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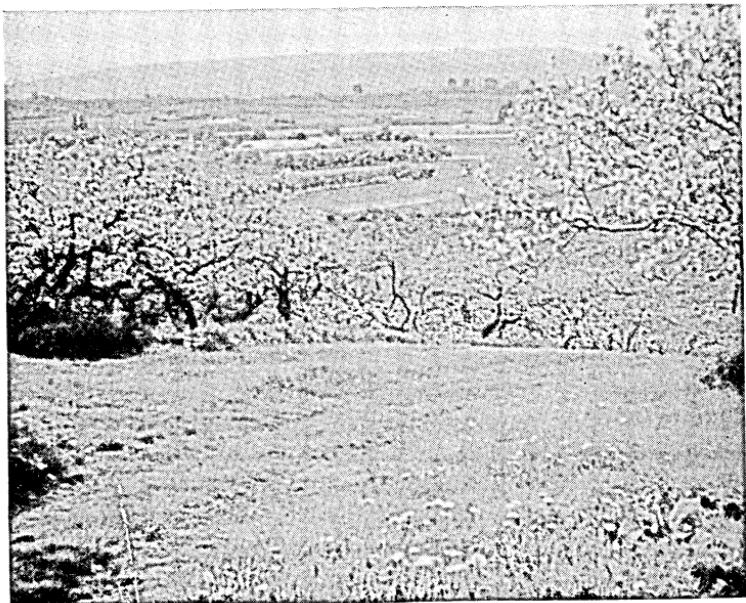
*A Study of the Functional Layout
of Some Mixed Horticultural
Holdings in*

the Vale of Evesham,

Year 1955/56

by

E. B. FEKETE



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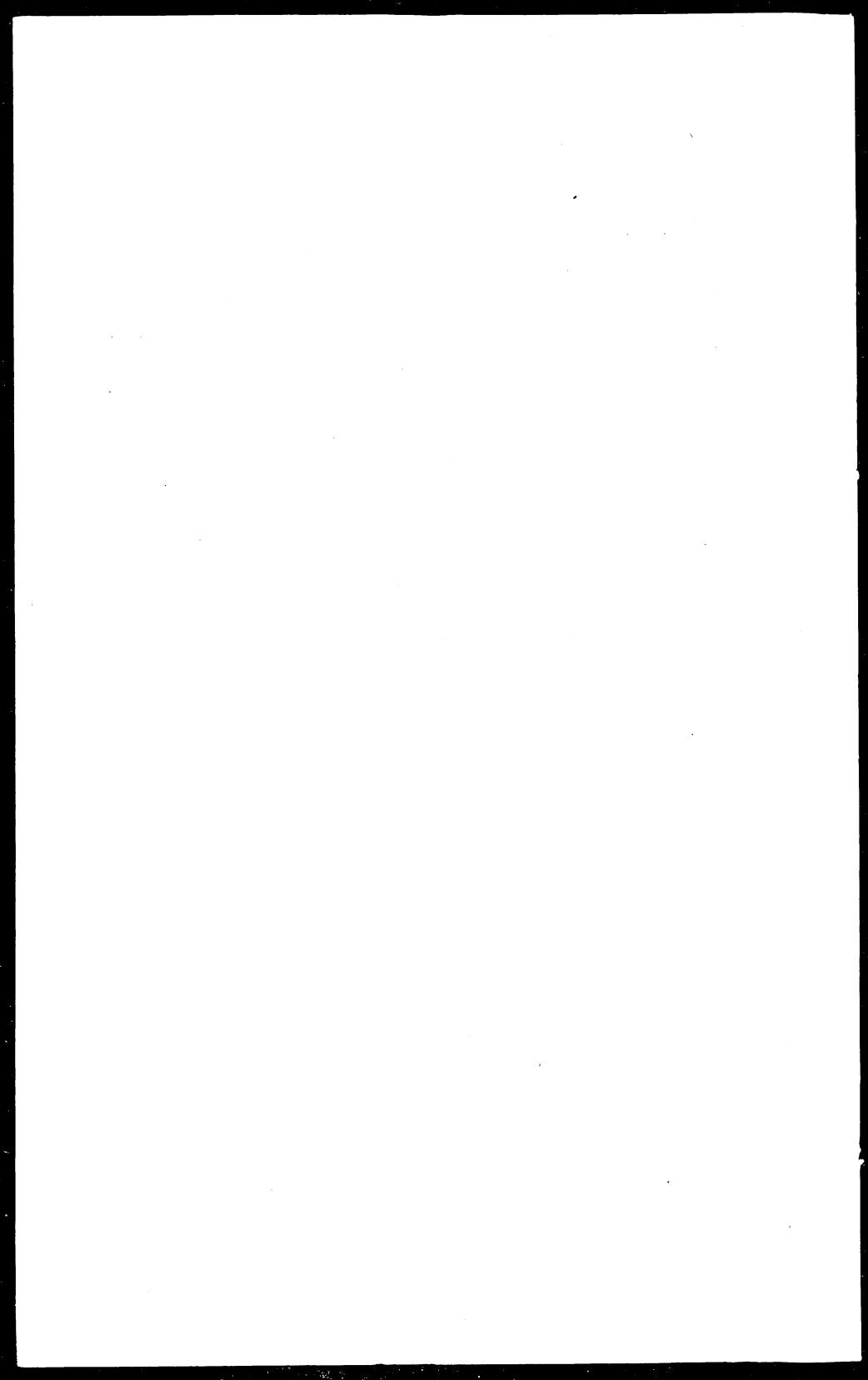
*A Study of the Functional Layout of Some
Mixed Horticultural Holdings
in the Vale of Evesham*

Year 1955/56

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(i)



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Introduction

THIS Department has been carrying out economic inquiries on horticultural holdings in the Vale of Evesham for the past seven years, the aim being to collect and examine data on various aspects of horticultural management. These annual inquiries have, however, always been based on the financial results of individual holdings and the conclusions derived therefrom have thus been limited to their own economic implications.

In examining the financial results of individual holdings and comparing them with one another, the "one acre figures" for both production and costs show considerable variation. In any section of agricultural production, there are many factors which may have a bearing on the financial results, so that variation may be regarded as the rule rather than the exception. These factors are either mere chance ones, as for example the weather, which are more or less beyond the grower's control, or they are the result of certain physical conditions which prevail on the holding. These particular conditions, such as the geographical layout, soil types, or water supply, if favourable, may be assets and of considerable advantage in management but on other holdings these factors may to a greater or lesser degree, be disadvantageous. These physical conditions, even in such a small area as the Vale of Evesham, vary considerably from holding to holding, and it is only natural that the business accounts, too, show considerable variation.

However, the variation in the financial results is only partly due to the differences in physical conditions prevailing on the holdings, and although these conditions have a certain direct bearing on financial results, their main importance lies in the fact that they play a decisive part in developing certain patterns of production. The texture of the soil, the location of the holding and indeed its entire topography are factors which determine the type and system of cultivation. In horticulture the most diverse form of production is to be found, and it is obvious that from the combination of the wide range of possible crops there is a considerable and varied pattern of production. Since all these crops represent different values in the

overall production, the financial results of the individual holdings are bound to vary considerably according to the crops grown on the land. In employing a certain type of cultivation such, for instance, as fruit or vegetable growing, the principal aim of management is to select those crops which are most suited to the prevailing physical conditions on the holding. By the right selection of crops, it is possible to exploit fully the opportunities which these conditions offer, and to overcome or mitigate the difficulties which they may create.

An important factor in horticultural production is the layout of the holding, which in geographical terms defines the location of the holding and suggests a certain arrangement within its own boundaries. The physical layout of the holding can indeed be manifold. It can consist of one simple unit or a number of them, as is usually the case in the Evesham area. It can occupy low lying land or elevated positions. Indeed, in many cases, it appears to include both. It may have an abundant water supply of its own for irrigation and spraying, or it may have to rely on supplies drawn from the mains. It may have good and easy communications with the markets, or have to cater for its own transport and so on. Although all these features of the layout are of great importance and contribute considerably to the value of the land and its successful production, it is the organisation of the holding, the particular system by which the land is employed, which provides the basic background for its financial results. Thus, it is the prevailing arrangement of crops which actually decides the character of the holding and differentiates one from another, such for example as a fruit- or vegetable-growing holding with an extensive or intensive method of cultivation. This pattern of layout is the functional organisation of the holding, the basis of business policy whereby the grower endeavours to keep the market regularly supplied with produce and to receive adequate income for his efforts.

In measuring the success of a business it is well nigh impossible to correlate all the physical factors with the financial results. On the other hand, although the financial results may give a good and useful picture of the efficiency of management, they are not on their own sufficient to give a more comprehensive explanation of the success or failure of the holding. For instance, the gross turnover of a holding may vary from £50 to £1,000 per acre, but if no detailed information is available of the various aspects of its managerial organisation, the data may be far too wide for plausible interpretation. Thus,

the aim of this survey has been to explore some of the aspects of the functional organisation prevailing on the 32 holdings and to relate it to the financial results which were achieved by them during the cropping year 1955/56.

In the Vale of Evesham the horticultural industry is very varied in character and although examples of specialist cultivation can be found, the majority of holdings do not comply with any one particular pattern. Nearly all the growers whose holdings have been included in the survey produce both vegetable and fruit crops to a greater or lesser degree, and classification can therefore only be made according to the relative importance of any one particular type of horticultural product on the holding. This problem of classification of holdings into different groups has been further aggravated by the fact that most of the holdings consist of several distinct plots of land which are frequently at some distance one from the other and the crops grown on them may vary considerably. However, despite the complex nature of layout, various regions of the area display certain characteristic types of mixed horticulture, and it is hoped that it will be possible in this report to underline the main features of the apparent differences in their functional layouts.

In discussing the various aspects of the inquiry, the report is divided into three parts: the first deals with the general features of the Vale; the second with the layout of the co-operating holdings and describes their various patterns of production; the third part gives an account of the financial results.

PART I

General Features

The Area

THE survey area covers almost the entire south-eastern region of Worcestershire and conforms to the Rural Districts of Evesham and Pershore.

According to the parish statistics compiled from the 4th June, 1950 Returns,* the acreage of agricultural land in the whole area amounts to some 101,659 acres and is split up among 2,774 holdings. Of this acreage about 24 per cent of the land is devoted to horticultural production on holdings of greatly varying size and of different types of cultivation. On the whole, it is typical small-holding area in which about 84 per cent of the holdings are under 50 acres but which is not more than 20 per cent of the total acreage. Although horticulture may be found in almost every parish, the main horticultural districts clearly coincide with the predominantly small-holding parishes. However, within the range of horticultural parishes it is not possible to draw up a dividing line between the typically vegetable- and typically fruit-growing parishes, since according to the statistics the number of parishes where one type of cultivation exceeds that of another is very few. In the Evesham district, Badsey, Bretforton and Offenham can be regarded as mainly vegetable-growing parishes, whereas Harvington is a mainly fruit-growing parish. In the Pershore district, Little Comberton and Wick are primarily vegetable-growing parishes, whereas the parish of Fladbury is mainly fruit-growing.

Within the wide range of horticultural crops, almost all types and varieties of produce can be found to be grown on a commercial scale and there are a number of crops for which the area is renowned. For instance, it is believed that the Vale is the earliest sprout producing area in the country, its asparagus

* See Report "Vale of Evesham, An Economic Study, Year 1951/52" by E. B. Fekete.

is famed for the delicate quality, and it is undoubtedly the home of the finest English plum varieties.

On the whole, the Vale of Evesham is one of the most important areas in the country for commercial horticulture and its supplies of fresh fruit and vegetables reach almost every part of the country from Southampton to Glasgow, from London to Swansea. This vast amount of produce, grown in a relatively small area, suggest a highly developed concentration of the industry and a considerable intensity of production.

In order to form some opinion of the degree of concentration of horticultural production in the Vale, it will perhaps be of interest to make some comparisons, on a county basis, between the principal horticultural areas of England. Statistics* show for each county the acreages of land devoted to horticulture and it is possible to express these acreages as a percentage of the total area of the county. Such a comparison seems to be rather limited, as far as the Vale of Evesham is concerned, but if one takes into account the fact that about 58 per cent of the horticultural land of Worcestershire is concentrated in the Vale, then the resulting picture may be regarded as more informative. The results of the comparison are as follows:

Total Area of Land in Each County
under Horticultural Production = 100

	Vegetable Area %	Fruit Area %	Total Horticultural Area %
<i>Worcestershire</i>	3.7	5.7	9.4
<i>South-East England:</i>			
Kent	2.5	8.9	11.4
Surrey	1.4	0.4	1.8
East Sussex	0.6	1.1	1.7
<i>The Fens:</i>			
Isle of Ely	6.7	2.6	9.3
Huntingdon	4.1	1.0	5.1
Norfolk	3.2	1.3	4.5
Cambridge	2.5	1.8	4.3
Soke of Peterboro'	2.4	0.2	2.6
Lincoln (Holland)	1.4	0.9	2.3
Rutland	1.8	0.1	1.9
<i>Home Counties:</i>			
Bedford	7.2	0.6	7.8
Hertford	1.6	0.5	2.1

(Continued on page 6)

* Ministry of Agriculture, Fisheries and Food: Agricultural Statistics 1954/55.

(Continued from page 5)

			Vegetable Area %	Fruit Area %	Total Horticultural Area %
<i>East Anglia:</i>					
Essex	.	.	3.8	1.6	5.4
West Suffolk	:	:	2.3	1.0	3.3
East Suffolk	:	:	2.5	0.8	3.3
<i>The West Country:</i>					
Hereford	.	.	0.3	4.4	4.7
Gloucester	:	:	0.8	1.7	2.5
Somerset	:	:	0.2	1.8	2.0
Devon	:	:	0.2	1.1	1.3

From the above figures it can be seen that Worcestershire with 9.4 per cent of its total area devoted to horticultural crops has the second largest concentration of horticultural production in the country. However, taking into account the fact that the Vale occupies less than one-quarter of the total area of the county of Worcester, it is apparent that this area with its concentration of horticultural production probably ranks second to none over the whole country. The total area of agricultural land in Worcestershire is 444,869 acres. The Vale occupies 101,659 acres of which 24,315 acres are devoted to vegetable and fruit crops. According to these figures, 24 out of every 100 acres of agricultural land in the Vale are under horticultural production. If the acreage used for growing flowers, herbs and under fallow is also taken into consideration, then, the horticultural acreage can be put at least between 25 and 26 per cent. When the distribution of the 24,315 acres between fruit and vegetable crops is compared with the rest of the county the following picture is shown.

	Vegetables		Fruit		Total	
	Acres	%	Acres	%	Acres	%
Vale of Evesham	13,788	84	10,527	41	24,315	58
Rest of Worcestershire	2,719	16	14,885	59	17,604	42
Total	16,507	100	25,412	100	41,919	100

Although the Vale occupies only 23 per cent of the total county acreage, it accounts for 84 per cent of the vegetable acreage and 41 per cent of the fruit crops. Owing to the fact that there are other important fruit growing areas in Worcestershire, especially along the valleys of the Severn and the Teme, the predominance of fruit in the Vale is not as clearly marked as that of vegetables. Nevertheless, this by no means

alters the fact that more horticultural production is concentrated in this small area than in the rest of the county.

The reasons for the development of this concentration of horticulture seem to be rather complex. According to historians the roots of the industry are linked with the early history of the area. However, the history of commercial horticultural production and its modern development, as it is known to us, is much younger and originated mostly in the 19th century. During this period there were a number of factors both national and local which provided the impetus for development and helped to mould the industry into its present ramified and modern form. In the opinion of Gaut,* the most important factors which affected the development of the industry in the Vale were the repeal of the Corn Laws; the extension of the railway system (1852), and the general acceptance of the Evesham custom of land tenure, whereby the tenant could expect adequate compensation for the improvements carried out by him on the holding and for his efforts in maintaining it in a high state of productivity.

Although these factors are important in the gradual development of the area, they are not the sole reason why the Vale has become the centre of large-scale horticultural production. The answer is by no means simple, particularly if one tries to focus one's attention on physical factors such as topography, climate and soils.

The Vale of Evesham occupies that stretch of the Avon Valley which lies in Worcestershire and partly in Warwickshire. If it is believed that horticulture requires flat land, then although the area is nowhere so dissected, nor its relief so high that it would become prohibitive for horticultural production, the Vale can by no means be regarded as flat. The wide sweep of the valley between Bidford-on-Avon and Tewkesbury is cut by several ridges and interrupted by outliers of the Cotswold Hills which bound the area to the south-east. The northern limit of the Vale is indeterminate as is its western boundary which does not generally extend as far as the Severn valley, except possibly near the parish of Kempsey. Those topographical conditions do not, on the whole, indicate that they have been decisive in determining the present location of the industry.

As for climatic conditions, it may be that Bredon Hill in the south and the Cotswolds in the south-east offer the valley a

* R. C. Gaut, M.Sc., *History of Worcestershire Agriculture and Rural Evolution*.

certain amount of protection from winds, and likewise cause some reduction in rainfall. According to local meteorological observations the average rainfall in the Vale is lower than that in other parts of Worcestershire. The average annual rainfall data for the years 1926-1935 were as follows:

Northern Worcestershire	.	.	.	> 27.50 in.
Central and Western Worcestershire	.	.	.	25.00-27.50 in.
South-eastern Worcestershire	.	.	.	< 25.00 in.

In southern Worcestershire, the area around Malvern, wetter weather is experienced than in the area lying to the east of Worcester and Bredon Hill which includes the Vale of Evesham.

However, the low rainfall is not always an advantage, and in some years irrigation is of obvious benefit.

It is by no means easy to accept the theory that the area has developed as an important centre of horticulture due entirely to the mildness of the climate, with a consequent emphasis on early crops. When one considers the extensive and widespread damage that has been done to crops in the Vale in the last few years through drought and frost one realises that climatic conditions are not always optimum for crop production. Admittedly it is milder in this area than on the scarplands to the east, but it is on these very uplands that large acreages of Brussels sprouts are being picked in the depth of winter.

As far as geological conditions are concerned, the overall horticultural importance of the area is certainly not due to its soils. These are very diverse in character, and certainly not always of a type most suitable for vegetable or fruit production. For example, some of the heavier soils of the Evesham series may be difficult to work and in certain areas when land of this type changes hands it is often not used again for small-holding horticulture. Likewise in some parts of the area older plum orchards have encountered nutritional problems when the tree roots have penetrated to the calcareous bands to be found in the Vale.

A conclusion to be drawn from the above sketch of the physical conditions prevailing in the area is that, while these factors have not prevented it, they have nevertheless not offered sufficient incentive to stimulate large scale horticultural production in the Vale.

However, when one considers the geographical position of the area with regard to potential markets, together with its highly organised layout, it is then that advantages become more apparent. With the exception of Greater London, the bulk

of our population still lives in the Midlands, South Wales, the North of England and the Central Lowlands of Scotland: thus the Vale of Evesham is in a better position to serve many of these regions than the other principal producing areas. Because of the proximity of the Home Counties and Kent to London, the bulk of the Evesham produce appears to travel either northwards, or to Bristol and South Wales rather than to London.

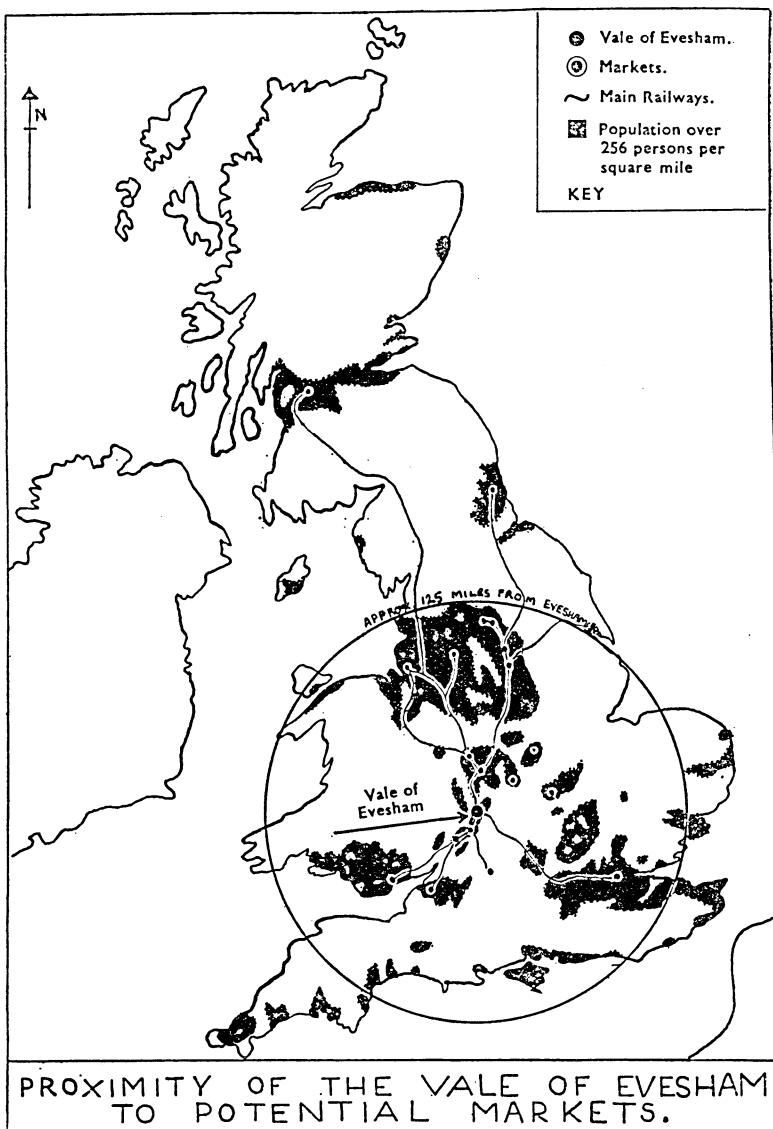
The favourable position of the Vale of Evesham in relation to potential markets is shown on the accompanying map.

The following map illustrates the geographical position of the Vale and shows its relationship to the various industrial areas of the country where the population exceeds 256 persons per square mile. A circle drawn from Evesham with a radius of say 125 miles would include most of the large towns in the north, London in the east, the entire area of South Wales and a considerable part of South-West England. However, it is the northern sector of the circle which provides the major regions of demand for produce from the Vale. Its close association with the industrial Midlands and its relative proximity to the North of England makes the area the natural source of supply of fresh fruit, vegetables and other horticultural produce. The continued growth of these thickly populated industrial regions of the country which are served by the Vale must have always provided it with ample impetus for both further intensification and territorial expansion.

The map shows the geographical position of the various markets to which the 32 holdings co-operating in this Survey sold their produce. Although the number of markets is not more than 18, discounting the 4 local markets at Evesham and Pershore, the general trend in the movement of produce is rather apparent. Of the 18 markets, 12 are situated in the north and only 5 in the south if London is not taken into account.

In response to the steady demand for produce, more and more land has been gradually drawn into horticultural production and more and more growers have established themselves in the area. This evolution has been mainly responsible for the present structural layout of the Vale. During this process the boundaries of the various horticultural districts have become defined and the small-holding character of certain of them established. The existing pattern of layout is by no means static. The industry is still expanding and for this purpose is absorbing more land; it is also adapting itself to up-to-date techniques. The topographical expansion of the

Proximity of the Vale of Evesham to Potential Markets



industry is towards the slopes of the Cotswold Hills where more and more farm land is being taken over for horticultural production, especially for growing Brussels sprouts. The technical intensification, on the other hand, manifests itself in the introduction of modern glasshouse cultivations as, for example, in the parish of Offenham; the increasing use of irrigation, mechanisation, and the employment of new and improved varieties of crops and so on.

To ensure the smooth function of the industry, various developments in the structural pattern needed to be encouraged. Gradually, highly ramified and efficient facilities for communication have been evolved; trading and co-operative organisations have also been established to cover the whole of the Vale.

The prevailing network of communications, both road and rail, readily ensures the rapid and reliable transportation of produce and goods. It provides a direct link with the great markets of the country, not only from the main centres of the area, but indeed from each individual holding. On many holdings, the produce is collected daily by the wholesaler, the local markets or one of the co-operative organisations. This method of collecting produce relieves growers of the burden of transporting their own crops and thus enables them to devote more time to their holdings.

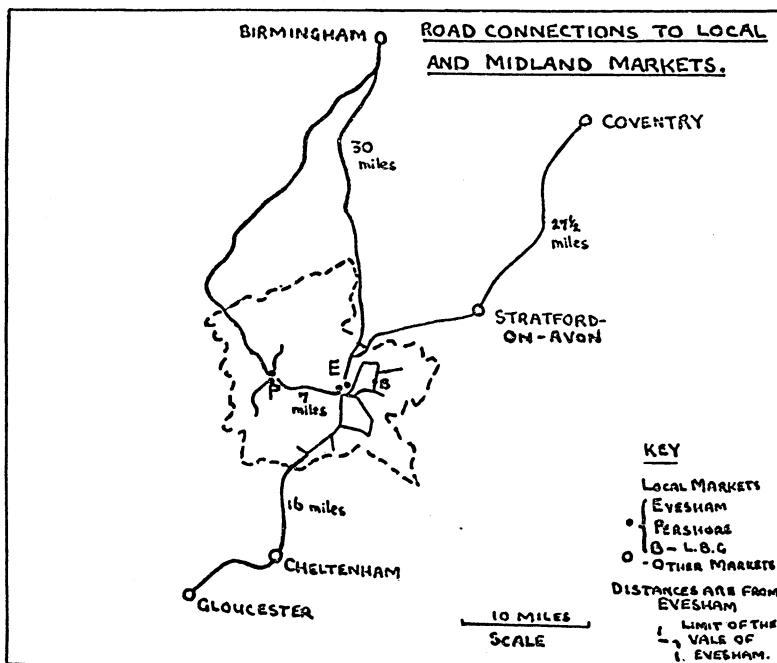
With regard to trade, most of the needs of the industry are met locally. The sale of produce and the purchase of all kinds of commodities required by the growers are carried through by old established firms both of a private and co-operative nature. The grower has a fair choice of method in disposing of his produce locally. He can sell it either through one of the local markets, or through local merchants, or, if his holding happens to be situated at the northern, eastern or southern fringes of the area, he can even make use of the services of the neighbouring markets such, for instance, as those at Birmingham or Cheltenham. There are four markets in the area, namely, two at Evesham and two at Pershore. Of these markets, two are private firms, with, however, shareholder growers, whereas the other two are co-operatives maintained entirely by their member growers. The trade links of these markets extend well over the whole country and a very large proportion of produce is sold through them; their function is considerable and they are indeed an integral part of the industry. On these markets the produce is sold to buyers from all over the country both on the auction floor and by private treaty. All the markets cater for the collection and transportation of produce from the

holding to Evesham or Pershore and also provide facilities for the purchase or hire of containers. Besides the services of these markets, there are many growers who carry out their transactions partly, or entirely, through their oldest co-operative organisation, the well known Littleton and Badsey Growers Ltd. Although this co-operative has no open market of its own, it is one of the most important selling and purchasing agencies in the area. In addition to the disposal of produce, its activities include the bulk buying and distribution of seeds, fertilisers, sprays, machinery and all sorts of horticultural sundries. The markets share their profits with their member growers. The private markets pay dividends to their shareholder growers, whereas the co-operatives give a bonus to their member growers. The basis of the bonus payment is the value of the turn-over which the grower has transacted with the Society. The other local channel for the disposal of produce is the services of merchants. These firms, large and small, and often producers themselves, have built up a considerable custom all over the country. They buy produce outright from the grower and, with their far reaching contacts, can move it from the holdings right to the doorstep of the retail trade. Some of these firms with their own trade organisation and fleet of lorries supply large areas of the country with fresh produce. They are the main source of supply, especially of plums for the processing industry, and in order to satisfy this particular kind of demand they, together with the market representatives, offer, early in the season, contracts to growers in which they promise to buy their crop at a mutually agreed price. As a general practice, these prices are negotiated between the merchants and the growers on the one hand, and between the merchants and the processing industry on the other, as soon as prospects of the plum crop can be assessed. The third alternative for the grower is to sell his produce at one of the neighbouring markets. Although these markets are outside the Vale, they really belong to the general pattern of the area due to their ease of access. These markets are situated within a radius of not more than 30 miles from Evesham; the distance is even less for those growers whose holdings are situated near the outer boundaries of the Vale. The relationship between these markets and the area of the Vale is shown in the following sketch.

These markets, too, together with their own organisations, wholesalers, or commission salesmen furnish facilities for the growers which are, in many respects, similar to those provided by the local markets.

Besides the facilities provided by the distributive and transport organisations, there are of course, many others which, directly or indirectly, help the industry to perform its activities efficiently. Some may provide the grower with expert advice on the growing of crops; others in the form of voluntary associations may safeguard and promote the interest of the grower both with official bodies and with the public.

Road Connections to Local and Midland Markets



Although it is true to say that the physical factors of the area such as the climate and natural lay-out, together with some of its soils, are favourable for horticulture, it is really the prevailing organisation with its ramified facilities that ensures the smooth and efficient working of the industry.

Naturally, the high concentration of production within such a relatively small area has some disadvantages such, for example, as the lack of land and shortage of labour. On account of the great number of growers, there is always a steady demand for suitable land either for establishing new businesses or expanding old ones. If a grower wishes to expand his business by

adding a few more acres to his holding, it might be necessary for him to buy or rent the required land at a considerable distance from his old ground. This general lack of land is the main cause of fragmentation of the holdings; there are many holdings which consist of five or even more detached units of land. In fact, the one unit holding is rather the exception than the rule.

It is often argued that holdings with multiple units are an advantage rather than a set-back. One reason may be said to be that by the scatter of the holding the grower can at least mitigate on one part of his land the damage which adverse climatic conditions may inflict upon his crops on another part. This argument, can however, only be considered valid as long as the holding does not become too scattered. The cultivation, harvesting and gathering of crops from strip lands lying far apart from each other is both costly and cumbersome. Most of the land, especially in the Evesham district, is rented but, in accordance with the Evesham custom, the grower is entitled to hand it over to a suitable new tenant who has to recompense him for his ings. Due to the lack of land, this sum is rather high and naturally it varies considerably in different districts of the Vale. The other disadvantage of the area is the shortage of suitable labour. One of the characteristic features of horticulture is that it requires a considerable amount of hand labour and most of the cultivating and harvesting operations require a certain degree of skill. It is not only major operations such as the planting of crops, or the grafting and pruning of trees which need knowledge and experience, but even in the preparation of produce for market, a good understanding of grading and packing is required. Thus, the entire labour force, both regular and casual, needs to be trained in one way or another. The mechanisation of some crops is virtually impossible, as for instance asparagus, and consequently these crops have to be grown on small holdings where family labour is available. As there are constant industrial developments not only in the neighbouring areas but very often even within the boundaries of the Vale, the drain on local labour makes it rather difficult for the growers to satisfactorily maintain and supplement the size and skill of their labour force. Obviously, the drift from the land affects mainly the younger generation. Although no census of the age of the workers was taken during the course of this Survey, it transpired from the growers' information that on several holdings the average age of the workers tended to increase rather than to decrease. The general

decrease in the regular labour force, however, is confirmed by the annual economic surveys carried out by this Department. According to this source of information, the average acreage per regular worker increased from 5.9 to 8.4 acres on an average 84-acre holding during the period 1949-1954. In order to avoid possible bottlenecks caused by the shortage of labour, growers avail themselves more and more of the use of mechanisation and of the services of agricultural contractors.

These are some of the disadvantages which are only natural consequences of the high concentration of production in a relatively confined area. Whatever these disadvantages may be, they are greatly outweighed by the favourable geographical position of the Vale; also by its organised lay-out and communications.

Whereas the physical factors, such as location, climate and soils belong to the inherent conditions of the area, the pattern in which they are employed for the sake of the industry and the way in which they are backed up by various facilities is due to the growers themselves. The general lay-out of the area reflects the interests of the growers in keeping abreast with the scientific progress of horticulture, and an intense pride in maintaining a high standard of production. It is the steadfast character and the traditional skill of the growers which has really developed the Vale into the home of commercial horticulture. Their individuality in the use of the land, and their co-operative spirit in maintaining and developing existing facilities is the real background of the lay-out in which the area is striving to carry out its activities.

Briefly then, these are the most important factors of the characteristic features of the Vale, and they give a general background picture of the environment of the holdings involved in this study.

The Survey Sample

There are 32 holdings in this survey which, through the willingness of the growers themselves have been drawn from those 70 Vale of Evesham holdings that have co-operated with this Department for a good many years, and have provided all sorts of valuable information on various financial aspects of their management.

As mentioned before, prevailing physical conditions on the

holdings have an important bearing on the pattern of lay-out. The location of the holding, the altitude of the ground, the types of soil all have a direct effect upon the extent of the land and act as deciding factors in the selection and the growing of crops most suited for these conditions. It would, however, be rather difficult to classify the 32 holdings according to physical conditions and to relate their lay-outs to any of these factors, since the differences between them may appear in a very mixed form. For instance, a holding with its various units of land may extend over the boundaries of several parishes and may consequently have a scattered location with different climatic conditions, altitude contours and soil types. As far as these factors are concerned, therefore, it is best to regard the sample as one whole, embodying most of the physical conditions characteristic of the area.

Although for the scope of this survey a sample of 32 holdings may appear to be rather limited, the individual holdings included in it give a very good insight into the pattern of land which is used in production. The holdings are well scattered over the main market gardening districts of the area and, thanks to their varied horticultural character, they represent a fairly wide cross-section of the different sizes of holdings with different types of cultivation. Despite the fact, that, on most of the holdings, various types of cultivation appear in a rather mixed form, the sample is sufficiently suitable to be able to detect and examine some of the more usual patterns of lay-out where crops on the land are organised to contribute to the economy of the holding.

Before discussing the functional patterns of lay-out prevailing on the holdings, it is first desirable to outline the structural composition of the sample. This outline will give an account of the most important inherent conditions on individual holdings and also a notion of the physical background of the entire sample.

Physical Lay-out

Owing to the very varied natural conditions prevailing in the Vale, there may be as many types of holdings as there are holdings investigated in this survey. It is perhaps true to say that no holding in the area is similar to another. This difference is due chiefly to the particular physical pattern in which the holding has to develop and perform its own function. Thus,

each holding in the sample has its own particular physical lay-out which varies according to location, size and fragmentation of land, diversity of soil and availability of water supply.

Location and Altitude of Holdings

The location of the sample holdings includes the districts of both Evesham and Pershore, there being 22 holdings around Evesham and 10 near Pershore. This regional distribution of the sample corresponds favourably with the statistical pattern* of the area and show the following comparison:

	Sample		Area	
	No.	%	No.	%
Evesham District	22	69	2,000	72
Pershore District	10	31	774	28
Total	32	100	2,774	100

The holdings are situated in 17 different parishes, 13 of which are in the Evesham and 4 in the Pershore district. These are typical parishes for market garden production so that the scatter of the holdings may be regarded as fairly representative for the area. The parish distribution of the holdings is shown on the accompanying sketch.

The above parish distribution has, however, been based mainly on the residential parts of the holdings, without taking other units of land into account; consequently the actual scatter of the sample is far wider than the area represented by the 17 parishes. It does in fact, involve about 23 parishes all together, including Broadway, Cleeve Prior, Hinton-on-the-Green and Wickhamford in the Evesham district, and the parishes of Eckington and Wick in the Pershore district.

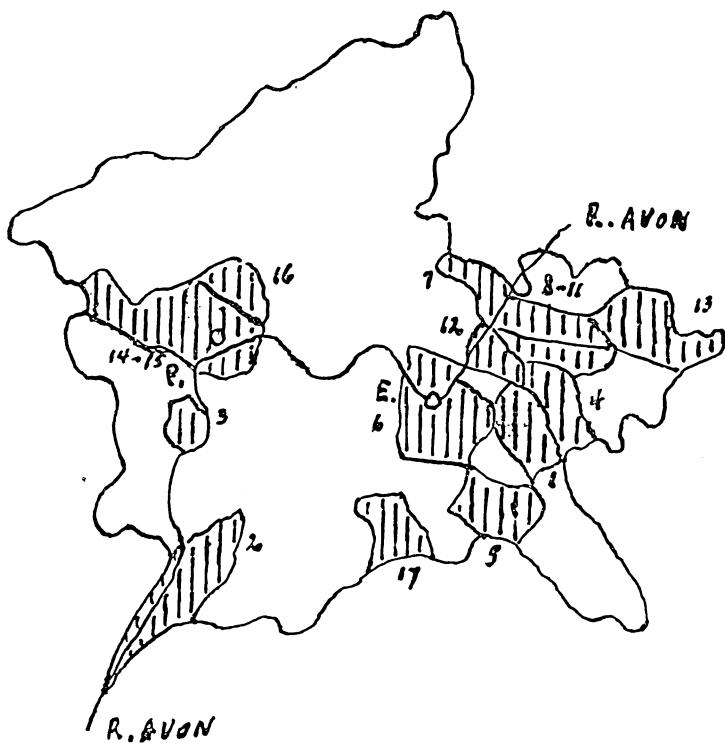
The altitude contours of the individual holdings range from 45 feet to 900 feet.

There are no great heights within the Vale itself and the area exceeding 200 feet is quite limited in extent.

The minimum heights to be found are of land near the River Avon downstream from Pershore. As far as the altitude is concerned, the representative holdings in the sample are those lying between 116 to 178 feet. These include the holdings of growers in the parishes of South and Middle Littleton where vegetables are grown on the lower land to the east of the villages with orchards on the higher land of Cleeve Hill to the west.

* 4th June, 1951 Agricultural Returns.

Parishes in the Survey



Parishes	
1. Badsey	8-11. The Littletons
2. Beckford	12. Offenham
3. Birlingham	13. Pebworth
4. Bretforton	14-15. Pershore
5. Childs Wickham	16. Pinvin
6. Evesham Borough	17. Sedgeberrow
7. Harvington	

In order to ascertain whether or not the altitude of the ground has any particular bearing on the functional lay-out of the holding, the sample was divided into two groups, namely holdings with a minimum height of below 110 feet and holdings above this level. By sub-dividing the holdings within these two groups according to types of cultivation, and by showing the minimum and maximum heights of the ground, it was possible to obtain certain indications of the effect of altitude on the use

of land. For this purpose, the types of cultivation are classified as "mixed", "vegetable" and "top fruit", whereas the minimum and maximum heights denote the lowest and the highest level known to occur on the holdings. Thus, the relationship between the altitude and types of cultivation can be shown as follows:

TABLE 1
Layout Patterns at an Altitude of below 110 feet

Code No. of Holdings	Mixed		Vegetable		Top Fruit	
	Min.	Max.	Min.	Max.	Min.	Max.
W.R. 13 .	Feet 102	Feet 146	Feet —	Feet —	Feet —	Feet —
W.R. 16 .	—	—	45	199	—	—
W.R. 17 .	—	—	87	164	—	—
W.R. 23 .	—	—	105	105	—	—
W.R. 29 .	—	164	—	—	93	—
W.R. 33 .	87	108	—	—	—	—
W.R. 35 .	—	—	109	—	—	270
W.R. 42 .	—	—	100	100	—	—
W.R. 65 .	—	—	85	91	—	—
W.R. 67 .	80	—	—	113	—	—
W.R. 69 .	50	50	—	—	—	—
W.R. 84 .	—	—	64	91	—	—
W.R. 95 .	—	—	74	100	—	—
W.R.100 .	108	178	—	—	—	—
Total .	427	646	639	963	93	270
Average .	85	129	80	117	93	270

For this group of holdings the overall average height works out at a minimum of 84 feet and a maximum of 134 feet above sea level. The land belonging to these holdings is situated in or near the main valley of the River Avon in the neighbourhood of the villages of Birlingham, Pershore, Pinvin, Offenham, Harvington and the Borough of Evesham.

It is significant, that of the 14 holdings represented in this group, 7 specialise in vegetable production, and only 2 are partly engaged in top fruit growing. The mixed type of cultivation, of course, also includes a fair amount of top fruit production. However, on these holdings, too, the top fruit is generally grown on slopes and not on flat ground. From these figures it is apparent that the vegetable crops are grown chiefly on low-lying land, whereas orchards are situated on higher ground.

The second and larger group of holdings, 18 in number, is scattered about the Vale away from the main valley. The areas involved include the parishes of Pebworth, the Littletons, Bretforton, Badsey, Childs Wickham, Sedgeberrow and Drakes Broughton. The relationship between altitude and type of cultivation on these holdings is shown in Table 2.

TABLE 2
Layout Patterns at an Altitude of above 110 feet

Code No. of Holdings	Mixed		Vegetable		Top Fruit	
	Min.	Max.	Min.	Max.	Min.	Max.
	Feet	Feet	Feet	Feet	Feet	Feet
W.R. 15 .	—	—	—	—	127	127
W.R. 24 .	—	—	—	—	143	143
W.R. 30 .	—	—	—	—	141	189
W.R. 36 .	—	—	114	114	—	—
W.R. 37 .	—	—	110	—	—	200
W.R. 39 .	—	—	180	900	—	—
W.R. 43 .	—	—	130	—	—	200
W.R. 44 .	—	—	—	—	148	148
W.R. 46 .	—	148	120	—	—	—
W.R. 51 .	—	—	144	151	—	—
W.R. 58 .	—	178	120	—	—	—
W.R. 60 .	—	—	145	—	—	200
W.R. 62 .	200	200	—	—	—	—
W.R. 70 .	—	—	110	—	—	200
W.R. 77 .	—	227	168	—	—	—
W.R. 81 .	150	150	—	—	—	—
W.R. 93 .	150	203	—	—	—	—
W.R. 96 .	—	—	120	148	—	—
Total .	500	1,106	1,461	1,313	559	1,407
Average .	167	184	133	328	140	176

For this group of holdings, the overall average altitude ranges from a minimum of 140 feet to a maximum of 213 feet. It is interesting to note, that there are 4 holdings which devote all their land to vegetables, 4 to fruit and 3 to mixed production. On the other 7 holdings, the use of land is divided between these three types of cultivation to a varying degree. In this group, too, the top fruit, on the whole, is grown mainly on higher land, whereas vegetable crops, with the exception of sprout grounds, occupy the low lands of the holdings.

As can be seen from the foregoing tables, the altitude of the individual holdings ranges from 45 to 900 feet. This wide

difference is rather exceptional, since the maximum height of the majority of holdings is between 150 and 200 feet. The average minimum altitude for the sample is in fact, 116 feet and the average maximum 178 feet. From the figures shown in the tables, it can be seen that in both groups of holdings the orchards are concentrated on the slopes rather than in the valleys, whereas the vegetable crops occupy the low-lying land.

Size and Fragmentation of Holdings

Another important factor which has an effect on the functional lay-out of the holdings, is the size. Whereas the available acreage on a large holding may permit an extensive pattern of production, on a small holding the use of land has to be intensive.

In the sample, the size of the holdings varies from very small ones of under 5 acres to the large horticultural farms. Cultivation on these holdings and farms although they may differ in size, is typically horticultural with a diverse utilisation of land.

For the purpose of analysis and comparison the holdings have been divided into acreage groups and in some cases into districts as well. However, due to the relatively small number of holdings in the sample, it has not been possible to superimpose one regional division or acreage group on another; the sample thus has to be considered as one whole. Four acreage groups have been chosen, namely (a) less than 10 acres; (b) 10 to 50 acres; (c) 50 to 100 acres, and (d) over 100 acres. The division of the holdings into the above acreage groups is of no particular importance as far as this survey is concerned, and is only used to assist in ascertaining the existing patterns of functional lay-out.

The distribution of holdings between the Evesham and Pershore districts and among the four acreage groups is shown in Table 3.

TABLE 3
Distribution of Holdings

Size Groups	Evesham				Pershore				Total			
	No. of Holdings	%	Acreage	%	No. of Holdings	%	Acreage	%	No. of Holdings	%	Acreage	%
Acres												
1-10	9	41	59.9	7	1	10	8.2	1	10	31	68.2	5
10-50	10	46	222.3	24	4	40	54.3	9	14	44	276.5	18
50-100	1	4	82.5	9	2	20	143.2	24	3	9	225.7	15
Over 100	2	9	552.0	60	3	30	394.2	66	5	16	946.2	62
Total	22	100	916.7	100	10	100	599.9	100	32	100	1516.6	100

The sample, in spite of its limitations in the number of holdings, compares favourably with the overall statistics of the area. With regard to regional distribution this comparison may be shown as follows:

	Sample		Total Area	
	Acres	%	Acres	%
Evesham District	917	60	52,622	51
Pershore District	600	40	49,037	49
Total	1,517	100	101,659	100

According to the above figures the Evesham area is over-represented in the sample by 9 per cent, but this only emphasises the small-holding character of the survey. Indeed, the sample readily illustrates the concentration of small-acreage holdings in the Evesham district and in this respect it agrees with the overall statistical data. The correspondence between the acreage groups can be set out as follows:

Acres	Sample		Total Area		Difference
	Acres	%	Acres	%	
1-10	5	7	7	-2	
10-50	18	13	13	+5	
50-100	15	13	13	+2	
Over 100	62	67	67	-5	

The average acreage of the 32 holdings is 47.4 acres against the statistical average of 36.6 acres. The difference is due mainly to the higher average acreage of the 10-50 acre group in the sample.

Although the statistical data may be relevant in assessing the representativeness of the sample, they do not reveal all the details which make such a comparison valid in every respect. The statistical information, for instance, does not include small plots of land of one acre or less; also some of the grounds which are treated as separate holdings are in fact component units of one holding under one management. Had the sample holdings been examined according to the number of agricultural returns submitted by the grower in connection with the various parts of his holding, the number of holdings in the survey would have been more than 32 and would consequently have shown a lower average size than 47.4 acres.

A rather common feature of horticulture in the Vale, is that the grower frequently has land in several distinct localities, which are very often a considerable distance apart. These separate pieces of land may represent either complete fields bounded by hedges etc., or merely parts of them. Actually, there are many fields in the area which are divided into several plots of land and cultivated by different growers. On such plots there is hardly any visible sign of boundaries; at the most, they are marked off from each other by small concrete blocks showing the corners of the land. In the course of this survey, when ascertaining the total number of plots belonging to the sample holdings, only those pieces of land were taken into consideration whose location completely detached them from the other parts of the holding. Thus, a road or stream running across a field was not regarded as dividing the land into separate units. It has been borne out by the sample holdings, that the extent of the fragmentation of land in the area must be considerable. By taking into account the crop acreage alone, it can be seen that on the 32 holdings the land has been divided into not less than 83 separate units. Table 4 shows how these units are split up between the various acreage groups, together with the average number and size.

TABLE 4
Fragmentation of Holdings

Size Groups	Holdings	Units	Total Crop Acreage	Average No. of Units	Average Acreage per Unit
Acres 1-10 .	No. 10	No. 23	Acres 66	No. 2	Acres $2\frac{3}{4}$
10-50 .	14	37	284	3	$7\frac{1}{2}$
50-100 .	3	6	221	2	$36\frac{1}{4}$
Over 100 .	5	17	714	3	42
Total .	32	83	1,285	3	$15\frac{1}{2}$

This table shows that, on the average, each holding consists of 3 separate pieces of land, each unit being approximately $15\frac{1}{2}$ acres. With regard to the average number of units, there is hardly any variation between the various size groups, there being only 2 for the 1-10- and 50-100-acres groups, and 3 for the 10-50- and over-100-acre groups. The variation is, however, more significant between the individual holdings, there being

a number of holdings both small and large consisting of 3 or more distinct units. The holdings are shown below grouped according to their component units.

Groups of Holdings According to Component Units

No. of Units	1-10 Acres	10-50 Acres	50-100 Acres	Over 100 Acres	Total No. of Holdings
1	3	4	1	1	9
2	2	3	1	2	8
3	4	4	1	—	9
4	1	1	—	—	2
5	—	1	—	1	2
6	—	1	—	—	1
7	—	—	—	1	1
Total	10	14	3	5	32

According to the above figures, 15 of the 32 holdings have their component units in 3 or more distinct localities and not less than 12 of them belong to the 1-10- and 10-50-acre groups. Obviously, these two acreage groups are most affected by the fragmentation of land, and in both groups 50 per cent of the holdings have their land split up into 3 to 6 separate units. As an illustration of the extent to which the land can be split up, it is perhaps of interest to mention that the holding with 4 units in the 1-10-acre group is just under 8 acres, and that the holding with 6 units in the 10-50-acre group is slightly over 13 acres.

As mentioned before, the average size of the individual units on the sample holdings is $15\frac{1}{2}$ acres, but in reality, the size of these units varies considerably, and the holdings generally consist of a main field and a certain number of outlying plots. As a result of the severe sub-division of the holdings the size of the individual units, especially of the outlying plots, is very small, and indeed very often, not much larger than good sized allotments. This is particularly true of holdings under 50 acres where the average acreage of each unit is not much more than $5\frac{3}{4}$ acres. Here the land seldom occupies an enclosed field, but lies in strips, at varying distances from one another, forming parts of several fields and are unfenced. The analysis of the 24 holdings comprising the 1-10- and 10-50-acre groups gives the following picture of the nature of fragmentation.

Acreage Group		No. of Field Units	No. of Plot Units
1-10	:	3	20
10-50	:	12	25
Total	.	15	45

From the above figures it can be seen that of the 60 units of land making up these two acreage groups, three-quarters of them are plots without any proper boundaries. In fact, some of these "open" plots are the sites of the famous plum orchards of the Vale, where the trees merge into one complete field and only the grower himself knows the extent of his own plot. Even these plots, planted up with orchard trees, may vary considerably in size. In one particular instance, one unit consisted of not more than nine rows of trees situated in a large plum orchard; the rest of the orchard belonged to other growers.

In order to find out some facts about the size of the units and the pattern in which they are related to each other, 23 of the 32 holdings were dissected and examined according to their respective units. This analysis showed that on all the holdings, 2 major units form the main area of land, whereas the other units are smaller plots of a more or less supplementary nature. Of the two main units, the larger one is generally the residential part of the holding, or that part of the land which lies near to the grower's house; the smaller unit, although its location may be somewhat further afield, is closely linked to the central part of the holding. The number of plots, and the distances which separate them from the main units, may vary considerably from holding to holding and may be made up of all possible sizes of land. On these 23 holdings, the total acreage of 950.5 acres represented 72 separate units, giving an average of 3.1 units per holding and 13.2 acres per unit of land. By calculating the sizes of the individual units in accordance with their particular importance, the average acreage of the 23 holdings can be split up as follows:

Units	Acres
1	29.2
1	8.5
1	2.3
0.1	1.3
<hr/>	
3.1	41.3

The extent of fragmentation on the average holding is rather moderate, and all the units are fields of workable size. Although this seems to be satisfactory as far as the rather limited sample of 23 holdings is concerned, there are many individual holdings in the area where the position is quite different. For instance on a number of these holdings the land is divided into a good many strips of a hardly workable size and lying at

considerable distances apart. Such cases can be illustrated by the few following examples drawn from the sample holdings.

Unit	<i>Holding "A"</i>	<i>Holding "B"</i>	<i>Holding "C"</i>
1st .	3.0	3.5	54.5
2nd .	2.0	3.0	10.5
3rd .	1.8	2.0	9.5
4th .	1.0	2.0	8.0
5th .	—	1.8	7.0
6th .	—	0.9	1.5
7th .	—	—	1.0
	—	—	—
	7.8	13.2	92.0

The acreages given for these holdings refer only to ground used for growing crops and, consequently, do not include any grass or other land; thus the number of units may be even greater than shown above.

There are numerous causes of the fragmentation of land, but in most cases they can be attributed to a combination of economic and social factors. It is not mere personal ambition which prompts the grower to add pieces of land to his existing holding, but due to circumstances which he feels cannot otherwise be satisfied. For instance, as his family grows up he may be induced to own or rent more land in order to provide sufficient labour and livelihood for the members of his household; or, he may consider the existing acreage far too small to be a sound economic unit and feels there is a better chance to balance the economy of his business by acquiring more land. By adopting a more intensive method of cultivation there would be ample scope for higher production, but in many cases this may easily be precluded by lack of capital for expensive equipment, or the need of specialised technical knowledge for glass-house cultivation, plant and flower growing or any other form of specialist enterprise.

Nevertheless, the multiple holding is itself a type of specialised enterprise since its husbandry requires special knowledge both from the managerial and the technical point of view. It is more intricate on these holdings to co-ordinate the pattern of production, and synchronise the numerous operations than it is on a single-unit holding. In planning the use of the land, each unit has to be considered separately, yet in such a manner that the crops grown there will fit in with the general organisation of the holding, and permit an even flow of operations to avoiding wastages and bottlenecks. On the whole, it can be

said that the greater the number of units, the more complex and costly is the work involved. The transfer of labour and machinery from one unit to another involves extra costs, and the lack of organisation might easily have an adverse effect on the cost structure of the holding, especially if the units are far apart.

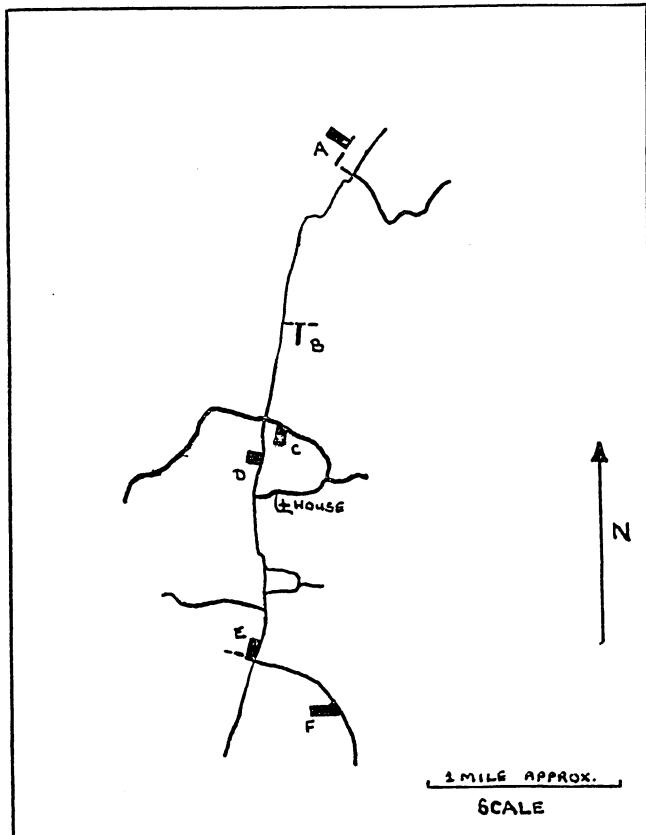
In the course of this survey, an attempt has been made to ascertain some facts on the distances travelled by the grower in the pursuance of his daily work. In order to obtain the required information, the distance between the grower's home and the furthestmost part of the holding has been taken into account, or, if the house happens to be situated on the holding the distance to the most extreme points. Although the information thus obtained does not cover all the distances between the various units, it gives some idea of the maximum distance involved in the lay-out of the holdings. On the 32 holdings, the average maximum distance according to size-groups is as follows:

<i>Size Groups</i>	<i>Miles</i>		
<i>Acres</i>			
1-10	:	:	1.1
10-50	:	:	1.5
50-100	:	:	0.9
Over 100	:	:	3.2
Total			1.6

As might be expected, it is the over-100-acre group which represents the greatest average distance of 3.2 miles, whereas the 1-10-acre group shows only 1.1 miles. However, when it is taken into consideration that the average acreage of this group of small holdings is not more than 6.58 acres, and is scattered over three different places, the distance of 1.1 miles may have a different meaning. For a grower with a large holding there is no necessity to visit all his fields every day to carry out physical work there, but a grower with a small holding has to make a daily call on each part of his holding in order to perform various tasks. It may often happen that he has to visit some parts of his holding even more than once a day, according to the demands made by the prevailing weather or other conditions. Thus, the distance covered by the small grower with a multiple holding from his house to his work, moving from one plot to another and returning home in the evening, may run into many more miles than the actual distance between the two extreme points of his holding. In fact,

there are a number of small holdings in the survey sample where the grower has to cover more than 5 miles in visiting his various plots of land. This is shown in the following sketch which illustrates the distances between various plots on a small holding of just over 10 acres.

Distances between Various Plots on a Small Holding of Just Over 10 Acres



The survey sample is almost equally divided between those holdings where the maximum travelling distance is under 1 mile and those where it exceeds this mark. There are 17 in the former group and 15 in the latter. Of the 17 holdings, 13 are of one or two units the other 4 consisting of 3 units. In the other group of 15 holdings the maximum distance varies

from 1 to $8\frac{1}{2}$ miles, and on not less than 10 holdings it exceeds 2 miles.

As mentioned before, excessive fragmentation of land makes the economy of a holding far too involved and proves detrimental to both production and costs. It is true to say that the scattered location of land may minimise the risk of frost, drought and disease, but the limited attention given to the use of land and to the husbandry of crops may eventually result in lower yields and lower financial returns. The divided cultivations of the various units, and the loss of time in the frequent re-deployment of labour and machinery are factors which have considerable bearing on costs. Although these features of the survey belong to another part of this report, it will perhaps be of interest to see how the 1955/56 financial results of the multiple holdings compare with those of one-to-two-unit holdings. The figures in the following comparison are calculated per acre.

	<i>Production</i>	<i>Costs</i>	<i>Margin</i>
	£	£	£
Multiple Holdings	137	117	+20
Holdings with 1-2 units	291	227	+64

In the above data there are 15 multiple holdings which represent a total crop acreage of $621\frac{1}{2}$ acres, or $41\frac{1}{2}$ acres per holding. In the one-to-two-unit group there were 17 holdings with a crop acreage of $663\frac{1}{2}$ acres, or 39 acres per holding. Although there may be a certain difference in the pattern of lay-out of the two groups, on account of the glasshouse area involved, the data, on the whole, may be regarded as suitable for examination. From these figures it can be seen that the group of one-to-two-unit holdings was three times more successful than the other group, showing a margin of £64 per acre, after deducting the value of the grower's unpaid labour. Of the 17 holdings in this group only 3 failed to make a profit, whereas in the other group of 15 holdings 4 were unsuccessful thus showing a profit of 18 per cent of the former group and 27 per cent of the latter group. On holdings with three or more units both the production and cost figures were about half of those shown for the one-to-two-unit holdings. With regard to production, the higher figure for holdings in the one-to-two-unit group was largely due to the more intensive method of cultivation which cannot be so easily employed on the multiple type of holding. Costs, on the other hand, seem to be reasonably low for holdings with three or more units, but in relation to production they are higher than those in

the other group. Holdings with one or two units achieved a margin of £64 per acre at a cost of 78 per cent, whereas in order to ensure a margin of £20 per acre the cost of the other holdings absorbed 85 per cent of production.

On the whole, the above figures suggest that the reason for the better results lies in the fact that the lay-out of the small unit group of holdings is more suitable for the employment of intensive methods of production and for the exercising of better control over costs.

Soils of Holdings

There is perhaps no other branch of the agricultural industry where the type and quality of the soil matters so much as it does in horticulture. It is one of the basic factors in determining the various patterns in which the land on the holdings is used. Since commercial horticulture is the most competitive form of cultivation, it is of the utmost importance for the various crops—so numerous in kind and variety—to be grown on the right type and properly maintained soil. In order to ensure satisfactory returns, crops have to mature early, be prolific in quantity and sound in quality, and naturally these things can be achieved best if crops are grown on soils most suited to their nature and character. Thus, the number and variety of crops which can be grown on a holding depends very largely on its types of soils.

It is well known that the soils of the Vale are numerous and diverse in character. There are about 19 different soil series divided into many more soil types* in this relatively small area. On most of the holdings the land is divided into several scattered units so that there can be a considerable combination of different soils. The fact that so many different crops are grown on the holdings may be chiefly due to the diversity of soils.

From what has been said previously, the fragmentation of land, which is so typical of the average holding in the Vale, it may be thought to be a definite drawback to the economy of the holding. This is undoubtedly so, especially when the holding is divided into too many small units and no proper organisation exists between them. However, a moderate division of the holding into, say, 2-3 units of a workable size may, to a certain extent, be an advantage, since the difference in the properties of the soil on the individual units, may enable the

* *Survey of Soils and Fruits in the Vale of Evesham*, University of Bristol Research Station, Long Ashton.

grower to produce a wider range of crops and to spread the risk of glut or failure.

In this survey we have also attempted to obtain a general picture of the different kinds of soils prevailing on the co-operating holdings. Details of the information obtained showed that the soils and their composition differed considerably from holding to holding and even on single units of a comparatively small acreage there was a good deal of variation. The major soil series which occur most commonly on the holdings are as follows.

Evesham Series

On the whole, this is the most characteristic and widely met set of soils on the sample holdings. This clay soil, due to its calcareous properties, is comparatively easy to cultivate and maintain in a high state of fertility, provided it is managed properly.

Haselor Series

This set of soils is rather similar in character to the Evesham series with the exception that it contains a fair amount of flat limestone rock. It generally constitutes the soil of the plum orchards, especially on Cleeve Hill. The other parts of the holdings situated in this district are located on the Evesham series and devoted to vegetable production.

Pershore Series

The soil on a number of holdings is divided between the Evesham and the Pershore series. The latter is the second most important soil series of the area and is a superficial deposit varying in texture from a light sand to a heavy loam. It provides a warmer soil than the Evesham clay but requires heavy manuring in order to maintain fertility.

These are the three most common soil series which occur on the sample holdings. There are however instances of the Cropthorne Heath, Wyre, Honeybourne, Badsey, Under-Badsey, Worcester, and Cheltenham series. The Cropthorne Heath series is somewhat similar to the Pershore but is podsolised, and the Wyre series is an alluvial soil bordering the river Avon and its main tributaries (e.g. Isbourne at Sedgebarrow). The Honeybourne and Badsey series have also developed from superficial deposits, but whereas the former is a stoneless non-calcareous loam, the latter may be somewhat heavier and always contains calcium carbonate. Under-Badsey clay is a modern deposit of alluvial origin, derived mainly from the

highly calcareous Lias Clay and occurs only locally on the flat land bordering Badsey Brook. The Worcester series is found on Cleeve Hill and is a loam derived from the Keuper Marl; and the Cheltenham series is a freely drained calcareous sand occurring on holdings near Childs Wickham.

As can be seen, the land on the sample holdings consists of at least 10 different soil series, each of which may in itself show certain textural variations. It would, therefore, owing to the compound nature of the soil, be misleading to make any detailed classification of the holdings, or even their component units according to the various soil series. However, as a broad generalisation, it is possible to divide them into two groups on the basis of the diversity or uniformity of the soil. In this differentiation, the holdings on which the land consists of more than one soil series have been classified as diverse; on those where the land belongs to the same series, they have been classified as uniform. If this definition is adopted then 21 holdings can be considered as having diverse soils and 11 uniform soils. Of these 11 holdings, 6 were found to be on clay soils mainly of the Evesham series, whereas the soils of the other 5 have been identified with the lighter soils of the Pershore series. The number of holdings with uniform soils seems to be higher than expected, although the area which they occupy is not more than 161 acres, or 11 per cent of the total acreage included in the sample. This relatively small acreage suggests, that most of the small, especially single unit holdings, tend to fall into the group with uniform soils, and, in fact, 5 of the 11 holdings belong to the 1-10 acreage group.

Usually, there is a direct link between uniformity of soils and compactness of lay-out, and it is a factor which can play an important part in the adoption and development of intensive methods of cultivation. Most of the 11 holdings with uniform soils are engaged, to a greater or lesser degree, on intensive cultivation and according to their 1955/56 financial results they seem to be more successful than those holdings where the soils are diverse. The extent to which the financial results of the two groups of holdings differ from each other can be seen from the following figures:

	<i>Production</i>	<i>Costs</i>	<i>Margin</i>
		Per Acre	
Holdings with uniform soils . . .	£ 365	£ 267	£ +98
Holdings with diverse soils . . .	143	123	+20

The above figures show that, after allowing for the unpaid

labour of the grower, the profit margin of the holdings with uniform soils is nearly five times as great as for those with diverse soils. Production on these holdings was almost three times as much and expenditure twice as much as on the other group of holdings.

In order to maintain the high fertility of the soil, considerable quantities of fertilisers of all sorts are used. During the cropping year 1955/56 on the 32 sample holdings the total sum spent on manures and artificials amounted to £14,933, an average of £467 per holding or £11 per acre of crops. As might be expected, holdings with uniform soils are the greatest consumers of fertilisers both in quantity and in quality. It is not the nature of the soil but the intensive use of the land which demands so generous an application of fertilisers. The 1955/56 accounts show that the fertiliser bill for these holdings averaged £18 per acre, whereas it amounted to £9 on the holdings with diverse soils. These cost figures suggest that on both groups of holdings considerable quantities and types of fertilisers were used. However, the analysis of the invoices showed that farmyard manure made up the bulk of the purchased fertilisers. There are a few holdings in the sample which produce a limited quantity of farmyard manure for their own requirements, but on most of the holdings a supply had to be purchased. About 500 tons were bought and used by the 32 holdings during the cropping year 1955/56; this represented 33 per cent of the total tonnage of purchased fertilisers. Other types of fertilisers used on the holdings in considerable quantities were lime 21 per cent, straight inorganic fertilisers 17 per cent, and granular compounds 11 per cent. About 10 different groups of fertilisers were used, in varying degrees of combination, in order to maintain the fertility of the soil. This will be described later when the costs of soil fertility are being discussed.

Water Supply to Holdings

To develop the land for horticultural production, or promote its use for intensive forms of market garden cultivation, a constant and plentiful supply of water is indispensable. The technique of growing, protecting and marketing crops in a state of cleanliness depends on the use of water, and its presence decides whether or not the land can be employed for horticultural production.

Within the general pattern of horticultural land utilisation, it is the amount of water available on a holding which determines whether fruit or vegetable production shall be extensive

or intensive. A limited supply of water would restrict abundant growth and would exclude the possibilities of employing intensive methods of production. A plentiful supply of water could encourage glasshouse enterprises, and with its irrigation and spraying facilities promote specialised forms of vegetable production and orchard cultivation. On the other hand, a shortage of water may curtail the range of crops, isolate some parts of the holding, or increase costs by the necessity of transportation of water to the fields.

Hence, the availability of water is one of the decisive factors in determining not only the suitability of the land for horticultural production, but also the type of cultivation and the extent to which it can be carried out. It is true to say that the supply of water, whether the source is natural or man-made, has a direct effect on the selection of crops and their deployment and indeed on the entire functional pattern of production.

On the whole, all the 32 holdings in the sample are well provided with a constant and reliable supply of water. In some cases, however, it may happen, that the entire area of the holding, due to its scattered location, cannot be served satisfactorily from the available water supply. One of the disadvantages of these scattered holdings is that some parts of their area, especially those of the outlying fields and "open" plots, are very often far away from the central source of supply of water. If separate units cannot rely on their own supply of water, or have access to other supplies, their land may easily become parched during periods of drought. Piped water is seldom available on these plots.

Generally speaking, holdings obtain their supplies of water from very varied sources, and those with separate units of land may have a number of different sources from which they can draw their requirements. The various sources of water supply are the river Avon or its tributaries, ponds, ditches, wells or mains supplies. The number of co-operating holdings according to their chief sources of water supply is as follows:

		<i>No. of Holdings</i>
River or stream		8
Ponds or ditches		3
Wells		10
Mains		11
		<hr/>
		32

As can be seen from the above details, most of the holdings draw their water supplies from wells and mains. There are,

however, 8 holdings which obtain water direct from the river or one of its larger tributaries. These holdings have the advantage of an unlimited supply and 4 of them make full use of it by using irrigation for growing outdoor vegetable crops. In all, there are 12 holdings in the sample which employ methods of irrigation, but 8 of them are using mains water, largely for glasshouse crops. This supply, of course, has to be paid for, but in times of drought restrictions on the use of mains water may make the supply inadequate. Wells are a common feature of many of the smaller holdings and are often the means of supply for the separate out-lying units. There are two types of well to be found on the holdings: one which is used to obtain a regular water supply: the other a shallow one sunk in the orchards in order to facilitate spraying. Wells occur on the flat land bordering the river Avon where the soils are relatively porous and the water table is near the surface, but they may also be found on Cleeve Hill, Knowle Hill and in the parish of Pebworth. As far as shallow wells are concerned, these render a very useful service to orchards which are otherwise isolated from the main water supply. During a dry season however their supply may be very precarious. On 3 of the sample holdings, the only source of water supply is that provided by ponds, ditches and tanks in which rain water has been collected and stored. This source of supply occurs on a number of holdings in the Vale, but it is by no means a common feature, the majority of holdings being well provided with proper sources of water supply. The number of holdings making use of irrigation facilities is steadily increasing and amongst the sample holdings it represents 38 per cent of the 32 co-operators.

The 12 holdings equipped with irrigation facilities are the most successful holdings in the sample. The reason for their success may lie chiefly in the intensive pattern of production, but the benefits of irrigation have no doubt contributed considerably to the favourable results. During the cropping year 1955/56 only 2 of these holdings failed to achieve a profit margin, but of the 20 holdings without irrigation facilities 5 failed to do so. The following is a comparison between the 1955/56 results of the holdings with irrigation facilities and those without.

		Production	Costs Per Acre	Margin
Holdings with Irrigation	:	350	258	92
Holdings without Irrigation	:	140	125	15

The above figures show that, after allowing for the grower's unpaid labour, the average profit margin of holdings with irrigation facilities is more than six times as high as it is on the other holdings. Production too is about two and a half times and expenditure twice the sum shown for holdings without irrigation facilities.

PART II

Functional Layout

IN adopting or maintaining a certain pattern of production, prevailing physical conditions dictate how best the land may be used to the greatest advantage. The kinds of crops to choose are those which can be grown economically for the benefit of the grower and are most suited to the land. Planning the use of land is thus a process in which existing physical factors are reconciled with available technical and economic resources. This results in a distinctive type of arrangement whereby a holding is split up in such a manner between various enterprises, that the combined turnover of the crops is expected to be sufficient to provide the grower with an adequate financial return. This systematic arrangement of crops is the functional layout of the holding, the manifestation of a complex organisation in which various means of production are co-ordinated to a common end.

Within a certain region physical factors may be identical for a number of holdings, but technical and economic resources such as capital, labour, technical knowledge and experience may vary considerably from holding to holding. Because of the difference in available resources, individual holdings naturally show great variation in their functional layouts.

In the Vale of Evesham, where almost all horticultural crops are grown on a commercial scale, the possible combination of crops in the layout of the holdings are innumerable. On the 32 holdings surveyed, fruit, vegetables, flowers, and herbs are grown in a very mixed form, and the acreage occupied by individual crops is very variable. In view of the diverse nature of cultivation, it would be very difficult to define the usual patterns of functional layout on these holdings merely by visual observation alone. So, in order to do this, it is necessary to examine (a) the acreage distribution of the holdings; (b) the methods of land utilisation and crop rotation; and (c) the equipment of the holdings.

Acreage Distribution of Holdings

In considering layout, together with the relative importance of various crops grown on the holdings, the most simple, though not always the most satisfactory approach seems to be to assess it on the basis of acreage distribution. Although this method may give a fairly comprehensive picture of the extent of individual crops occupying the land, it has certain limitations.

Generally speaking, the size of horticultural holdings is rather limited, and the grower is consequently compelled to make the best possible use of his land in order to ensure a satisfactory turnover. Owing to the intensive use of land, a certain acreage on the holding is occupied by at least two crops during the cropping year. Whether this multiple use of land manifests itself in double or inter-cropping, it is very difficult to include the area involved in the acreage distribution.

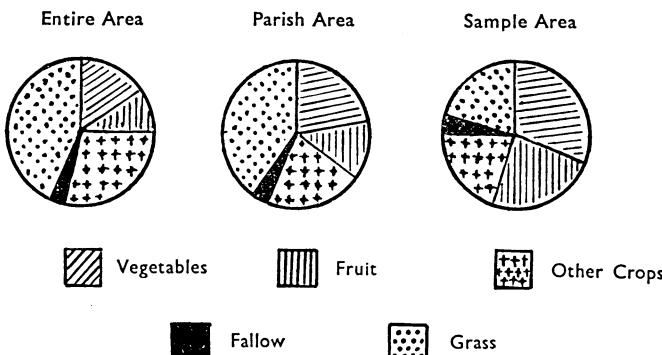
However, since the size of the holding is measured in acres, and each crop occupies a certain acreage, it is first of all necessary to examine the total area of the sample holding, how it is split up between the various crops, and then consider the implications of double and inter-cropping later on when discussing the prevailing system of land utilisation.

In order to ascertain the typical patterns of layout on the 32 holdings, it is necessary to examine the acreage distribution of these holdings as a whole, and then to dissect it according to acreage size groups and districts. At the same time, it may be of interest to compare the figures with the statistical material drawn up for the Vale and for the parishes in which the present survey has been carried out, so as to see how far the holdings may be regarded as a representative sample.

Average Acreage Distribution

In the layout of the 32 holdings, the main part of the land is under arable cultivation and only about 19 per cent of the area is occupied by grass. The character of the sample is predominantly horticultural since almost three-quarters of the tillages of these holdings are used for growing vegetables, fruit and other market garden crops. Although the sample does not comply with the overall statistical conditions, it may be regarded as typical for the small-holding districts of the Vale, such as Offenham, Badsey and Charlton. The difference between the acreage distribution in the sample and that of the combined area of Evesham and Pershore, and the parishes of the surveyed holdings, is illustrated in Diagram 1.

DIAGRAM 1
Patterns of Acreage Distribution



The difference between the sample and the other two statistical patterns is mainly due to the fact that both the area as a whole and the parishes in question include a considerable acreage of farmland. According to statistics compiled from the 4th June returns, 1951, the area under farm crops and grass represented 73 per cent of the combined acreage of the Evesham and Pershore districts and 60 per cent of the parishes involved in the present survey. In the sample area, however, farm land occupies only 39 per cent of the total acreage. Details of the acreage distribution in the three patterns is shown in Table 5.

TABLE 5
Comparison Between Patterns of Acreage Distribution

Items	Entire Area		Parish Area		Sample Area	
Vegetables . . .	Acres 13,646	% 14	Acres 8,005	% 22	Acres 485	% 32
Fruit . . .	10,526	10	5,507	15	363	24
Other Farm Crops . . .	29,655	29	8,250	22	300	20
Fallow . . .	3,069	3	1,271	3	79	5
Grass etc. . .	44,763	44	14,239	38	290	19
Total . . .	101,659	100	37,272	100	1,517	100

From the foregoing figures it can be seen that the sample acreage represents almost 2 per cent of the entire area and 4 per cent of the parishes. With regard to the distribution of

land among the various enterprises, each pattern shows a rather different picture. A detailed comparison between the three patterns, however, has certain limitations. The figures given for the "entire" and "parish" areas refer to the Returns for the 4th June, 1951, but those of the sample show the actual pattern of the use of land during the cropping year 1955/56. The statistical material is thus confined not only to the pattern of an earlier year, but also to that of a fixed date. Owing to the fact that crops occupy the land for a varying period of time, the agricultural returns cannot give a full account of the seasonal changes which may occur in the layout of a holding during one whole cropping year. Moreover, there may be certain changes in the annual rotation of crops and, by considering the acreage distribution of these crops at only one particular date, the validity of the comparison may be adversely affected. However, if the double and inter-cropped areas of the sample holdings are discounted, then the statistical information, despite its limitations, may offer some useful comparisons, especially when considering the importance of individual crops within the layout of their respective groups, such as vegetables or fruit.

Acreage Under Vegetable Crops

On the sample holdings 485 acres, or 32 per cent of the total acreage, were devoted to the growing of 24 different vegetable crops, including some plants and seeds. This is about 4 per cent of the entire vegetable acreage of the Vale, and 6 per cent of the respective parishes. In considering the acreage distribution of the various crops according to their related branches, such as brassicas, roots and onions, legumes and other vegetable crops, the difference in layout in the sample, and in the two statistical patterns, is reasonably small. As shown in Diagram 2, the discrepancy which exists mainly affects the areas of brassicas and the other vegetable crops, but those of legumes and roots and onions are very much the same.

From the following diagram, the acreage of brassicas appears to be over-represented in the sample area, but the other vegetables such as asparagus, tomatoes, lettuce, etc. are somewhat underrated. However, owing to the technical difference, previously mentioned, between the compilation of the statistical material and the sample acreage, it is difficult to determine whether the discrepancy is due merely to this, or to a general change in relative crop acreages since 1951. Details of the distribution of the vegetable acreage is as follows.

DIAGRAM 2
Patterns of Vegetable Acreage Distribution

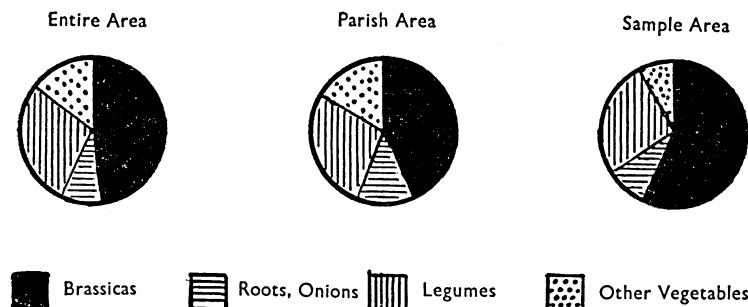


Table 6 shows that the sample holdings are reasonably representative of the Vale and the relative importance of the various crops compares favourably with the statistical patterns. In the layout of the sample holdings brassicas are the most important crops covering 57 per cent of the vegetable acreage; legumes occupy 27 per cent, while roots and onions and other miscellaneous crops occupy 8 per cent of the total acreage respectively.

TABLE 6
Distribution of Vegetable Acreage

Crops	Entire Area		Parish Area		Sample Area	
	Acres	%	Acres	%	Acres	%
Brassicas . . .	6,585	48	3,462	43	275	57
Roots, Onions . . .	1,289	9	825	13	37	8
Legumes . . .	4,009	29	2,316	28	131	27
Others . . .	1,906	14	1,402	16	42	8
Total . . .	13,789	100	8,005	100	485	100

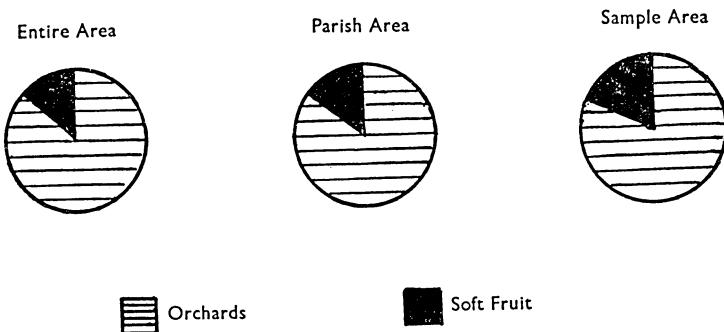
Acreage Under Fruit Crops

In the layout of the sample holdings the area under orchard and soft fruit crops amounted to 363 acres, representing 24 per cent of the total acreage. This is about 3 per cent of the fruit acreage of the Vale, and 7 per cent of that of the parishes involved in the survey. As with the vegetable acreage, the sample and the statistical material correspond fairly closely. Diagram 3 shows how the fruit acreage of the sample compares .

with the other two patterns and to what extent the acreage is split up between top and soft fruit.

DIAGRAM 3

Patterns of Fruit Acreage Distribution



It can be seen that in the sample area the soft fruit acreage is somewhat over represented. This may, however, be due to the fact that since 1951 the orchard area, particularly of plums, has been decreased and possibly replaced by some soft fruit crops. Details of the distribution of the fruit acreage are as follows:

TABLE 7
Distribution of Fruit Acreage

Crops	Entire Area		Parish Area		Sample Area	
	Acres	%	Acres	%	Acres	%
Orchards . .	9,169	87	4,721	86	302	83
Strawberries . .	699	6	468	8	14	4
Black and						
Red Currants .	287	3	131	1	22	6
Gooseberries . .	99	1	75	3	1	1
Raspberries . .	70	1	28	1	2	1
Loganberries and						
Blackberries . .	202	2	84	1	22	5
Total . . .	10,526	100	5,507	100	363	100

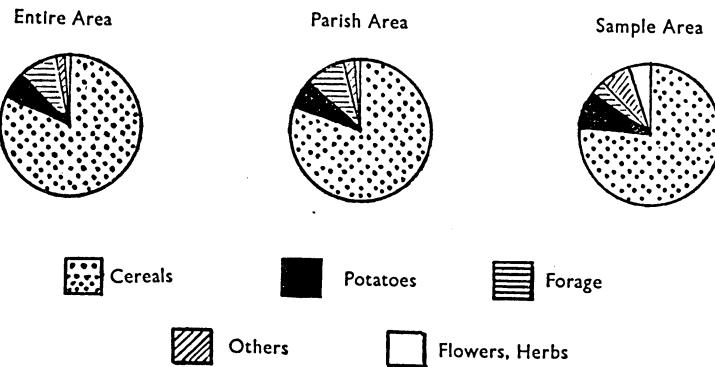
These figures show hardly any difference between the acreage distribution of the three patterns. However, the figures reveal an incomplete picture, since a considerable part of the soft

fruit acreage is interplanted among the plum trees and therefore cannot be shown in the acreage distribution. This aspect of inter- and double-cropping will be dealt with separately later.

Acreage Under Other Crops etc.

This area of the sample holdings comprises the rest of the arable land which has been used for growing flowers, herbs, cereals, potatoes and various forage crops. Several horticultural farms have been included in the sample so that the acreage under "other crops" represents a fairly large proportion of the layout of the survey area. It actually amounted to 300 acres, or 20 per cent of the total acreage. In the light of the statistical patterns, this proportion compares favourably with that of the "entire area" where it represents 29 per cent, and with the "parish area" where it covers 22 per cent. This particular part of the sample holdings is about 1 per cent of the area under "other crops" in the Vale as a whole, and 4 per cent of that of the parishes included in the survey. The division of this area is illustrated in Diagram 4.

DIAGRAM 4
Patterns of Acreage Distribution of "Other Crops"



As mentioned before, the sample area corresponds very closely with the two statistical patterns. The slight difference which exists in the sample area is that the acreage under cereal and forage crops is somewhat underrated, whereas that of potatoes, and sundry crops, such as grass seed and flowers and herbs, is over-represented. Details of the acreage distribution are shown in Table 8.

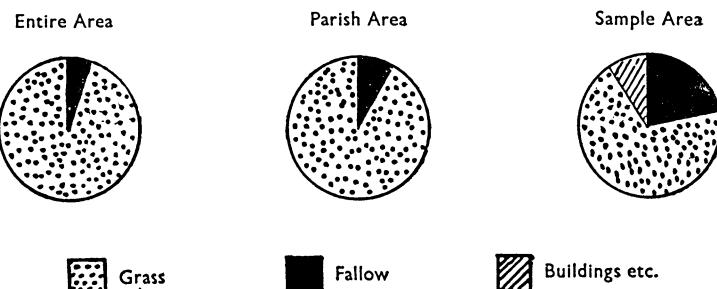
TABLE 8
Acreage Distribution of "Other Crops"

Crops	Entire Area		Parish Area		Sample Area	
	Acres	%	Acres	%	Acres	%
Cereals . . .	24,419	82	6,651	81	227	76
Potatoes . . .	1,856	6	582	7	26	9
Forage Crops . . .	2,631	9	813	10	11	4
Others . . .	606	2	104	1	23	7
Flowers, Herbs . . .	143	1	100	1	13	4
Total . . .	29,655	100	8,250	100	300	100

Acreage Under Grass, Bare Fallow, etc.

The real difference which exists between the overall pattern of the sample and the statistical material is in the acreage distribution of the land under grass and fallow. Whereas on the sample holdings this area represents only 24 per cent of the total land, in the statistics for the entire area of the Vale it amounts to 47 per cent and in the parish area to 41 per cent. In the layout of the sample holdings the land under grass, bare fallow etc. is 369 acres, or nearly 1 per cent of the grass, etc. area shown for the Vale, and just over 2 per cent of that of the respective parishes. As shown in Diagram 5 the land kept under fallow represents a greater proportion in the sample area than in the other two patterns. This is mainly due to the fact that the sample area includes some newly purchased land which was not brought into production during the cropping year 1955/56.

DIAGRAM 5
Acreage Distribution into Grass, Fallow, Buildings, etc.



As can be seen from these patterns, the layout of grass in the statistical information also includes the areas for buildings, roads and wasteland. In the sample area, this represents about 8 per cent of the acreage under grass, fallow, etc. Details of the acreage distribution is shown in Table 9.

TABLE 9
Acreage Distribution of Grass, etc.

Items	Entire Area		Parish Area		Sample Area	
	Acres	%	Acres	%	Acres	%
Grass . . .	44,763	94	14,239	92	260	70
Bare Fallow . . .	3,069	6	1,271	8	79	22
Buildings etc. . .	*	—	*	—	30	8
Total . . .	47,832	100	15,510	100	369	100

* Not available, since this information is not included in the 4th June Returns.

On the whole, the acreage distribution of the survey sample compares favourably with the statistical patterns of the area, and by taking into account the fact that it was based on the voluntary co-operation of 32 growers, its representativeness may be regarded as fully satisfactory.

Acreage Distribution by Districts

As mentioned before, the survey holdings have been drawn from both the Evesham and Pershore districts of the Vale. Although both districts are similar in extent and in their horticultural character, there is some marked difference between them, especially with regard to the layout of the individual holdings. In the Evesham district, the small holding consisting of several separate units is the typical feature, but in the Pershore district the size of holdings appears to be larger and subdivision into units far less significant.

According to the statistical information, there are almost three times as many holdings in the Evesham district as in the Pershore area. As the Vale is almost equally divided between the two districts, the average holding in the Evesham district is 26 acres, whereas in the Pershore district it works out at 63 acres. Thus, the main difference between the two districts manifests itself in the size of holdings. Since a smaller acreage

requires a more intensive form of cultivation, the distribution of land for the growing of crops also shows a somewhat different picture in the two districts. In the Evesham district more acreage is devoted to vegetable crops, whilst in the Pershore district the grassland area absorbs a higher proportion of the land and more livestock are kept.

This general difference between the two districts is clearly confirmed by the layout of the sample holdings. Although the sample is rather small for detailed comparison, the distribution of the acreage of the 32 holdings between Evesham and Pershore complies very closely with the overall statistical pattern. This is shown in Table 10.

TABLE 10
Number of Holdings and Their Acreages

District	No. of Holdings				Acres			
	Entire Area		Sample Area		Entire Area		Sample Area	
Evesham . . .	2,000	% 72	22	% 69	52,622	% 51	917	% 60
Pershore . . .	774	28	10	31	49,037	49	600	40
Total . . .	2,774	100	32	100	101,659	100	1,517	100

From the foregoing table it can be seen that the difference between the "entire" and the "sample" area is negligible, showing a variation of 3 and 7 per cent in the numerical and 9 per cent in the acreage distribution of the holdings.

The average size of the sample holdings is 47 acres against the statistical average of 37 acres. This difference is due to the substantial acreage which the horticultural farms represent in the sample. The average size of the holdings according to their respective districts is as follows:

	Sample Area	Entire Area
	Acres	Acres
Evesham area . . .	42	26
Pershore area . . .	60	63

It is in the Evesham area where the average size of holding has been affected by the inclusion of some farms as distinct

from small holdings. However, as these farms are rather typical for their horticultural production, their inclusion in the sample is justifiable even at the expense of a higher average acreage.

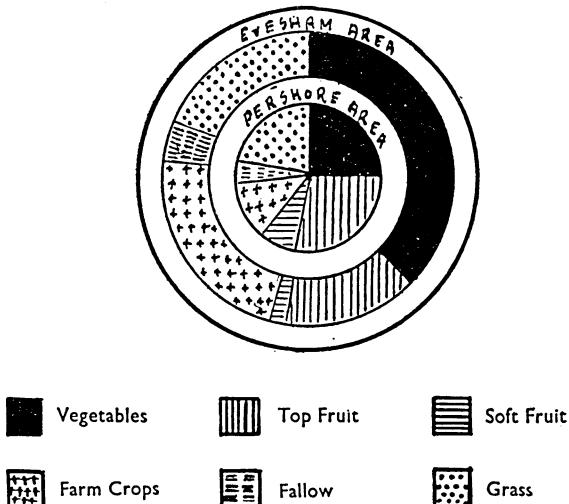
As previously stated, the other difference between the layout of the Evesham and Pershore holdings is to be found in the use of land. The contrast which such a comparison offers is not, however, as striking as the size and fragmentation of the holdings. According to the statistical information, there is no marked difference between the two districts in the proportional distribution of their arable and grassland acreage. The only difference which may distinguish them from each other is the pattern in which the crops are grown on the arable land. It would be of limited value and rather difficult to compare the acreage distribution of the various crops apparent in the statistical material with details of the sample holdings, as the crop acreages might have suffered vast changes since 1951. In any case, the chief aim is to ascertain the layout of the two types of holdings, and to examine the difference between them, and the sample itself provides the relevant information.

In order to obtain a fair picture of the two patterns of layout it is best to consider only those acreages where the main crops were grown, and for the time being to ignore those which were used for additional crops, either by means of double- or inter-cropping. In that manner, it is possible to ascertain the existing patterns of land distribution on the basis of actual acreage, without having the data obscured by the complex implications of multiple cropping.

As shown in Table 10 the total area of the 32 holdings represents 1516.6 acres, of which 916.7 acres are situated in the Evesham, and 599.9 acres in the Pershore district. The arable land of the Evesham holdings amounts to 752.6 acres and the grassland to 164.1 acres. On the Pershore holdings the arable part of the land is 474.4 acres and the grassland 125.5 acres. Within this distribution of land the arable acreage represents all the land which is used for crop production, and consequently it includes the entire orchard area of the holdings, irrespective of the method by which the ground is kept under grass or cultivated. In the light of the above figures there is no marked difference between the two types of holdings in the proportional distribution of their arable and grassland acreage. On the Evesham holdings the arable and orchard land represents 82 per cent, and the grassland 18 per cent of the total acreage; on the Pershore holdings, the arable land occupies 79 per cent

and the grassland 21 per cent of the total acreage. Thus, within the layout of both types of holdings the acreage distribution of the arable and grassland area is almost identical. The difference, however, which divides the two patterns is to be found in the use of the arable acreage. The patterns of layout of the Evesham and Pershore types of holdings are shown in Diagram 6.

DIAGRAM 6
Pattern of Layout by Districts



It can be seen from the above diagram that the vegetable and farm crop acreage is higher on holdings in the Evesham area, whereas in the Pershore area the fruit acreage is higher. The statistical material does not offer a very reliable basis for comparison, but it is safe to say, that, as far as the distribution of the fruit and farm crop acreage is concerned, there is some discrepancy between the overall statistical pattern and the sample. In accordance with the 1951 figures the proportion of the fruit and farm crop acreage should be about the same on both types of holding. Details of the acreage distribution on the sample holdings are given in the following table.

TABLE 11
Acreage Distribution by Districts

Crops etc.	Evesham		Pershore		Total	
	Acres	%	Acres	%	Acres	%
Vegetables . . .	335.13	37	150.05	25	485.18	32
Fruit . . .	154.72	17	207.85	35	362.57	24
Flowers, Herbs . . .	11.20	1	1.25	—	12.45	1
Farm Crops . . .	209.85	22	78.20	13	288.05	19
Fallow . . .	41.70	5	37.00	6	78.70	5
Grass . . .	142.90	16	116.50	19	259.40	17
Buildings, Roads, etc. . .	21.20	2	9.05	2	30.25	2
Total . . .	916.70	100	599.90	100	1,516.60	100

From Table 11 it can be seen that on the Evesham-type holdings 38 per cent of the total acreage is under vegetable crops, flowers and herbs, 17 per cent under top and soft fruit and 22 per cent occupied by farm crops, including early potatoes. Of the total acreage on the Pershore-type holdings, the vegetable acreage is 25 per cent, the fruit acreage 35 per cent and the acreage under farm crops only 13 per cent. The acreage occupied by bare fallow, grassland and buildings, roads, etc. is in very much the same proportion both on the Evesham and Pershore types of holding.

The acreage of vegetable crops on the sample holdings amounts to 485.18 acres, or 32 per cent of the total land. Table 12 shows how this acreage is split up between the various crops.

TABLE 12
Distribution of Vegetable Acreage

Crops	Evesham		Pershore		Total	
	Acres	%	Acres	%	Acres	%
Brassicas . . .	204.05	22	71.20	12	275.25	18
Roots, Onions . . .	23.95	3	13.10	2	37.05	2
Legumes . . .	79.59	9	51.02	9	130.61	9
Others* . . .	38.74	4	15.98	2	54.72	4
Total . . .	346.33	38	151.30	25	497.63	33

* Includes flowers and herbs.

In the light of the total acreage this table shows that the main difference between the two layouts of the vegetable acreage is

in the brassicas. The acreage of these crops on the Evesham-type holdings is almost double that of the Pershore-type holdings. Also the "other" vegetable crops show a similar trend with double the acreage on the Evesham-type holdings.

Details of the brassica acreage are as follows:

Crops	Evesham		Pershore		Total	
	Acres	%	Acres	%	Acres	%
Brussels sprouts . . .	132.10	14	22.25	4	154.35	10
Cabbage, Savoys . . .	42.90	5	39.05	7	81.95	5
Cauliflower, Broccoli . . .	29.05	3	9.90	1	38.95	3
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
	204.05	22	71.20	12	275.25	18

According to these figures there were considerably more sprouts grown on the Evesham-type than on the Pershore-type holdings and a higher proportion of cauliflower were also grown. On the other hand, the cabbage acreage was more predominant on the Pershore than on the Evesham-type holdings.

With regard to the layout of roots and onions, the acreage distribution of these crops is very similar on both types of holding, being 3 per cent of the total acreage on the Evesham-type and 2 per cent on the Pershore-type. Details are given below.

Crops	Evesham		Pershore		Total	
	Acres	%	Acres	%	Acres	%
Carrots	1.60	0.2	1.00	0.2	2.60	0.2
Parsnips	1.65	0.2	—	—	1.65	0.1
Beetroot	9.40	1.0	4.40	0.7	13.80	0.9
Leeks	0.95	0.1	2.00	0.3	2.95	0.2
Onions	10.35	1.1	5.70	0.9	16.05	1.1
Total	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
	23.95	2.6	13.10	2.1	37.05	2.5

The distribution of the legume acreage is exactly the same on both types of holding, representing 9 per cent of the total area. The following shows how this crop acreage is divided.

Crops	Evesham		Pershore		Total	
	Acres	%	Acres	%	Acres	%
Broad Beans	20.13	2	11.25	2	31.38	2
Runner and Dwarf Beans	20.16	2	23.42	4	43.58	3
Peas	39.30	5	16.35	3	55.65	4
Total	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
	79.59	9	51.02	9	130.61	9

As shown in the above figures there is a higher runner and

dwarf bean acreage on the Pershore than on the Evesham holdings but on the latter the pea acreage is more extensive.

The acreage devoted to "other" vegetable crops is higher on the Evesham than on the Pershore-type holdings, the proportion being 4 per cent of the total acreage on the Evesham and 2 per cent on the Pershore holdings. Details of the acreage distribution are shown below.

Crops	Evesham		Pershore		Total	
	Acres	%	Acres	%	Acres	%
Asparagus . . .	9.80	1.1	1.00	0.2	10.80	0.7
Lettuce . . .	4.10	0.4	10.90	1.7	15.00	1.0
Radish . . .	0.20	—	0.80	0.1	1.00	0.1
Rhubarb . . .	3.40	0.4	—	—	3.40	0.2
Tomatoes . . .	3.10	0.3	0.50	0.1	3.60	0.2
Flowers, Herbs . . .	11.20	1.2	1.25	0.2	12.45	0.9
Sundries . . .	6.94	0.8	1.53	0.2	8.47	0.6
Total . . .	38.74	4.2	15.98	2.5	54.72	3.7

Of the above crops, asparagus, tomatoes, flowers and herbs are mainly associated with the Evesham-type holdings and lettuce with the Pershore-type holdings. The acreage devoted to "sundries" includes such crops as marrows, shallots, sweet corn, etc., which are grown on a very small scale and cannot be shown separately.

The total fruit acreage, including both top and soft fruit, amounts to 362.57 acres, representing 24 per cent of the land on the sample holdings. Within the layout of the two types of holding, the relative importance of the fruit acreage is much higher on the Pershore than on the Evesham holdings, the proportion being 35 per cent for the former and 17 per cent for the latter type of holding. However, these figures do not indicate the full importance of fruit growing in the layout of these holdings as, especially on the Evesham holding, a very considerable proportion of the orchard area is inter-cropped by soft fruit.

The distribution of the fruit acreage is as follows:

TABLE 13
Distribution of Fruit Acreage

Crops	Evesham		Pershore		Total	
	Acres	%	Acres	%	Acres	%
Top Fruit . . .	133.67	15	168.15	28	301.82	20
Soft Fruit . . .	21.05	2	39.70	7	60.75	4
Total . . .	154.72	17	207.85	35	362.57	24

As can be seen, almost the whole of the fruit land consists of orchards whereas the soft fruit area represents only one-fifth of the total acreage. However in view of the practice of inter-cropping soft fruit among orchard trees, this ratio between the acreage distribution of top and soft fruit is somewhat less. Actually, the proportion of the orchard area which is inter-cropped by soft fruit is about 8 per cent of the total fruit acreage.

The distribution of the top fruit acreage is given below.

	<i>Crops</i>	<i>Evesham</i>		<i>Pershore</i>		<i>Total</i>	
		Acres	%	Acres	%	Acres	%
Plums	.	64.95	7	112.39	19	177.34	12
Apples	.	59.32	6	44.82	7	104.14	7
Pears	.	4.40	1	10.94	2	15.34	1
Cherries	.	5.00	1	—	—	5.00	—
Total	.	133.67	15	168.15	28	301.82	20

In the composition of the orchard acreage, the plum is the most widespread of all top fruit and it occupies almost half of the total fruit acreage. Apples are also well represented on the sample holdings, but on the whole their importance is far less than that of plums. In the orchards most varieties of plums, apples and pears are grown on a fair acreage, but cherries only refer to one young plantation of morellos which are not yet in full bearing. Various aspects of the layout of orchards will however be dealt with later in the report.

With regard to the difference in the layout of the two types of holding, the acreage distribution shows that there is a larger plum acreage on the Pershore holdings, whereas apples are of the same relative importance on both types of holding.

The following gives a picture of the distribution of the soft fruit acreage.

	<i>Crops</i>	<i>Evesham</i>		<i>Pershore</i>		<i>Total</i>	
		Acres	%	Acres	%	Acres	%
Strawberries	.	3.45	0.4	10.15	1.7	13.60	0.9
Gooseberries	.	0.40	—	0.95	0.2	1.35	0.1
Raspberries	.	1.10	0.1	0.50	0.1	1.60	0.1
Blackcurrants	.	—	—	22.10	3.7	22.10	1.4
Blackberries (cult.)	.	11.70	1.3	2.00	0.3	13.70	0.9
Loganberries	.	4.40	0.5	4.00	0.1	8.40	0.6
Total	.	21.05	2.3	39.70	6.1	60.75	4.0

From these figures it appears that strawberries and blackcurrants occupy a higher acreage on the Pershore holdings but there is a greater acreage of blackberries and loganberries on the Evesham holdings. With regard to gooseberries, the 1.35 acres represents only that area which was solely occupied by the crop. It does, however, occupy a much larger acreage especially on the Evesham holdings where it is inter-cropped between plum trees.

The farm crop acreage occupies 288.05 acres, or 19 per cent of the total area of the holdings. On the Evesham-type holdings it represents 22 per cent, and on the Pershore holdings 13 per cent of the total acreage.

The acreage distribution of farm crops is as follows.

Crops	Evesham		Pershore		Total	
	Acres	%	Acres	%	Acres	%
Wheat	162.55	17	32.00	5	194.55	13
Barley	6.00	1	25.00	4	31.00	2
Oats	—	—	2.00	1	2.00	—
Potatoes*	19.50	2	7.00	1	26.50	2
Mangolds	1.00	—	1.00	—	2.00	—
Kale	7.00	1	1.20	—	8.20	1
Fodder Beet	—	—	1.00	—	1.00	—
Grass Seed	13.80	1	9.00	2	22.80	1
Total	209.85	22	78.20	13	288.05	19

* Includes early potatoes.

As can be seen, wheat is the most important farm crop on both types of holding. However, on the Evesham-type holding its significance is far greater than on the Pershore-type, being 17 per cent of the total acreage, as against 5 per cent. Barley and oats occupy 5 per cent of the total acreage on the Pershore-type holdings, whereas the barley acreage on the Evesham-type holdings is negligible. The acreage distribution of the remaining crops is of limited importance.

As mentioned before, the area under crops does not reflect the full importance of the acreages on which individual crops are grown. By means of double- and inter-cropping, the area of the holding in effect becomes increased over and above the actual acreage. As far as vegetables are concerned, the extent of this acreage depends very largely on the system of crop rotation, the general layout, and age of trees, etc., on fruit plantations.

On the sample holdings the extent of double- and inter-cropping may be shown as follows.

TABLE 14
Double and Inter-Cropped Areas

	Evesham		Pershore		Total	
	Acres	%	Acres	%	Acres	%
Total acreage .	916.70	100	599.90	100	1516.60	100
Double-cropped .	45.27	5	39.21	7	84.48	6
Inter-cropped .	38.85	4	8.30	1	47.15	3
Total . . .	1000.82	109	647.41	108	1648.23	109

According to the above figures, the total multiple-cropped areas of the holdings represents 131.63 acres, or 9 per cent of the total acreage. Within the layout of both types of holdings this area is very similar, being 9 per cent of the total acreage for the Evesham and 8 per cent for the Pershore-type holdings. On the Pershore holdings it is the proportion of the double-cropped area which is higher, but on the Evesham holdings the inter-cropped area has the relatively larger acreage.

The acreages affected by multiple cropping are shown below.

Crops	Evesham		Pershore		Total	
	Acres	%	Acres	%	Acres	%
Brassicas	29.15	3	28.50	5	57.65	4
Roots	5.85	1	0.70	—	6.55	—
Legumes	14.40	2	10.25	2	24.65	2
Others	9.17	1	3.41	—	12.58	1
Fruit	24.55	2	4.65	1	29.20	2
Farm Crops	1.00	—	—	—	1.00	—
Total	84.12	9	47.51	8	131.63	9

By multiple cropping the acreage of brassica crops has been increased to a greater extent on the Pershore holdings, but on the Evesham holdings roots and onions, other vegetables and fruit crops show the greatest increase.

As may be seen, it is the extent of the vegetable acreage which distinguishes the two district patterns from each other, rather than the degree of multiple cropping. It is difficult to draw any definite conclusions from such a limited number of holdings, and from results which refer only to one particular year, as to which type of layout is the more financially successful. However, as a matter of interest, it can be mentioned in passing

that during the 1955/56 cropping year the Evesham pattern seemed to be more successful than the Pershore one. From the financial accounts of the holdings, the per acre results show the following comparison.

	<i>Production</i>	<i>Costs</i>	<i>Margin</i>
	£	£	£
Evesham pattern . . .	233	181	+52
Pershore pattern . . .	188	164	+24

In the light of the above figures, the margin achieved by the Evesham holdings was 56 per cent higher than that of the Pershore holdings. Production on the Evesham holdings was almost 25 per cent higher and costs only 9 per cent higher than on the Pershore holdings. The difference may chiefly be due to the fact that more glass was employed on the vegetable acreage by the Evesham holdings, and, during the cropping year in question, vegetable crops were more successful than fruit, especially plums, which generally make up the area under fruit crops.

Acreage Distribution by Size-Groups

The distribution of holdings into acreage size-groups gives an even more descriptive picture of the different patterns of layout. Although the district distribution of holdings accounts for the type of layout, consistent with prevailing physical factors and characteristic of local traditions of cultivation, it is the size-group stratification which provides a better and a more detailed distinction of the existing patterns of layout. The scope of the business very largely depends on the size of the holding, and it is therefore the available acreage which determines the type of cultivation and the kinds of crops to be grown. To achieve satisfactory results on a holding with a small acreage, it is obvious that the layout should consist primarily of those crops which, with their high financial returns, can offset the limited extent of the ground. The layout of a small holding may thus present quite a different picture of the organisation of production than a medium or a large holding.

As previously mentioned, the co-operating holdings have been divided into four size-groups, namely 1-10, 10-50, 50-100 and over 100 acres. In Table 15 the holdings are shown according to these size-groups and compared with the overall statistical data.

TABLE 15
Number and Acreage of Holdings

Size-Groups	Sample				Entire Area			
	No. of Holdings	%	Acreage of Holdings	%	No. of Holdings	%	Acreage of Holdings	%
Acres								
1-10 . .	12	38	88.20	6	1,731	63	7,531	7
10-50 . .	12	38	255.53	17	585	21	13,249	13
50-100 . .	3	9	225.67	15	177	6	13,054	13
Over 100 . .	5	15	947.20	62	281	10	67,825	67
Total . .	32	100	1,516.60	100	2,774	100	101,659	100

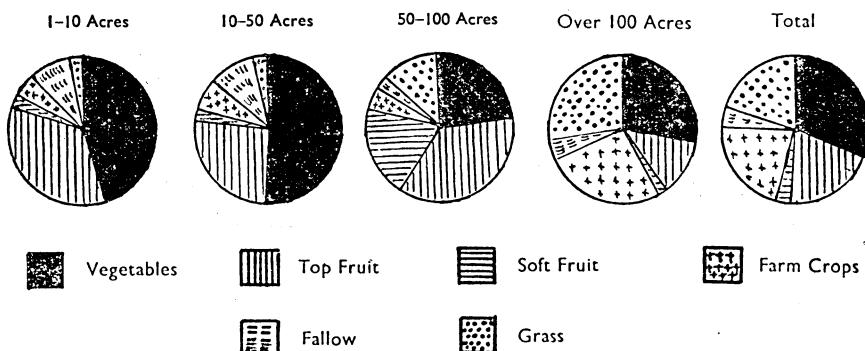
In the foregoing table the proportional distribution of holdings shows that 76 per cent of them belong to the under 50-acre groups, whereas in the general statistical data this size of holding represents 84 per cent of the total. There is a closer similarity between the sample and the statistical data in the acreage distribution. Actually, the difference does not exceed 5 per cent in any of the acreage groups. The distribution of numbers and acreages of holdings in Table 15 gives the following average acreages for the various size-groups.

Acreage Groups Acres	Sample		Entire Area	
	Acres	Acres	Acres	Acres
1-10 . .	7.3	7.3	4.3	4.3
10-50 . .	21.3	21.3	22.7	22.7
50-100 . .	75.2	75.2	73.7	73.7
Over 100 . .	189.4	189.4	241.4	241.4
Total	47.4	47.4	36.6	36.6

The extent to which the land is divided between vegetables, fruit, farm crops, fallow and grass is shown according to size-groups in Diagram 7.

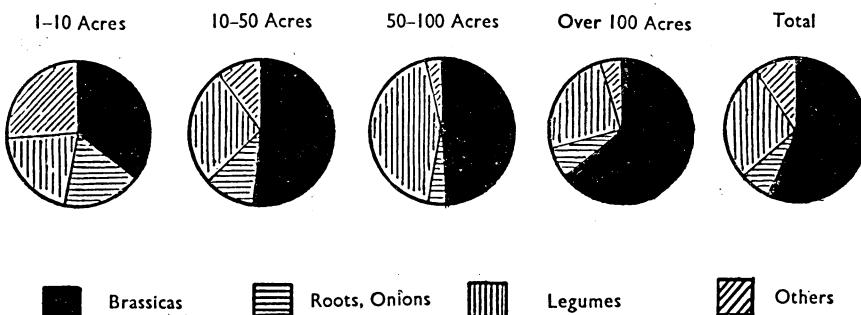
Diagram 7 shows the overall pattern of the holdings to be almost equally divided into four sections, of which the vegetable acreage occupies about one-third, fruit and farm crops together with fallow one-quarter each, and grass one-fifth of the land. Of the four size groups, the layout of the 1-10- and 10-50-acre groups is predominantly vegetable with a substantial acreage of fruit; the pattern of the 50-100-acre group on the other hand, consists mainly of fruit with some vegetable acreage, whereas in the layout of the over-100-acre group the vegetable acreage is combined with land under farm crops and grass.

DIAGRAM 7
Patterns of Acreage Distribution by Size-Groups



With regard to the layout of the vegetable acreage, there were about 20 different kinds of crops grown on the holdings during the year 1955/56. Among these crops brassicas were the most important and occupied more than half of the vegetable land on the 32 holdings. The second most important group of crops was legumes, with a proportion of more than one-third of the total vegetable acreage; the significance of roots and onions and "other vegetables" was rather limited in the overall pattern of the vegetable layout. Among the various size-groups, there is a considerable variation between the acreage distribution of the crops in the patterns of layout. The typical features of these patterns can be seen in Diagram 8.

DIAGRAM 8
Patterns of Vegetable Acreage Distribution by Size-Groups



According to this diagram, in all four patterns of layout the predominant crops were the brassicas. The relative importance of these crops was, however, far less significant in the pattern of the 1-10-acre group than in that of the higher acreage groups. On the other hand, the acreage of "other vegetables" such as asparagus, lettuce, tomatoes, etc., and roots and onions absorbed a greater share of land on the 1-10-acre holdings, than on the larger ones. Legumes were grown widely on all sizes of holdings, but their proportion was greater for the larger acreage groups than on the 1-10-acre holdings. Details of the acreage distribution of these crops are given in Table 16.

TABLE 16
Acreage under Vegetable Crops

Acreage Groups	1-10		10-50		50-100		Over 100		Total	
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
1. Crops										
1.1. Brassicas										
Brussels sprouts	8.95	23	32.70	26	10.40	20	102.30	39	154.35	32
Cabbage, Savoys	2.00	5	23.75	18	7.00	14	49.20	18	81.95	17
Cauliflower, Broccoli	2.90	8	11.00	8	7.65	15	17.40	7	38.95	8
2. Roots and Onions										
Carrots	0.15	—	1.20	1	—	—	1.25	—	2.60	1
Parsnips	0.20	1	1.45	1	—	—	—	—	1.65	—
Beetroot	1.70	5	4.10	3	—	—	8.00	3	13.80	2
Leeks	0.85	2	0.10	—	—	—	2.00	1	2.95	1
Onions	3.40	9	7.65	6	3.00	5	2.00	1	16.05	3
3. Legumes										
Broad Beans	2.00	5	11.38	9	4.00	8	14.00	5	31.38	6
Runner, Dwarf Beans	4.20	11	11.00	8	11.00	22	17.38	7	43.58	9
Peas	2.00	5	14.65	11	7.00	14	32.00	12	55.65	12
4. Other Vegetables										
Asparagus	5.45	14	4.35	3	1.00	2	—	—	10.80	2
Lettuce	2.20	6	2.55	2	—	—	10.25	4	15.00	3
Radish	0.20	1	0.80	1	—	—	—	—	1.00	—
Rhubarb	—	—	1.40	1	—	—	2.00	1	3.40	1
Tomatoes	1.45	3	0.65	—	—	—	1.50	—	3.60	1
Sundries	0.95	2	2.75	2	—	—	4.77	2	8.47	2
Total*	38.60	100	131.48	100	51.05	100	264.05	100	485.18	100

* The total acreages, which are in excess of the actual size of the holding are the totals of the acreages of different crops grown during the year and are also the result of double- and inter-cropping.

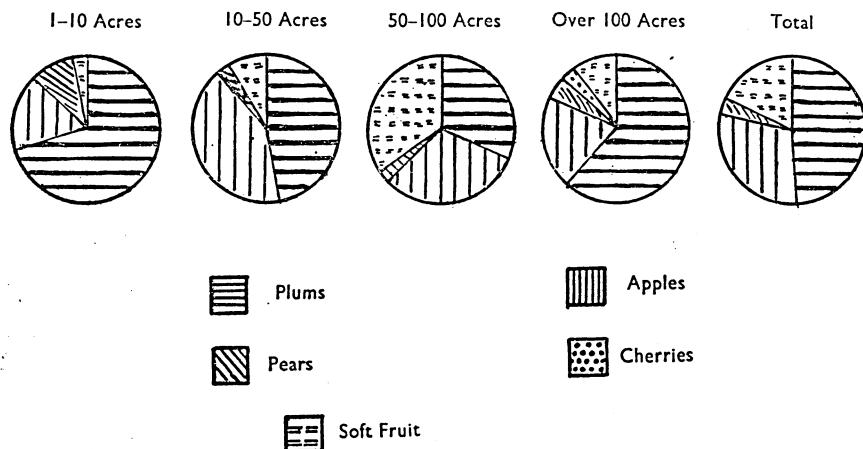
These figures show that the Brussels sprout crop was by far the most important, and in the layout of all four size-groups it occupied 20 to 39 per cent of the vegetable land. The second most important brassica crop was cabbage, but on the 1-10-acre holdings cauliflower covered a larger acreage. The cabbage

acreage represented mainly spring cabbage, but it also included some summer (chiefly Primo), winter cabbage and Savoys. The root and onion crops are typical small-holding crops where the required hand labour is more easily forthcoming than on large holdings. Of these crops, beetroot and onions were the most widely grown on the sample holdings. Whereas beetroot was grown mainly for summer bunching, onions were grown as spring crops for salad. Of the legumes, peas were the most important crop, their significance being far greater in the layout of holdings belonging to the larger acreage groups than on 1-10-acre holdings; runner and dwarf beans, however, occupied a larger acreage than peas. In the layout of the "other vegetable" crops the major part of the acreage was taken up by asparagus and lettuce. Although both crops were grown almost on all sizes of holdings, their importance manifests itself mainly on holdings which belong to the 1-10-acre group.

With regard to the layout of the fruit acreage of the holdings, orchard fruit occupies almost the whole of the land devoted to fruit production. Actually, the orchard area covers not less than 84 per cent of the fruit acreage leaving only 16 per cent to soft fruit. Of course, the plum is the predominant top fruit crop occupying almost half of the fruit land, whereas the apples cover only about one-third of the acreage, and pears and cherries are of minor importance. Of the soft fruit, black currants, strawberries and cultivated blackberries are the crops which make up most of the soft fruit acreage. The acreage distribution of fruit crops is illustrated in Diagram 9.

This diagram shows that in all four size-groups plum orchards occupy most of the ground. In fact, on the 1-10 and over-100-acre holdings the pattern of layout is predominantly plum growing. In the 10-50 and 50-100-acre groups, however, the proportion of plum and apple orchards is almost the same. Pears, on the other hand, are of relatively minor importance, and cherries are only grown in the over-100-acre group. Of the four patterns of acreage distribution, it is in the 50-100-acre group where the land is almost equally divided between plums, apples and pears and soft fruit, each of them occupying about one-third of the fruit area. In the other patterns, the acreage of the soft fruit is comparatively small and does not exceed 10 per cent of the total fruit acreage. However, this share of the soft fruit acreage does not fully represent the real importance of these crops as a substantial acreage, especially

DIAGRAM 9
Patterns of Fruit Acreage Distribution by Size-Groups



that of gooseberries, is inter-cropped among plum trees. The distribution of the fruit acreage is shown in detail in Table 17.

TABLE 17
Acreage under Fruit Crops

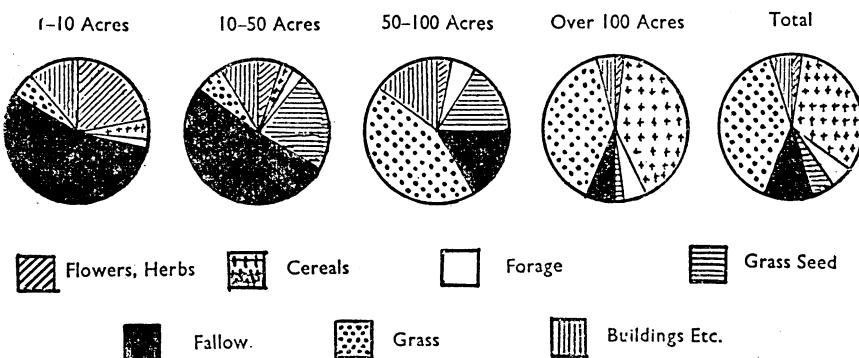
	Acreage Groups		1-10		10-50		50-100		Over 100		Total	
	Crops		Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
1. Top Fruit												
Plums . . .	22.95	69	32.79	46	41.80	33	79.80	62	177.34	49		
Apples . . .	6.10	18	30.52	42	38.02	30	29.50	23	104.14	30		
Pears . . .	2.85	9	2.64	4	4.35	3	5.50	5	15.34	4		
Cherries . . .	—	—	—	—	—	—	5.00	3	5.00	1		
2. Soft Fruit												
Strawberries . . .	0.70	2	2.35	3	5.55	4	5.00	3	13.60	4		
Gooseberries . . .	0.20	—	1.15	2	—	—	—	—	—	1.35	—	
Raspberries . . .	0.60	2	0.50	—	0.50	—	—	—	—	1.60	—	
Black Currants . . .	—	—	2.10	3	20.00	16	—	—	—	22.10	6	
Blackberries (cult.) . . .	—	—	—	—	11.70	9	2.00	2	—	13.70	4	
Loganberries . . .	—	—	—	—	6.40	5	2.00	2	—	8.40	2	
Total	33.40	100	72.05	100	128.32	100	128.80	100	362.57	100		

The remainder of the layout of the 32 holdings is occupied by flowers, herbs, farm crops, grass and some used for buildings and roads, etc., the total acreage for this part being 688.85 acres, or 44 per cent of the entire area of 1516.60 acres. However, 554.35 acres of this land, or 83 per cent of its total

acreage belongs to the pattern of the over-100-acre holdings and is used almost entirely for general farm crops and grass. On the whole, the grassland area forms a substantial part of the layout, especially in the patterns of the larger acreage groups. As most of these holdings carry some livestock, such as cattle, pigs and poultry, the grassland acreage is used both for hay and grazing. Diagram 10 shows the acreage distribution of the area under farm crops, grass, etc.

DIAGRAM 10

Patterns of Acreage Distribution of Farm Crops, Grass, etc., by Size-Groups



Perhaps, the most striking feature of these patterns is the comparatively high proportion of fallow land in the two lower acreage groups. This is due to some rather exceptional conditions, since after acquiring new land, only very few holdings in these groups were unable to bring it into production during the year in question. However, apart from the grassland area, it is mainly the acreage under farm crops, such as cereals, forage and grass seed, which makes up the layout of this particular part of the holdings. Although most of these crops are grown on all sizes of holdings, their main significance manifests itself in the pattern of the over-100-acre group. On the other hand, the acreage of flowers and herbs, though they are also grown on all sizes of holdings, is the main feature of the 1-10-acre group. The area of buildings, roads and unproductive pieces of land is highest in the 1-10- and 50-100-acre groups, where the fragmentation of the land on the one hand, and the layout of the fruit acreage on the other, suggest more roads, headlands, etc. Details of the acreage distribution of farm crops, grass, etc., is shown in Table 18.

TABLE 18
Acreage Under Farm Crops and Grass, etc.

Acreage Groups			1-10		10-50		50-100		Over 100		Total	
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
Crops, etc.												
1. Flowers . . .	2.60	16	1.25	2	—	—	—	—	3.85	1	3.85	1
2. Herbs . . .	0.95	6	1.40	3	1.25	3	5.00	1	8.60	1	8.60	1
3. Farm Crops:												
Wheat . . .	1.00	6	1.75	3	—	—	191.80	35	194.55	29	194.55	29
Barley . . .	—	—	—	—	—	—	31.00	6	31.00	5	31.00	5
Oats . . .	—	—	—	—	—	—	2.00	—	2.00	—	2.00	—
Mangolds . . .	—	—	—	—	—	—	2.00	—	2.00	—	2.00	—
Kale . . .	—	—	—	—	0.20	—	8.00	1	8.20	1	8.20	1
Fodder Beet . . .	—	—	—	—	—	—	1.00	—	1.00	—	1.00	—
Potatoes . . .	0.10	1	1.40	3	3.00	6	22.00	4	26.50	4	26.50	4
Grass seed . . .	—	—	11.75	23	7.05	15	4.00	1	22.80	3	22.80	3
4. Bare Fallow . . .	8.95	55	26.75	51	7.15	16	35.85	7	78.70	12	78.70	12
5. Grassland . . .	1.00	6	3.00	6	21.40	46	234.00	42	259.40	39	259.40	39
6. Buildings, etc. . .	1.60	10	4.70	9	6.25	14	17.70	3	30.25	5	30.25	5
Total	16.20	100	52.00	100	46.30	100	554.35	100	668.85	100		

Having examined the acreage distribution of the various crops, grassland, etc., it has been possible to establish the average patterns of layout of the 32 holdings. The acreage distribution has been based on the actual acreages of holdings, so that the patterns thus obtained do not include the acreages for those crops which were grown by means of double- and inter-cropping. On the whole, this additional acreage is rather moderate and its inclusion does not exceed 9 per cent of the whole, but in the patterns of the various size-groups it may fluctuate considerably. The extent to which the double and inter-cropped area affects the patterns of the various size-groups is as follows.

Acreage Groups	Total Acreage	Double and Inter-Cropped Area	
		Acres	%
Acres			
1-10	88.20	21.35	24
10-50	255.53	38.20	15
50-100	225.67	22.10	10
Over 100	947.20	49.98	5
Total	1516.60	131.63	9

According to these figures the position is that the smaller the size of the holding the greater the multiple-cropped acreage. On a small holding of under 10 acres, for instance, the double- and inter-cropped area represents one-quarter of each acre;

on a large holding of over 100 acres, however, it drops to one-twentieth of an acre. It is mainly the vegetable acreage which is most affected by the multiple use of the land; the fruit acreage is confined to inter-cropping. The differences in the double- or inter-cropped acreages of vegetables, fruit and farm crops are shown as follows.

Crops	Total Acreage	Double and Inter-Cropped Area	
		Acres	%
Vegetables	485.18	100.73	21
Fruit	362.57	29.20	8
Farm Crops, etc. . . .	379.20	1.70	—
Grass, etc. . . .	289.65	—	—
Total	<u>1516.60</u>	<u>131.63</u>	<u>9</u>

Thus, out of each 10 acres of vegetable land more than 2 acres are double- and inter-cropped, whilst on the fruit acreage this ratio is less than an acre.

In considering the combination of crops which make up the patterns of layout in the various size-groups, and the rate at which the land has been used for multiple cropping, it is only natural that financial results of holdings of different sizes show considerable variation as shown in the following per acre figures.

Acreage Groups	Production	Average Per Acre	
		Costs	Margin
Acres	£	£	£
1-10	356	257	+99
10-50	171	150	+21
50-100	151	134	+17
Over 100	121	108	+13

These figures show that the pattern of the 1-10-acre group was the most successful with a margin of £99 per acre, and readily confirms the high intensity of cultivation both in the form of glasshouses and multiple cropping. The margin of the 10-50-acre group, on the other hand, is considerably lower, and is partly due to the fact that this group of holdings represents a wider acreage range than the 1-10-acre group. However, the decrease in results of the three higher acreage groups indicates the decline in the extent of intensity in the patterns of their layout.

Method of Land Utilisation and Crop Rotation

ALTHOUGH the acreage distribution of the sample holdings may give a fairly comprehensive picture of the functional layout of the land, it is far from being complete in providing a wider insight into the prevailing methods of land utilisation. The analyses of the various patterns of acreage distribution simply record the kind of crops grown, their respective acreages, and relative importance, but give no other information which may throw more light on the composition of the layout. The pattern of layout being the result of a certain method of land utilisation, it is necessary to examine more closely the various factors which have a bearing on design. There are a number of such factors, but their main aspects reveal themselves in the practices of intensive cultivation, in the combination of varieties of crops, in the number of crops grown on the ground, and in the system of crop rotation.

Practices of Intensive Cultivation

Generally speaking, intensive cultivation implies a certain method of land utilisation designed to ensure the highest possible returns for a relatively small area. The methods of intensive cultivation may be manifold, the chief among them being the production of crops of high value and the practice of multiple cropping.

The intensive cultivation of crops of high value may be carried out by growing them in the open fields and by production in glasshouses, frames or under cloches. Growing such crops as asparagus, tomatoes and flowers in the open is the general pattern of small-scale horticulture, but cultivation of the same crops under glass is the main feature of the specialist enterprise.

In the Vale of Evesham there are very few holdings which rely entirely on the production of crops under glass and in most cases it is combined with open field cultivation. This general picture is confirmed by the 1954 Agricultural Returns for Worcestershire, where the total acreage under glass was only 53 acres. This was a very low figure in comparison with Hertfordshire, for example, where in that particular year the area under glass amounted to 584 acres. However, in spite of the low acreage figure shown for Worcestershire as a whole, the use of glass on the Evesham holdings seems to be widespread and of increasing importance. The number of holdings equipped with glass, in one form or another is considerable,

and though many of them are not specialists in the strict sense, they all use glass to a varying degree in order to produce crops, or at least to propagate their own plants.

Of the 32 sample holdings about 19 use glass and on 6 of these holdings, the glasshouse is actually the real centre of production and the crops produced therein are the main source of revenue. On 8 other holdings, the use of glass is somewhat limited, but nevertheless it plays an important part in the production of both crops and plants. In addition to these 14 holdings, there are at least 5 more where a small glasshouse or cloches are used for the purpose of propagating and protecting plants.

The employment of glass is by no means the exclusive feature of small-holding horticulture, since it may be found on any size of holding. Of the 14 holdings where glass plays an important part in the pattern of production, 3 belong to the 1-10-acre group, and 6 to the 10-50-acre group; in the 50-100-acre group there is only 1 holding but in the over-100-acre group there are 4 of these holdings. Consequently there is no relationship between the use of glass and the size of holding. This also seems to be confirmed even by those holdings which may be regarded as specialised for glasshouse production. Of the 6 holdings in the sample, 2 are under 10 acres, 2 between 10-50 acres, and the remaining 2 over 100 acres.

Most types and sizes of glasshouses are in use on the holdings in the form of both permanent and moveable structures and these are operated as either heated or cold houses. Of the 6 glasshouse holdings, there are 3 where the heated permanent glasshouse is the typical feature, but on the other 3 the area under glass is covered mainly by unheated dutch-light structures. None of these structures are of the "mobile" type which can be shifted as a whole from one place to another, but are rather semi-permanent constructions which have to be dismantled and set up again when moving them to another part of the ground. The transfer of the structure is carried out in sections, so that moving it is not a difficult operation and may be accomplished in a very short space of time. Most of these structures on the sample holdings rest on concrete blocks set in the soil, and the uprights and beams supporting the various sections are erected on them. Dutch lights are not only used to provide glasshouse space, but also as frames erected as single or double span structures. Many of the dutch-light structures are equipped with polythene linings in order to more efficiently conserve and maintain the warmth.

On the whole, the equipment of the glasshouse holdings is very modern and the system of production very up-to-date. The techniques of sterilisation and heating of the soil, compost making and feeding and watering of plants are all well abreast of general scientific progress.

As mentioned before, there is no specific relationship between the use of glass and the size of the holding, but with regard to the amount of glass employed on the holdings, the position is quite different. According to the figures for the sample holdings, the area under glass is relatively more important in the layout of the small holdings than in the medium and large ones.

During the year 1955/56 the amount of glass used by the 32 sample holdings was about 179,121 sq. ft. or 4.07 acres, representing 0.3 per cent of the total acreage of 1516.60 acres. Among the various acreage size-groups the area under glass divided itself as follows.

Acreage Groups	Total Acreages Under Glass	
	Sq. feet	Acres
1-10	47,916	1.10
10-50	48,000	1.10
50-100	—	—
Over 100	83,205	1.87
Total	179,121	4.07

In the light of the total acreages of the various size-groups, the relative importance of the distribution of glass in the average layout of the holdings can be shown as follows.

Acreage Groups	%	
	Acres	%
1-10	—	1.3
10-50	—	0.4
Over 100	—	0.2

In relative terms therefore, the smaller the size of the holding the higher the importance of the glass. Hence, the limitation of acreage is overcome by the advantages derived from the use of glass. In this way, the small-holding grower not only mitigates the hazards of the weather, but also increases his turnover to such an extent that it corresponds to that of much larger holdings where no glass is employed.

The high turnover of the glasshouse holding is due both to the types of crop grown there, and to the constant utilisation of the glass-covered area. Although there are many crops which can be "forced", the number of crops generally grown under glass is rather limited. On the sample holdings, the main glasshouse crop is the tomato which occupies the ground longer than any other; but the importance of the following crop, be it lettuce, flowers, or plants, is by no means insignificant. Such crops are not of a subsidiary nature, but full scale enterprises occupying the area wholly for their particular seasons. Thus, during a cropping year, there are at least two, possibly three, crops which can be produced in glasshouses. Due to the rapid rotation of crops and the high commercial values involved, the turnover of heated glasshouses can be about £2 per sq. yd., and that of dutch lights £1, subject, of course, to the type and number of crops grown. On the sample holdings, tomatoes are combined either with lettuce, chrysanthemums, kidney beans or plants, and to a lesser degree with marrows. Cucumbers are grown either on their own, or alongside the glasshouse with the tomatoes. Radishes are generally catch-crops. The plants produced under glass consist mostly of tomatoes, cauliflower, and sprout plants, grown either on contract, or to sell to other growers for planting out in the spring. The acreage distribution of the various glasshouse and frame crops is as follows.

TABLE 19
Acreage of Glasshouse and Frame Crops

Acreage Groups	1-10		10-50		Over 100		Total	
	Acres	%	Acres	%	Acres	%	Acres	%
<i>Crops</i>								
Tomatoes . .	0.65	59	0.85	77	1.50	80	3.00	74
Plants . .	0.45	41	0.25	23	—	—	0.70	17
Cucumbers . .	—	—	—	—	0.25	13	0.25	6
Marrows . .	—	—	—	—	0.12	7	0.12	3
Total Area . .	1.10	100	1.10	100	1.87	100	4.07	100

In addition to the above, the acreage distribution of those crops which followed on and were harvested during the year in question is shown below.

TABLE 20
Acreage of Multiple Cropped Glasshouse and Frame Area

Acreage Groups	1-10		10-50		Over 100		Total	
	Acres	%	Acres	%	Acres	%	Acres	%
<i>Crops</i>								
Total Area . . .	1.10	100	1.10	100	1.87	100	4.07	100
Lettuce . . .	0.30	27	0.20	18	0.13	7	0.63	15
Radishes . . .	0.25	23	—	—	0.38	20	0.63	15
Kidney Beans . . .	—	—	—	—	0.88	46	0.88	22
Flowers . . .	0.45	41	—	—	0.50	27	0.95	23
Total Gross Area . . .	2.10	191	1.30	118	3.76	200	7.16	175

According to the above figures, 75 per cent of the total area under glass was multiple-cropped, and both on the 1-10-acre and over 100 acre holdings the intensity of utilisation of the glass area was around 100 per cent. The low percentage shown for the 10-50-acre group is due to the fact that on these holdings the area consisted of dutch lights only, and on one holding they were only erected during the year under review so excluding the possibilities of multiple-cropping.

As mentioned before, the turnover involved in glasshouse cultivation is substantial and involves a considerable number of crops. It would therefore be rather difficult to give any definite financial results of the glasshouse enterprises on the sample holdings, as the production of crops under glass is mixed up with open field cultivation, and these could not easily be dissected from each other. Nevertheless, by separating the holdings with glass from those with only a small amount of glass, or none at all, it is possible to illustrate and compare their production and cost figures based on the entire trading of the business. For the year 1955/56 these results, worked out per acre, were as follows.

Types of Holdings	Averages per Acre		
	Production £	Costs £	Margin £
Holdings with substantial area under glass	499	353	+146
Holdings with limited or no area under glass	155	134	+ 21

According to the above figures the glasshouse holdings were far more successful than the others, and both the production

and cost results indicate the importance which the use of glass represents in the pattern of their layout. Among the holdings with glass there was no financial failure, but 7 holdings in the other group of 26 failed to show any margin of success. The results of the 6 glasshouse holdings, according to their respective size-groups, were as follows.

Acreage Group	Averages per Acre		
	Production	Costs	Margin
Acres	£	£	£
1-10	1,122	725	+397
10-50	217	189	+ 28
Over 100	156	146	+ 10

As can be seen from these figures, the small-holdings under 10 acres show the highest financial results. Although the use of glass was equally important on all 6 holdings, it was most effective on the small type of holding. Taking into account that the average acreage of this particular group of holdings is about 5 acres, the overall result achieved corresponds very favourably with even that of the over-100-acre holdings, where the average acreage is around 140 acres. These results thus show clearly that, in the layout of glasshouse holdings, it is not the acreage size which defines the scope of the business, but rather the amount of glass used on it.

The other characteristic feature of the intensive method of cultivation is the practice of multiple-cropping, whereby two or even more crops are harvested from the same piece of land during the financial year in question. Multiple-cropping may be carried out either by growing several crops in succession on the same piece of land, or by producing different crops simultaneously on the same ground and inter-planting them between each other. Of these two forms of multiple-cropping, the former is generally known as double-cropping, and the latter as inter-cropping. Although reference has already been made to these practices of land utilisation when discussing the acreage distribution of crops and the various features of glasshouse production, they are sufficiently important to deserve more detailed examination.

Of the two types of multiple land utilisation, it is perhaps the technique of double-cropping which mostly affects the pattern of the crop layout. Crops grown by means of inter-cropping are always of a subsidiary nature, such, for instance, as gooseberries between plum trees; but in a double-cropping

scheme the second crop may be equally or even more important than the first crop as in the case of beans after cabbage. Owing to the quick rotation of crops, the double-cropping technique provides an ever changing scene on the holding. One day nothing but some dead foliage may mark the end of an enterprise on a field and then the following day the land may be ploughed up into neatly set furrows; by the following week the visitor might easily be confronted with the picture of a promising new venture. The season covered by the financial year of the holdings may commence either in October, January or April, and it is, therefore, often difficult to determine the extent to which the land has been double-cropped. There are always some crops among the various ones grown on the holding the tail end of which overlap the financial year, no matter what the year ending may be. These crops tend to obscure the issue of double-cropping by showing the revenue derived from them partly at the beginning and partly at the end of the financial year. In the present survey, however, while assessing the double-cropped area of the holding, these part-crops have been regarded as one full enterprise, especially if they occupied the same acreage in both years. In cases where the land of the second part-crop was not occupied, then that piece of land was considered as single-cropped. On the other hand, if the second part-crop was planted or drilled on a piece of ground which had already been cropped, then its entire acreage was classified as double-cropped. If the area of the second part-crop was larger than that of the first part-crop, then only the difference between the two acreages was considered as being double-cropped, provided, of course, that this piece of land had previously carried another crop.

By assessing the double-cropped area in this manner, the acreage which carried two or more crops during the year 1955/56 was 84.48 acres, or 6 per cent of the total acreage of the 32 holdings. Of the total vegetable acreage of 84.8 acres, or 6 per cent of the area of the 32 holdings which comprised 1,516.60 acres, 485.18 acres were under vegetables and 17 per cent of this latter acreage, 82.78 acres, was double-cropped. The difference between the 84.8 acres and the 82.78 acres, namely 1.7 acres, was double-cropped as to 0.7 acres by flowers and 1 acre by mangolds. In the light of the various acreage groups, the relative importance of the double-cropped area is very much the same, and in relation to the vegetable acreage it shows only a very slight fluctuation. This may be seen from the following figures:

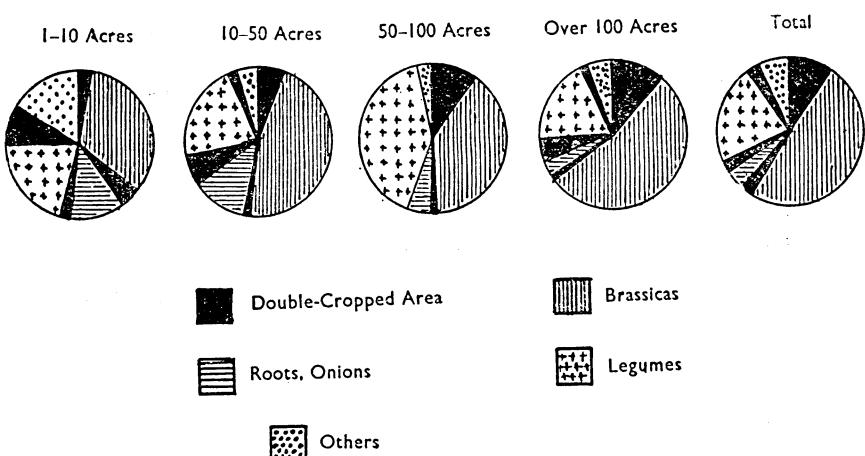
<i>Acreage Groups</i>					<i>Vegetable Acreage</i>	<i>Double-Cropped Area</i>	
	Acres		Acres		Acres	% 18	
1-10	.	.	38.60		7.05		
10-50	.	.	131.48		22.50		17
50-100	.	.	51.05		7.75		15
Over 100	.	.	264.05		45.48		17
Total	.	.	485.18		82.78		17

The technique of double-cropping is not restricted to any specific group of crops, though it may point that way for some short term crops such as lettuce, peas, etc.; more or less equal opportunities are offered to all vegetable crops. The function and scope of double-cropping depends more on the quality of the soil than on the biological nature of the individual crop. An easily workable soil of high quality on which crops mature early, offers ample possibilities for double-cropping, but a cold clay type of soil gives hardly any scope at all for cropping the land more than once. In view of the fact that on most of the sample holdings the land consists of light, medium and heavy soils, it was not possible to prepare reliable data on the extent to which these soils were double-cropped. However, on one particular holding, where the soils were of lighter character, the double-cropped area amounted to as much as 75 per cent of its total vegetable acreage. On the other hand, on holdings with heavier soils, this ratio was well below 10 per cent and only in one particular case did it rise to 20 per cent. On suitable soils, crops, which would otherwise occupy the land for most part of the year, mature quickly and make room for others, and so the technique of double-cropping is clearly revealed in a fast rotation of crops. There are apparently no specific rules followed by the growers to decide on the type of crop by which the land should be double-cropped. By and large, the technique may apply to any type of crop, whether it be an annual or a short term crop. In the course of the present survey, there were instances when an early crop of Brussels sprouts was picked by October, and on one holding the field was then planted up with lettuce, and on another with spring cabbage. The extent to which double-cropping affected the layout of the various groups of crops on the sample holdings in 1955/56 is shown in Diagram 11.

From this diagram it can be seen that, on average, it was the brassicas which were double-cropped to the greatest extent due to the large acreage involved; the acreage of other groups

DIAGRAM 11

Extent of Double-Cropping in the Layout of Vegetable Acreage



of crops was also affected but only to a lesser degree. In relative terms, however, the acreage of other miscellaneous crops, such as lettuce, radish, etc., was the most heavily double-cropped. The ratio between acreages of the various groups of crops and their double-cropped areas may be shown as follows:

Crops	Crop Acreage	Double-Cropped Area	
		Acres	%
Brassicas . . .	275.25	49.40	18
Roots, Onions . . .	37.05	6.00	16
Legumes . . .	130.61	16.80	13
Others . . .	42.27	10.58	25
Total . . .	<u>485.18</u>	<u>82.78</u>	<u>17</u>

These percentages clearly indicate that although the relative importance of double-cropping was highest for "other" vegetable crops, there was also a fair proportion among the other groups of crops. The ratio between crop acreages and double-cropped areas is shown below for the various size groups.

<i>Acreage Groups</i>	<i>Brassicas</i>	<i>Roots</i>	<i>Legumes</i>	<i>Others</i>
Acres	%	%	%	%
1-10 . . .	10	20	12	34
10-50 . . .	12	12	20	42
50-100 . . .	27	33	—	—
Over 100 . . .	20	15	13	16
Total . . .	—	—	—	—
	18	16	13	25

The above figures show that in the groups of under 50 acres, the highest proportion of double-cropping occurs on the "other vegetable" acreage, whereas on the large holdings it occurs on the brassica, and also on the roots and onion acreages.

Details of the distribution of double-cropped acreages among the various crops are as follows:

<i>Crops</i>	<i>Crop Acreage</i>	<i>Double-Cropped Area</i>	<i>Acres</i>	<i>%</i>
1. Brassicas				
Brussels sprouts .	154.35	26.50	17	
Cabbage, Savoys .	81.95	20.50	25	
Cauliflower, Broccoli .	38.95	2.40	6	
2. Roots and Onions				
Carrots . .	2.60	0.05	2	
Parsnips . .	1.65	—	—	
Beetroot . .	13.80	0.10	1	
Leeks . .	2.95	2.95	100	
Onions . .	16.05	2.90	18	
3. Legumes				
Broad Beans .	31.38	—	—	
Runner, Dwarf Beans .	43.58	10.55	24	
Peas . .	55.65	6.25	11	
4. Other Vegetables				
Asparagus . .	10.80	—	—	
Lettuce . .	15.00	8.13	54	
Radishes . .	1.00	1.00	100	
Rhubarb . .	3.40	—	—	
Tomatoes . .	3.60	1.45	40	
Sundries . .	8.47	—	—	
Total . . .	485.18	82.78	17	

Of the individual crops, leeks, lettuce, radishes and tomatoes were most used for the purpose of double-cropping, but sprouts, cabbage, onions, beans and peas were also well represented.

The other type of multiple land utilisation is the method by which two different crops are grown on the same piece of ground simultaneously. Of these, one is the main crop, while the other, which is usually of a subsidiary nature, is the second

crop and is planted between the rows. The extent of inter-cropping is more easily detectable in the layout of a holding than that of double-cropping. In the case of inter-cropping the extent of the area may be ascertained by the main crop acreage but in double-cropping, where the preceding crops disappear altogether, more elaborate examination is often required. Of course, the rate of inter-cropping on the holding varies considerably, depending on the land made available by the main crop. For instance, a plantation of very young trees may provide more room for inter-cropping than that of young soft fruit bushes, or when vegetables are inter-cropped by other vegetable crops the ratio may easily be as much as 50 per cent. In the course of the present survey, whilst having ascertained the extent of the inter-cropped area, it has not been possible to investigate the number of bushes or plants grown between the rows; the acreage of the main crop has been taken as sufficient to supply the required information, namely, of how far the application of inter-cropping has affected the crop layout of the holdings.

On the 32 sample holdings, the inter-cropped area amounted to 47.15 acres which is about 3 per cent of the total acreage of 1,516.60 acres. The double-cropped area represented 6 per cent of the total acreage of the holdings, but the importance of inter-cropping was of less significance. On the other hand, double-cropping is mainly a feature of vegetable growing, but the technique of inter-cropping applies to both fruit and vegetable crops. Of the 47.15 acres of inter-cropped land, 19.25 acres or 41 per cent of this area were under vegetables, and 27.90 acres under fruit crops. Short of 1.55 acres, where vegetable crops were inter-cropped by vegetables, the entire area of inter-cropped land was found on the fruit acreage of the layout, in particular in the orchards. Of the soft fruit acreage of 60.75 acres, only 0.40 acres were inter-cropped by vegetables, otherwise this area was covered by multiple-cropping. In view of the fact, that inter-cropping was carried out almost entirely among fruit trees, its importance is best measured by relating it to the orchard area of the holdings, as shown below.

Acreage Groups Acres	Orchard Area Acres	Inter-Cropped Area	
		Acres	%
1-10 . . .	31.90	13.05	41
10-50 . . .	65.95	14.85	23
50-100 . . .	84.17	14.30	17
Over 100 . . .	119.80	3.00	3
Total . . .	301.82	45.20	15

According to the above figures, 15 per cent of the orchard area of the sample holdings was producing more than one type of crop. This rate of multiple-cropping corresponds very closely with the 17 per cent of double-cropping carried out on the vegetable acreage. In the acreage size groups there was little fluctuation in the ratio between the vegetable and double-cropped area but with regard to inter-cropping this fluctuation was considerable. On small holdings of under 10 acres, almost half the orchards were inter-cropped, but larger holdings showed that the greater the acreage the less important was the inter-cropping. With regard to individual crops inter-cropping showed itself to be most important among the soft fruit crops; its significance among vegetable crops was rather moderate. The relationship between acreage of single crops and the respective inter-cropped areas is shown in Table 21.

TABLE 21
Relationship Between Crop and Inter-Crop Acreages

	Vegetable Crops	Total Acreage	Inter-Cropped Acreage	
		Acres	Acres	%
Brassiccas:				
Brussels sprouts	.. .	154.35	6.60	4
Cabbage, Savoys	.. .	81.95	1.65	2
Roots, Onions:				
Onions	16.05	0.55	3
Legumes:				
Broad Beans	31.38	0.30	1
Runner, Dwarf Beans	43.58	1.00	2
Peas	56.65	6.55	12
Others:				
Asparagus	10.80	1.30	12
Lettuce	15.00	0.30	2
Radishes	1.00	0.45	45
Sundries	8.47	0.55	6
Fruit Crops				
Soft Fruit:				
Strawberries	13.60	7.50	55
Gooseberries	1.35	17.75	—
Raspberries	1.60	0.10	6
Black currants	22.10	1.85	8
Red currants	—	0.60	100
Blackberries (cult.)	13.70	0.10	1

As seen from Table 21, some of the soft fruit crops are grown almost entirely by means of inter-cropping. By far the most important single example of this technique is the inter-cropping

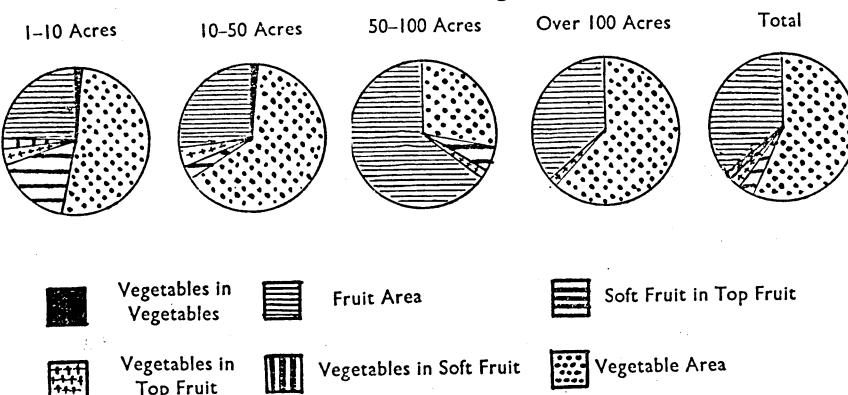
of gooseberries grown almost exclusively under plum trees. The other most commonly used inter-crop is strawberries, and the extent to which they were grown between fruit trees was 55 per cent of the open field plantations. The other soft fruit crops, especially currants, were also used for inter-cropping on a number of holdings, but the area which they occupied was only of limited significance. Amongst vegetables, radishes, peas and asparagus showed the highest proportion of inter-cropping. Asparagus, however, was an exception, and the fact that on one particular holding young trees had been planted in an old bed, already scheduled for grubbing, discounts the crop as a potential inter-crop. In practice, the combination works rather the other way, with the young asparagus plantations being inter-cropped by vegetables.

There are a number of crop combinations used in the practice of inter-cropping, and on the 32 sample holdings there were at least 17 different combinations between crop and inter-crop which may be grouped as follows:

- (a) Soft fruit in top fruit;
- (b) Vegetables in top fruit;
- (c) Vegetables in soft fruit; and
- (d) Vegetables in vegetables.

Of these four groups, the first two were the most important forms of inter-cropping, their acreage being not less than 95 per cent of the total inter-cropped area. The relative importance of these groups of combinations in the layout of the vegetable and fruit land is illustrated in Diagram 12.

DIAGRAM 12
Pattern of Inter-Cropping in the Layout of the Vegetable
and Fruit Acreage



From Diagram 12 it can be seen that the combination of soft fruit with top fruit was by far the more predominant form of inter-cropping, and on average absorbed 8 per cent of the total fruit acreage. The practice of inter-cropping vegetables between fruit trees was of less importance, being only 4 per cent of the total fruit acreage and only 1 per cent was devoted to growing vegetables among soft fruit crops. It was only in the smaller acreage groups that the growing of vegetables among other vegetable crops occurred, but even there did not exceed 1 per cent of the total vegetable acreage. The inter-cropping of top fruit by soft fruit was most widespread on the 1-10-acre holdings where this area occupied not less than 35 per cent of the total fruit acreage; on the 10-50-acre holdings it was 8 per cent and on the 50-100-acre holdings 6 per cent. On the other hand, the practice of growing vegetables between fruit trees was more common on the 10-50-acre holdings, where it was 13 per cent of the fruit area; in the 1-10-acre group it was 4 per cent and in both the 50-100 and over-100-acre groups it was 2 per cent. Incidentally, on the over-100-acre holdings this was the only form of inter-cropping. Inter-cropping soft fruit by vegetable crops was only practised on the under-10-acre holdings and was not more than 2 per cent of the total acreage under fruit crops. In all the forms of inter-cropping just mentioned almost all the crops which are generally grown in the Vale of Evesham were included. The extent to which these crops were grown as inter-crops is set out in Table 22.

Table 22 shows that the most important inter-crop is gooseberries and it is generally grown in plum orchards, although there were several instances on the sample holdings where apple and pear plantations were inter-cropped with gooseberry bushes. There were a number of methods of inter-planting gooseberry and indeed black and red current bushes, practised on the holdings. On some holdings, the bushes were planted in the tree rows themselves so that there were about three bushes grown between each pair of trees. On other holdings, bushes were planted in such a manner as to form one, two and sometimes even more complete rows between each pair of tree rows. On a few plantations, the method of inter-cropping was the combination of the two previous methods. This particular method, however, might easily result in too many bushes being inter-planted between the trees, and would eventually lead to difficulties in maintaining and cultivating the orchard itself. Another fairly common combination of

TABLE 22
Distribution of Crops in the Various Forms of Inter-Cropping

Acreage Groups	1-10			10-50			50-100			Over 100			Total		
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	
<i>Inter-Crops</i>															
1. <i>Soft Fruit in Top Fruit:</i>															
Gooseberries	10.00	71	2.90	18	4.85	34	—	—	—	—	17.75	38	—	—	
Black Currants	1.10	8	0.75	5	—	—	—	—	—	—	1.85	4	—	—	
Red Currants	0.50	4	0.10	1	—	—	—	—	—	—	0.60	1	—	—	
Strawberries	0.25	2	1.25	8	6.00	42	—	—	—	—	7.50	16	—	—	
Raspberries	—	—	0.10	1	—	—	—	—	—	—	0.10	—	—	—	
Blackberries (cult.)	—	—	0.10	1	—	—	—	—	—	—	0.10	—	—	—	
2. <i>Vegetables in Top Fruit:</i>															
Brussels Sprouts	0.20	1	6.40	41	1.50	10	—	—	—	—	6.60	14	—	—	
Cabbage	0.10	1	0.05	—	—	—	—	—	—	—	1.65	4	—	—	
Carrots	—	—	0.05	—	—	—	—	—	—	—	0.30	1	—	—	
Onions	—	—	0.30	2	—	—	—	—	—	—	0.30	—	—	—	
Broad Beans	0.15	1	—	—	—	—	—	—	—	—	0.15	—	—	—	
Runner Beans	—	—	1.00	6	—	—	—	—	—	—	1.00	2	—	—	
Peas	0.20	1	—	—	2.00	14	—	—	—	—	5.20	11	—	—	
Radishes	0.45	3	—	—	—	—	—	—	—	—	0.45	1	—	—	
Lettuce	0.10	1	1.30	8	—	—	—	—	—	—	0.10	—	—	—	
Asparagus	—	—	0.50	3	—	—	—	—	—	—	1.30	3	—	—	
Sundries	—	—	—	—	—	—	—	—	—	—	0.50	1	—	—	
3. <i>Vegetables in Soft Fruit:</i>															
Broad Beans	0.20	1	—	—	—	—	—	—	—	—	0.20	—	—	—	
Lettuce	0.20	1	—	—	—	—	—	—	—	—	0.20	—	—	—	
4. <i>Vegetables in Vegetables:</i>															
Onions	0.25	2	—	—	—	—	—	—	—	—	0.25	1	—	—	
Peas	0.30	3	1.00	6	—	—	—	—	—	—	1.30	3	—	—	
Total	14.00	100	15.80	100	14.35	100	3.00	100	47.15	100	—	—	—	100	

soft fruit with top fruit is the growing of strawberries between young apple trees. On the sample holdings, it was the usual practice to inter-plant such orchards either with strawberries or vegetable crops for some five years after the initial planting up. Among vegetables, sprouts and peas were the principal inter-crops. Not on the sample holdings, but in some places in the Vale, young apple plantations were inter-cropped with wheat. In the combination of vegetable crops with other vegetables, a fairly common practice, especially on small-holdings, is to inter-crop young asparagus beds with such vegetable crops as peas and onions. However, after a period of three years, when the beds become established, it is not possible to inter-crop them any longer.

Combination of Crop Varieties

As has already been seen from details of the distribution of the crop acreage, there were at least 40 different kinds of crops grown on the 32 sample holdings. Amongst these crops, vegetables, fruit, flowers, herbs and various farm crops were all well represented. The classification of horticultural crops according to the main species does not always express the full significance of a single crop. For instance, some crops have a number of varieties which really represent a number of distinct crops, and these may differ in character, seasonality and husbandry technique. It is therefore not only the crop itself, but also its varieties which occupy a certain amount of importance in the crop layout of the holding, having a definite bearing on the system of land utilisation. As far as vegetables are concerned, the entire pattern of crop rotation depends on the varieties of the crops grown. For instance, spring cabbage may be rotated by runner beans; salad onions by a crop of winter cabbage; or the different varieties of lettuce may be grown in succession over the whole year. Just as the different varieties of crops represent entirely different commercial values on the market, so the returns derived from a crop very largely depend on the extent to which the varieties are combined. If a crop of cauliflower happens to consist mainly of the early variety, it is obvious that the overall yield and returns will show different results from those where the main crop belongs, say, to the autumn variety. With regard to fruit crops, the extent to which the diverse varieties of fruit are combined in the layout of the plantation is of much the same importance, especially as far as yields and returns are concerned. For instance, the turnover of a plum orchard consisting

mainly of yellow egg plums is bound to show different results from those plantations where the main variety is the Victoria plum. There are, of course, many combinations of varieties in which the single crops are grown, and due to the great number involved, it is very often impossible to ascertain, especially in retrospect, the acreage on which each variety has been grown.

On the sample holdings, the various vegetable crops represented not only early, mid, and late season varieties, but each of them consisted of further branches of lengthy sub-divisions. For instance, at least 10 different varieties of cauliflower were grown, without taking into account the proprietary varieties developed by various seed firms. The most commonly grown varieties were the Snowball, Cambridge No. 5, Meteor, Driancourt, Majestic, Novo, Veitch's, Self-Protecting, Pioneer and Remme. In view of the ramified nature of crop varieties, the scope of the present survey proved to be very limited in the investigation, even in a simplified manner, of the layout of vegetable crops according to their varieties. With regard to soft fruit crops, the position was very similar on account of the numerous varieties grown. On the sample holdings, strawberries were grown at least in 9 different varieties of which Royal Sovereign, Auchincruive Climax, Cambridge Favourite, and Huxley were the most popular. The main varieties of gooseberries were Careless, Leveller and Lancer; of black currants Mendip Cross and Baldwin; of raspberries Malling Promise and Lloyd George, and of red currants, Laxton's No. 1. With regard to top fruit crops the position is somewhat different since the prevailing varieties in the orchards are more easily recognisable and are grown and sold under their proper names. Vegetables and soft fruit crops are seldom sold according to their particular variety, though there may be a few exceptions, but plums, apples and pears, on the other hand, are always marketed according to variety, unless the quality is too inferior.

In the course of the present survey an attempt has been made to obtain information on the composition of the orchards on the sample holdings and on the varieties of the plums, pears and apples grown.

In the Vale of Evesham the plum, at least as far as its acreage is concerned, ranks second to none in the line of importance of all horticultural crops. This area is perhaps the most concentrated plum-growing district in the country, where practically every variety of the fruit is grown on a commercial

scale. The plum orchard occupies a prominent place in the layout of a good many holdings and contributes a fair share of income to the overall economy of the business.

Of the 32 sample holdings, there were 23 which to a greater or lesser extent were engaged in plum growing. Their orchard area amounted to 177.34 acres, representing 12 per cent of the entire survey acreage of 1,516.60 acres, or 55 per cent of the total top fruit acreage of 301.82 acres.

In order to obtain the required information on the composition of these orchards, 58.85 acres, or 33 per cent of the total acreage, were subjected to a detailed examination during which all the trees were counted, classified according to age and divided into their appropriate varieties. This particular inquiry covered the plum orchard area of 8 holdings.

On the whole, the number of trees in these orchards amounted to 10,624, or, on average, 181 trees to the acre with a spacing of 15 ft. x 16 ft. With regard to the spacing of trees, the actual measurements carried out in the orchards brought to light a number of different distances at which the trees were planted. Some of the measurements showed rather wide distances such as 18 ft. x 18 ft., 24 ft. x 15 ft., or even 24 ft. x 18 ft., but there were also closer plantations of 21 ft. x 4 ft. and 18 ft. x 9 ft., but the more common spacing was 15 ft. x 15 ft. On the more recently established plantations, the practice of planting the trees at wider distance apart was favoured, and instead of the 15 ft. spacing, 18 ft. and 24 ft. was left between the rows, so allowing more ground for under-cropping the trees with gooseberries or other soft fruit.

The surveyed orchards consisted of both old and young plantations, but an overwhelming majority of the trees were found in orchards which were over 30 years old. The number of trees grouped according to age are as follows:

<i>No. of Years</i>	<i>No. of Trees</i>	<i>%</i>
Less than 5 years	946	9
5-10 years	175	2
10-30 years	3,220	30
Over 30 years	6,283	59
Total	10,624	100

From the above figures it can be seen that 59 per cent of the total number of trees were over 30 years old, and the proportion of young trees only 11 per cent. These figures show that the

plantations in question are slowly becoming aged, and a much higher proportion of young trees would need to be planted in order to maintain the present cropping capacity in years to come. On this basis, it would take about 90 years to replenish an orchard to keep it at a satisfactory level of production, and this is, indeed, a very slow process. Of course, the very low prices of 1·7d. per lb. for yellow egg plums, for example, or 2·3d. for Victoria plums, which the growers have encountered during recent years have given very little encouragement to the establishment of new plantations, or to the replanting of old ones. In some of the old orchards one could see trees which were invariably half-standard, and frequently showed signs of serious damage, which they must have suffered some years ago, leaving only little more than their stumps. There were also a number of empty places in the rows where the trees had been grubbed and never replaced. Of the 15 plum growing holdings, there were 7 where some of the plum orchards had been grubbed during the last three years, but on only one of these holdings had the occupier been enterprising enough to make good the void by replanting with plum trees.

In the majority of orchards, however, the trees were kept in perfect order, and were well looked after by adequate manuring and spraying. With the exception of 3 holdings where the orchards were grassed down, all the holdings kept the ground cultivated, which is really the characteristic difference between the husbandry of plum and apple orchards. It is usually in the spring that fertilisers are applied to the orchards, and between 5 and 10 cwt. to the acre is used. These fertilisers are normally inorganic in character, and the actual constituents depend on the type and condition of the soil and the personal preference of the grower. On several of the surveyed holdings, the inorganic fertilisers consisted of two distinct types, one was nitrogenous and the other potassic, but in a few cases the nitrogenous dressing was applied in the autumn instead of the spring. On the whole, the spraying programme carried out in the orchards was rather simple, and almost on every holding it consisted of an early spring wash of D.N.C. or Ovarmort (DNC/Petroleum), but in some cases tar oil was used instead. Some other sprays were also used, though not as a part of the spraying programme, but more to counter certain specific attacks of pests such as sawfly (BHC or Derris), or aphis (BHC/DDT). In some of the orchards greasebands were applied to the trees in the autumn to provide them with greater protection against the danger of pests from the ground.

Whilst surveying the orchards, almost every variety of fruit was encountered, even in this relatively small area. There were many varieties distributed rather haphazardly both in number and location in the older orchards while in the young orchards the number of varieties was not more than 11, and they were planted separately. Of the 10,624 trees found in the orchards not less than 26 different varieties were grown, and these are shown as follows:

TABLE 23
Composition of Plum Orchards According to Varieties

Varieties	No. of Trees	%
Yellow Egg	3,544	33
Victoria	2,692	25
Burbank	881	8
Purple Pershore	831	8
Damson	613	6
River's Early Prolific	528	5
Czar	361	4
Belle de Louvain	228	2
Bountiful	161	2
Marjorie's Seedling	191	2
Gages	115	1
Early Laxton	92	1
Magnum	73	1
Coe's	65	1
Cropper	50	1
Orleans	41	—
Wydale	34	—
Premier	27	—
Heron	26	—
Pond's Seedling	21	—
Late Egg	12	—
Monarch	10	—
President	10	—
Jimmie Moore	10	—
Blaisdon Red	4	—
Waterloo	4	—
Total	10,624	100

Table 23 shows that the first 7 varieties are of importance, constituting 89 per cent of the total number of trees recorded.

On the whole, the figures obtained from this inquiry agree quite favourably with those of the 1944 fruit census, in so far as they permit comparison. This may be shown as follows:

Plums	Sample		Census	
	No. of Trees	%	No. of Trees	%
Victoria Plums . . .	2,692	25	166,700	21
Greengages . . .	115	1	3,700	1
Damsons . . .	613	6	42,000	5
Other Plums . . .	7,204	68	577,200	73
Total . . .	10,624	100	789,600	100

As mentioned before, the tendency on new plantations is to reduce the number of varieties, and instead of the older type of fruit, to plant younger and more profitable varieties. Holdings with orchards under 10 years old provided the required data on the change in the technique of establishing new plantations. On these plantations the distribution of the number of trees, and the varieties involved was as follows:

Varieties of Plums	No. of Trees		
	Total	Per Acre	%
Victoria . . .	208	33	18
Prolific . . .	188	31	17
Marjorie's Seedling . . .	170	27	15
Damson . . .	158	25	14
Oullin's Golden Gage . . .	105	16	9
Yellow Egg . . .	104	16	9
Early Laxton . . .	53	9	5
Magnum . . .	50	9	5
Cropper . . .	50	9	5
Heron . . .	20	4	2
Premier . . .	15	2	1
Total . . .	1,121	181	100

From the above figures it is evident that although the Victoria plum still maintains its popularity, most of the other standard varieties such as yellow egg, burbank, etc., have lost some of their importance. It seems that these varieties are gradually giving way to those which produce a better quality fruit, for instance Oullin's Golden Gage, or have a longer marketing season, such as River's Early Prolific, Early Laxton, or perhaps a late season plum such as Marjorie's Seedling.

The apple is a less typical fruit of the Vale of Evesham but is nevertheless well represented in the area, and there are signs of development in the form of new plantations.

Of the 32 holdings, 16 were to a greater or lesser degree, engaged in apple growing. Their orchard area amounted to 104.14 acres or 7 per cent of the entire sample, and 34 per cent of the total fruit acreage. On three of these 16 holdings, the

apple was the principal crop, according to acreage. On 4 of the holdings all the trees have been planted since 1946.

For the purpose of detailed analysis, 11 holdings with an apple acreage of 52.27 acres provided information on the composition of the layout of their apple orchards. This particular area represented 52 per cent of the total apple acreage included in the survey.

The number of trees in the orchards in question, amounted to 7,516, showing on average, 144 trees to the acre with a planting distance of 15 x 20 ft. Of the total number, 5,896 trees were found in the young plantations, where a reasonable proportion of them was either already in bearing, or very nearly so. It is rather difficult to draw conclusions from this part of the data but a considerable proportion of new plantations shows a complete contrast to the plum orchards where so few new trees have been planted since the war.

With regard to the management of the orchards, the trees, both in the new and old plantations, were well maintained; in particular, they appeared to have been pruned regularly, as well as being adequately manured and sprayed. The very young plantations were still kept under arable conditions, but the older orchards, without exception, were grassed down. There was unfortunately not sufficient information to be able to comment upon the practices of grafting, pruning and manuring; the available information proved to be too sketchy for detailed examination, especially in view of the complex nature of these operations. Young trees were raised both by budding and grafting, practised in all possible forms. In one orchard for instance, the established root-stock happened to be the trunks of old Grosvenor, Victoria and Lane's Prince Albert trees onto which Ellison's Orange and Laxton's Fortune shoots were grafted. The technique of pruning, too, had been carried out in a number of ways to suit the requirements of the trees. The trees in the old orchards, especially those of the culinary varieties, were of half-standard size, whereas on the young plantations, they appeared to be mainly the bush type. From the manurial point of view, Sulphate of Ammonia, and Chilean Potash Nitrate seemed to be the most widely applied inorganic fertilisers; the organic manures used were mainly hoof and horn, bone meal and shoddy. As a rule, the spraying of trees in apple orchards is far more extensive than that usually carried out in plum orchards. Although the types of sprays favoured by individual growers varied considerably on the sample holdings, the times of

application of different sprays were well defined. On those three holdings, where apple growing was one of the major enterprises, the spraying programme consisted of winter, spring, and early summer washes. The winter, or the early spring wash, was carried out by the application of tar oil, or D.N.C., similar to the spraying of the plum orchards, but this operation had to be followed by another severe, or even more spring and early summer sprays applied at about fortnightly intervals. The spring sprays consisted of fungicide, such as Lime-Sulphur, Colloidal Sulphur, or a mercuric preparation, combined with various insecticides according to requirements of the prevailing circumstances. The insecticides used included D.D.T., Chlorocide, B.H.C., and also mercurated lead. On the smallest of the three holdings with a 4-acre orchard acreage, spraying was done by means of a knapsack sprayer, which, due to the fact that the trees were very young, was quite effective though tardy and took up a considerable amount of time. On all the other holdings, where the trees were more advanced in age, and covered a more appreciable acreage, power-assisted sprayers were used to carry out the operations.

As mentioned before, in the orchards of the 11 holdings there were 7,516 trees, representing 52.27 acres. Altogether there were 18 different varieties of apples grown in the orchards of which 5 were culinary and 13 dessert apples. The number of trees divided into varieties were as follows.

According to Table 24 the proportion of young trees under 10 years of age is 78 per cent of the total number. All the new orchards consist of dessert varieties, and, as far as the sample orchards are concerned, no culinary apples have been planted for at least 15 years. The culinary varieties, which represent 45 per cent of the old orchard trees, only account for some 9 per cent of the combined number of old and young trees. From the available data it is impossible to assess any changes of preference which may be taking place in the planting of apple orchards, due to the large number of young dessert trees on the one hand, and the complete absence of young culinary trees on the other. It is, however, quite evident that among the dessert apples Cox's, Lord Lamourne and Worcesters appear to be the most popular varieties. Of these varieties, the most favoured apple is undoubtedly the Cox's Orange Pippin, which tends to dominate the apple orchard to the same degree as the combined varieties of Victoria and Yellow Egg in the plum orchard. Of the culinary varieties, Bramley's and

Newton's are the only two of any specific commercial importance, although a number of other varieties are grown in the country on a fairly wide scale.

TABLE 24
Composition of Old and New Apple Plantations
According to Varieties

Varieties	Old Orchards		New Orchards		Total Orchards	
	No. of Trees	%	No. of Trees	%	No. of Trees	%
<i>Dessert Apples</i>						
Cox's Orange Pippin .	602	37	3,434	58	4,036	54
Lord Lambourne .	6	—	1,429	24	1,435	19
Worcester Pearmain .	189	12	292	4	481	7
Egremont Russet .	—	—	190	3	190	3
Ellison's Orange .	50	3	112	2	162	2
Laxton's Fortune .	—	—	117	2	117	2
Blenheim Orange .	—	—	100	2	100	1
Sunset .	—	—	100	2	100	1
Laxton's Superb .	31	2	50	1	81	1
Beauty of Bath .	6	—	42	1	48	1
Early Worcester .	—	—	30	1	30	—
Herring Pippin .	8	1	—	—	8	—
Ribston Pippin .	6	—	—	—	6	—
<i>Culinary Apples</i>						
Bramley's Seedling .	395	24	—	—	395	5
Newton Wonder .	272	17	—	—	272	4
Early Victoria .	25	2	—	—	25	—
Annie Elizabeth .	18	1	—	—	18	—
Lane's Prince Albert .	12	1	—	—	12	—
Total	1,620	100	5,896	100	7,516	100

The third top fruit crop grown on the sample holdings is the pear. Although pears are grown fairly widely in the Vale, the importance of the crop is somewhat limited since the acreage involved is never very extensive. Of the 32 holdings, there were as many as 17 where pears formed part of the layout of the orchard area, but the acreage was very small in comparison with the plum and apple acreage. The largest pear orchard in the sample was $3\frac{1}{4}$ acres, while the smallest was only one-tenth of an acre. The pear acreage of the sample holdings only amounted to 15.34 acres, representing 5 per cent of the total top fruit, and 1 per cent of the entire survey area. Ten holdings furnished information on the layout of their pear

orchards, and on these holdings, the number of pear trees amounted to 945 on approximately 6 acres. In a number of cases, it was difficult to ascertain the extent of the area occupied by the trees, as they did not always constitute a compact orchard area, but were found scattered in the old apple orchards. This sporadic location mainly affected the old trees; the young ones were always planted separately and formed properly laid-out orchards on their own. The following varieties were represented among the 945 trees.

TABLE 25
Number of Pear Trees According to Varieties

Varieties	No. of Trees	%
Conference . .	765	81
Laxton's Superb . .	132	14
Avonside . .	38	4
Burgemot . .	10	1
Total . . .	945	100

By far the most important variety is the Conference pear, and on the sample holdings all the young plantations consisted of this particular variety. The considerable proportion of new plantations established both on the sample holdings and in the Vale as a whole, indicate a steadily growing importance of pear production with a distinct preference for the Conference variety. Besides Conference pears, however, many other choice varieties are grown in the Vale of Evesham, which were not represented on the sample holdings. Of these varieties the most important ones are the Catillac, Clapp's, Dr. Jules, Comice, Fertility, Pitmaston and William.

The only remaining orchard fruit is the cherry, whose significance is indeed very limited. There was scarcely any holding where the fruit was grown on any appreciable acreage. Of the 32 sample holdings, there was only one where a small proportion of the layout was devoted to a young cherry plantation; the fruit consisted of only one single sour variety, so that the available information was not sufficient for detailed examination.

Average Number of Crops Grown on the Holdings

Details of the acreage distribution of crops have already

accounted for the type and varieties which were grown on the holdings, and gave ample indication of their relative importance within the pattern of the layout. These data, together with those on multiple-cropping, provided a fairly comprehensive picture of the pattern of land utilisation, but cannot be regarded as being fully informative in respect of the average number of crops grown on the holdings, nor with regard to single crops occupying only one, or several distinct plots of land.

According to the acreage distribution figures, there were at least 40 different crops, with innumerable varieties, grown on the holdings, and by means of multiple-cropping a good many of them were produced jointly on the same piece of ground. In assessing the number of crops which might feasibly be grown on an average holding, it is quite obvious that the whole 40 crops could not possibly be accommodated on one holding no matter what the acreage may be. In the list of preference, some crops may have a better chance of being included in the catalogue of probable crops than others. In the list of probable crops, it is not always the relative position of the crop to the aggregate acreage which decides its rank of priority; it may also depend on the rate of preference, shown by the holdings, for its cultivation. For instance, in the survey sample, Brussels sprouts were grown on 25 holdings, whereas cherries were only grown on one. Thus, in the average pattern of crop layout, the inclusion of sprouts had a far greater rate of preference than that of cherries.

In order to ascertain the average number of crops grown on the 32 holdings, the acreage of sprouts "bought on the ground" has also been taken into account. Although this particular area does not belong to the actual layout of the holding, its inclusion in the sample acreage may be regarded as justified, bearing in mind that this is a customary practice. Sprout growing is an important part of the economy of the Vale of Evesham holdings, for, on many of them, this crop provides the main income during the long winter months. Due to possible changes in the system of crop rotation, however, or to the greater demand for land by other crops, it is not always possible for a grower to plant as large an acreage of sprouts on his land as he thinks necessary, so in such cases, he either rents a piece of sprout-growing land on a seasonal basis from another grower, or purchases the growing crop as it stands. Of the 32 sample holdings, there were 5 growers who made use of this method of increasing their area of arable

land, and this purchased acreage amounted to 59 acres, or 32 per cent of the 154.35 acres of sprouts grown on their own land. With the exception of the under-10-acre holdings, the purchase of growing sprouts was practised by all sizes of holdings. Holdings in the 10-50-acre group purchased 16 acres of sprouts and in the 50-100-acre group, 23 acres, while those in the over-100-acre group bought 20 acres. As most of these holdings grew sprouts on their own land as well, the enterprise has no effect on the number of crops, but it somewhat increased the number of the plots where sprouts were grown.

With regard to the different crops grown on the 32 holdings, there was a wide variation in their numbers from holding to holding. Some holdings were growing a good many, whereas others managed to maintain a certain level of production with a limited number of crops. The minimum number of crops grown by any holding was 4, and the maximum 24, the general range being from 8 to 17. This variation is shown in Table 26.

TABLE 26
Number of Crops Grown on Holdings

1-10 Acre Group		10-50 Acre Group		50-100 Acre Group		Over 100 Acre Group	
Code No. of Holding	No. of Crops	Code No. of Holding	No. of Crops	Code No. of Holding	No. of Crops	Code No. of Holding	No. of Crops
W.R. 15	8	W.R. 24	10	W.R. 13	11	W.R. 16	22
W.R. 23	8	W.R. 29	16	W.R. 17	12	W.R. 33	14
W.R. 36	16	W.R. 30	8	W.R. 100	14	W.R. 35	9
W.R. 37	10	W.R. 44	6	—	—	W.R. 39	16
W.R. 42	13	W.R. 46	14	—	—	W.R. 67	11
W.R. 43	4	W.R. 51	12	—	—	—	—
W.R. 58	16	W.R. 62	12	—	—	—	—
W.R. 60	12	W.R. 65	12	—	—	—	—
W.R. 81	11	W.R. 69	11	—	—	—	—
W.R. 95	9	W.R. 70	17	—	—	—	—
—	—	W.R. 77	17	—	—	—	—
—	—	W.R. 84	9	—	—	—	—
—	—	W.R. 93	8	—	—	—	—
—	—	W.R. 96	14	—	—	—	—
Total	107	—	166	—	37	—	72
Average	11	—	12	—	12	—	14

According to Table 26 there were altogether 382 crop enterprises carried out on the 32 holdings, which gives an

average figure of 12 crops per holding. This figure is very much the same in the various acreage size-groups, and shows 11 crops in the 1-10-acre group and 12 in the 10-50 and 50-100-acre groups; the number of crops grown in the over-100-acres group amounted to 14. Taking into account the total crop acreage together with double-cropped, inter-cropped and purchased crop areas, the figure amounts to 1,417.58 acres, and the average acreage of one single crop works out at 3.7 acres. In the light of the average crop acreages for each size-group, the relationship between the average acreage of the holdings and that of the single crop is shown as follows:

Acreage Groups	Average Crop Acreage		Average Acreage Per Crop
	Per Holding	Acres	
Acres			Acres
1-10		10.7	1.0
10-50		21.6	1.8
50-100		81.0	6.8
Over 100		153.0	11.0

As can be seen, the average crop acreage of the holding and the average acreage of the crop is in direct proportion, showing the same increasing trends in the acreage size-groups. This is mainly due to the similarity in the average number of crops grown in the different size-groups. The higher average acreage per holding shown for the 1-10-acre group may be ascribed to the greater multiple-cropped area of the holdings included in this particular group.

The number of crops may have a certain bearing on the overall financial results of a holding. For instance, there may be too many crops on a holding, so preventing the grower from giving sufficient individual attention to each crop. Consequently, this lack of attention might easily result in lower crop returns, even in financial failure. By dividing the 32 holdings into two groups, one growing not more than 12 crops and the other over 12 crops, the production, costs and margin per acre give the following picture.

	Production	Costs	Margin
	£	£	£
Holdings with less than 12 crops	267	210	+57
Holdings with over 12 crops	138	116	+22

The above figures seem to confirm the point that the more reasonable the number of crops grown, the better the financial results. This tends to suggest the advantage of the specialist grower who devotes his land to only a very limited number of crops. Another feature of these figures is that a large number of crops does not necessarily increase the costs.

As mentioned before, the average number of crops, grown on the 32 holdings was 12. In deciding on individual crops and the acreage which they might occupy in the average pattern of layout, the main criterion is not so much their relative values of importance in the acreage distribution, but rather the rate of preference for their cultivation shown by individual holdings. In drawing up a list of the 12 most likely crops, the rate of preference is bound to be rather high, especially when taking into consideration at least 45–50 per cent of the holdings that had been interested in growing each crop. In this manner, Brussels sprouts, for instance, which were grown on 25 holdings and represented 78 per cent of the sample, is one of the crops to be included in the list of the 12 crops, whereas the chances of cherries grown only on one holding, showing a rate of preference of not more than 3 per cent, is far too remote for consideration.

Using this method to ascertain the average pattern of crop layout on the 32 holdings, the list of the 12 most probable crops, together with bare fallow and land occupied by buildings, roads, etc., would show the following picture.

TABLE 27
Average Pattern of Crop Layout

No.	Crops	No. of Holdings	Per Cent of 32 Holdings	Total Sample Acreage	Acreage in Average Lay-out
1	Runner, Dwarf Beans	27	84	55.13	2.7
2	Brussels sprouts	25	78	246.45	13.4
3	Plums	24	75	177.34	9.6
4	Cabbage	20	63	104.10	5.9
5	Onions (Salad)	18	56	18.90	1.1
6	Peas	18	56	68.45	3.7
7	Apples	17	53	105.14	5.9
8	Pears	17	53	15.64	1.1
9	Beetroot	17	53	13.90	0.5
10	Lettuce	17	53	23.30	1.1
11	Broad Beans	16	50	31.68	1.5
12	Gooseberries	15	47	19.10	1.1
Total Crops		—	—	879.13	89
Bare Fallow		23	72	78.70	8
Buildings etc.		21	66	30.25	3
Total Acreage		—	—	988.08	100
Less Purchased Crop Area		—	—	167.90	—
Net Acreage		—	—	820.18	47.4

As can be seen from the foregoing Table, the chief aim was to illustrate the layout of the average holding in such a manner that the acreages of the various crops and the other pieces of land would add up to the average size of 47.4 acres. The acreages of the single crops also include purchased crops and multiple-cropped areas, so it was necessary to determine the extent to which the gross acreage should be reduced in order to arrive at the average acreage of the 32 holdings. In the sample acreage the areas of purchased crops and multiple-cropping amounted to 190.63 acres, or 13 per cent of the total net acreage of 1,516.60 acres. By applying this percentage figure to the average holding, the area in question works out at .6 acres, which corresponds satisfactorily with the difference between the gross and net acreage. Details of the distribution of this area among the various crops are as follows.

<i>Crops</i>	<i>Sample</i>	<i>Acreage</i>	<i>Average Layout</i>
	Acres	%	Acres
Brussels sprouts . . .	92.10	55	3.3
Cabbage . . .	22.15	13	0.8
Onions . . .	2.85	2	0.1
Runner, Dwarf Beans . . .	11.95	7	0.4
Peas . . .	12.80	8	0.5
Lettuce . . .	8.30	5	0.3
Gooseberries . . .	17.75	10	0.6
Total . . .	167.90	100	6.0

TABLE 28
Distribution of Crops in Average Layouts According to Size-Groups

No.	Crops	1-10 Acre Group			10-50 Acre Group			Acreage in Layout
		No. of Holdings	Per Cent of 12 Holdings	Sample Acreage	Acreage in Layout	No. of Holdings	Per Cent of 12 Holdings	
1	Brussels sprouts	8	67	10.55	1.3	11	92	59.45
2	Runner, Dwarf Beans	8	67	4.40	0.5	12	100	15.85
3	Plums	8	67	22.95	2.5	9	75	32.79
4	Gooseberries	8	67	10.20	1.3	12	—	13
5	Beetroot	7	58	1.80	0.2	7	—	—
6	Onions (Salad)	7	58	3.85	0.5	7	38	8.05
7	Lettuce	6	50	5.50	0.6	7	38	6.92
8	Flowers	6	50	2.80	0.3	—	—	—
9	Asparagus	5	42	5.45	0.7	—	—	—
10	Peas	5	42	3.30	0.3	7	38	19.15
11	Cabbage	—	—	—	—	9	75	8
12	Strawberries	—	—	—	—	67	26.05	10
13	Pears	—	—	—	—	8	3.60	1
14	Apples	—	—	—	—	7	58	0.3
15	Cauliflower	—	—	—	—	6	50	31.52
16	Broad Beans	—	—	—	—	6	50	11.40
17	Loganberries	—	—	—	—	6	50	4
18	Grass Seed	—	—	—	—	—	—	—
19	Wheat	—	—	—	—	—	—	—
20	Potatoes	—	—	—	—	—	—	—
21	Mangolds	—	—	—	—	—	—	—
22	Barley	—	—	—	—	—	—	—
	Total Crops	—	—	70.80	87	—	—	229.10
	Bare Fallow	—	—	8.95	11	1.0	9	26.75
	Grassland	—	—	—	2	0.2	—	10
	Buildings	5	42	1.60	—	8	57	—
	Total Gross Acreage	—	—	81.35	100	9.1	—	260.55
	Less Purchased etc. Acre	—	—	17.15	—	1.7	—	45.85
	Net Acreage	—	—	64.20	—	7.4	—	214.70
								21.3

No.	Crops	50-100 Acre Group				Over 100 Acre Group			
		No. of Holdings	Per Cent of 3 Holdings	Sample Acreage	Acreage in Layout	No. of Holdings	Per Cent of 5 Holdings	Sample Acreage	Acreage in Layout
1	Brussels sprouts	2	67	38.15	15.4	4	80	138.30	30.5
2	Runner, Dwarf Beans	67	67	11.00	4.5	5	100	22.88	6.1
3	Plums	100	100	19	17.2	4	80	79.80	16.3
4	Gooseberries	67	4.85	2	1.8	—	—	—	—
5	Betroot	—	—	—	—	4	80	8.00	2.0
6	Onions (Salad)	2	67	3.00	1	0.9	—	—	—
7	Lettuce	—	—	—	—	4	80	10.88	2.0
8	Flowers	—	—	—	—	—	—	—	—
9	Asparagus	—	—	—	—	—	—	—	—
10	Pes.	2	67	9.0	4	3.6	3	60	37.00
11	Cabbage	67	67	10.50	4.5	5	100	64.45	7
12	Strawberries	2	67	11.5	5	—	—	—	—
13	Pears	100	4.35	2	1.8	—	—	—	—
14	Apples	3	100	38.05	17	15.4	3	60	29.50
15	Cauliflower	—	—	—	—	3	60	19.40	2
16	Broad Beans	—	—	—	—	3	60	14.00	1
17	Loganberries	2	67	6.40	3	2.7	—	—	—
18	Grass Seed	2	67	7.05	4	3.6	—	—	—
19	Wheat	—	—	—	—	4	80	191.80	40.6
20	Potatoes	—	—	—	—	—	60	22.00	4.1
21	Mangolds	—	—	—	—	3	60	3.00	0.1
22	Barley	—	—	—	—	2	40	31.00	6.1
	Total Crops	—	—	183.70	84	75.9	—	673.01	142.3
	Bare Fallow	—	—	67	7.15	5	100	35.85	8.1
	Grassland	—	—	100	21.40	5	100	234.00	48.9
	Buildings	—	—	100	6.25	5	100	17.70	4.1
	Total Gross Acreage	—	—	—	—	—	—	960.56	203.4
	Less Purchased Crop Area	—	—	—	44.10	15.0	—	68.38	14.0
	Net Acreage	—	—	—	176.40	75.3	—	892.18	189.4

From the above figures it can be seen that the sprouts area is most affected by the practice of additional cropping. In fact, the 3.3 acres absorb not less than 24 per cent of the 13.4 acres of sprout ground shown in the average layout. Of the 3.3 acres, purchased crops amount to 1.3 acres or 21 per cent of the 6 acres of additional cropping land. The remaining area of sprouts together with the acreages of all the other crops, show to what extent the crops in question were produced on the grower's own land by means of double- and inter-cropping.

In considering the possible financial turnover of the layout, crop returns may be estimated by the use of average receipts of sales for the holdings, based on their last six years' trading. In the light of these standard values, crops included in the layout would show the following turnover.

Crops	Area	Average Per Annum		
		Receipts Per Acre	Total Receipts	%
Brussels sprouts	13.4	25	123	1,648
Runner, Dwarf Beans	2.7	5	197	532
Plums	9.6	18	107	1,027
Cabbage	5.9	11	156	920
Onions	1.1	2	387	426
Peas	3.7	7	119	440
Apples	5.9	11	107	631
Pears	1.1	2	56	62
Beetroot	0.5	1	123	61
Broad Beans	1.5	2	85	127
Lettuce	1.1	3	255	280
Gooseberries	1.1	2	78	86
Fallow, etc.	5.8	11	—	—
Total	53.4	100	—	6,240
				100

According to these figures the total turnover amounted to £6,240 or £132 per acre, based on the net acreage of the layout which was 47.4 acres. In relating the proportional distribution of receipts to that of acreage, individual crops show only a slight variation in their respective values. Of the 12 crops, the proportion of receipts was higher than that of the acreage distribution for 5 of them while it was lower for 4; but for the remaining 3 crops there was no difference.

The preference for growing the above mentioned 12 crops may be regarded as typical of the sample as a whole, but it is evident that in the various size-groups the preference may

sway to some other crops, resulting in an entirely different combination of crops for each type of holding of a particular size. These different patterns of layout are shown in Table 28. As can be seen from the details of this Table, the combination of crops and the extent to which they are used in the four patterns differ considerably from each other. There are altogether 22 crops which make up the layouts of the four size-groups, and of these only seven are to be found in most groups. Brussels sprouts, runner and dwarf beans, plums and peas are represented in all the four, whilst onions, cabbage and apples occur in three of the size-groups. In the 1-10-acre group asparagus and flowers are the characteristic crops, but they do not occur in any other size-group.

The distinctive crops in the 10-50-acre group are loganberries and grass seed, and in the over-100-acre group cereals, potatoes and mangolds. Of the 10 crops shown in the 1-10-acre group, plums occupy the greatest, namely 28 per cent of the total gross acreage of 9.1 acres. On a small holding with an actual acreage of only 7.4 acres, a plum orchard of 2.5 acres seems to be a drawback rather than an asset, since the orchard receipts, even if they are supported by a certain amount of inter-cropping, say, with gooseberries, are not sufficient to provide a turnover comparable with such high value crops as early cauliflower, salad crops, or tomatoes, which are more suitable for this type of holding. On holdings in the larger size-groups, however, the extent to which single crops may be accommodated is of somewhat less importance, since the greater acreage offers more flexibility in cropping the land. In the patterns of both the 1-10-, and 10-50-acre groups, the extent of bare fallow seemed to be too high at 1 acre and 2.5 acres respectively, but it was largely due to the fact that in both groups more land had been purchased but could not be turned into production during the 1955/56 period. Grassland is the main feature of the two larger groups being 12 per cent of the net acreage in the 50-100-, and 26 per cent in the over-100-acre group. The areas occupied by buildings, roads and headlands, etc., are more or less in proportion with the total acreage of the four patterns, being 2 to 3 per cent.

All four patterns include a certain area of multiple-cropping together with the purchased sprout crop acreage. In the 1-10-acre group there is no purchased crop acreage, but all the other groups include an allowance for this particular type of enterprise. In accordance with the proportional shares which these areas represent on the sample holdings,

their extent in the patterns amount to 1.3 acres out of 4.5 acres in the 10-50-acre group; 4.7 out of 15 acres in the 50-100-acre group, and to 2.2 out of 14 acres in the over-100-acre group. In the light of the net acreages of the four patterns the percentage acreages of the additional cropping were as follows.

<i>Acreage Groups</i>	<i>Acres</i>	<i>%</i>
1-10	:	23
10-50	:	21
50-100	:	20
Over 100	:	7

On the whole, without taking the areas of the purchased sprout crop into account, these figures correspond satisfactorily with those previously derived from the results of the acreage distribution of the holdings. Actually, in ascertaining the various patterns of layout, the calculation was based on the original gross acreage of the holdings; the difference between this and the average net acreage was the area of additional cropping. Details as to how this area is divided between the various crops is shown in Table 29. From this table it can be seen that altogether there are 12 crops which have a share in the additional cropped acreage. Although this number of crops may seem rather high, being 55 per cent of the 22 crops included in the various patterns of layout, it appears, to some degree, more proportionate when one considers that on the 32 holdings, 24 of the 40 crops grown were involved in double and inter-cropping. With regard to the various size-groups, the 1-10-, and 50-100-acre patterns comprised 5 crops each, whereas the 10-50- and over-100-acre groups had 6 and 8 crops respectively. In the 1-10-acre group, gooseberries inter-planted between plum trees showed the highest acreage, whereas in the other groups sprouts had the highest inter-planted acreage, even discounting the purchased crop acreage. The multiple-cropped area of sprouts in the 10-50-acre group represents 1.3 acres, or 30 per cent of the total area in question; in the 50-100-acre group, it works out at 1.7 acres or 11 per cent, and in the over-100-acre group at 2.6 acres or 19 per cent. Thus, the proportion of this crop in the double and inter-cropped area, surpasses that of all other crops, with the exception of cabbage in the over-100-acre group and strawberries in the 50-100-acre group.

With regard to the financial aspects of the four patterns of layout, the results of a possible turnover are given in Table 30.

TABLE 29
Distribution of Multiple-Cropped and Purchased Crop Areas in the Average Layouts

No.	Crops	1-10 Acre Group		10-50 Acre Group		50-100 Acre Group		Over 100 Acre Group	
		Sample	Layout	Sample	Layout	Sample	Layout	Sample	Layout
1	Brussels sprouts	Acres 1.60	% 0.2	Acres 26.75	% 58	Acres 27.75	% 62	Acres 36.00	% 53
2	Runner beans	0.20	1	4.85	—	4.85	11	6.50	10
3	Gooseberries	10.00	58	0.9	—	—	—	—	—
4	Beetroot	0.10	1	—	—	—	—	—	—
5	Onions	0.45	3	0.1	0.40	1	—	2.00	3
6	Lettuce	3.30	19	0.3	4.40	9	0.4	0.63	1
7	Peas	1.30	1	4.50	10	0.5	2.00	5	0.8
8	Flowers	0.20	8	0.2	—	—	—	5.00	7
9	Cabbage	—	—	—	3.30	7	0.3	1.2	—
10	Strawberries	—	—	—	1.25	3	0.1	6.00	14
11	Cauliflower	—	—	—	0.40	1	—	2.1	—
12	Mangolds	—	—	—	—	—	—	1.00	1
	Total	17.15	100	1.7	45.85	100	4.5	44.10	100
								15.0	68.38
									100
									14.0

As can be seen from the details of this Table, the combination of crops shown in the four patterns, seems to be quite satisfactory in providing adequate sums of gross turnover for each size-group. It is perhaps only the 1-10-acre group where the receipts might have shown a higher total than £1,258, especially if emphasis had been laid on more valuable crops than plums and gooseberries. In the light of the average net acreages of the four size-groups, the receipts per acre were as follows.

<i>Acreage Groups</i>	<i>Receipts per Acre</i>
Acres	£
1-10 . . .	172
10-50 . . .	152
50-100 . . .	128
Over 100 . . .	72

From the above figures it can be seen that the combination of crops in the 1-10-acre group yielded the highest receipts per acre. This may be confirmed by relating the patterns of the 10-50- and 50-100-acre groups to the average acreage for this particular group of holdings; the different combination of crops would have the effect of producing average returns per acre of less than £172. Actually, the 10-50-acre pattern would produce £160 per acre, and the 50-100-acre pattern £140 per acre. As far as the receipts of the 50-100- and over-100-acre groups are concerned, they make no allowance for revenue from grassland. However, due to the relatively small area involved, this discrepancy makes no appreciable difference to the overall results.

To be able to comment on the profitability of the four patterns of layout, adequate data would be required on costs for each crop involved and these would be set against the respective returns. No such information is available so the costs can only be estimated by the use of some auxiliary data derived from the production/cost relationship of the sample holdings. However, as these figures refer not only to the crop production but to the entire business, they have had to be amended by omitting sums spent on feeding stuffs, and ignoring receipts derived from the sale of livestock. All other revenue and expenditure can be taken into account, including the cost of unpaid labour, and depreciation of machinery, etc. In view of the fact that livestock production is of only limited importance on the sample holdings, the required amendment

TABLE 30
Distribution of Crops and Receipts in Average Layouts

No.	Crops	Receipts per Acre	1-10 Acre Group			10-50 Acre Group			50-100 Acre Group			Over 100 Acre Group					
			Acreage		Receipts	Acreage		Receipts	Acreage		Receipts	Acreage		Receipts			
			Acres	%	£	Acres	%	£	Acres	%	£	Acres	%	£			
1	Brussels sprouts	123	1.2	1.3	£1.48	5.9	2.3	£726	15.4	1.7	£1,894	20	3.752	27			
2	Runner, Dwarf Beans	197	0.5	1.5	£0.99	1.8	5.6	£315	4.5	5	£886	9	1,202	9			
3	Plums	107	2.5	2.8	£268	3.4	13	£364	11	17.2	£1,840	19	16.3	13			
4	Gooseberries	78	1.2	1.3	£0.94	7	—	—	1.8	2	£140	1	1,744	13			
5	Beetroot	123	0.2	0.2	—	25	2	—	—	—	—	—	—	—			
6	Onions (salad)	387	0.5	0.5	£193	15	0.8	£310	10	0.9	£1	348	4	246	2		
7	Lettuce	255	0.6	0.6	£153	12	0.8	£204	6	—	—	—	—	—			
8	Flowers	494	0.3	0.3	£148	12	0.3	£204	6	—	—	—	—	—			
9	Asparagus	157	0.6	0.6	£94	8	—	—	—	—	—	—	—	—			
10	Peas	119	0.3	0.3	£36	3	2.1	£8	—	3.6	4	428	5	8.1	4		
11	Cabbage	156	—	—	—	—	2.5	£10	390	12	4.5	5	702	7	964	7	
12	Strawberries	241	—	—	—	—	0.3	£1	72	2	4.5	5	1,085	11	2,215	16	
13	Pears	56	—	—	—	—	0.3	£1	17	1	1.8	2	101	1	—	—	
14	Apples	107	—	—	—	—	3.1	£12	332	10	15.4	17	1,648	17	633	4	
15	Cauliflower	166	—	—	—	—	1.0	£4	166	5	—	—	—	—	681	5	
16	Broad Beans	85	—	—	—	—	1.0	£4	85	3	—	—	—	—	2.0	1	
17	Loganberries	135	—	—	—	—	—	—	—	3	—	—	—	—	170	1	
18	Grass Seed	60	—	—	—	—	—	—	—	3.6	4	—	—	—	—	—	
19	Wheat	25	—	—	—	—	—	—	—	4	216	2	—	—	40.6	—	
20	Potatoes	80	—	—	—	—	—	—	—	—	—	—	—	—	4.1	19	
21	Mangolds	50	—	—	—	—	—	—	—	—	—	—	—	—	1.0	8	
22	Barley	30	—	—	—	—	—	—	—	—	—	—	—	—	0.1	3	
Total		—	—	—	—	—	—	—	—	—	—	—	—	—	183	1	
Other Land		—	—	—	—	—	—	—	—	—	—	—	—	—	142.3	70	
Total Acreage and Receipts		—	—	—	—	—	—	—	—	—	—	—	—	—	61.1	30	
Total Acreage		9.1	100	1,258	100	25.8	100	3,231	100	90.3	100	9,632	100	203.4	100	13,668	100

scarcely affects overhead costs. According to this revised information, costs on the 1-10-acre holdings absorbed 74 per cent of the revenue while, on the 10-50-acre holdings it was 84 per cent; on the 50-100-acre holdings costs amounted to 87 per cent and on the over-100-acre holdings to as much as 92 per cent. For the average size-groups of the 32 holdings, costs represented 80 per cent of receipts. By applying these figures to the various patterns in question, their profitability showed the following results.

	<i>Acreage Groups</i>				
	1-10	10-50	50-100	Over 100	Average
	£	£	£	£	£
Revenue per acre . . .	172	152	128	72	132
Costs per acre . . .	127	128	111	66	106
Margin per acre . . .	45	24	17	6	26
Margin per Holding . . .	329	511	1,278	1,136	1,232

From the above results, it can be seen that amongst the various patterns of layout the 1-10-acre group showed the highest margin per acre. However, in spite of this favourable result, the net income of £329 is considerably less than that shown for holdings in the larger size-groups. In order to improve the net income, a holding of 7.3 acres should aim at a margin of £71 per acre to be at all comparable with a holding of 21.3 acres; or at a sum of £175 per acre to attain a net income similar to that of a holding of 75.2 acres; even for a holding of 47.4 acres, which is the average size of the 32 sample holdings, a margin of £169 should be aimed for.

When describing the structural layout, it was mentioned that on most of the holdings the land is divided between several distinct units. Needless to say, in the functional layout each of these separate units has its own particular pattern of crop production. Although the average grower raises twelve different crops, he does not necessarily simplify his cropping by growing any particular crop on the whole of his acreage or even on one part of the holding. On the contrary, unless certain physical factors determine the location of a crop, it is frequently found that the same crop is grown on several parts of the holding at the same time. This fragmentation of crop layout is illustrated in the following table.

TABLE 31
Layout of Crops According to Number of Fields

Crops	Acreage Groups				
	1-10	10-50	50-100	Over 100	Average
	No. of Fields	No. of Fields	No. of Fields	No. of Fields	No. of Fields
Brussels sprouts .	2	2	3	2	2
Runner, Dwarf Beans .	2	1	2	1	1
Plums	1	2	2	2	2
Gooseberries	1	—	1	—	1
Beetroot	1	—	—	1	1
Onions	2	2	1	—	2
Lettuce	2	1	—	1	1
Flowers	3	—	—	—	—
Asparagus	1	—	—	—	—
Peas	1	2	1	2	2
Cabbage	—	2	3	2	2
Strawberries	—	1	2	—	—
Pears	—	1	2	—	1
Apples	—	1	3	1	2
Cauliflower	—	1	—	2	—
Broad Beans	—	1	—	1	—
Loganberries	—	—	1	—	—
Grass Seed	—	—	1	—	—
Wheat, Barley	—	—	—	4	—
Potatoes	—	—	—	1	—
Mangolds	—	—	—	1	—

Apart from physical conditions, such, for instance, as soil or water supply, there are other factors which may be responsible for the divided layout of the individual crops. One of these is the size of the holding and the degree of fragmentation. On a small-holding where only a limited acreage is available, it is difficult to group crops in such a manner as to occupy only one particular part of the ground. While complying with the overall financial policy of the holding, whereby each crop should contribute a certain amount of income to the total revenue, it might easily happen that the required acreage suitable for a certain crop cannot be found on one compact piece of land, but can only be found on two or more fields lying quite apart from each other. This situation may be further aggravated if the holding is divided into several distinct units. On such holdings, the fragmented layout may result in a considerable scatter of individual crops, and as shown in Table 31 even orchards may have several distinct locations on the same holding. The production of different

varieties of crops is another factor which may be responsible for the divided layout, since many of these varieties are regarded as distinct crops and naturally occupy a layout distinct from other varieties. One such composite crop is flowers, and as a grower may raise more than one variety, for instance wall-flowers and statice, there is no reason to compel him to group both of them on one part of the holding. The same reason applies to a number of crops, such as cauliflower, cabbage, onions and tomatoes.

System of Crop Rotation

Strictly speaking, the rotation of crops is a systematic utilisation of land, whereby crops of different character are grown in succession on the same piece of ground in order to preserve the soil from exhaustion and the infection of disease. On horticultural holdings, where crops follow each other in continuous succession during the year, a rather complex pattern of crop rotation is evolved. Although many crops may be grown on a holding, individual crops should have their eligible successors so that their cultivation would satisfy both theoretical requirements and the grower's own practical considerations.

It is undoubtedly true to say that no grower in the Vale would attempt to deny the wisdom of "ringing the changes" when it comes to selecting the succeeding crops. In making a decision in connection with any theoretically acceptable crop rotation there are a number of factors, both technical and economic, which present difficulties to the grower. A mere change between crops belonging to the same botanical group, for example cabbage after sprouts, would not constitute a crop rotation in the strict sense. On the other hand, a suitable crop rotation, such as roots after brassicas, may mean that some crops would have to be forsaken for one season, or grown on a smaller acreage; this would hardly satisfy the grower's aim of attempting to ensure a certain income based on the annual returns of individual crops. But, even if these considerations were reconcilable with the rules of crop rotation, there are still a number of other factors which call for substitution and improvisation in selecting the succeeding crop. Among others, the major limitations in complying with the theoretically acceptable patterns of crop rotation are the prevailing weather conditions, the size and soils of the holding, and the reliance on certain crops. The final decision in selecting a succeeding crop often depends on the weather conditions of the year in

question. A climatically late season may have quite a different bearing on the grower's decision than an early one. For instance, a late season may delay the drilling say of spring onions on a field where sprouts have been grown, and consequently the grower is compelled to grow onions on any other available piece of land no matter what kind of crops occupied it previously. On the other hand, an early season may encourage an increased scale of double-cropping with such combinations of crops, as stick beans after peas, which otherwise would be considered incompatible. In any case, the selection of the second crop must be in conformity with the size of the holding and the general condition of its soils. In unfavourable conditions, a large holding can afford to leave a certain part of the acreage fallow, whereas on a small holding such a course would mean a loss of indispensable income. On a large holding, it is quite feasible to rotate extensive types of crops by others of similar nature, for example, cereals after sprouts, but on a small-holding, where the level of production is maintained by growing intensive types of crops, such a change in cropping would result in a sharp fall in the income and would affect the entire economy of the holding. Cultivations are governed by the actual condition of the soil, which may be too wet or too dry at a critical time, so the small grower cannot select his crops according to patterns of crop rotation, but is compelled to utilise the land when and where it becomes fit for any suitable crop to be sown or planted. A further difficulty in maintaining a systematic crop rotation is the reliance on certain crops. There are many holdings which grow a high proportion of brassicas, and it is thus inevitable that on some of the ground at least a second brassica crop has to be planted. In order to maintain a pattern of crop rotation, the only alternative would be a drastic reduction in the brassica acreage in every other year, a course which would not appeal to the grower who attempts to maintain the same acreage of a given crop each year. Stability in the acreage distribution of crops is likely to keep the returns and costs steady. In view of the reliance on certain crops, the choice of a succeeding crop is governed by the availability of land at sowing and planting time. If for example, it is the right time to plant onions to be pulled the following spring, then the grower will have to drill those onions as soon as the land is available and it may well be on the same plot of ground as that from which the current year's crop has recently been cleaned.

In the present survey, an attempt was made to collect some concrete evidence of the crop changes, which took place on the sample holdings. For this particular purpose, the crops grown on any given piece of land have been recorded for a period of two years, namely January 1955 to December 1956. However, the data thus compiled only refer to those changes which affected the acreages of the annual crops, and have no bearing on the changes of those occupied by permanent crops. On the whole, it was possible to establish crop changes on 764.5 acres, which is 77 per cent of the 996.2 acres of annual crops on the sample holdings. The relationship between preceding and succeeding crops and their correspondence with the sample acreages is shown in Table 32.

According to these figures, there is a very close resemblance between the details of the three acreage distributions, but the difference in relative terms between all the individual crops is quite insignificant, being around 10 per cent. Although these figures do not furnish any evidence on the presence of any form of crop rotation, they do indicate that the majority of holdings grow the same crops year after year on very much the same acreage. The extent of the acreage to which cropping changes had occurred was not more than 71.5 acres, being slightly less than 10 per cent of the 764.5 acres. In the light of the acreage of the preceding crops, the changes in the acreage of succeeding crops can be set out as follows:

Crops	Increase		Decrease	
	Acres	%	Acres	%
Brassicas	—	—	46.1	7
Roots, Onions	28.0	4	—	—
Legumes	32.7	4	—	—
Others	—	—	1.5	—
Flowers	0.7	—	—	—
Farm Crops	10.1	2	—	—
Fallow	—	—	23.9	3
Total	71.5	10	71.5	10

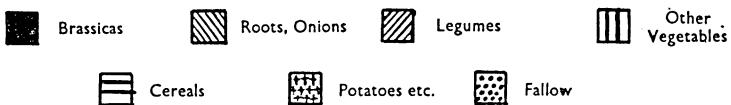
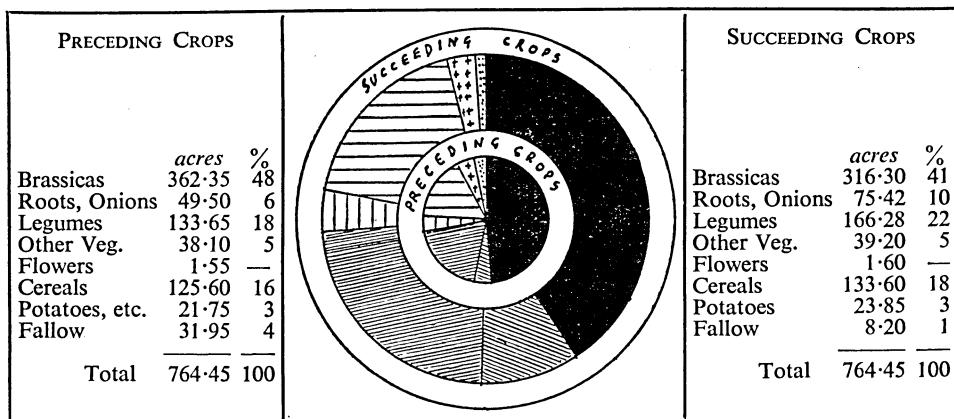
As can be seen, the changes in cropping are indeed very moderate, and whatever system of rotation may exist in the layout of crops, it is certainly not carried out at the expense of any particular crop. The similarity between the layouts of the preceding and succeeding crops is illustrated in Diagram 13.

TABLE 32
Changes in Acreage Distribution of Crops

Crops	Sample		Succeeding Crops		Preceding Crops	
	Acres*	%	Acres	%	Acres	%
Brussels sprouts . .	246.5	25	163.1	21	189.7	25
Cabbage . . .	104.1	10	112.5	15	128.8	17
Cauliflower . . .	41.4	4	40.7	5	43.9	6
Total Brassicas . .	392.0	39	316.3	41	362.4	48
Carrots	2.6	—	0.6	—	1.8	—
Parsnips	1.7	—	0.6	—	1.5	—
Beetroot	13.9	1	28.2	4	13.7	2
Leeks	6.5	1	18.4	2	8.0	1
Onions	18.9	2	27.6	4	24.5	3
Total Roots and Onions	43.6	4	75.4	10	49.5	6
Broad Beans . .	31.7	3	32.5	4	31.2	4
Runner, Dwarf Beans .	55.1	6	58.4	8	37.7	5
Peas	68.5	7	75.4	10	64.8	9
Total Legumes . .	155.3	16	166.3	22	133.7	18
Lettuce	23.3	2	25.1	3	30.1	4
Radishes	2.6	—	2.6	—	2.1	—
Tomatoes	5.1	1	5.3	1	1.2	—
Sundries	25.8	2	5.7	1	4.7	1
Total Other Vegetables	56.8	5	38.7	5	38.1	5
Flowers	4.6	1	2.1	—	1.5	—
Cereals	227.6	23	133.6	18	125.6	16
Kale and Mangolds . .	11.2	1	1.0	—	1.0	—
Potatoes	26.4	3	22.9	3	20.8	3
Total Farm Crops . .	265.2	27	157.5	21	147.4	19
Fallow	78.7	8	8.2	1	31.9	4
Total	996.2	100	764.5	100	764.5	100

* Includes double and inter-cropped areas.

DIAGRAM 13
Layout of Preceding and Succeeding Crops



In order to form a more definite opinion of whether or not any specific pattern of crop rotation exists on the sample holdings, it is necessary to re-arrange the acreage figures of the crops so that the sequence and the extent of the acreage between the first and second crops can be observed. In this way, it is possible to ascertain how the acreage of the first crop has been split up between the various succeeding crops, and on what acreage there was no change when the same crops followed each other. This combined form of acreage distribution of the preceding and succeeding crops is shown in Table 33.

As can be seen from Table 33 the acreages of the first or preceding crops are shown in the vertical columns, whereas those of the second or succeeding crop are in the horizontal columns. In this way, it is possible to account for not only the sequence of the various crops, but also for the acreages on which they followed each other. For instance, for Brussels sprouts, the figures show that of the total preceding acreage of 189.70 acres, 62.35 acres had been sown by cereals, and on

TABLE 33

Acreage Distribution of Preceding and Succeeding Crops

First Crop	Second Crop	Acres	BRASSICAS	Carrots	Peas	Radish	Tomatoes	Sundries	Flowers	Cereals	Mangolds	Potatoes	Fallow	Total								
B. Sprouts	B. Sprouts	31.00	47.95	1.90	-.45	6.50	1.55	6.70	1.35	.25	12.00	3.50	-.50	-.15								
Cabbage	Cabbage	2.50	16.40	13.40	-.75	—	5.75	—	5.70	7.00	2.25	27.15	6.90	-.05								
Cauliflower	Cauliflower	2.00	8.10	10.50	—	—	—	—	—	—	—	—	—	—								
Carrots	Carrots	2.25	—	—	—	—	—	—	—	—	—	—	—	—								
Parsnips	Parsnips	2.25	—	—	—	—	—	—	—	—	—	—	—	—								
Beetroot	Beetroot	17.50	1.32	1.00	—	—	—	—	—	—	—	—	—	—								
Leeks	Leeks	2.95	5.85	—	—	—	—	—	—	—	—	—	—	—								
Onions	Onions	1.10	4.95	8.15	—	—	—	—	—	—	—	—	—	—								
Broad Beans	Broad Beans	2.20	7.73	—	—	—	—	—	—	—	—	—	—	—								
Runner Beans	Runner Beans	33.20	12.70	—	—	—	—	—	—	—	—	—	—	—								
Peas	Peas	18.00	—	3.00	—	—	—	—	—	—	—	—	—	—								
Lettuce	Lettuce	.50	3.00	4.70	—	—	—	—	—	—	—	—	—	—								
Radish	Radish	—	—	—	—	—	—	—	—	—	—	—	—	—								
Tomatoes	Tomatoes	.80	4.25	—	—	—	—	—	—	—	—	—	—	—								
Sundries	Sundries	.25	—	—	—	—	—	—	—	—	—	—	—	—								
Flowers	Flowers	.20	—	—	—	—	—	—	—	—	—	—	—	—								
Cereals	Cereals	.62.35	1.60	—	—	—	—	—	—	—	—	—	—	—								
Mangolds	Mangolds	—	—	—	—	—	—	—	—	—	—	—	—	—								
Potatoes	Potatoes	10.70	—	—	—	—	—	—	—	—	—	—	—	—								
Fallow	Fallow	4.00	—	—	—	—	—	—	—	—	—	—	—	—								
Total	Total	189.70	128.80	43.85	1.85	1.45	13.65	8.05	24.50	31.15	37.70	64.80	30.05	2.10	1.25	4.70	1.55	125.60	1.00	20.75	31.95	764.45

31 acres of this area sprouts were planted again. By taking the acreages of the succeeding crops the table also gives detailed information on the acreages and types of the preceding crops. For instance, it shows that on the 163.10 acres of new sprout plantations 47.95 acres were previously occupied by cabbage, 36.90 acres by cereals and so on. In order to emphasise the extent of the acreage of the allied crops given in Table 33, these acreages have been enclosed in squares, showing those pieces of land where the same types of crops followed each other, and thus, in the strict sense, where no rotation of crops occurred. In cases where the preceding single crop was followed by the same crop, these lie along the diagonal line drawn across the table.

In view of the great number of possible crop combinations, it would be too lengthy and rather difficult to depict the exact patterns of crop rotation, and to prove mathematically the degree of association or dissociation between the acreages of preceding and succeeding crops. However, from the details given in this table, it is possible firstly to draw some conclusions on the prevailing sequence of cropping, in particular on the extent to which the layout of crops may depend on rotational practices, and secondly to see which are the main features of these patterns.

In considering whether the presence of a crop rotation is responsible for the layout of crops, the available evidence suggests that there is some distinct association between certain crops, but this may not always be due to a premeditated form of crop rotation. The enclosed acreage figures on Table 33 show that there were 242.45 acres on which the same types of crops followed each other, for example brassicas after brassicas, and thus no crop rotation occurred. This acreage is 32 per cent of the total of 764.45 acres, which readily indicates that on 68 per cent of the total acreage under review, the land had been cropped according to some form of rotational sequence. However, this rather high rate of rotationally cropped acreage may be mainly due to the fact that some horticultural farms were included in the sample, and on these it is customary to alternate cereal crops with brassicas. However, on small market garden holdings, where the cultivation of cereal crops is not practicable, undoubtedly the area cropped under a rotational system is somewhat less than 68 per cent of the available arable acreage, and consequently more land has to be used for crop repetitions. Although it was not possible to examine separately the pattern of crop rotation on small-

holdings, some guidance on the repetition of crops can be obtained from the available overall data. As mentioned before, the area of crop repetitions amounted to 242.45 acres in which almost all crops were represented. In the light of the total acreages of the succeeding crops, the areas of repetitive crops show the following distribution.

Crops	Total Area		Area of Repetition	
	Acres	%	Acres	%
Brassicas . . .	316.30	41	134.05	42
Roots, Onions . .	75.42	10	8.10	11
Legumes . . .	166.28	22	34.55	21
Other Vegetables, Flowers	40.80	5	10.25	25
Farm Crops, Fallow .	165.65	22	55.50	33
Total	764.45	100	242.45	32

According to these figures, it was the brassica crops which were mostly affected by repetitive cropping, and 42 per cent of the brassica acreage was successively replanted by the same type of crops. The other crops which were most affected were, strangely enough, farm crops, such as cereals, potatoes and mangolds; 33 per cent of their total acreage was used again to grow the same crops. It was not on the horticultural farms where this rather odd form of cropping occurred, but on some of the small-holdings engaged on poultry or pig enterprises where corn and potatoes, etc., were grown to offset the cost of the purchased feeding stuffs. On the 40.80 acres of "other vegetables and flowers" the area of repetitive cropping amounted to 25 per cent, and here it was chiefly lettuce crops which recurred on the same ground. The area on which legumes followed each other represented 21 per cent of the 166.28 acres involved, and peas were mainly responsible for the rate of repetition in the legume acreage. The smallest repetitive ratio, however, was shown by the root and onion crops, being only 11 per cent of their 75.45 acres, and this was chiefly due to the redrilling of salad onions on the same piece of land. These figures on the whole indicate that in the layout of crops repetitions are only practised on a moderate scale, and the recurrence even of those crops which are typical for small market garden holdings, such as roots, onions, lettuce, tomatoes, flowers, etc., is kept within reasonable bounds. At least, as far as the sample holdings are concerned, the rate of repetitive cropping seems to be quite steady, being 32 per cent of the acreage of succeeding crops; with regard to

the preceding crops it amounted to 232.35 acres, or to 30 per cent of the total crop acreage of 764.45 acres. Thus it is fair to say that a rotational cropping pattern, in which every possible sequence is well represented, is used on the greater part of the acreage of the holdings.

The sequences of crops are illustrated in Diagram 14, which shows how the acreages of the preceding crops were split up to make room for the succeeding crops.

In broad lines, the foregoing diagram accounts for all the sequences of cropping which occurred on the sample holdings. As can be seen from the acreage figures of the following crops, these sequences show the prevailing pattern from which the various types of crops were combined in their rotational and repetitive successions. Brassicas, of course, dominate the pattern of succession, due to the fact that they occupy the largest acreage, and consequently show the highest proportions in following other crops. There are several rotational sequences distinguishable in the pattern, namely, brassicas followed by legumes and cereals; roots and onions by brassicas; brassicas planted after legumes; other vegetables such as lettuce, and tomatoes followed by brassicas; and roots and onions, brassicas and legumes grown after cereals and so on. On the other hand, several theoretically possible sequences appear to be absent or poorly represented in the pattern; this may perhaps be due to the limited scope of the survey sample, or, in a number of cases, to the lack of correlation in the growing seasons of the component single crops concerned. In order to get a full picture of crop sequences, however, it is necessary to examine the pattern of succession of each individual crop and then draw conclusions from the rotational layout of cropping. With the aid of the data shown in Table 33, the extent to which each crop followed its preceding partner can be traced back and combined with the patterns of succession. The crops which followed brassicas are shown in Table 34.

According to the above figures brussels sprouts were mainly followed by cereal crops. This sequence, however, generally applies to horticultural farms, where, after sprouts the land can be left idle until the autumn sowing of wheat and barley, etc. On a small holding, where limited acreage demands continuous production, succeeding crops were runner and dwarf beans, peas, beetroot and, to a fair extent, another sprout crop.

Cabbage was mainly followed by sprouts and to some

extent by beans, cereals and another crop of cabbage, e.g. spring cabbage after winter cabbage.

After cauliflower the main crop sequences were cabbage, onions, lettuce and as a repetition cauliflower again.

TABLE 34
Crop Sequences after Brassicas

Succeeding Crops	Brussels Sprouts		Cabbage		Cauliflower		Total	
	Acres	%	Acres	%	Acres	%	Acres	%
Brussels sprouts . . .	31.00	16	47.95	37	1.90	4	80.85	22
Cabbage	2.50	1	16.40	13	13.40	31	32.30	9
Cauliflower	2.00	1	8.40	7	10.50	24	20.90	6
Carrots	0.20	—	0.25	—	—	—	0.45	—
Parsnips	0.25	—	—	—	—	—	0.25	—
Beetroot	17.50	9	1.32	1	1.00	2	19.82	5
Leeks	2.95	2	5.85	5	0.10	—	8.90	3
Onions	1.10	1	4.95	4	8.15	19	14.20	4
Broad Beans	2.20	1	7.73	6	0.60	1	10.53	3
Runner and Dwarf Beans	33.20	18	12.70	10	0.40	1	46.30	13
Peas	18.00	10	—	—	3.00	7	21.00	6
Lettuce	0.50	—	3.00	2	4.70	11	8.20	2
Tomatoes	0.80	—	4.25	3	—	—	5.05	1
Sundries	0.25	—	—	—	0.10	—	0.35	—
Flowers	0.20	—	—	—	—	—	0.20	—
Cereals	62.35	33	16.00	12	—	—	78.35	22
Potatoes	10.70	6	—	—	—	—	10.70	3
Fallow	4.00	2	—	—	—	—	4.00	1
Total	189.70	100	128.80	100	43.85	100	362.35	100

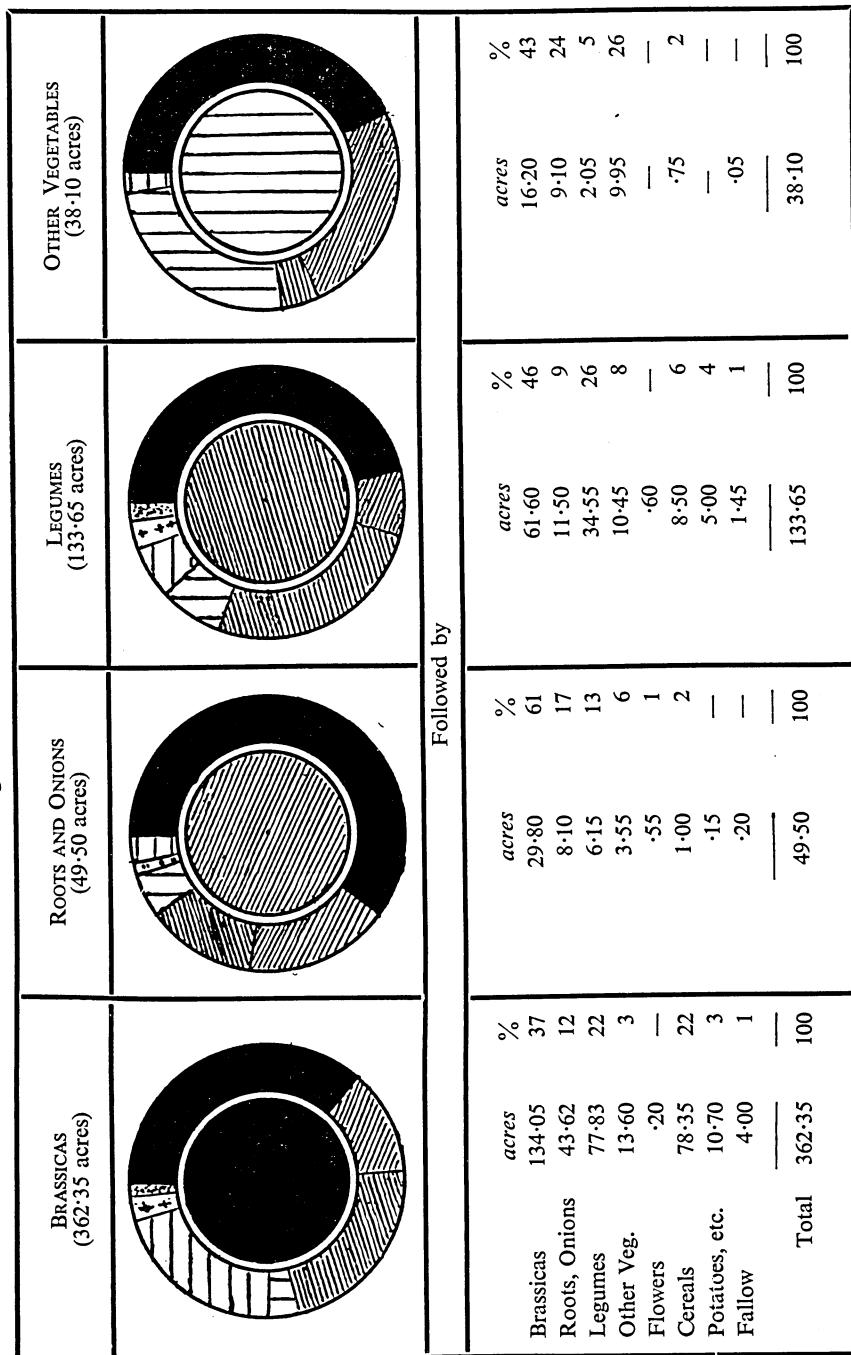
The acreage of carrots and parsnips is far too small to trace rotational sequences from it on a representative basis.

With regard to beetroot, almost the entire acreage of the succeeding crops was followed by sprouts and cabbage.

Leeks were mainly followed by peas, sprouts, cauliflower and as a repetition by leeks again.

The crops which came after onions were sprouts, cabbage and onions again.

DIAGRAM 14
Average Pattern of Crop Rotation



FLOWERS (1.55 acres)	CEREALS (125.60 acres)	POTATOES, ETC. (21.75 acres)	FALLOW (31.95 acres)
Followed by			
acres			
%			
Brassicas			
.60	.39	50.40	40
Roots, Onions	.29	—	5
Legumes	.13	40.00	1.00
Other Veg.	.20	.20	2.20
Flowers	.06	—	1.35
Cereals	.13	—	—
Potatoes, etc.	—	35.00	6
Fallow	—	28	—
Total	1.55	100	100

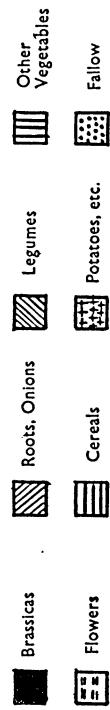


TABLE 35
Crop Sequences after Roots and Onions

Succeeding Crops	Carrots	Parsnips	Beetroot	Leeks	Onions	Total
Brussels sprouts	Acres 0.45	% 31	Acres 6:50	% 47	Acres 6:70	% 28
Cabbage	0.75	41	5:75	42	5:70	31
Cauliflower	—	—	—	—	1.55	25
Carrots	—	—	—	—	—	5
Parsnips	0.20	10	—	0.15	—	—
Beetroot	—	—	0.20	2	0.10	1
Leeks	—	—	—	—	0.50	2
Onions	—	—	—	—	4	4
Runner and Dwarf Beans	0.25	14	—	0.40	4.15	10
Peas	0.65	35	—	0.20	3	2
Lettuce	—	—	—	—	0.60	11
Radishes	—	—	—	—	2.75	7
Tomatoes	—	—	—	—	34	5.10
Sundries	—	—	—	—	6	4
Flowers	—	—	—	—	0.80	3
Cereals	—	—	—	—	0.95	4
Potatoes	—	—	—	—	2	2
Fallow	—	—	—	—	—	—
Total	1.85	100	1.45	100	13.65	100
					8.05	100
					24.50	100
					49.50	100

TABLE 36
Crop Sequences after Legumes

Succeeding Crops	Broad Beans		Runner and Dwarf Beans		Peas		Total	
	Acres	%	Acres	%	Acres	%	Acres	%
Brussels sprouts	1.35	4	0.25	1	12.00	19	13.60	12
Cabbage	7.00	23	2.25	6	27.15	42	36.40	26
Cauliflower	9.00	29	0.10	—	2.50	4	11.60	8
Parsnips	—	—	0.10	—	—	—	0.10	—
Beetroot	—	—	4.00	11	0.30	—	4.30	3
Leeks	0.15	—	—	—	0.70	1	0.85	1
Onions	1.25	4	2.05	6	2.95	5	6.25	5
Broad Beans	—	—	1.05	3	0.70	1	1.75	1
Runner and Dwarf Beans	1.00	3	8.00	21	0.90	1	9.90	8
Peas	3.00	10	8.90	23	11.00	17	22.90	17
Lettuce	0.40	1	3.20	8	3.00	5	6.60	5
Sundries	2.10	7	—	—	1.75	2	3.85	3
Flowers	0.30	1	0.30	1	—	—	0.60	—
Cereals	5.50	18	1.50	4	1.50	2	8.50	6
Potatoes	—	—	5.00	13	—	—	5.00	4
Fallow	0.10	—	1.00	3	0.35	1	1.45	1
Total	31.15	100	37.70	100	64.80	100	133.65	100

After broad beans the succeeding crops were mainly cauliflower, cabbage, cereals and peas. In the main, this is the crop which, together with early peas, provides the grower with possibilities for double-cropping his ground.

The succeeding crops to runner and dwarf beans were peas, potatoes, beetroot, and beans again. It is interesting to note, that this particular crop was hardly followed by sprouts at all. A possible explanation may be found in the fact, that although the crop completes its cropping cycle in September or October, sprouts cannot be planted until the following spring, and indeed will not be fit to harvest until September, which means that for about one full year there is no revenue from the plot of land in question.

Peas, on the other hand, though their cropping season is rather similar to that of beans, were rotated by sprouts. This sequence, however was only practised by farmer-growers and not on small market garden holdings, where peas were generally followed by cabbage or by another crop of peas.

TABLE 37
Crop Sequences after "Other Vegetables" and Flowers

Successing Crops	Lettuce		Radishes		Tomatoes		Sundries		Flowers		Total	
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
Brussels sprouts	3.50	12	0.50	25	—	—	—	—	0.15	10	4.15	10
Cabbage	6.90	23	0.05	2	—	—	—	—	0.30	19	8.30	21
Cauliflower	4.05	13	—	—	—	—	—	—	0.15	3	4.35	11
Beetroot	—	—	—	—	—	—	—	—	0.35	36	2.05	5
Leeks	—	—	—	—	—	—	—	—	—	—	6.20	16
Onions	6.15	21	—	—	—	—	—	—	0.15	3	1.30	3
Runner and Dwarf Beans	1.05	3	—	—	—	—	—	—	0.10	2	0.20	1
Peas	—	—	—	—	—	—	—	—	—	13	0.30	1
Lettuce	0.70	2	—	—	—	—	—	—	—	—	1.95	5
Radishes	7.55	25	—	—	—	—	—	—	0.10	6	7.95	20
Sundries	—	—	—	—	—	—	—	—	—	—	1.50	4
Flowers	—	—	—	—	—	—	—	—	0.25	4	0.40	1
Cereals	—	—	—	—	—	—	—	—	0.20	16	0.40	1
Fallow	—	—	—	—	—	—	—	—	—	—	0.05	2
Total	—	—	30.05	100	2.10	100	1.25	100	4.70	100	1.55	100
											39.65	100

Of this group of crops, it is only the sequence of cropping after lettuce which merits attention. The acreages of radish, out-door tomatoes, flowers and sundry crops, such as spinach, sweet corn and shallots, etc., are so small that the crop sequences involved are hardly worth mention. With regard to lettuce, there were some distinct rotational sequences of which cabbage and leeks seemed to be the most common, but cauliflower and sprouts were also fairly well represented. However, the lettuce after lettuce sequence shows the highest percentage and this is due to the fact that there are a number of holdings where lettuce is grown all the year round, and, especially on small-holdings, the crops very often follow each other on the same piece of ground.

TABLE 38
Crop Sequences after Cereals, Potatoes etc. and Fallow

Succeeding Crops	Cereals		Potatoes etc.		Bare Fallow		Total	
	Acres	%	Acres	%	Acres	%	Acres	%
Brussels sprouts	36.90	30	1.20	6	11.20	35	49.30	27
Cabbage	13.00	10	8.00	37	2.30	7	23.30	13
Cauliflower	0.50	—	—	—	0.95	3	1.45	1
Beetroot	—	—	1.00	4	—	—	1.00	1
Leeks	—	—	—	—	0.50	2	0.50	—
Onions	—	—	—	—	1.15	4	1.15	1
Broad Beans	20.00	16	0.20	1	—	—	20.20	11
Runner and Dwarf Beans	—	—	—	—	0.80	3	0.80	—
Peas	20.00	16	2.00	9	2.50	8	24.50	14
Lettuce	0.10	—	0.35	2	—	—	0.45	—
Sundries	—	—	0.80	4	—	—	0.80	—
Flowers	0.10	—	0.20	1	0.05	—	0.35	—
Cereals	35.00	28	—	—	10.00	30	45.00	25
Mangolds	—	—	1.00	4	—	—	1.00	1
Potatoes	—	—	7.00	32	—	—	7.00	4
Fallow	—	—	—	—	2.50	8	2.50	2
Total	125.60	100	21.75	100	31.95	100	179.30	100

Although the cropping sequence after cereals includes a fair proportion of the succession of cereals by cereals, it gives some indication of what may be regarded as the vegetable crops of the farmer-grower linked up with his production of wheat, barley and oats, etc. According to Table 38 the crops which followed cereal crops were sprouts, cabbage, broad beans and peas.

After potatoes, the major sequences were spring cabbage following early potatoes and peas, and a further crop of potatoes grown after the main crop.

Finally, after the land had been left fallow for a year, it was cropped mainly by sprouts and cereals. Actually, these crops are considered best to clear the ground of weeds with a view to more intensive future cropping. The fallow-fallow sequence indicates that 8 per cent of the preceding fallow ground still remained uncropped in the succeeding year; this was due to change of tenancy on some holdings where the grower could not utilise this particular part of his ground.

In drawing up a certain pattern of crop rotation, or making alterations to an existing one, the main point to be considered is whether or not new planning can improve the financial results of the holding. It is undoubtedly true to say that variations in annual weather conditions may demand substitutions which would upset even the most careful planning: on a short term basis, this argument may be quite valid. As a long term policy, however, when, after a longer period, the results of the lean and fat years are judged as a whole, those holdings with a steady crop rotation are likely to have a better chance of success, than those on which experiments with new crops, and ever changing acreage distributions are taking place. As has already been shown in Table 32, there has been very little difference between the acreage distribution of the preceding and succeeding crops on the sample holdings. On the basis of six years' returns of individual crops, collected during the present and previous surveys, it is possible to weigh up the financial difference, if any, between the two acreage distributions embodying the prevailing system of crop rotation on the sample holdings. As the rotational pattern affects only the acreages of the annual crops, it is necessary to apply the acreage distributions to this particular part of the average acreage of the 32 surveyed holdings. Of this average layout of 53.4 acres of land, the acreage of the permanent crops amounted to 17.7 acres, that of the purchased sprouts ground to 6 acres, and the area occupied by buildings and roads, etc., to 1.5 acres, accounting in all for 25.2 acres. Having deducted this area from the total acreage, the basis of the calculation refers to 28.2 acres, which is the acreage of the annual crops. The distribution of this acreage amongst the succeeding and preceding single crops, together with the financial returns, are shown in Table 39.

TABLE 39
Crop Returns in the Pattern of Crop Rotation

Crops	Average Returns per acre	Succeeding Crops				Preceding Crops			
		Acres	%	Returns	Acres	%	Returns	Acres	%
Brussels sprouts . . .	123	5.9	21	726	20	7.1	25	873	25
Cabbage . . .	156	4.2	15	655	18	4.8	17	749	22
Cauliflower . . .	166	1.5	5	249	7	1.7	6	282	8
Beetroot . . .	123	1.1	4	135	3	0.6	2	74	2
Leeks . . .	125	0.6	2	75	2	0.3	1	37	1
Onions . . .	387	1.1	4	426	12	0.8	3	310	9
Broad Beans . . .	85	1.1	4	94	3	1.1	4	94	2
Runner and Dwarf Beans	197	2.3	8	453	13	1.4	5	276	8
Peas . . .	119	2.8	10	333	9	2.6	9	309	9
Lettuce . . .	255	0.8	3	204	5	1.1	4	281	8
Sundries . . .	100	0.3	1	30	1	0.3	1	30	1
Tomatoes . . .	150	0.3	1	45	1	—	—	—	—
Cereals . . .	25	5.1	18	128	4	4.5	16	113	3
Potatoes . . .	80	0.8	3	64	2	0.8	3	64	2
Fallow . . .	—	0.3	1	—	—	1.1	4	—	—
Total	—	28.2	100	3,617	100	28.2	100	3,492	100

As can be seen from the foregoing Table 39, the difference between the financial returns of the two acreage distributions is only £125, which, actually is not more than 4 per cent of the sum shown for the returns of the preceding crops. These results indicate that, on a six-year basis, the difference between the two sets of returns is almost negligible, due mainly to the steady pattern of crop rotation. However, if, for example, in the succeeding crop acreage, sprouts had been replaced by cereals, or the ground left fallow, then the returns would obviously have shown a considerably lower figure than for the returns from the preceding crops. Such an alteration in the pattern of cropping might easily result in financial failure, especially if the grower has not made suitable adjustment to the costs.

Buildings and Equipment on the Holdings

ALTHOUGH the land itself is the major factor in the functional layout of the holdings, other integral parts of the layout are the available buildings and fixed equipment, which either

occupy a certain portion of the acreage, or provide facilities situated apart from the ground. They are considerable assets to the organisation of the holding not only because they promote the running of the business, but also because they have a direct effect on the pattern of the layout. The kinds of enterprises undertaken, and the introduction of new ones, depend very largely on the availability of the necessary buildings and sheds, etc. If there is an ample number of buildings on the holding, it is practicable to carry out expansions, having available facilities for the housing of livestock, storing of produce, and the accommodation of additional labour. It is evident that the lack of buildings on a holding is likely to curtail or even preclude further development except at the expense of a fair amount of capital outlay.

Of all the buildings, the grower's dwelling house quite obviously plays the most important part in the pattern of the layout, and it is important not only because the grower conducts his business from there, but rather because the actual location of the house has a direct effect on the entire organisation of the business. If it is situated at some distance from the land, this may virtually preclude any enterprise which would normally require constant personal attention such, for example, as livestock or glasshouses. To have his house away from his land is indeed a serious drawback to the grower, since, instead of developing that pattern of layout which may, perhaps, be most suited to his own knowledge and nearest his own ambition, he has to devote his attention to growing crops which can endure without constant supervision.

On the surveyed holdings, the majority of the growers live either on their land, or in very close proximity to it, with very often only the road separating the house from the land. Of the 32 holdings, there were only 9 where the grower's house was at a distance from his ground. In these cases, the grower generally lived in one of the villages, for example, the Littletons, Offenham, Pinvin, and even in the town of Evesham. The daily routine of these growers invariably consisted of leaving the house early in the morning for the ground and returning home late in the evening. This mode of life obviously entails considerable travelling between the house and the land. Nevertheless, the lot of some of the other growers is only slightly better, since although they live on their own holdings, their land is divided into several separate units, and they frequently have to stay away from their homes in order to

work on the outlying pieces of land. On the whole, the detached location of the dwelling house is generally found on holdings of under 50 acres situated in the most thickly populated market garden parishes of the Vale. The number of holdings, dissected according to the location of the grower's house, can be set out as follows:

<i>Acreage Group</i>	<i>No. of Holdings with House on Ground</i>	<i>No. of Holdings without House on Ground</i>
Acres		
1-10	8	4
10-50	8	4
50-100	3	
Over 100	4	1
Total	<u>23</u>	<u>9</u>

In the above figures, where the house stood adjacent, or in close proximity to the ground, its location has been regarded as joined to the land. The foregoing results show that only 9, or 28 per cent, of the 32 holdings had dwelling houses apart from the ground. Most of the houses are of relatively modern construction, fitted with the usual amenities, and supplied with gas, electricity and water. Almost all the growers have the telephone installed in the house; this ensures prompt and easy communication with the markets and agents, an important factor in running this type of business.

With regard to out-buildings, there are many different types of structures in use on the holdings, both in the form of permanent buildings and temporary sheds, stalls and barns, etc. The majority of the surveyed holdings, however, belong to the smaller acreage groups and most of the buildings are of temporary construction, chiefly of timber and corrugated iron. These holdings generally consist of several separate plots of land, and obviously the grower cannot have elaborate buildings on each of his outlying fields. Moreover, even if he chose to ignore the resulting wastage of cultivable land, there is hardly any need for such facilities in, say, plum orchards, or on sprout-growing grounds, etc. In these cases, a good shed for packing the produce, or taking shelter in bad weather is quite sufficient for these various plots of land. On the larger holdings there is, of course, a full range of farm buildings in operation which are properly adapted to horticultural production.

On the 32 holdings, there were 80 different buildings of both

permanent and temporary construction. These buildings are classified in Table 40 according to the predominant types of buildings.

TABLE 40
Types of Buildings on Holdings

Buildings	Acreage Groups				
	1-10	10-50	50-100	Over 100	Total
Tool Sheds . . .	No.	No.	No.	No.	No.
Tool Sheds . . .	15	18	2	—	35
Barns, Packing Sheds . . .	3	12	4	—	19
Garages . . .	1	6	1	—	8
General Farm Buildings	—	—	1	5	6
Cold Stores . . .	—	—	1	1	2
Offices . . .	1	1	3	4	9
Roadside stall . . .	—	—	1	—	1
Total	20	37	13	10	80

As can be seen from the foregoing Table 40, the most common type of building is nothing but a small tool shed, of some 5 or 6 feet square and is the chief feature of the small market garden holdings. It represents 75 per cent of the total buildings in the 1-10-acre group, and 50 per cent in the 10-50-acre group. The shed may occasionally be used for storing a small motor cultivator, but is usually only large enough for a limited number of hand tools, fertilisers, seeds and so on. In this group of holdings, there were many where the outlying fields had no covered shelter at all in which produce could be stored, packed or covered in bad weather. There were, however, better facilities on holdings in the 10-50-acre group. On many of these holdings there was at least a barn in the largest field which frequently served the multiple function of garage, packing shed and store. Individual garages, and tractor sheds were often "Nissen"-type structures. General types of farm buildings were found on the larger holdings, where farm land had been drawn into horticultural production, and thus the buildings found a new lease of life in supporting a more intensive form of cultivation. These buildings consisted of cottages, cowsheds, pig-sties (which may or may not be used as such), dutch barns, implement sheds, workshops and offices, etc.: these were all usefully employed in the production

of fruit and vegetables. On 9 of the 32 holdings, a room or shed was set aside as specific accommodation for managerial duties. In order to comply with the more modern methods of marketing, growers are paying increased attention to the grading and storing of produce. As a rule, produce is graded either whilst being harvested, or being packed, so that no specific accommodation is required for this process, though one surveyed holding had its packing shed fitted with a mechanical grader for grading tomatoes.

Storage, on the other hand, requires special facilities, where the produce can be kept without deterioration until the trend of the market improves. Two of the holdings in the survey had their own cold stores, one for the long term storage of apples graded on the premises and the other for the short term storage of vegetables. For growers, whose turnover does not warrant the costly installation of a cold store, such facilities are available at one of the local markets, namely, the Pershore Co-operative Fruit Market Ltd.

In the course of the present survey, it was not possible to ascertain the area taken up by buildings alone on the holdings. However, judging from the combined acreage of buildings, roads and headlands, etc., the area covered by buildings must be extremely small. The combined acreage of buildings and roads, etc., on the 32 holdings amounted to 30.25 acres, which is about 2 per cent of the entire acreage of 1,516.60 acres; this represents an average area per holding of somewhat under 1 acre. However, as the extent of this particular part of the layout very largely depends on the actual acreage of the holding, it is obvious that the larger the holding the more numerous the buildings, and the longer the roads. This relationship between the area occupied by buildings and roads and the size of the holding can be seen from the following average figures.

Acreage Groups		Area of Buildings and Roads per Holding			
Acres					Acres
1-10	:	:	:	:	0.2
10-50	:	:	:	:	0.5
50-100	:	:	:	:	2.1
Over 100	:	:	:	:	3.9
Average		.	.	.	1.0

Taking into account that the above figures refer only to those 23 holdings where the dwelling house was on the ground, the

results, especially in the smaller acreage groups, show the very moderate extent which this area represents in the layout of the holding. It is very difficult to arrive at exact measurements of these odd and scattered parts of the layout, when estimating the extent of the various parts of the holding, and the figures in question have to be treated with reserve, and if anything to be regarded as more on the low side. However, there was no holding in the survey, where the number of buildings was too high and claimed too great a proportion of the land; nor were any of them too elaborate with a high upkeep figure, which made them uneconomic. Even the dwelling houses, which generally occupy the greatest proportion of the land, and require the most maintenance, were in line with the overall layout. In fact, holdings which had the dwelling house on the ground were more profitable; this was mainly due to the more specialised pattern of layout with cultivations under glass, and livestock husbandry. This is borne out by the evidence supplied by the 1955/56 financial results of the 32 holdings as shown below.

	<i>Holdings with House</i>	<i>Holdings without House</i>
	£	£
Production per acre . . .	246	150
Costs per acre . . .	196	124
Margin	<hr/> 50	<hr/> 26

The above figures show that the holdings where the grower lived on the land were about twice as successful as the others; the reason for this is to be found chiefly in the fact that they could devote more land and more time to intensive types of enterprises. Of the 9 holdings, where the grower lived apart from his ground, only one had some unheated glasshouses.

Besides buildings and fixed installations there was, of course, various other equipment used on the holdings. These were implements which, although they did not belong to the actual layout of the holding, played an important part in its maintenance and efficient function. As the layout of the surveyed holdings was so diverse in size and character, it is only natural that the kinds of implements found on them were of the greatest variety. In view of this complex nature of mechanisation, it is hardly possible to enumerate in detail all the types of implements employed on those holdings, but it would appear to be sufficient to mention those of capital importance

used for the maintenance of the layout. These are the tractors, motor vehicles and major cultivating equipment.

With regard to mechanised power almost all the holdings were equipped with a tractor of some sort varying from small cultivators to the most powerful four-wheeled and crawler types of tractor. The number of tractors and similar power-driver cultivators were distributed amongst the 32 holdings as follows:

<i>Acreage Groups Acres</i>	<i>Total No. of Tractors and Cultivators</i>	<i>Average No. per Holding</i>	<i>Average Acreage per Tractor or Cultivator</i>
1-10	12	1	7·4
10-50	35	3	7·1
50-100	7	2	37·6
Over 100	33	7	27·1
Total	<u>87</u>	<u>3</u>	<u>17·5</u>

On average, there were 3 tractors and cultivators in operation on each holding. The lowest number of tractors used was in the 1-10-acre group, where there was only one machine to every holding, mostly of the small cultivator type. On holdings in the 10-50-acre group there were 3 tractors working on each holding, one being a four-wheeled tractor. In both groups of holdings the average acreage per tractor or cultivator was practically the same. The holdings in the 50-100-acre group were mainly fruit-growing holdings and their requirements for tractor work seemed to be far less than that in any other group. On the over-100-acre holdings practically all the tractors were proper major tractors, and the acreage per tractor was 27·1 acres. The types of tractors and cultivators varied greatly from one holding to the other. Of the 87 tractors maintained on the sample holdings roughly less than one-half were four-wheeled or tracked, whereas the remainder were of the cultivator type. The latter type was divided into two distinct classes, namely, the motor hoe, a mechanised form of hoeing, which was used for surface cultivation only, and the rotary hoe which is capable of breaking and churning up the soil to a reasonable depth. The types of tractors and cultivators used on 20 of the surveyed holdings is shown in Table 41.

TABLE 41
Types of Tractors and Cultivators

Types of Machines	Acreage Groups				
	1-10	10-50	50-100	Over 100	Total
	No.	No.	No.	No.	No.
Tractors:					
Ferguson . . .	1	4	1	1	7
Fordson . . .	—	1	—	3	4
Others . . .	1	—	1	1	3
Crawler type . . .	—	1	—	1	2
Cultivators: . . .					
Motor hoe . . .	4	8	—	1	13
Rotary hoe . . .	4	9	—	1	14
Total	10	23	2	8	43

Although a tractor or cultivator was found on nearly all the holdings, there were 5 on which horses were used as well, in order to supplement the work of mechanised equipment. On the sample holdings, the number of working horses was only 11, 5 of which were employed on holdings of under 50 acres. Apart from the available tractor and horse power, there was also a fair amount of cultivation done by agricultural contractors. The practice of having the work of ploughing done by hired labour and equipment was most widely met on holdings in the smaller acreage groups, where the available cultivator was not suitable for the job. However, contract work was not confined only to ploughing, but included other cultural operations, such as "scuffling", the spraying of fruit trees and, at times, some of the other crops.

With regard to vehicles, there were 23 private cars, and 22 lorries and vans operating on the 32 holdings. The distribution of motor cars, lorries and vans according to the various size groups were as follows:

Acreage Groups	No. of Private Cars	No. of Lorries, or Vans
Acres		
1-10	3	2
10-50	10	6
50-100	3	4
Over 100	7	10
Total	23	22

On average, there was more than one vehicle on every holding. However, in the lowest acreage group 7 of the 12 holdings did not possess any form of mechanised transport, and had to rely entirely on the merchant or market for the collection of produce, while the growers themselves used bicycles to get to and from work. However, in the 10-50-acre group only 4 of the 12 growers possessed neither car nor van, whereas the others, in addition to the motor car, ran a lorry or van as well. Each of the larger holdings had its own car and lorry, especially in the over-100-acre group where there were at least one car and two lorries on every holding. The grower's private car plays an important part in the management of the holding, frequently being used to tow a trailer laden with produce for market, or providing easy access to different parts of the holding, often situated several miles apart. Lorries and vans are used not only for the transportation of produce, but also for the conveyance of workers, between their homes and the holding, and the different pieces of land. This is especially so on the larger holdings where considerable numbers of casual workers are employed. The distances involved in taking produce to market, or the workers to and from work, are comparatively small, so that it is not the actual mileage which takes a heavy toll of available transport, but rather the number of journeys involved. Although all the local markets are situated within easy reach of the holdings, the transportation of produce may demand almost the constant use of vehicles, especially during peak periods of the season. The average distance between the sample holdings and the nearest local market was just under 3 miles. However, this average distance is somewhat over-estimated, since the Littleton and Badsey Growers Ltd., not having an open market, were not included in the calculation. This widely known co-operative organisation of growers is considerably nearer holdings situated in the parishes of Littleton, Badsey, Pebworth and Offenham, than the markets at Evesham. Taking only the Evesham and Pershore markets into account, the average distances between the holdings and the markets were as follows:

<i>Acreage Groups</i>	<i>Distance</i>
<i>Acres</i>	<i>Miles</i>
1-10 . . .	2.8
10-50 . . .	2.9
50-100 . . .	2.1
Over 100 . . .	4.1

Among the individual holdings, the shortest distance was just under 1 mile and the longest distance $7\frac{1}{2}$ miles. For growers in the peripheral parts of the Vale, such as Pebworth, Sedgeberrow or Beckford, there were alternative markets at Stratford-on-Avon, Cheltenham and Gloucester which, for these areas, could be considered local markets. However, these markets were not included in the distances previously mentioned since they would have considerably increased the average mileage between the holdings and their nearest markets.

Besides tractors and motor vehicles, there were a great number of diverse types of machinery used on the holdings. Those which most merit attention are implements which, due to their high capital and utility value, represent substantial assets in the grower's stock of equipment. Details of such types of implements found on the holdings and their distribution among the various size-groups, are shown in Table 42.

TABLE 42
Types of Mechanical Equipment on Holdings

Machine	Acreage Groups				
	1-10	10-50	50-100	Over 100	Total
	No.	No.	No.	No.	No.
Sprayer . . .	—	8	2	2	12
Irrigation Equipment . .	3	7	1	5	16
Stationary Engine . .	—	1	—	1	2
Electric Generator . .	1	—	1	1	3
Boiler . . .	2	1	—	2	6
Grass Cutter . . .	—	4	1	—	5
Combine Harvester . .	—	—	—	1	1
Total	6	21	5	12	45

Of the above items of machinery, sprayers and grass cutters were the implements of the fruit grower, but, there were a few vegetable-growing holdings which also possessed spraying equipment. For the purpose of drawing water from the river or well, most holdings which were equipped with irrigation facilities had some kind of pumping machinery. Pumps and stationary engines were also used for spraying operations on fruit-growing holdings. In addition to their irrigation equipment, some of the glasshouse holdings also

had boilers installed, to provide heat for the crops during the cold periods of the year. Although 5 of the 6 holdings with important glasshouse production had boilers in their inventories, only 3 appeared to make much use of them. In addition to these items of machinery there were, of course, many other implements kept and used on the holdings, which although of a subsidiary nature (e.g. trailers, ploughs and harrows, etc.), represented a fair amount of capital value invested in the business.

Apart from fixed installations such as glasshouses and frames, etc., the capital invested in mechanical equipment on the holdings was on the whole rather substantial. After allowing for depreciation, the value of the machinery used amounted to £34,081 or £1,065 per holding, showing that on average each acre of land had to carry about £22 worth of implements. This valuation is itemised as follows according to the various types of machinery.

	Total Value £	Value Per Acre £
Tractors and Cultivators	6,877	4
Motor Cars	5,167	3
Lorries, etc.	4,031	3
Other Machines	7,161	5
Miscellaneous Equipment	10,845	7
 Total	 34,081	 22

Of the various acreage size-groups, it was on the 1-10-acre holdings where the rate of mechanisation was the heaviest; in the other groups it showed a rather steep decline. This can be seen from the following figures:

Acreage Groups	Total Capital Value £	Capital Value Per Acre £
Acres		
1-10	5,566	63
10-50	8,143	32
50-100	5,012	22
Over 100	15,360	16
 Total	 34,081	 22

The above figures show that the per acre investment in machinery on holdings in the smallest group was about four times that on the largest holdings. This discrepancy appears to be somewhat exaggerated by the considerable grassland

acreage of the larger holdings, but it readily proves the necessity of costly equipment in the pursuance of intensive forms of cultivation.

Patterns of Layout on Average Types of Holdings

HAVING described most of the relevant features of layout on the 32 holdings, it now only remains for us to find out and describe how the various average types of holdings functioned.

Initially, and indeed throughout much of this report, the classification of holdings was based on the acreage of the available land, regardless of the characteristic features and purpose shown by prevailing methods of cultivation. In horticulture, due to its diverse nature, it is difficult to find a satisfactory method whereby holdings may be classified into representative groups. The classification into acreage size-groups has no bearing on the method of cultivation, and the type-group classification, owing to the very mixed form of the cultivation, may be far too wide to obtain a representative distinction between the holdings. However, in order to discuss the functional layout of holdings, it seems desirable to adopt the latter method of classification and group the holdings in such a manner that the picture thus obtained, at least in broad terms, accounts for the most common patterns of the respective types of cultivation. With this in mind the available data on the 32 holdings have been re-examined and grouped in accordance with significant and obvious similarities found in methods of cultivation. By defining the different types of cultivation according to enterprises which provided the highest income per acre, the sample holdings fell into 6 distinct type-groups. These type-groups, and the respective number of holdings are set out as follows:

Type-Groups	No. of Holdings	
	No.	%
I. Holdings with glasshouses	5	16
II. Intensive vegetable holdings	4	13
III. Extensive vegetable holdings	2	6
IV. Small-scale vegetable and fruit holdings	14	43
V. Large-scale fruit and vegetable holdings	4	13
VI. Horticultural farms	3	9
Total	32	100

As seen from the above distribution of holdings, the backbone of the sample is the 18 mixed types of holdings growing both fruit and vegetables. Due to the marked difference in the method of organisation on the large holdings as compared with the small holdings, it appeared to be necessary to sub-divide this group on an acreage basis, and separate the over-50-acre holdings from the others. A similar procedure had to be applied to the specialist vegetable-growing holdings too, since the smaller holdings proved to be far more intensive in character than the larger ones. Here the type of crops, rather than the acreage of the individual holding, marked the dividing line. The group of horticultural farms was comprised of large holdings, where livestock and farm crops were of considerable importance and where there was a substantial area of grass-land.

These then, according to methods of cultivation, were the 6 distinct type-groups found on the sample holdings. Nevertheless, within the various groups considerable differences in cropping existed between individual holdings, but these were of degree rather than of kind.

In order to give an account of the functional patterns of the 6 type-groups it was necessary to reconstruct from average results the complete layout for each type of holding. By using the average results obtained from the analysis of single holdings, figures of total acreages, individual crops, areas under glass, double- and inter-cropped areas, etc., readily supply details for the synthesis of hypothetical, but, nevertheless, representative holdings. In presenting the layout of the various type-groups, the total acreage of crops, fallow, grass, and land used for buildings, roads, etc. was calculated according to the average acreage of the holdings included in their respective groups.

In order to make a proper allocation of the available acreage to the various crops and to make allowances for the purchase of standing crops and for double- and inter-cropping, it was necessary to ascertain the area under crop production from a gross acreage figure in which all these items were included. Thus, in calculating the gross crop acreage of the various type-groups, the average area of the holding had to be increased, on the one hand, by the appropriate share of double- and inter-cropping, and also, if any, by the average acreage of the purchased crops; on the other hand, it had to be decreased by the average acreage of grassland, buildings, etc. The results of this calculation can be shown as follows:

TABLE 43
Average Gross Crop Acreages According to Type-Groups

Type-Groups	Total Area	Average Acreage	Multiple Cropped Area		Purchased Crop Area	Total	Less Area of Fallow, Grass, etc.	Average Gross Crop Area
Group	Acres	Acres	Acres	Acres %	Acres	Acres	Acres	Acres
I	203.00	40.6	6.5	15.5	—	47.1	3.4	43.7
II	42.00	10.5	2.3	21.4	—	12.8	2.6	10.2
III	65.50	32.7	0.5	1.5	4.3	37.5	4.0	33.5
IV	166.40	11.9	1.7	14.5	0.5	14.1	1.8	12.3
V	340.70	85.2	11.0	12.9	5.8	102.0	12.7	89.3
VI	699.20	233.0	7.7	3.3	6.7	247.4	86.1	161.3

The values shown in the last column of the above Table 43 represent the acreage to be divided among the different crops in order to obtain the crop layout of the holding. In allotting the available acreage to the various crops, it was first of all necessary to determine the number of crops which were representative of each type-group, and then to ascertain the extent of the acreage to be assigned to each of them. The number of crops allocated in the layout of the various type-groups have been determined in accordance with the number of crops grown on the holdings which constituted each of the groups in question. These figures indicate that Group I should include ten crops, Groups II and IV twelve, and Groups III and V thirteen, whereas in the layout of Group VI there should be sixteen crops. The kinds of crops represented in the above numbers have been selected according to the preference shown by the holdings, within the groups, for these particular crops. Thus, the highest percentage figures found in the occurrences of individual crops have defined those which are likely to be most representative for the layout of the various type-groups. Having decided on the number and kind of crops, it was then necessary to divide the available acreage among the selected crops so that the extent to which they occupied the land fully complied with the average acreage distributions of the type-groups. To satisfy this aim, the total acreages of the individual crops, which were to be included in the various layouts, had to be extracted from the figure of the six acreage distributions; then by adding them together the resulting percentage figures indicate the relative importance of each crop. The division of

the crop acreage of each type-group according to the results of the percentage distribution thus gives a picture of how the layouts of the crops should be arranged. The layout of each type-group contained a certain acreage of fallow land, but naturally this area has not been included in the crop acreage to be divided. The results of these calculations are shown in Table 44.

As mentioned before, the figures shown in Table 44 include all crops, irrespective of their cultivation, namely whether or not they have been double or inter-cropped, or purchased on the ground. So as to comply with the actual size of the holdings, the multiple cropped and purchased crop areas, the extent of which had already been ascertained, had to be split up between the single crops in question. The overall acreage distribution of the various type-groups gave the necessary guidance in defining the affected crops and the acreages involved. The results of these calculations together with the acreages allotted to fallow, grass and buildings, etc., can be seen from the details of the data and sketch maps compiled for each type-group.

Finally, as the sample holdings generally consisted of several separate units of land, it was also necessary to determine the number of these fields and their respective acreages. Details based on average results are as follows:

Group	No. of Units in Acres					Total
	(1)	(2)	(3)	(4)	(5)	
I. . .	40.6	—	—	—	—	40.6
II. . .	7.0	2.3	1.2	—	—	10.5
III. . .	26.4	3.6	2.7	—	—	32.7
IV. . .	6.1	3.0	2.8	—	—	11.9
V. . .	70.2	15.0	—	—	—	85.2
VI. . .	194.3	15.0	9.7	7.0	7.0	233.0

Having ascertained relevant details of the layout of the 6 type-groups, it is now possible to describe briefly the composition of the average holdings in turn.

Group I. Holdings with Glasshouses

Of the five holdings comprising this group, all are primarily tomato producers, otherwise there is little uniformity. Three of the holdings rely entirely on Dutch-light structures, but the other two make use of heated glass. The area covered by glasshouses and frames amounts to 5,324 sq. yds, or 1.1 acres.

Although the average acreage is 40.6 acres, there are large differences between the holdings concerned, two of them being of less than 5 acres, two of more than 40 and one of under

TABLE 44
Crop Layout of Type-Groups in Accordance with the Acreage Distribution

Crops	Group I		Group II		Group III		Group IV		Group V		Group VI	
	Acreage Distribution	Layout	Acreage Distribution	Layout	Acreage Distribution	Layout	Acreage Distribution	Layout	Acreage Distribution	Layout	Acreage Distribution	Layout
Brussels sprouts	48.9	%39	17.0	2.3	11.0	2.5	11.0	1.5	1.9	1.7	15.5	%18
Cabbage, Savoys	29.5	24	10.3	2.0	10.3	2.0	10.3	1.5	2.0	1.7	96.0	28.9
Plums	14.5	12	5.0	1.0	5.0	1.0	5.0	0.2	0.2	0.2	104.1	31.3
Lettuce	9.7	8	3.4	1.0	3	0.3	3	0.2	0.2	0.2	19.5	4
Runner and Dwarf Beans	6.2	7	3.2	1.4	4.9	1.5	6.5	1.0	3.3	5	12.6	2.4
Cauliflower	6.2	5	2.2	1.2	4	0.4	5.5	0.8	6.8	5	4.3	3.9
Plants	3.9	3	1.4	0.9	0.8	0.2	1.7	0.3	2.8	3	3.0	5.0
Tomatoes	2.5	2	0.9	0.2	—	—	—	—	—	—	—	—
Flowers	0.6	—	0.2	—	—	—	—	—	—	—	—	—
Radishes	0.2	—	0.1	—	—	—	—	—	—	—	—	—
Onions	—	—	—	—	3.8	1.1	4.0	0.6	2.0	4.1	3	4.0
Peas	—	—	—	—	6.2	1.8	3.0	0.5	7.2	5	0.6	1.1
Broad Beans	—	—	—	—	2.9	0.8	8.5	1.3	4.4	18.0	6	28.0
Beetroot	—	—	—	—	1.2	0.3	0.4	1.5	0.8	—	—	8.4
Strawberries	—	—	—	—	0.7	0.2	0.2	—	1.7	1	0.2	4.2
Leeks	—	—	—	—	0.6	0.2	0.2	—	2.6	2	0.2	1.8
Carrots	—	—	—	—	—	—	1.0	—	—	—	—	—
Parsnips	—	—	—	—	—	—	1.0	1	0.5	—	—	0.6
Potatoes	—	—	—	—	—	—	1.0	1	0.6	—	—	0.3
Rhubarb	—	—	—	—	—	—	—	—	—	—	—	—
Gooseberries	—	—	—	—	—	—	—	—	—	—	—	—
Pears	—	—	—	—	—	—	—	—	—	—	—	—
Apples	—	—	—	—	—	—	—	—	—	—	—	—
Asparagus	—	—	—	—	—	—	—	—	—	—	—	—
Loganberries	—	—	—	—	—	—	—	—	—	—	—	—
Blackberries	—	—	—	—	—	—	—	—	—	—	—	—
Cereals	—	—	—	—	—	—	—	—	—	—	—	—
Kale, Mangolds	—	—	—	—	—	—	—	—	—	—	—	—
Total	125.2	100	43.7	34.3	100	10.2	65.4	100	33.5	141.8	100	12.3
										314.0	100	89.3
											536.0	100
												161.3

20 acres. On most of these holdings the land appears to be in one complete block. The soils tend to be fairly uniform throughout, although two of the holdings are located on soils of the Pershore series, and two on soils of the Evesham series. The former are to be found on the river-terrace land adjoining the Avon, and the latter on one of the clay-covered ridges in the neighbourhood of Evesham. The fifth holding is situated on the slopes of Bredon Hill which accounts for the relatively large altitude range recorded for this particular group.

All the holdings are supplied with public water though several have, or are developing, supplementary sources, such as water from the River Avon, its tributary brooks, and from wells. Irrigation is used for the outdoor crops, and trickle irrigation for crops under glass. In addition to the glasshouses, an office, a packing shed, and a garage for vehicles and tractors are to be found on the holdings.

The wide range of enterprises occurring in this group obviously leads to differences in crops associated with the glasshouse production. For example, in one case they include farm crops and pigs. The specialist lines besides tomatoes consist of raising vegetable plants for sale, especially cauliflower and sprouts, and the production of bulb and chrysanthemum flowers. The frame-raised crops are mainly lettuce and radish. The practice of inter-cropping is unimportant on these holdings, but double-cropping accounts for nearly 16 per cent of the total acreage.

Group II. Intensive Vegetable Holdings

Although no glass was used on the four holdings included in this group, the method of cultivation has been classified as intensive because mainly high value crops, such as early cauliflower, salad onions and stick beans were grown on a small acreage. With the exception of a small strawberry plantation practically no fruit was grown on these holdings.

The average acreage of this group of holdings was $10\frac{1}{2}$ acres consisting of three separate units of land of which the most far distant was situated about 1.2 miles from the grower's house. The soil on all four holdings tended to be uniform and alluvial in character. Three of these holdings make use of irrigation: on two the water is pumped from the river or stream, but the third has to rely on public water; this supply is not always adequate for the extensive use of the irrigation system. Due to the scattered location of the holdings, electricity is not available in all parts of the layouts, in fact one holding has no supply

at all. The farm buildings are relatively simple consisting of tool and packing sheds, and possibly a tractor shed or barn.

With regard to the method of cultivation, no inter-cropping was practised on the holdings in question, but double-cropping accounted for more than 21 per cent of the total acreage. This is rather a reflection of the light soils and of the intensity of production. Under these circumstances it seems strange to have 1.6 acres of fallow land included in the layout of these holdings, but this relatively high figure is due to the fact that one holding took over a new piece of land which could not be utilised during the year of this survey.

Group III. Extensive Vegetable Holdings

There are only two holdings which can be regarded as representative of this particular type-group. Although on these holdings, too, the main crops are vegetables, their method of cultivation is entirely different from that of the intensive vegetable-growing holdings. Apart from the fact that the average size of holding was 32.7 acres which was much larger than that of the average holding in the previous group, crops were grown on a field-scale and with hardly any irrigation. The main crops were brassicas and legumes occupying 79 per cent of the cropped acreage. The most important single crop appeared to be sprouts; a fair proportion of these were either bought on the ground or grown on land specifically rented for that purpose. There was no inter-cropping, and double-cropping was only 1.5 per cent of the total acreage. These features, coupled with the high figure for fallow land, more than 10 per cent of the layout, illustrates the comparatively low intensity of the cultivation.

These holdings also consisted of three separate units, but although the two smaller pieces of land were comparable in size with those of the intensive vegetable growing holdings, the main unit in the layout was 26.4 acres in extent. On the whole, the soils were diverse, and varied between heavy loams and clays. The location of the holdings fell within a distance of 4 miles of Evesham, and the component units of land within a radius of about 2½ miles of the grower's house. The number and type of buildings were very similar to the holdings in the previous type-group.

Group IV. Small-scale Vegetable and Fruit Holdings

This type-group has perhaps the most representative layout

of the small market garden holdings to be found in the Vale of Evesham. The average size, the fragmentation of land, and indeed the entire method of cultivation of the 14 holdings comprising this group, very closely resembles the pattern of layout for many of the small holdings so common in the area. In fact, there is but little difference between the holdings, and the layout of the 14 holdings, too, seems to conform to a general pattern. Any difference which may exist only manifests itself in the kind of crops grown and not in the intensity of cultivation. It is possible that more vegetables are grown on some holdings than on others; or, occasionally in the orchards, the main crop is apples rather than plums; or the land may consist of one plot only, instead of the more typical three units, but the mixed pattern of growing fruit and vegetables on a small scale is the main feature on each of these holdings.

The average acreage of this type-group of holdings is only 11.9 acres, divided into three units which spread over an area of about $1\frac{1}{4}$ miles and are situated within a radius of 2 to 3 miles from Evesham or Pershore. The holdings are located in a number of parishes such as the Littletons, Cleeve Prior, Offenham, Sedgeberrow, Hinton-on-the-Green, Chidswickham, Pershore and Birlingham, so that the variation in soils is considerable. However, most of the soils belong to the Evesham series or the Hazelor series which are rather similar to the clays of the Evesham series, but contain fragments of underlying Liassic limestone rock. Most of the plum orchards are situated on this kind of soil, probably because it is at a higher altitude, and thus may offer better air drainage. No irrigation system is used on these holdings, and the supply of electricity is confined to the grower's house only; this is generally situated apart from the land. The buildings on the ground are usually limited to one or two tool sheds and a tractor shed.

Of the twelve crops generally grown on these holdings, by far the most important on an acreage basis is the plum crop, followed closely by Brussels sprouts. The typical small-holder's crops, such as asparagus and onions for spring-pulling are important and so are gooseberries for inter-cropping between the plum trees. Double-cropping is practised surprisingly little, probably due to the fact that many of these holdings are situated on the heavier, colder soils of the Evesham clay. On the other hand, the practice of inter-cropping orchard trees is quite common, and accounts for nearly 15 per cent of the total acreage. According to average figures, fallow land amounts to $1\frac{1}{2}$ acres, which seems to be rather high for

the size of holding in question. However, it can be accounted for within this group by the fact that several land changes took place during the period of this survey, and consequently the land could not be prepared for cropping.

Group V. Large-scale Fruit and Vegetable Holdings

Among the 32 sample holdings there are altogether 18 which grow both fruit and vegetable crops. However, 4 of these holdings were far too large to be included in the previous type-group. The acreage of all these holdings was over 50 acres, and in their crop layout both top and soft fruit were predominant. Clearly, these holdings form a type-group of their own, as their organisation differs considerably from that of any of the other type-groups.

The average size of this type of holding was 85.2 acres consisting of only two separate units of land, of about 1 mile in extent, and it was situated about 2 miles from the nearest market. All the holdings within this group rely on company water, and do not make use of irrigation. One of them, however, had a well sunk to provide water for this purpose. In addition to the usual range of farm buildings employed in the business, there were offices, packing sheds, garages and a cold store. Electricity was available on all the holdings.

As mentioned before, fruit was the predominant crop in the layout of these holdings; in fact it occupied nearly 60 per cent of the arable acreage. The main vegetable crops were brassicas and legumes; roots and onions were not grown at all. About 6 per cent of the total acreage was inter-cropped, and the double-cropped area amounted to 7 per cent. Strawberries and vegetables were inter-cropped in young apple orchards, and gooseberries in mature plum orchards. A fair proportion of sprouts were grown on specially rented land. Fallow land amounted to 5 per cent of the total area of the holding.

Group VI. Horticultural Farms

This type-group consisted of those farms which although they derived most of their income from horticultural crops, grew considerable amounts of general farm crops, kept livestock, and had a substantial acreage under grass. The layout of these farms consisted of the main block of land with the usual range of buildings and of a number of outlying fields which were devoted mainly to growing cereal crops.

Only three farms fell into this category and, of these, two

raised cattle, and the third kept sheep and pigs. Of the three, one was primarily a farm with fruit, and the other two were farms with vegetable production. One of the three farms had its own cold store, but the other two made use of the cold storage facilities available at the local market. On the two vegetable growing farms there were also some glasshouses, but due to the relatively very small area under glass, they had to be omitted from the average layout of the type-group.

The average acreage of this group of farms was 233 acres of which 77.9 acres were under grass. The layout consisted of five units of land, one central farm of 111.8 acres, and four outlying fields of which the smallest was only 7 acres. Within the layout of this area, the distance to be covered from one end of the farm to the other was about 4½ miles. The reason for this considerable distance was that one of the farms consisted of two holdings, one in the Vale itself, and the other stretching right into the Cotswolds, together with separately rented sprout land.

The most important vegetable crops on the farms were sprouts and cabbage, but peas, cauliflower and beans were also well represented. Both vegetable growing farms employed irrigation and drew their water supply either from a stream or the mains. With regard to fruit, the main crops were apples and plums, but no soft fruit was grown on the farms. Intercropping was not practised at all in this type-group, and double-cropping was relatively unimportant, being only 3 per cent of the total acreage.

On all three farms there were ample buildings and their equipment was up-to-date in every respect.

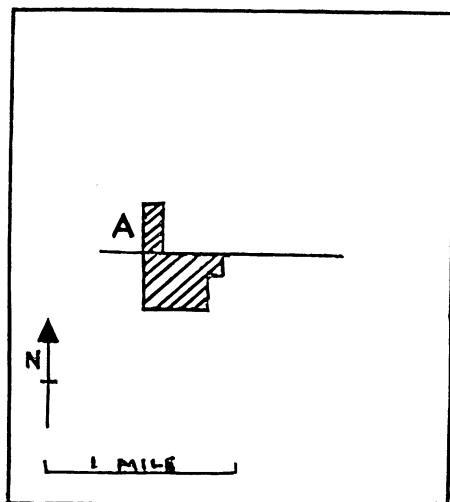
Having described in general terms the main features of the six type-groups, the average patterns of layout can be summarised and illustrated by the following sketch-maps together with their respective data set out in detail.

In average terms, they depict the actual frame-work of the 32 holdings in which the most valuable asset, the land, is organised in order to produce crops for market and to provide fair returns to the grower. However, although the data and descriptions may offer a fairly comprehensive insight into this organisation, the actual function of the layout can best be observed from the financial results achieved by the holdings.

Group I. Holdings with Glasshouses

Average Acreage 40.6 acres

1. General Features



Number of Units Comprising Holding = 1 (*To be called A*)

	Acres
Land under crops	37.9
Grassland and Buildings	2.7
Total	40.6

Soils: *uniform distribution—Pershore or Evesham series.*

Slope of Land: *appreciable to slight.*

Maximum Travelling Distance on the Holding: *1.1 miles.*

Altitude Range: *120 ft. to 164 ft.*

Location: *3.5 miles from Evesham.*

Irrigation System

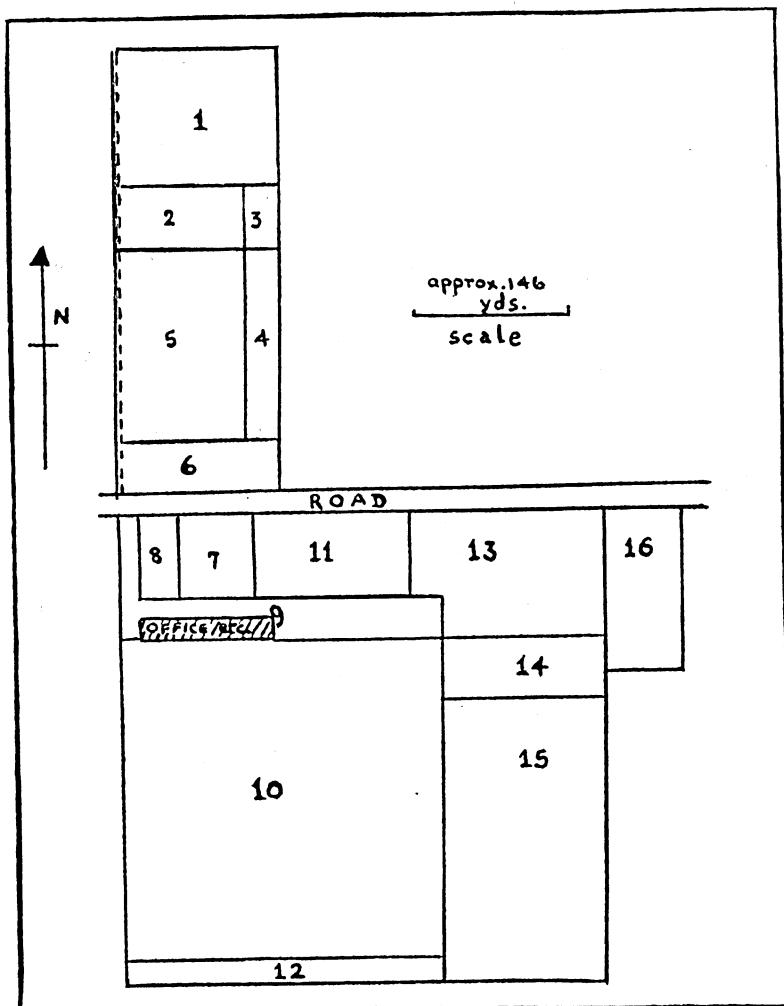
Source of Water Supply: *stream and Company water.*

Electricity: *available.*

Buildings: *glasshouses; office; packing shed; tractor shed.*

2. Functional Layout

Unit A=40.60 acres.



Key to Crops Grown

Plot No.	PERMANENT CROPS		Acreage
	Main Crop	Intercrop	
1	Plums		3.4
2	Young Plums	Sprouts (1.3 acres)	1.3
3	Young Plums	Runner Beans (0.3 acres)	0.3

ARABLE CROPS AND FALLOW

4	Runner Beans	:	:	:	:	:	:	0.9
5	Sprouts	:	:	:	:	:	:	3.9
	Glasshouse:							
7	Flowers	:	:	:	:	:	:	0.2
	Plants	:	:	:	:	:	:	0.7
	Tomatoes	:	:	:	:	:	:	0.9*
	Frames:							
8	Plants	:	:	:	:	:	:	0.2
	Radish	:	:	:	:	:	:	0.1*
10	Sprouts	:	:	:	:	:	:	11.8
11	Runner Beans	:	:	:	:	:	:	2.0
12	Fallow	:	:	:	:	:	:	0.7
13	Cabbage	:	:	:	:	:	:	3.4
	Lettuce	:	:	:	:	:	:	3.4*
14	Cabbage	:	:	:	:	:	:	0.5
	Plants	:	:	:	:	:	:	0.5*
15	Cabbage	:	:	:	:	:	:	6.4
16	Cauliflower	:	:	:	:	:	:	2.2
	Total Crops and Fallow	:	:	:	:	:	:	37.9
6	Grassland	:	:	:	:	:	:	1.2
9	Buildings, etc.	:	:	:	:	:	:	1.5
	Total	:	:	:	:	:	:	40.6

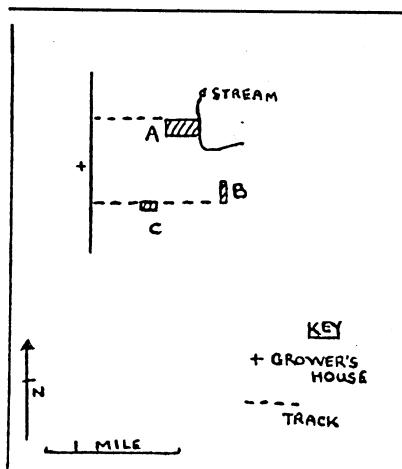
* Double Cropped

Summary of Crop Acreages

No. of Crops = 10	Acreage	%	Double Crop		Intercrop	
			Acreage	%	Acreage	%
<i>Brassicas:</i>						
Sprouts . . .	17.0	42	—	—	1.3	—
Cabbage . . .	10.3	25	—	—	—	—
Cauliflower . . .	2.2	5	—	—	—	—
<i>Legumes:</i>						
Runners . . .	3.2	8	—	—	0.3	—
<i>Other Vegetables:</i>						
Tomatoes I.D. . .	0.9	2	0.9	—	—	—
Lettuce . . .	3.4	8	3.4	—	—	—
Radish . . .	0.1	—	0.1	—	—	—
<i>Flowers and Herbs:</i>						
Flowers . . .	0.2	1	—	—	—	—
Plants . . .	1.4	4	0.5	—	—	—
<i>Top Fruit:</i>						
Plums . . .	5.0	12	—	—	—	—
<i>Fallow</i> . . .	0.7	2	—	—	—	—
Gross Total . . .	44.4	109	4.9	12	1.6	4
Less Double and Intercrop . . .	6.5	16				
Net Total . . .	37.9	93				
Buildings, Roads, Wasteland . . .	1.5	4				
Grassland . . .	1.2	3				
Total of Holding . . .	40.6	100				

Group II. Intensive Vegetable Holdings
Average Acreage 10.5 acres

1. General Features



No. of Units Comprising Holding = 3

Land under Crops:	A = 6.00 acres
	B = 2.25 acres
	C = 1.25 acres
Grassland & Buildings	= 1.00 acres
Total	<hr/> 10.50 acres

Soils: *uniform distribution—Pershore or other relatively light soils.*

Slope of Land: *appreciable to none.*

Maximum Travelling Distance on the Holding: *1.2 miles.*

Altitude Range: *88 ft. to 101 ft.*

Location: *2.1 miles from Evesham or Pershore.*

Irrigation System

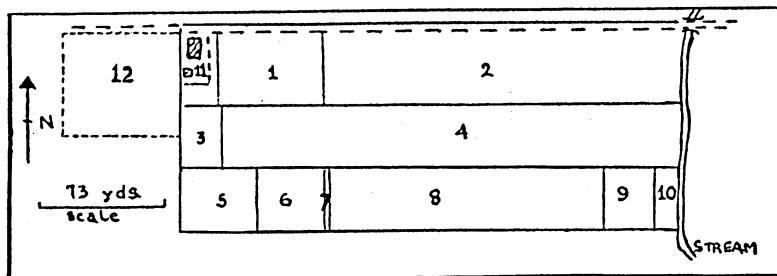
Source of Water Supply: *stream.*

Electricity: *none.*

Buildings: *tool shed; tractor shed.*

2. Functional Layout

Unit A = 7.00 acres.

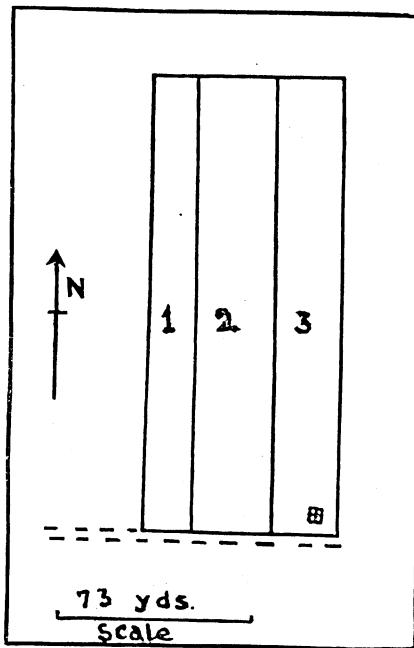


Key to Crops Grown

Plot No.	PERMANENT CROPS	Acreage
3	Strawberries . . .	0.2
ARABLE CROPS AND FALLOW		
1	Fallow . . .	0.3
2	Runner Beans . . .	1.5
4	Peas . . .	1.8
5	Onions . . .	0.3
	Lettuce . . .	0.3*
6	Onions . . .	0.25
	Tomatoes . . .	0.25*
7	Onions . . .	0.05
8	Fallow . . .	1.3
9	Cauliflower . . .	0.2
10	Beetroot . . .	0.1
11	Total Crops and Fallow. . .	6.0
	Buildings, etc. . .	0.25
	Grassland . . .	0.75
Total . . .		
7.00		

* Double Cropped

Unit B = 2.25 acres.

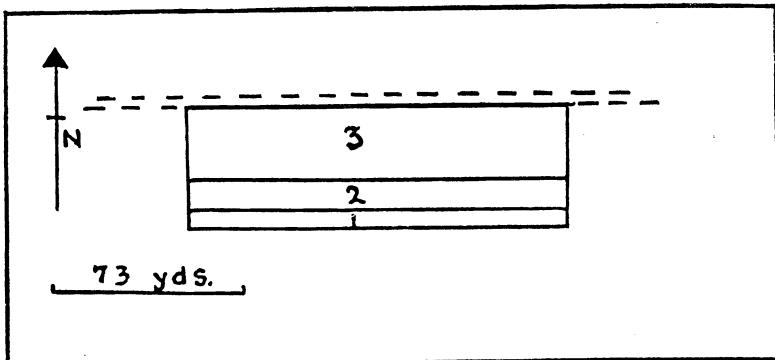


Key to Crops Grown

Plot No.	ARABLE CROPS AND FALLOW			Acreage
1	Onions	.	.	0.5
	Sprouts	.	.	0.5*
2	Cabbage	.	.	1.0
	Sprouts	.	.	1.0*
3	Sprouts	.	.	0.75
	Total	.	.	2.25

* Double Cropped

Unit C=1.25 acres.



Key to Crops Grown

Plot No.	ARABLE CROPS AND FALLOW			Acreage
1	Leeks	.	.	0.2
	Cauliflower	.	.	0.2*
2	Beetroot	.	.	0.25
3	Broad Beans	.	.	0.8
	Total	.	.	1.25

* Double Cropped

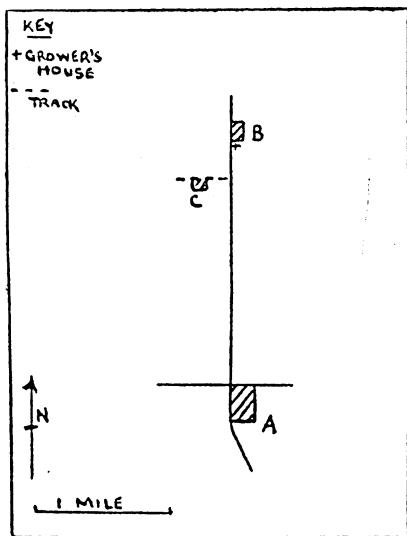
Summary of Crop Acreages

No. of Crops = 12		Acreage	%	Double Crop	
				Acreage	%
<i>Brassicas:</i>					
Sprouts	.	2.25	21	1.5	—
Cabbage	.	1.0	10	—	—
Cauliflower	.	0.4	4	0.2	—
<i>Roots and Onions:</i>					
Beetroot	.	0.35	3	—	—
Leeks	.	0.2	2	—	—
Onions	.	1.1	11	—	—
<i>Legumes:</i>					
Broad Beans	.	0.8	8	—	—
Runners	.	1.5	14	—	—
Peas	.	1.8	17	—	—
<i>Other Vegetables:</i>					
Tomatoes O.D.	.	0.25	2	0.25	—
Lettuce	.	0.3	3	0.3	—
<i>Soft Fruit:</i>					
Strawberry	.	0.2	2	—	—
Fallow	.	1.6	15	—	—
Gross Total	.	11.75	112	2.25	21
Less Double Crop	.	2.25	21		
Net Total		9.50	91		
Buildings and Roads	.	0.25	2		
Grassland	.	0.75	7		
Total of Holding	.	10.50	100		

Group III. Extensive Vegetable Holdings

Average Acreage 32.75 acres

1. General Features



No. of Units Comprising Holding = 3

		Acres
Land under Crops:		
A	.	26.1
B	.	3.6
C	.	2.75
Buildings	.	0.3
Total	.	<u>32.75</u>

Soils: diverse distribution—*Evesham and Badsey series*.

Slope of Land: appreciable to none.

Maximum Travelling Distance on the Holding: 2·4 miles.

Altitude Range: 132 ft. to 150 ft.

Location: 3·9 miles from *Evesham*.

Irrigation: *none*.

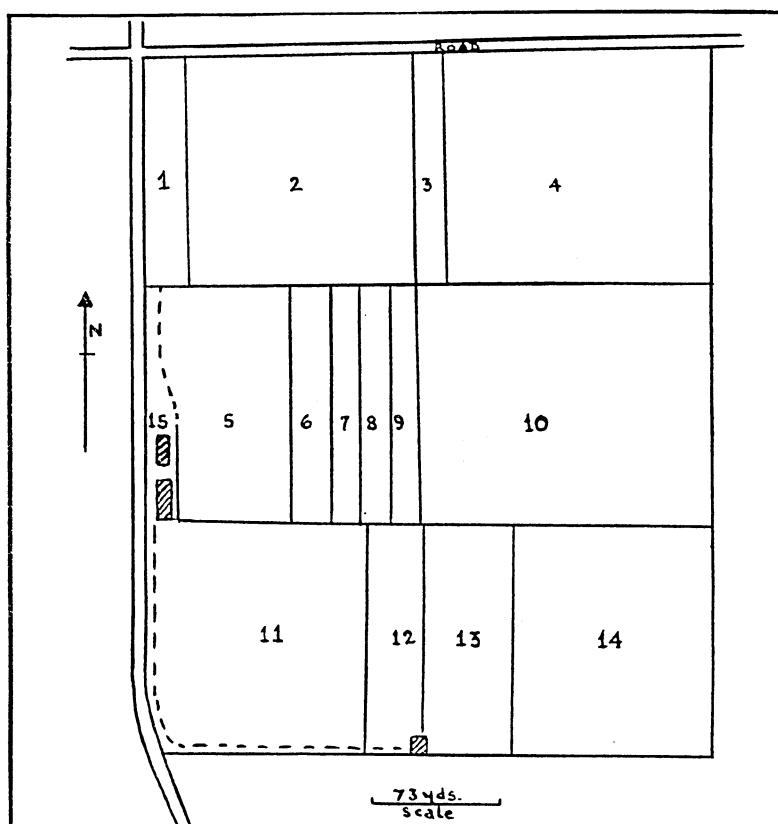
Source of water supply: *stream and Company*.

Electricity: *none*.

Buildings: *tool shed; tractor shed*.

2. Functional Layout

Unit A = 26·4 acres

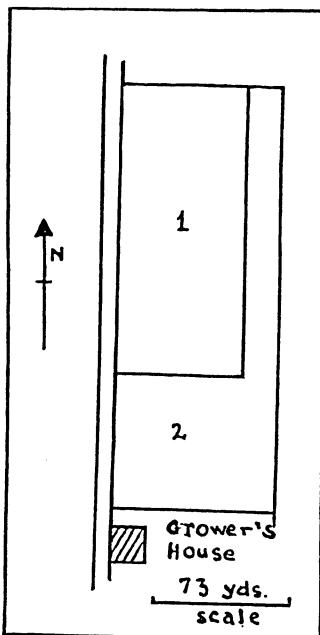


Key to Crops Grown

Plot No.	PERMANENT CROPS	Acreage
7	Rhubarb . .	0.5
ARABLE CROPS AND FALLOW		
1	Beetroot . . .	0.8
2	Sprouts . . .	3.5
3	Cabbage . . .	0.5
	Sprouts . . .	0.5*
4	Cabbage . . .	4.1
5	Fallow . . .	2.1
6	Potatoes . . .	0.6
8	Parsnips . . .	0.5
9	Carrots . . .	0.5
10	Broad Beans . .	4.4
11	Runner Beans . .	3.3
12	Plants . . .	1.0
13	Peas . . .	1.5
14	Cauliflower . .	2.8
Total Crops and Fallow		26.1
15	Buildings, etc. .	0.3
Total . . .		26.4

* Double Cropped

Unit B = 3.6 acres.



Key to Crops Grown

Plot No.	ARABLE CROPS AND FALLOW	Acreage
1	Onions . . .	2.0
2	Fallow . . .	1.6
	Total . . .	3.6

Unit C = 2.75 acres of Sprouts. Also 4.25 acres sprouts purchased.

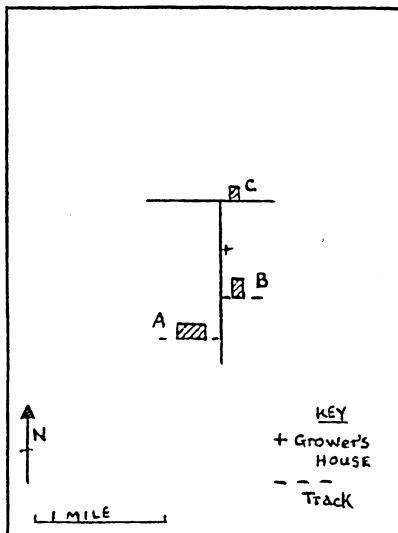
Summary of Crop Acreages

No. of Crops=13	Acreage	%	Double Crop	
			Acreage	%
<i>Brassicas:</i>				
Sprouts	11.0	34	0.5	—
Cabbage	4.6	14	—	—
Cauliflower.	2.8	9	—	—
<i>Roots and Onions:</i>				
Carrots	0.5	2	—	—
Parsnips	0.5	2	—	—
Beetroot	0.8	2	—	—
Onions	2.0	6	—	—
<i>Legumes:</i>				
Broad Beans	4.4	13	—	—
Runners	3.3	10	—	—
Peas	1.5	5	—	—
<i>Other Vegetables:</i>				
Potatoes	0.6	2	—	—
Rhubarb	0.5	2	—	—
<i>Flowers and Herbs:</i>				
Plants	1.0	3	—	—
Fallow	3.7	10	—	—
Gross Total	37.2	114	0.5	2
<i>Less</i> {Double Crop 0.5 acres Crops Purchased (sprouts) 4.25 acres}	4.75	15		
Net Total	32.45	99		
Buildings, roads, etc.	0.3	1		
Total of Holding	32.75	100		

Group IV. Small-scale Vegetable and Fruit Holdings

Average Acreage 11.9 acres

1. General Features



No. of Units Comprising Holding = 3

Land under Crops:	Acres
A	5.8
B	3.0
C	2.8
Grassland and Buildings	0.3
Total	<u>11.9</u>

Soils: *diverse distribution—Evesham and Haselor series.*

Slope of Land: *appreciable to slight.*

Maximum Travelling Distance on the Holding: 1.28 miles.

Altitude Range: 129 ft. to 170 ft.

Location: 3.0 miles from Evesham.

Irrigation: *none.*

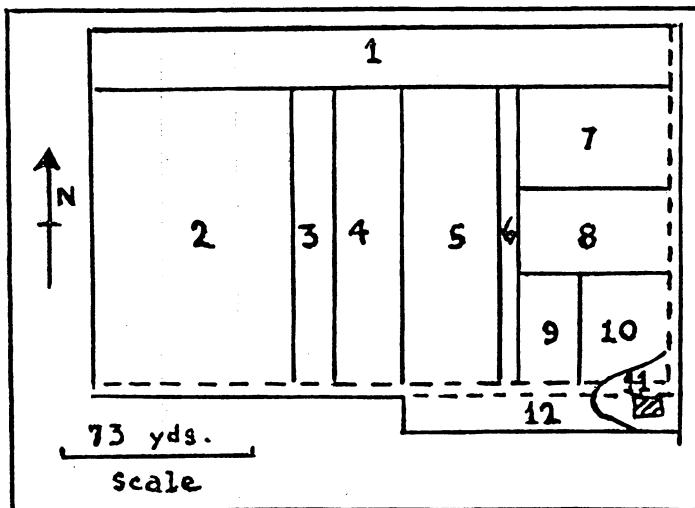
Source of Water Supply: *well.*

Electricity: *none.*

Buildings: *Two tool sheds; tractor shed.*

2. Functional Layout

Unit A=6.1 acres.



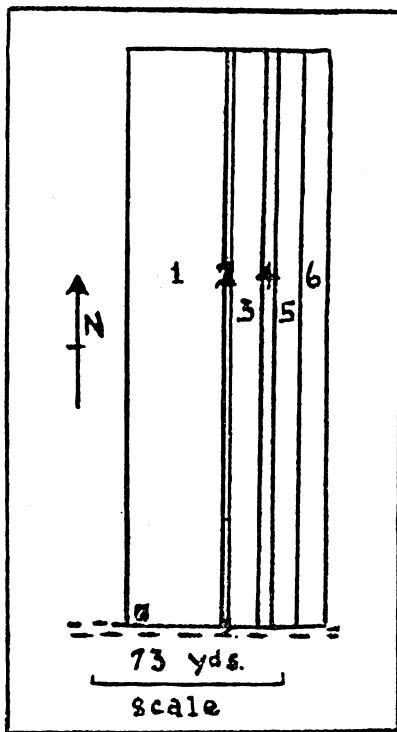
Key to Crops Grown

Plot No.	PERMANENT CROPS		Acreage
	Main Crop	Intercrop	
1	Plums		0.9
2	Apples		1.7
3	Young Pears	{ Asparagus (0.2 acres) Sprouts (0.2 acres) }	0.4
4	Plums		0.5
9	Strawberries		0.2
10	Gooseberries		0.2

ARABLE CROPS AND FALLOW

5	Fallow	.	.	.	.	.	.	.	0.8
6	Beetroot	.	.	.	.	.	.	.	0.2
7	Peas	.	.	.	.	.	.	.	0.5
8	Runner Beans	.	.	.	.	.	.	.	0.4
11	Total Crops and Fallow	.	.	.	.	.	.	.	5.8
12	Buildings, paths, etc.	.	.	.	.	.	.	.	0.2
	Grassland	.	.	.	.	.	.	.	0.1
	Total	.	.	.	.	.	.	.	6.1

Unit B=3.0 acres



Key to Crops Grown

Plot No.	PERMANENT CROPS		Acreage
	Main Crop	Intercrop	
6	Asparagus	Peas (0.1 acres)	0.5

ARABLE CROPS AND FALLOW

1	Sprouts	.	.	.	.	.	.	.	1.2
2	Cabbage	.	.	.	.	.	.	.	0.2
3	Onions	.	.	.	.	.	.	.	0.2
4	Runner Beans	.	.	.	.	.	.	.	0.2*
5	Onions	.	.	.	.	.	.	.	0.2
	Fallow	.	.	.	.	.	.	.	0.7
	Total	.	.	.	.	.	.	.	3.0

* Double Cropped

Unit C=2.8 acres *Plums* (with 1.0 acres intercropped by *Gooseberries*). Also 0.5 acres of *Sprouts* purchased.

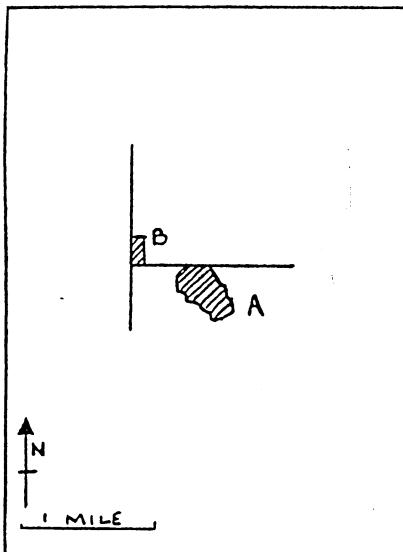
Summary of Crop Acreages

No. of Crops=12	Acreage	%	Double Crop		Intercrop	
			Acreage	%	Acreage	%
<i>Brassicas:</i>						
Sprouts	1.9	16	—	—	0.2	—
Cabbage	0.2	2	—	—	—	—
<i>Roots and Onions:</i>						
Beetroot	0.2	2	—	—	—	—
Onions	0.4	3	—	—	—	—
<i>Legumes:</i>						
Runners	0.6	5	0.2	—	—	—
Peas	0.6	5	—	—	0.1	—
<i>Other Vegetables:</i>						
Asparagus	0.7	6	—	—	0.2	—
<i>Top Fruit:</i>						
Plums	4.2	35	—	—	—	—
Apples	1.7	14	—	—	—	—
Pears	0.4	3	—	—	—	—
<i>Soft Fruit:</i>						
Strawberry	0.2	2	—	—	—	—
Gooseberry	1.2	10	—	—	1.0	—
Fallow	1.5	13	—	—	—	—
Gross Total	13.8	116	0.2	2	1.5	13
<i>Less</i> { Double and intercrop 1.7 acres Crops purchased (sprouts) 0.5 acres }	2.2	19				
Net Total	11.6	97				
Buildings, roads, etc.	0.2	2				
Grassland	0.1	1				
Total of Holding	11.9	100				

Group V. Large-scale Fruit and Vegetable Holdings

Average Acreage 85.2 acres

1. General Features



No. of Units Comprising Holding = 2

Land under Crops:	Acres
A	61.6
B	15.0
Grassland and Buildings . . .	8.6
Total	<u>85.2</u>

Soils: *diverse distribution—Evesham and Pershore series.*

Slope of Land: *appreciable to slight.*

Maximum Travelling Distance on the Holding: *1.0 miles.*

Altitude Range: *96 ft. to 149 ft.*

Location: *2.0 miles from Pershore.*

Irrigation: *none.*

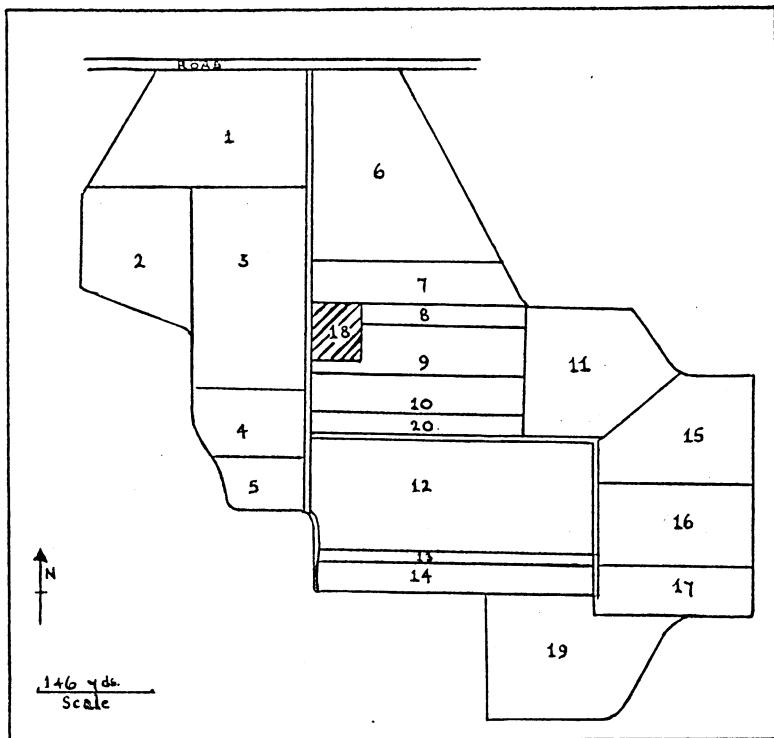
Source of Water Supply: *Company water.*

Electricity: *available.*

Buildings: *farm buildings; packing shed; office; cold store.*

2. Functional Layout

Unit A=70.2 acres.



Key to Crops Grown

Plot No.	PERMANENT CROPS			Acreage
	Main Crop	Intercrop		
1	Apples	Peas Cabbage Strawberries	(1.2 acres) (0.4 acres) (1.5 acres)	6.2
2	Blackberries			3.9
3	Plums			6.8
12	Plums			10.0
13	Gooseberries			0.1
14	Pears			2.2
16	Strawberries			3.2
17	Loganberries			2.4

ARABLE CROPS AND FALLOW

4	Runner Beans	.	.	.	.	.	.	2.3
5	Potatoes	.	.	.	.	.	.	1.4
6	Sprouts	.	.	.	.	.	.	7.1
7	Cabbage	.	.	.	.	.	.	2.7
8	Sprouts	.	.	.	.	.	.	2.7*
9	Cabbage	.	.	.	.	.	.	0.4
10	Runner Beans	.	.	.	.	.	.	2.0*
11	Cabbage	.	.	.	.	.	.	2.0
20	Cauliflower	.	.	.	.	.	.	2.0*
15	Cauliflower	.	.	.	.	.	.	1.0
18	Fallow	.	.	.	.	.	.	4.0
19	Peas	.	.	.	.	.	.	3.9
	Total Crops and Fallow	.	.	.	.	.	.	61.6
	Buildings and Roads	.	.	.	.	.	.	2.0
	Grassland	.	.	.	.	.	.	6.6
	Total	.	.	.	.	.	.	70.2

* Double Cropped

Unit B = 15.0 acres.

Key to Crops Grown

PERMANENT CROPS		Acres
Main Crop	Intercrop	
Plums	Gooseberries (1.2 acres)	10.0
Apples		5.0
	Total	15.0

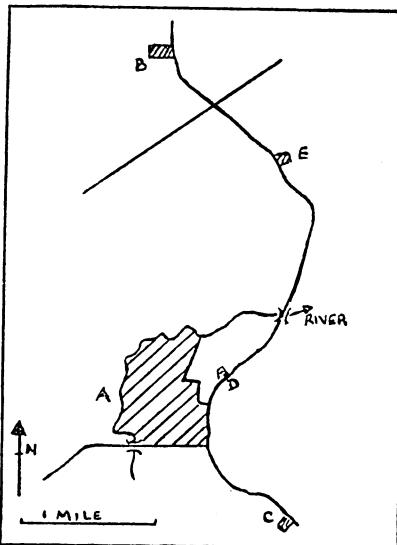
Summary of Crop Acreages

No. of Crops=13	Acreage	%	Double Crop		Intercrop	
			Acreage	%	Acreage	%
<i>Brassicas:</i>						
Sprouts	15.5	18	2.7	—	—	—
Cabbage	7.5	9	—	—	0.4	—
Cauliflower	3.0	4	2.0	—	—	—
<i>Legumes:</i>						
Runners	4.3	5	2.0	—	—	—
Peas	5.1	6	—	—	1.2	—
<i>Other Vegetables:</i>						
Potatoes	1.4	2	—	—	—	—
<i>Top Fruit:</i>						
Plums	26.8	31	—	—	—	—
Apples	11.2	13	—	—	—	—
Pears	2.2	3	—	—	—	—
<i>Soft Fruit:</i>						
Strawberry	4.7	5	—	—	1.5	—
Gooseberry	1.3	1	—	—	1.2	—
Loganberry	2.4	3	—	—	—	—
Blackberry	3.9	5	—	—	—	—
Fallow	4.0	5	—	—	—	—
Gross Total	93.3	110	6.7	8	4.3	5
<i>Less</i> {Double and Intercrop 11.0 acres Crops Purchased (sprouts) 5.7 acres}	16.7	20				
Net Total	76.6	90				
Buildings, roads, etc.	2.0	2				
Grassland	6.6	8				
Total of Holding	85.2	100				

Group VI. Horticultural Farms

Average Acreage 233.0 acres

1. General Features



No. of Units Comprising Holding = 5.

Land under Crops:	Acres
A	116.4
B	15.0
C	9.7
D	7.0
E	7.0
Grassland and Buildings . . .	77.9
Total	<u>233.0</u>

Soils: *diverse distribution of very varied soils including Evesham and Pershore series.*

Slope of Land: *appreciable to none.*

Maximum Travelling Distance on the Holdings: *4.4 miles.*

Altitude Range: *102 ft. to 404 ft.*

Location: *3.8 miles from Pershore.*

Irrigation System

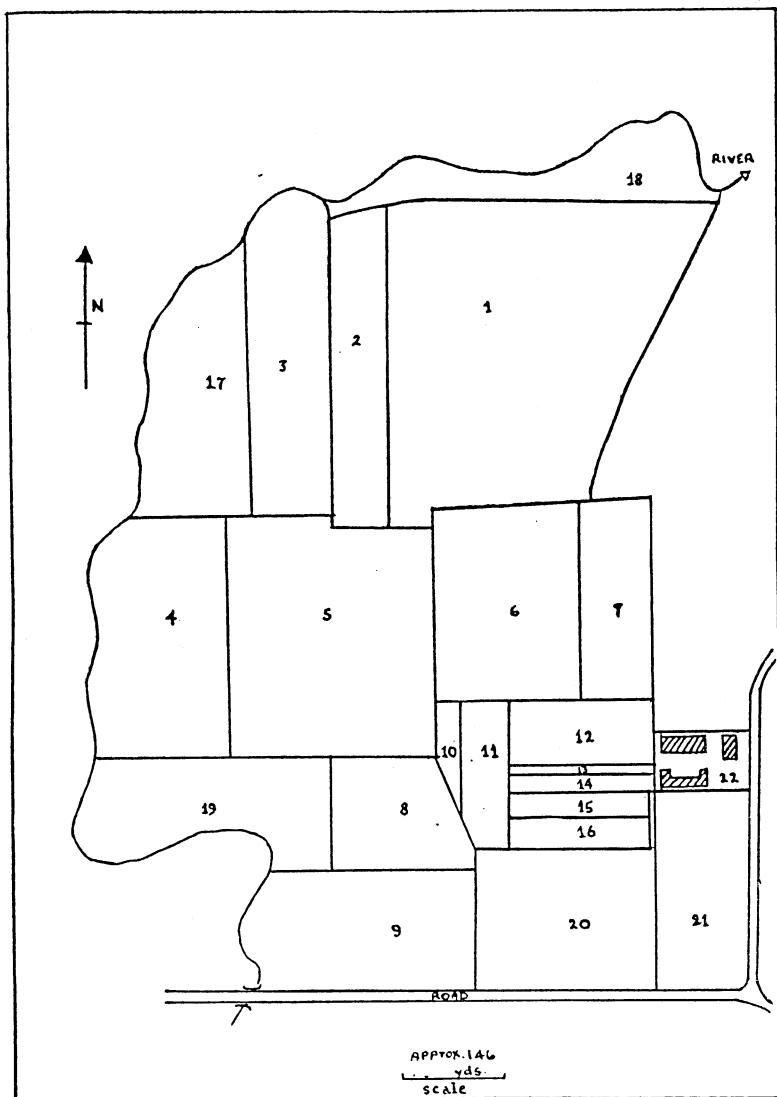
Source of Water Supply: *stream and Company water.*

Electricity: *available.*

Buildings: *office; farm buildings.*

2. Functional Layout

Unit A = 194.3 acres.



Key to Crops Grown

Plot No.	PERMANENT CROPS				Acreage
6	Apples	:	:	:	8.6
7	Plums	:	:	:	5.8

ARABLE CROPS AND FALLOW

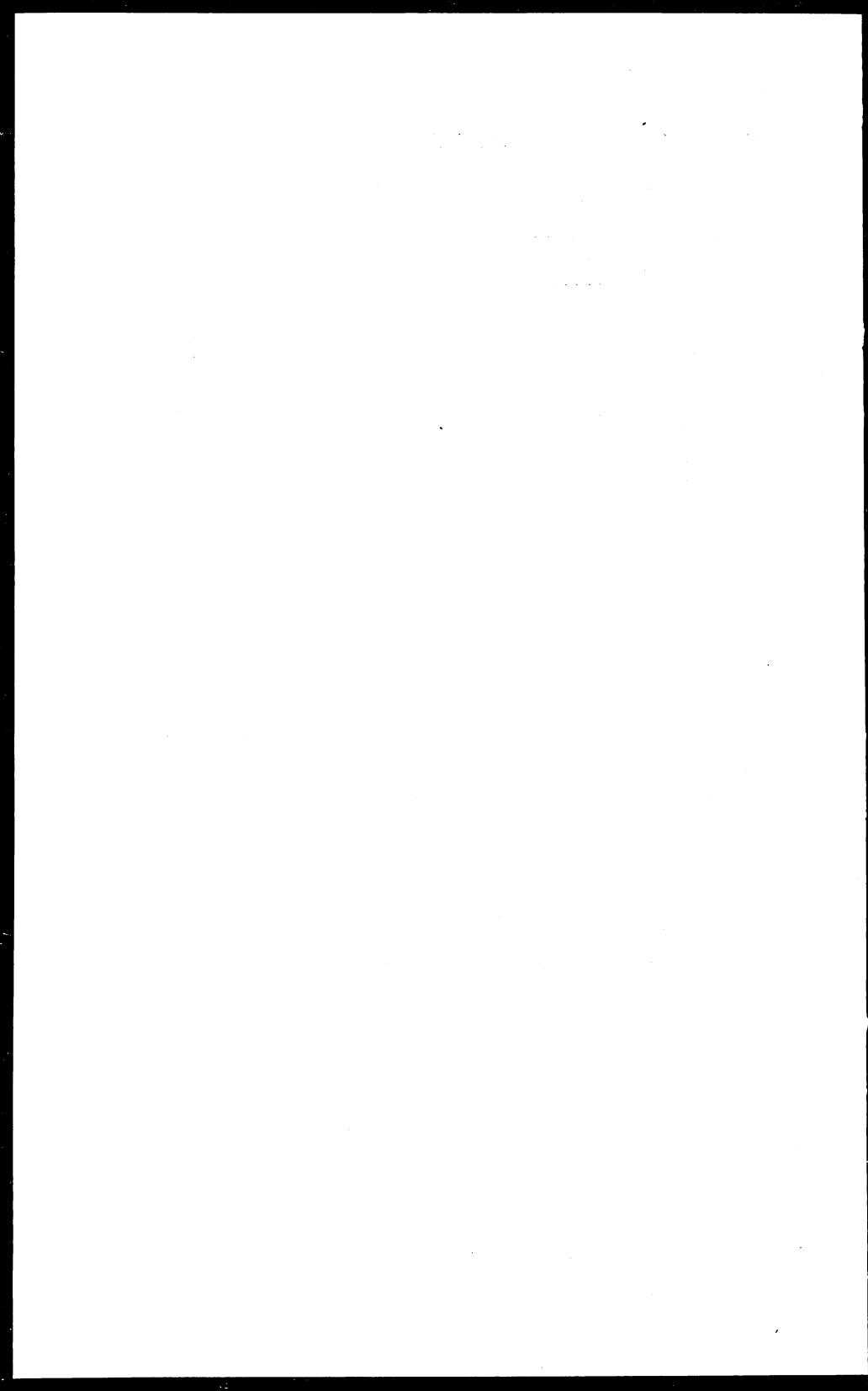
1	Cabbage	.	.	.	26.3
2	Cabbage	.	.	.	5.0
3	Cauliflower	.	.	.	5.0*
4	Peas	.	.	.	8.4
5	Sprouts	.	.	.	11.9
8	Cereal Crop	.	.	.	17.3
9	Broad Beans	.	.	.	4.2
10	Sprouts	.	.	.	10.0
11	Mangolds	.	.	.	0.6
12	Kale	.	.	.	2.4
13	Runner Beans	.	.	.	3.9
14	Carrots	.	.	.	0.3
15	Sprouts	.	.	.	0.3*
16	Leeks	.	.	.	0.6
17	Lettuce	.	.	.	0.6*
22	Beetroot	.	.	.	1.8
18-21	Lettuce	.	.	.	1.8*
	Onions	.	.	.	1.1
	Fallow	.	.	.	8.2
	Total Crops and Fallow	.	.	.	116.4
	Buildings, etc.	.	.	.	3.6
	Grassland	.	.	.	74.3
	Total	.	.	.	194.3

* Double Cropped

Units B-E = 38.7 acres—*Cereal Crops.*

Summary of Crop Acreages

No. of Crops=16						Acreage	%	Double Crop	
						Acreage	%		
<i>Brassicas:</i>									
Sprouts	.	.	.	.	.	28.9	12	0.3	—
Cabbage	.	.	.	.	.	31.3	13	—	—
Cauliflower	.	.	.	.	.	5.0	2	5.0	—
<i>Roots and Onions:</i>									
Carrots	.	.	.	.	.	0.3	—	—	—
Beetroot	.	.	.	.	.	1.8	1	—	—
Leeks	.	.	.	.	.	0.6	—	—	—
Onions	.	.	.	.	.	1.1	—	—	—
<i>Legumes:</i>									
Broad Beans	.	.	.	.	.	4.2	2	—	—
Runners	.	.	.	.	.	3.9	2	—	—
Peas	.	.	.	.	.	8.4	4	—	—
<i>Other Vegetables:</i>									
Lettuce	.	.	.	.	.	2.4	1	2.4	—
<i>Farm Crops:</i>									
Cereals	.	.	.	.	.	56.0	24	—	—
Mangolds	.	.	.	.	.	0.6	—	—	—
Kale	.	.	.	.	.	2.4	1	—	—
<i>Top Fruit:</i>									
Plums	.	.	.	.	.	5.8	3	—	—
Apples	.	.	.	.	.	8.6	4	—	—
Fallow	.	.	.	.	.	8.2	4	—	—
Gross Total	.	.	.	.	.	169.5	73	7.7	3
<i>Less</i> { Double Crop 7.7 acres Crops Purchased (sprouts) 6.7 acres }						14.4	6		
Net Total	.	.	.	.	.	155.1	67		
Buildings, roads, etc.	.	.	.	.	.	3.6	1		
Grassland	.	.	.	.	.	74.3	32		
Total of Holding	.	.	.	.	.	233.0	100		



PART III

Financial Results

IN describing the business results of the six operational patterns of layout, the chief aim is to present a picture, in average terms, of the financial returns achieved by the different types of organisation during the cropping year 1955/56. To do this it is necessary to examine the relationship between production and cost by providing data on net returns and gross production of the holding; the sale and return for single crops; and costs expended in the interest of production. These were the main objectives in analysing the accounts of the 32 holdings. The data thus obtained covered the cropping year ending at varying dates between September 30th, 1955 and April 5th, 1956. The number of accounts according to their closing dates is as follows:

		<i>No. of Accounts</i>	<i>%</i>
September, 1955	:	5	16
December, 1955	:	8	25
April, 1956	:	19	59
Total	.	32	100

In the analysis, both the actual transactions of buying and selling together with the opening and closing valuations of stock were considered. The transactions were supported by actual receipts and market sale notes, and details of the valuations were derived from the estimates of professional valuers. On those small holdings where no such valuations were kept, the necessary estimates including those of growing crops were specially prepared during the course of the survey work. The non-cash revenue and expenditure were based on the grower's own estimates.

In discussing the results of the analyses, the data derived therefrom will be dealt with in the following order: (a) Margin; (b) Production; (c) Costs, and (d) Relationship between Production and Cost. All the results are calculated on a per acre basis.

Margin

The term "margin" is used to express the success or failure of the holding's financial results. This is the difference between the opening valuation plus expenses, and closing valuation plus revenue.

"Valuations" include the value of all live and deadstock, with the exception of implements and machinery which have been depreciated and the sum thus obtained added to the cost.

"Revenue" includes all cash receipts due to the financial year, together with non-cash income, such as a share of the rent and rates of the grower's house attached to the holding, and produce consumed by the grower and his family.

"Expenditure" consists of all purchases and expenses, including the rental value if the grower is an owner-occupier, and also the value of the unpaid labour of the grower, his wife and family.

In order to simplify the form of presenting the margin figures, the sums of revenue and expenditure have been adjusted by the changes in the valuations, so that the difference between the opening and closing valuations, if it happens to be an appreciation decreases, and if a depreciation, increases the amount of expenditure.

On the whole, the margin figures of the 32 holdings show that the 1955/56 cropping year was a fairly successful one; but 7 of the 32 holdings, that is 22 per cent of the total, were not successful in achieving a positive margin. Among these were 1 intensive and 2 extensive vegetable-growing holdings, and 4 small-scale vegetable- and fruit-growing holdings. Sixteen of the 32 holdings had co-operated with the University in its annual surveys since 1949. By taking these identical holdings into account, the fluctuation in the number of unsuccessful holdings shows the following ratios:

		<i>No. of Holdings</i>	<i>%</i>
1949	.	3	19
1950	.	5	31
1951	.	4	25
1952	.	6	38
1953	.	3	19
1954	.	2	13
1955	.	3	19

From the above figures it can be seen that the proportion of unsuccessful holdings was lowest in 1949 and in the last three

years. The improvement is due chiefly to the increase of cultivations under glass, the more extensive use of irrigation and the gradual maturity of young fruit plantations.

The relatively high proportion of unsuccessful holdings was mainly due to the amount for "own labour", which was £29 per acre for the overall average of 1955. If this item had not been taken into account, there would only have been one unsuccessful holding out of the total of 32 and this actually belonged to the extensive type of vegetable-growing holding.

The average margin results are given in Table 45 where the deduction for "own labour" is shown separately.

TABLE 45
Average Margin per Acre

No.	Type-Group	Revenue	Expenditure	Difference	Own Labour	Margin
I.	Holdings with Glasshouses .	579	382	+197	23	+174
II.	Intensive Vegetable Holdings	273	136	+137	59	+ 78
III.	Extensive Vegetable Holdings	90	97	- 7	17	- 24
IV.	Small-Scale Vegetable and Fruit Holdings .	142	92	+ 50	38	+ 12
V.	Large-Scale Fruit and Vegetable Holdings. .	146	124	+ 22	3	+ 19
VI.	Horticultural Farms . .	85	75	+ 10	3	+ 7
—	Average	219	146	+ 73	29	+ 44

As can be seen from the foregoing table the average margin of the 32 holdings was £44 per acre, or £25 on each £100 of expenditure including the allowance for the unpaid labour of the grower and his family. This return may, indeed, be regarded as a satisfactory reward for the managerial skill and technical knowledge of the growers concerned. Of the six type-groups of layout, only the extensive vegetable-growing holdings showed a negative margin, a loss of £24 per acre, or £21 per £100 expenditure. This lack of success on the two holdings included in this particular group was due to their very low income brought about by a series of crop failures and adverse marketing conditions. Neither of these holdings were equipped with irrigation systems. The most successful type of layout was, of course, on holdings with glasshouse cultivations, where the margin averaged £174 per acre, or £43 per £100 expenditure. On the five holdings included in this group, the

margin per acre varied from £7 to £675 according to the acreage. The smallest of these holdings was $4\frac{1}{2}$ acres and the largest 132 acres. The intensive vegetable-growing holdings showed a margin of £78 per acre, or £40 on each £100 expenditure which compares very favourably with the result of the previous group of holdings, especially when one considers that there was no crop grown under glass. There were four holdings in this group of which the smallest was 7 acres and the largest 17.5 acres. Of these holdings only one showed a loss, whereas on the others the margin varied from £23 to £155 per acre. On the large-scale fruit and vegetable-growing holdings the average margin was £19 per acre, or £15 per £100 expenditure. Here, too, the figure refers to the result of four holdings, of which the smallest was 53 acres and the largest 115 acres. All of these holdings achieved a margin which varied between £1 and £29 per acre. The margin of the small-scale vegetable and fruit-growing holdings was £12 per acre, giving a return of £9 per £100 expenditure. In this group the smallest holding was 5.1 acres and the largest 24.2 acres. Of these 14 holdings there were four which were not successful in their efforts, otherwise the margin figures ranged from £4 to £61 per acre. On the last group of holdings, the horticultural farms, the average margin worked out at £7 per acre, or £9 per £100 expenditure which is identical with the figure for the previous group. There were three such farms included in this type-group, of which the smallest was 122.2 acres, and the largest 420 acres. The margin for these farms varied from £2 to £15 per acre.

In order to obtain a more comprehensive picture of the success of the 1955/56 season, it may be of interest to examine the data for the last seven years of the 16 identical holdings. According to these figures there was considerable variation in their margins per acre. Although there were some changes in the layout of the holdings, the wide variation in the annual results was mainly due to the fluctuation of receipts. Average margins per acre in relation to expenditure give the following picture:

Years	Margin		Per cent of Expenditure
	Per Acre	£	
1949	.	21	14
1950	.	6	5
1951	.	17	13
1952	.	7	5
1953	.	15	11
1954	.	25	20
1955	.	19	14
Overall Average	.	16	12

The above figures indicate, that on the 16 holdings, with an average acreage of 67.7 acres, the net return for the period of seven years averaged £16 per acre, or £12 per £100 expenditure. Without taking the value of "unpaid labour" into account, of course, these figures would be considerably higher. Of the seven years' results, those for 1949, 1951, 1954 and 1955 were above average, and in the light of these figures the cropping year of the present survey (1955) may be regarded as a fairly successful one with a margin of £19 per acre, and £14 per £100 expenditure.

Production

In describing the prevailing level of production on the sample holdings, there is a twofold purpose, namely to endeavour to give an account of the average financial output of the holdings and to show the return per acre from individual crops. The financial output figures include all branches of production, such as crops, livestock and sundry items; the per acre results are calculated by using the entire acreage of the holdings, and the crop returns are worked out on the actual acreage of each particular crop so as to give a picture of the results per acre both in quantity and cash.

Total Production of Holdings

In contrast to margin, production figures give an account of the financial results in greater detail and provide information on the success of the component enterprises. In calculating these results, receipts from single enterprises have been adjusted according to the respective changes in opening and closing valuations.

The result of this calculation showed that on the 32 holdings the major proportion of production was provided by vegetable crops. In fact, the total production per acre amounted to £219, of which £131 or 60 per cent was derived from vegetables, £49, or 22 per cent from fruit, and £28 or 13 per cent from other crops such as flowers, herbs and farm crops. Livestock production was only £4 per acre or 2 per cent, and the income from sundry items £7, or 3 per cent of the total production. The sundry items included market bonuses, receipts for contract work performed for other growers, and assessed amounts for various non-cash incomes.

The summary of average production per acre is set out according to type-groups as shown in Table 46.

TABLE 46
Average Production per Acre

No.	Type-Group	Vegetables		Fruit	Other Crops	Livestock		Sundries	Total
		£	%			£	%		
I.	Holdings with Glasshouses	403	70	£ 27	23	£ 7	1	£ 10	£ 579
II.	Intensive Vegetable Holdings	229	84	12	5	9	—	6	273
III.	Extensive Vegetable Holdings	83	93	1	1	—	—	3	90
IV.	Small-Scale Vegetable and								100
V.	Fruit Holdings	53	37	74	52	5	4	3	142
VI.	Large-Scale Fruit and								100
	Vegetable Holdings								
—	Average	131	60	49	22	28	13	4	219
									100

From the foregoing table it can be seen that of the various type-groups it was the holdings with glasshouse cultivation which achieved the highest average production of £579 per acre; this is almost three times as much as the overall average of £219. On these holdings the lowest result was £167, and the highest £1,697 per acre; the emphasis was invariably laid on vegetable production, and the growing of flowers and plants was only of secondary importance. The second highest level of production was shown by the group of intensive vegetable-growing holdings which averaged £273 per acre. Here, the lowest figure was £137 and the highest £428 per acre. Of the various type-groups it was the extensive vegetable-growing holdings which showed almost the smallest production, averaging only £90 per acre, which was not more than £4 higher than the horticultural farms. In spite of the fact that these farms managed to achieve a production level of £86 per acre on an acreage which was about four times as large as the extensive vegetable-growing holdings, the result seemed to be rather unsatisfactory. On the two holdings included in this group the production figure per acre was £62 on one and £118 on the other. In the group of horticultural farms, the production level on individual farms varied from £68 to £98 per acre. With regard to the two mixed groups of holdings, it is interesting to note that the average results for both the small- and large-scale fruit and vegetable producing holdings are almost the same, being £142 per acre for the first group and £146 for the latter. Within these results, even the distribution of income of various branches of production show a close similarity, despite the difference in the pattern of the functional layout which exists between the two type-groups.

As can be seen from the above results, there is a fairly wide variation between the production per acre of the six type-groups of holdings and the farms. However, by comparing these figures on a per £100 expenditure basis, the significance of the differences can be more easily appraised. The level of production of the various type-groups, calculated per £100 expenditure, gave the following results:

Production per £100 Expenditure	
Group	£
I.	143
II.	140
III.	79
IV.	109
V.	115
VI.	109
Average	125

According to the above figures, the return per £100 expenditure was almost the same in the groups of holdings with glasshouses and the intensive vegetable-growing holdings; the small-scale mixed holdings showed exactly the same standard as the big farms; and the large-scale mixed holdings surpassed this figure only by £6. The holdings in the extensive-vegetable-growing group lost £21 for each £100 of production. The overall average for 32 holdings worked out at £125 per £100 expenditure.

Of the £219 production per acre achieved by the 32 holdings, crop production amounted to £203. On average, this result was obtained by the growing of not more than 12 kinds of crops in the layout of the holding, and on the total area of the holding the average production per crop per acre was £17. Within the various type-groups this production figure showed the following variations:

Group	Average Number of Crops	Crop Production Per Acre	Production Per Crop Per Acre
	No.	£	£
I.	10	562	56
II.	9	266	30
III.	13	84	6
IV.	12	132	11
V.	13	134	10
VI.	16	69	4
Average	12	203	17

Apart from the glasshouse holdings, production was highest on those holdings where not too many crops were grown. In the group of small-scale vegetable and fruit holdings, there were two holdings of which one grew only four crops, and the other six crops; the production results of the former was £34 per crop per acre and for the latter £31. In contrast to these results, there were two other holdings in the same type-group which grew not less than 17 crops on their relatively small acreage. The results of these holdings was £10 and £5 return per crop per acre respectively.

With regard to the trend in the fluctuation of the annual production levels, data based on the seven-year results of the 16 identical holdings provide fairly good material for examination. The production results of these holdings are set out in Table 47.

TABLE 47
Average Production per Acre during the Period 1949-1955

Years	Vegetables		Fruit		Other Crops		Live-stock		Sundries		Total	
	£	%	£	%	£	%	£	%	£	%	£	%
1949	82	57	49	35	6	4	1	1	4	3	142	100
1950	72	55	46	35	5	4	2	2	5	4	130	100
1951	74	49	61	41	7	5	2	1	6	4	150	100
1952	82	59	40	29	7	5	2	1	8	6	139	100
1953	70	47	62	42	7	5	2	1	8	5	149	100
1954	90	59	49	32	5	3	2	1	7	5	153	100
1955	77	50	56	36	11	7	3	2	8	5	155	100
Average	78	53	52	36	7	5	2	1	7	5	146	100

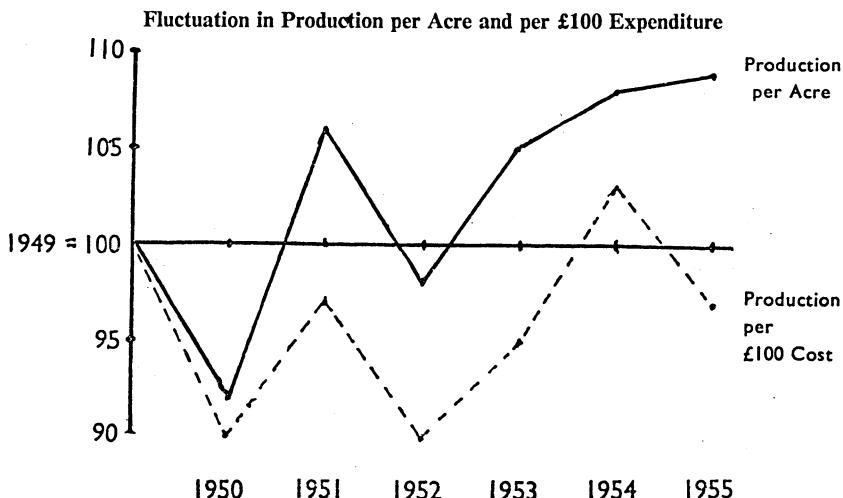
According to the above figures, the average production per acre for the seven years was £146, of which 53 per cent, or £78, represents the return for vegetables and 36 per cent, or £52, for fruit. The fluctuation in the annual results is far from excessive, the widest difference of £25 being between the years 1950 and 1955; this discrepancy is about 19 per cent of the 1950 results. As far as vegetable production is concerned, the relative share was lowest at 47 per cent of the total production in 1953, and highest at 59 per cent in 1952 and 1954. Fruit production, on the other hand, was lowest in 1952 at 29 per cent and highest in 1953 at 42 per cent of total production. Although there was some increase in the production of "other crops", especially flowers, e.g. chrysanthemums, the relative importance of these enterprises was limited in the light of total production; so also were the livestock and sundry items.

The trend in average production per £100 expenditure showed that, during the seven years, costs were not flexible enough to follow the fall in the revenue and thus to ensure a satisfactory balance between production and cost. The production levels per £100 expenditure can be set out for the seven years as follows:

Production per £100 Expenditure		
Years		£
1949	.	117
1950	.	105
1951	.	113
1952	.	105
1953	.	111
1954	.	120
1955	.	114
Overall Average		112

The above figures show that in 1950 and 1952, when production averaged £130 and £139 respectively, the return was only £105 per £100 expenditure. The effect of the increase in costs on the level of production can be seen from the figures set out for the years of 1954 and 1955. In 1954 the production figure of £153 per acre only returned £120 for £100 costs; in 1955, due to increases in expenditure it fell to only £114. By using simple index numbers, and taking the production for 1949 as 100 the trend in the fluctuation can be illustrated as shown in Diagram 15.

DIAGRAM 15



As can be seen from this diagram, production per acre in 1950 fell by 8 points from the 1949 level to 92, and in 1952 it dropped again by 8 points from the 1951 level of 106 to 98. On the other hand, the production per £100 expenditure fell by 10 points to 90 in 1950, and by 7 points in 1952 from the 97 shown for 1951. In 1955, although production per acre rose from 108 to 109, the return per £100 expenditure fell by 6 points from 103 to 97, indicating that the 1955 production incurred heavier costs than in 1954.

Sales of Market Garden Produce

The amount of production achieved by a holding depends mainly on the types of crops included in the production scheme

and on their successful sale. To ascertain the average return per acre from individual crops, the receipts of the sample holdings have been dissected according to crops, and separate data compiled on the quantities of produce sold and on the financial output achieved. These figures have been calculated on a one-acre basis, so that the actual acreage of the crops has been converted into one-acre fields. Consequently fields which were over one acre have been reduced and those which were only a fraction of an acre have been levelled up to one acre. Although the results, thus obtained, are based on hypothetical acreages, they provide a comprehensive and fairly representative picture of crop returns achieved by the 32 holdings during the year of 1955/56. The sales records for most of these holdings have been collected and analysed since 1950, and it is felt that a comparison with average returns, based on the past years' results, will provide some supporting information on the success of single crops during the year under review. However, although this comparison accounts for the differences between the overall average and the 1955/56 results, a better appraisal of the returns in question might be obtained from the available material of the last six years by setting out the annual results separately. Unfortunately, however, data on the 32 holdings were not sufficiently comprehensive for this purpose and could not provide full information on the annual fluctuations of all the crops included in the sample. For this kind of examination, only the returns of those holdings which grew the crop in all six years could be considered. During this comparatively long period, there were a number of holdings which altered their cropping plan by dropping some crops and introducing new ones, so that, obviously, the comprehensive data can only refer to the most important crops.

In ascertaining the per-acre returns of the various crops, the quantity has been calculated in pounds weight, dozens of crates and the price received in pence. Unfortunately, crops grown under glass could not be examined separately, since, due to lack of information on the market sales notes, it was impossible to dissect them from the others. In a number of cases, financial returns have been based on net prices which do not include market charges. However, in order to provide information on the net price paid to the grower, and to give some explanation of the average net price for 1955/56, special marketing data have been prepared for each crop showing the weekly fluctuations both in supply and prices, and accounting for the success of the various marketing agencies through which the

sales were transacted. Representative information on marketing requires as many transactions as possible which satisfactorily cover each week of the season, and so the available material obtained from the 32 holdings had to be supplemented by data of some other holdings in the Vale.

In measuring the returns of the individual crops per acre, the data have been derived from a total area of 322 acres, and represent 15 different kinds of vegetables, 3 top fruit, 7 soft fruit, 2 types of herbs, and some flowers. The distribution of this hypothetical acreage among the various types of crops and the receipts derived therefrom is shown in Table 48.

TABLE 48
Sales of Market Garden Crops

Crops	No. of Acres		Total Receipts		Per Acre Receipts
	No.	%	£	%	
Vegetables . .	206	64	60,651	72	294
Top Fruit . .	53	16	5,834	7	110
Soft Fruit . .	47	15	8,034	9	171
Herbs, Flowers . .	16	5	10,244	12	640
Total . .	322	100	84,763	100	263

From Table 48 it can be seen that the average return for vegetables, soft and top fruit, together with herbs and flowers worked out at £263 per acre. The difference between this figure and the £203 for crop production per acre is £60 which can be accounted for by farm crops and the considerable area of grass and unproductive land which have been included in the latter calculation. Among the crop returns per acre, herbs and flowers show the highest receipts of £640. This high figure is due mainly to the value of flowers grown under glass and to the fact that most of the out-door flowers were grown on a very small scale, representing even less than one-tenth of an acre, the conversion of which into a one-acre result is likely to produce a relatively high figure. The returns for vegetables average £294 per acre, and the inclusion of crops grown under glass accounts for this rather high figure.

In order to give a more detailed account of the returns of individual crops it is necessary to deal with each crop separately.

Sales of Vegetable Crops

In the data on crop sales, there were 206 acres of vegetable crops, the receipts from which amounted to £60,651 or £294 per acre. The acreage and receipts of this sample of mixed vegetable sales are given in Table 49 according to the various types of crops involved:

TABLE 49
Sales per Acre of Mixed Vegetable Crops

Crops	Acres		Total Receipts		Receipts Per Acre
	No.	%	£	%	
Brassicas	57	28	8,502	14	149
Roots and Onions	53	26	13,689	23	258
Legumes	60	29	8,057	13	134
Other Vegetables	36	17	30,403	50	845
Total	206	100	60,651	100	294

As can be seen from this table, the highest per acre return of the four component groups occurs in the "other vegetable" group which includes the sales of tomatoes and lettuce grown under glass. With regard to other crops, the roots and onions group shows the best return of £258 per acre; this is chiefly due to the high receipts obtained for spring onions. On the other hand, legumes have the comparatively lowest return of £134 per acre.

In order to give a picture of the successful and less successful crops, it is necessary to examine the results of the various vegetable groups in turn. However, prior to embarking on this examination, it is worthy of note that the summer of 1955 was a particularly dry one, and the winter of 1955/56 exceptionally hard. These weather conditions had a considerable bearing on the returns achieved by the various crops, and often caused short supply and high prices, which on some holdings resulted in good financial returns whereas others experienced a loss.

1. Brassicas

Brussels sprouts, cabbage and savoys, cauliflower and broccoli have been included in this group. The acreages and returns of these crops were as follows:

Crops	Acres		Total Receipts		Receipts Per Acre
	No.	%	£	%	
Brussels sprouts.	25	44	3,326	39	133
Cabbage, Savoys	19	33	2,723	32	143
Cauliflower, Broccoli	13	23	2,453	29	189
Total	57	100	8,502	100	149

Of the above crops, it was cauliflower which showed the highest per acre return, indicating that the greater proportion of the sample was an early crop. Cabbage and savoys also gave a fairly high return per acre, the reason being similar to that for cauliflower, namely the greater part of the crop being spring cabbage. The result of Brussels sprouts averaged £133 per acre which may be regarded as a satisfactory return.

As the financial returns of the crops depend on the quantities and the price at which they have been sold, it is necessary to examine the features of each crop separately.

(a) Brussels sprouts

As mentioned before, some of the holdings completed their financial accounts on September 30th and some on December 31st, 1955, in the height of the Brussels sprout season. Because of the closing dates of the accounts on these holdings the data drawn up on Brussels sprouts, although representing a full crop, really covers an eighteen-month season. Of the 25 holdings which grew sprouts there were altogether 10 where the crop overlapped the end of the financial year.

According to the results of the 25 sprout-growing holdings, the quantity sold per acre averaged 5,930 lb. or 296½ nets returning 5·4d per lb., or 9s. per net. Among the individual holdings, the highest yields and receipts were obtained by those holdings on which irrigation was used. There were 3 of these holdings in all and the returns varied from £220 to £255 and the yield sold from 450 to 629 nets. These results indicate the apparent value of irrigating the sprout plants in a dry summer. Apart from these holdings, the best results, on average, were obtained on the smaller type of holdings of under 50 acres. This may be due to the greater care and attention which can be given to cultivation and harvesting when the crop acreage is relatively small. On the other hand, there were holdings which experienced very low returns, the lowest being only £54 for a yield of 117 nets per acre. There were altogether 10 holdings

which achieved less than £100 per acre for their sprout crop. However, despite this high proportion of poor results, the 1955/56 sprout season may be regarded as a successful one. In fact, during the last six years, it was the best crop of all. The success of this crop was mainly due to short supplies and high prices.

The success of the 1955/56 crop can best be illustrated by comparing the results with those of previous years. This comparison is based on the sales of 13 holdings which grew sprouts every year during the six-year period under review. The comparison gives the following picture:

Years	Quantity Per Acre	Receipts Per Acre	Price Per lb.
1950	5,705	94	3·7
1951	5,552	120	5·2
1952	6,594	136	4·9
1953	8,667	110	3·0
1954	8,445	128	3·6
1955	6,832	151	5·3
Average	6,966	123	4·2

As can be seen from the above figures, receipts for 1955 were about 23 per cent higher than for the six-year average; on the other hand, in 1950, which due to prevailing glut conditions, was one of the poorest seasons, the returns were 24 per cent below average. In 1954 the 13 holdings sold 422 nets of sprouts per acre at a return of £128, but in 1955 they received £151 for 342 nets, which was 24 per cent less than the quantity for the previous year.

However, the above results of cash returns have been based on a mixed method of marketing in which some part of the yield was sold at a net price, and the other at a gross price. Thus, in order to ascertain the actual net price of the produce received by the grower, it was necessary to separate the net transactions from gross sales and to examine the effect which the marketing charges had on the average prices. For this purpose, special marketing data have been drawn up in which, besides the sample holdings, the transactions of some other growers have also been included so as to improve the representativeness of the results. In this manner, it has been possible to base the information on 1,594 transactions when 59,932 nets of sprouts were sold and a net return of £26,003 18s. 2d. was paid to the growers. The total sales of the 25 sample holdings amounted to 38,234 nets for a total net return of £16,078 2s. 3d.

TABLE 50

Sales of Brussels Sprouts

Method of Marketing	Transactions		Quantities		Gross Receipts			Gross Price	Deductions			
	No.	%	lb.	%	£	s.	d.		%	d.	£	s.
Growers' Co-operatives	266	17	175,814	14	3,508	14	6	17	4.9	268	11	2
Growers' Co-operatives	226	14	170,400	14	—	—	—	—	—	—	—	—
Local Markets	64	4	50,700	5	1,617	2	6	8	7.7	124	18	1
Local Merchants	91	6	43,540	4	—	—	—	—	—	—	—	—
Commission Salesmen:												
Barnsley	27	2	52,020	4	1,035	5	3	5	4.8	104	8	4
Birmingham	150	9	55,655	5	1,502	5	6	8	6.4	133	17	1
Birmingham	124	8	48,982	4	—	—	—	—	—	—	—	—
Bradford	19	1	14,200	1	—	—	—	—	—	—	—	—
Bristol	85	5	104,060	9	2,890	16	0	14	6.7	216	16	9
Cardiff	72	5	79,460	7	2,151	7	0	11	6.5	214	18	7
Coventry	63	4	12,330	1	222	11	6	1	4.3	16	16	7
Gloucester	57	4	26,517	2	484	17	6	2	4.4	36	8	2
Leeds	43	3	54,220	5	1,794	16	6	9	7.9	179	9	7
Leeds	1	—	200	—	—	—	—	—	—	—	—	—
Leicester	44	3	39,780	3	—	—	—	—	—	—	—	—
London	5	—	3,040	—	98	10	0	1	7.8	7	7	10
Manchester	91	6	180,195	15	4,774	11	6	24	6.4	477	9	2
Manchester	58	3	13,450	1	—	—	—	—	—	—	—	—
Newcastle	6	—	4,100	—	74	5	0	—	4.3	7	8	6
Northampton	1	—	920	—	—	—	—	—	—	—	—	—
Sheffield	51	3	52,400	5	—	—	—	—	—	—	—	—
Stratford-on-Avon	22	1	940	—	21	5	6	—	5.4	1	12	2
Swindon	28	2	15,720	1	—	—	—	—	—	—	—	—
Total	1,594	100	1,198,643	100	20,176	8	3	100	—	1,790	2	0
Gross sales	951	60	799,051	67	20,176	8	3	—	6.1	1,790	2	0
Net Sales	643	40	399,592	33	—	—	—	—	—	—	—	—

Sales of Brussels Sprouts

		Deductions								Net Receipts		Net Price	
Use of Empties		Handling Charges		Transport		Total							
£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	d.	
17	0	2	0.5	—	—	—	285	11	4	8.2	3,223	3 2	
—	—	—	—	—	—	—	—	—	—	13	4.4	—	
10	9	6	0.6	—	—	7 7 0	0.4	142	14	7	8.8	3,673	17 6
—	—	—	—	—	—	—	—	—	—	14	5.2	—	
—	—	—	—	—	—	—	—	—	—	6	7.0	—	
—	—	—	—	—	—	78 19 2	7.6	183	7	6	17.7	1,474	7 11
—	—	—	—	—	—	—	—	—	—	3	5.3	—	
—	—	—	—	—	—	851 17 9	3	—	—	3.9	—	—	
—	—	—	27 8 4	1.8	63 1 3	4.2	224	6	8	14.9	1,277	18 10	
—	—	—	—	—	—	—	—	—	—	5	5.5	—	
—	—	—	—	—	—	—	—	—	—	3	4.7	—	
—	—	—	—	—	—	—	—	—	—	1	5.1	—	
—	—	—	87 14 4	3.0	173 7 8	6.0	477	18 9	16.5	2,412	17 3	9	
—	—	—	—	—	—	477 18 9	16.5	2,412	17 3	9	5.6	—	
—	—	—	—	—	—	—	—	—	—	7	5.7	—	
11	17	0	5.3	3 19 0	1.8	18 15 0	8.4	51	7	7	23.1	171	3 11
6	15	4	1.4	—	—	22 11 3	4.7	65	14	9	13.6	419	2 9
—	—	—	22 11 10	1.3	75 10 11	4.2	277	12 4	15.5	1,517	4 2	6	
—	—	—	—	—	—	—	—	—	—	1	5.7	—	
—	—	—	—	—	—	—	—	—	—	3	2.1	—	
—	—	—	—	—	—	—	—	—	—	3	5.2	—	
1	5	4	1.3	—	—	—	—	8 13 2	8.8	859	5 0	—	
—	—	—	—	—	—	284 4 3	6.0	761	13 5	16.0	4,012	18 1	
—	—	—	—	—	—	—	—	—	—	15	5.3	—	
—	—	—	—	—	—	—	—	—	—	1	5.4	—	
—	—	—	2 9 2	3.3	14 12 2	19.7	24	9 10	33.0	49 15 2	—	2.9	—
—	—	—	—	—	—	—	—	—	—	31	1 0	—	
—	—	—	—	—	—	—	—	—	—	1,078	2 6	3	
11	8	2.7	15 4	3.6	—	—	2 19 2	13.9	—	18 6 4	—	4.7	—
—	—	—	—	—	—	—	—	—	—	444	8 0	2	
—	—	—	—	—	—	—	—	—	—	6.8	—	—	
47	19	0	0.2	144 18 0	0.7	787 18 9	3.9	2,770	17 9	13.7	26,003	18 2	
47	19	0	0.2	144 18 0	0.7	787 18 9	3.9	2,770	17 9	13.7	17,405	10 6	
—	—	—	—	—	—	—	—	—	—	67	5.2	—	
—	—	—	—	—	—	—	—	—	—	33	5.2	—	

The result of the 1,594 transactions was as follows:

		£	s.	d.
Gross sales		20,176	8	3
Net Sales		8,598	7	8
<hr/>				
Total		28,774	15	11
Market Deductions . . .		2,770	17	9
<hr/>				
Net Receipts		26,003	18	2
<hr/>				

In the light of combined gross and net sales, market deductions absorbed 9.6 per cent of the total receipts. By applying this percentage figure to the average results shown for 1955, the per acre receipts would be £137 instead of £151, and the price per lb. 4.8d. instead of 5.3d.

The pattern of marketing Brussels sprouts is given in Table 50 showing the sales as they were transacted through the different channels of the trade. According to these figures the result of both the gross and net sales of sprouts averaged the same net price of 5.2d. per lb. The majority of sales, 67 per cent of the total quantity, was made in gross terms through commission transactions which returned a gross price of 6.1d. per lb. The market deductions which actually reduced this price to 5.2d., included all the charges used by the various agencies through which the sales were carried out. However, the deductions do not include the cost of the nets, as they were bought separately by the grower, nor the cost of the grower's own transport for taking the produce from the holding to some of the local markets. In all, market deductions absorbed 13.7 per cent of gross receipts, showing a cost of 1s. 5d. per net of 20lb. The various charges given on the sales notes differed considerably from firm to firm, but they were all accounted for under the headings of commission, use of empties, handling charges and transport. With the exception of commission, all other charges were paid at flat rates. At distant markets, especially when the prices were low, market deductions absorbed a considerable proportion of gross receipts. For instance, at Newcastle at an average gross price of 4.3d. per lb., market charges reduced receipts by 33 per cent, and this was mainly due to the high charge for transporting the produce. On consignments sent to London and Stratford-on-Avon there were no accountable transport costs as in both cases the two growers took the produce to these markets with their own lorry. In any case, the quantities involved were

rather small and the possible cost would not influence the overall result.

According to the details of the sales notes, the growers marketed their sprout crop both locally and on 16 different markets as far afield as Newcastle, Barnsley, Manchester and Bristol. On the whole, there was no appreciable difference between these two systems of marketing. The results were as follows:

	Quantity		Net Receipts		Net Price per lb.
	lb.	%	£	%	d.
Local Sales	440,454	37	9,327	36	5·1
Distant Sales	758,189	63	16,677	64	5·3
Total	<u>1,198,643</u>	<u>100</u>	<u>26,004</u>	<u>100</u>	<u>5·2</u>

As shown in the above comparison, the difference between the two types of sales was only 0·2d. per lb. of produce. However, by taking into account the bonus payments given by the local co-operative organisations to their grower members, the difference could be reduced to an even smaller margin.

As mentioned before, the marketing results of sprouts, which spread over an eighteen-month period, were derived from two different crops. This means that in the data the extremes of supply and of price were somewhat concealed in either year. In order to obtain a clearer picture of the effect which the combination of the two crops had on the overall result, it is necessary to separate the sales of the old crop from those of the new one. The sale results of these crops were as follows:

	Quantity		Net Receipts		Net Price per lb.
	lb.	%	£	%	d.
Old Crop	438,641	37	8,794	34	5·2
New Crop	760,002	63	17,210	66	5·2
Total	<u>1,198,643</u>	<u>100</u>	<u>26,004</u>	<u>100</u>	<u>5·2</u>

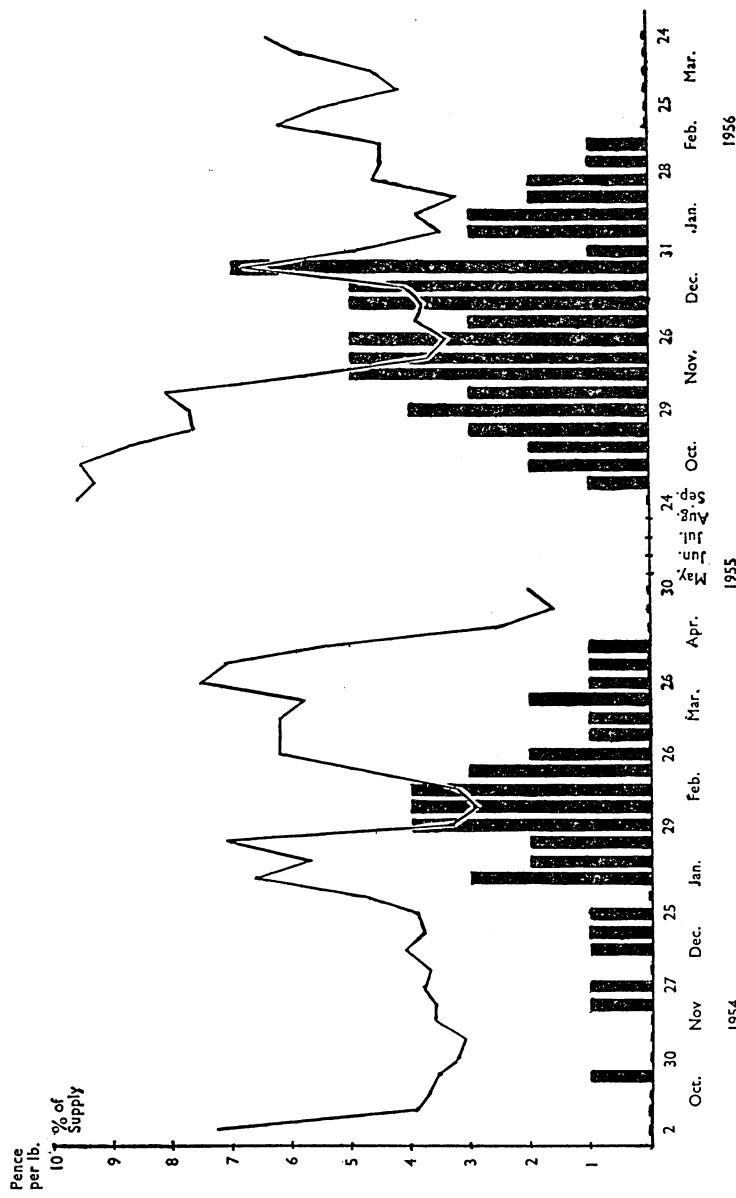
The above results show that despite the difference in the quantities sold and indeed in the general marketing conditions the two crops returned the same average net price per lb. The weekly fluctuations in the release of supplies and in prices are shown in Table 51. According to the details of the sales of the

two crops, the 1954/55 season appeared to be somewhat longer than that of 1955/56. Whereas in the former year the bulk of the supply was sold during January and February, 1955, in 1955/56 the greater part of the crop was disposed of in October, November and December, 1955, leaving only about 21 per cent of the supply for the rest of the season. Although the weekly prices in 1954/55 fluctuated at a low level, 40 per cent of the crop was sold when the price appeared to be favourable on the market and this fluctuated between 4·8d. to 7·5d. per lb. In the 1955/56 season, on the other hand, 47 per cent of the supply was sent to market when the prices varied between 4·9d. and 9·6d. per lb. From these figures it can be seen that it was the late crop in the 1954/55 season and the early crop in 1955/56 which returned the better prices. The results of both years indicate that the growers managed to keep a firm control over the release of their supplies, and thus obtained satisfactory returns.

TABLE 51
Brussels Sprouts
Comparison Between New and Old Crop

Dates	Supply				Receipts				Prices	
	1954/55		1955/56		1954/55		1955/56		1954/55	1955/56
	lb.	%	lb.	%	£	s.	d.	%	lb.	%
Sep. 19-25	—	—	1,100	—	—	—	—	—	—	—
26-Oct. 2	60	—	16,360	2	1	16	0	—	633	14 6
Oct. 3-9	3,150	1	22,700	3	51	5	7	1	896	13 11
10-16	3,070	1	28,030	4	47	11	3	1	1,012	2 7
17-23	7,570	2	37,400	5	111	17	0	1	1,184	14 4
24-30	3,774	1	45,155	6	49	12	8	1	1,352	12 6
31-Nov. 6	2,730	1	38,869	5	35	15	1	—	1,306	14 2
Nov. 7-13	3,500	1	58,640	8	51	16	8	1	1,390	11 3
14-20	11,240	3	59,610	8	169	9	0	2	924	3 3
21-27	7,880	2	50,890	7	125	9	11	1	723	19 7
28-Dec. 4	5,560	1	35,845	5	85	6	8	1	577	13 7
Dec. 5-11	5,800	1	49,388	6	98	15	2	1	785	13 10
12-18	9,000	1	49,935	7	143	18	4	2	851	4 0
19-25	10,820	1	77,215	10	174	13	1	2	2,179	4 6
26-Jan. 1	3,280	1	19,450	3	65	10	4	1	394	15 1
Jan. 2-8	31,450	7	32,635	4	866	9	2	10	475	5 0
9-15	27,615	6	33,610	4	677	0	8	8	547	14 6
16-22	21,400	5	29,510	4	605	6	3	7	387	13 8
23-29	46,040	15	29,655	4	641	16	10	7	569	14 0
30-Feb. 5	40,740	9	17,885	2	498	5	8	6	335	2 3
Feb. 6-12	44,440	10	15,560	2	588	6	2	6	294	19 6
13-19	36,720	8	4,460	1	738	3	0	8	114	2 8
20-26	20,090	5	1,460	—	516	10	8	6	33	12 11
27-Mar. 5	11,850	3	2,360	—	306	6	0	3	40	18 6
Mar. 6-12	17,530	4	580	—	450	14	5	5	11	2 1
13-19	24,340	5	1,300	—	588	4	0	7	31	10 0
20-26	16,900	3	400	—	530	0	7	6	10	12 7
27-Apr. 2	13,880	2	—	—	410	12	1	4	—	—
Apr. 3-9	6,380	1	—	—	144	17	5	2	—	—
10-16	1,580	—	—	—	16	7	10	—	—	—
17-23	240	—	—	—	1	11	0	—	—	—
24-30	12	—	—	—	2	0	—	—	—	—
Total	438,641	100	760,002	100	8,793	10	6	100	17,210	7 8
									100	5·2
										5·2

DIAGRAM 16
Weekly Fluctuation of Supplies and Net Prices of Brussels Sprouts During the Period 1954-1956



The weekly fluctuation of net prices and supplies in the combined results of the two crops are shown in Diagram 16.

(b) *Cabbage and Savoys*

In the Vale of Evesham three main cabbage crops can be distinguished, namely the spring, summer and winter crop. As each of these varieties has its own special marketing season, their returns may differ considerably. Among these crops, the most important is, of course, spring cabbage, the returns from which are much higher than those of any other cabbage crop. Its season runs, generally, from April until the end of June, but in order to get the best results, the crop should be cleared by the beginning of May. Summer cabbage (often the variety Primo) is cut in July, August and September, and may give heavy yields, but generally commands low prices. Winter cabbage and savoys are marketed from October until March, depending on the prevailing weather conditions. In a mild winter this crop is likely to be plentiful and the price rather low, but in a hard winter when sprouts are killed by frost, the crop may be of great value to the grower.

Of the 32 holdings, 19 grew cabbage and savoys during the cropping year 1955/56. Unfortunately, this sample was not wide enough to be able to ascertain the per acre returns of each individual variety of the crop, and it was therefore necessary to calculate the average returns for the entire crop. However, as 78 per cent of the marketed quantities and 83 per cent of the receipts were derived from spring cabbage, the average results must be interpreted to refer to a crop of which the major part is spring cabbage.

On the 19 holdings, the combined sale results of the three cabbage crops and savoys worked out at 314 crates of 40 lb. per acre with a return of £143 giving an average price of 2·7d. per lb., or 9s. 0d. per crate. Among the individual holdings there was indeed a very wide variation; the highest per acre result was 740 crates of spring cabbage for a return of £462, while the poorest result, due to crop failure, was only 18 crates of winter cabbage for a return of £5 per acre. The otherwise lowest sales results were 63 crates per acre for a return of £43. On the whole, the highest average yields were obtained by growers in the smaller acreage groups.

In the light of the results of the last 6 years, 1955 was one of the most successful seasons for cabbage crops. The comparison of the annual per acre results, with the overall average returns can be shown as follows:

Years	Quantity	Net Returns	Price per lb.
	crates	£	d.
1950	. . . 305	235	4·6
1951	. . . 328	124	2·3
1952	. . . 327	98	1·8
1953	. . . 329	160	2·9
1954	. . . 339	143	2·5
1955	. . . 323	175	3·3
Average	. . . <hr/> 325	<hr/> 156	<hr/> 2·9

The above results refer to the sales of 8 identical holdings which grew cabbage crops every year during the six-year period in question. It is interesting to note that despite the combined nature of the crop, the quantities sold per acre annually showed practically no variation and gave an overall average of 325 crates of 40 lb. per acre. Although this may appear to be a rather moderate yield, the financial return of £156 per acre shows that the crop proved to be quite a successful one, giving an average price of 9s. 8d. per crate of cabbage and savoys combined.

However, the above figure was not the net price paid to the growers, but the receipts from sales achieved through both gross and net transactions, and in order to ascertain the actual net price for 1955, it is necessary to find out the amount for market deductions by which the price of 3·3d. per lb. has to be reduced. In the special sample, the 677 transactions carried out by the 19 holdings and some additional ones too, showed that on the £9,808 gross and net receipts the market charges amounted to £808 or 8·2 per cent of total receipts. This share of the deductions would reduce the average price per lb. to 3d.

With regard to marketing, details are given separately for cabbage and savoys in Tables 52 and 53.

As far as the cabbage crop is concerned, 74 per cent of the 22,486 crates were sold locally through the services of co-operative organisations, auction markets and local merchants whereas the rest of the produce was sent to markets as far afield as London, Barnsley, Bristol, etc. On the whole, the sale of the crop averaged 2·3d. per lb. This price is 0·7d. lower than the average of 3d. shown for the 19 holdings, and the reason for this discrepancy lies in the fact that the proportion of spring cabbage is far less significant in the marketing data than in the other. Due to the mixed nature of the crop, the average

prices shown for the various marketing agencies show a considerable variation. The actual difference between the local and distant sales was as follows:

		Quantity		Net Receipts		Price
		lb.	£	%		per lb.
Local Sales	.	665,090	74	6,848	80	2·5
Distant Sales	.	234,350	26	1,826	20	1·9
Total	.	899,440	100	8,674	100	2·3

For those sales which were transacted in gross terms, the market deductions absorbed 11·7 per cent of the gross receipts. It is a general practice to market produce in returnable containers, so that the charge for the hire of the empties in this case was much higher than, for example, on brussels sprouts. This particular charge actually represented 2·3 per cent of the gross receipts for cabbage. Market charges at some of the distant markets were extremely high and the gross price was not high enough to keep these costs at a reasonable level. For instance, in London the charges absorbed 78 per cent of the gross price of 1·8d. per lb. and in Bristol 49 per cent of the gross price of 1·5d. per lb.

The pattern of marketing of savoys was very similar to that of cabbage. In all, 54 per cent of the 51,040 lb. of savoys was sold locally, whereas the rest of the crop was sent to Bristol, Gloucester and Northampton. The average price per lb. worked out at 1·5d., and since, unlike cabbage, the produce consisted of one kind of crop, the difference between the local and other markets was negligible. This may be seen from the following results:

		Quantity		Net Receipts		Net Price per lb.
		lb.	%	£	%	d.
Local Sales	.	30,520	54	176	51	1·4
Other Sales	.	25,960	46	169	49	1·6
Total	.	56,480	100	345	100	1·5

In the sale of savoys, market charges amounted to 13·9 per cent of gross receipts, of which the hire of returnable empties was 3·9 per cent. This crop, too, proved to be rather costly to market at a distant market when the selling price was low. For instance, in Bristol the marketing charges came to 50·2 per cent of the gross price of 1·4d. per lb. thus leaving the grower a net price of only $\frac{3}{4}$ d. per lb.

As mentioned before the marketing results of cabbage crops were based on the returns of three different kinds of crops. It was therefore necessary to dissect the sales according to the single varieties, in order to give a more detailed account of the effect which the combination of these crops had on the overall results. The sales of the three types of cabbage crops may be shown as follows:

	<i>Quantity</i>			<i>Net Receipts</i>			<i>Net Price per lb.</i>
	lb.	%	£	%	d.		
Spring cabbage	702,398	78	7,210	83	2·5		
Summer cabbage	71,552	8	245	3	0·8		
Winter cabbage	125,490	14	1,219	14	2·3		
Total	899,440	100	8,674	100	2·3		

The above results show that the average price of spring cabbage was not much affected by the other crops, mainly because the quantity of the summer cabbage was negligible, and the winter crop fetched a good price.

The average price of spring cabbage appeared to be rather low at 2·5d. per lb. or 8s. 4d. per crate. This was mainly due to the fact that about 57 per cent of the total supply was sold when the price fell below 2d. per lb. The fluctuation of prices can best be observed from the following weekly distribution of supply and receipts.

<i>Weeks</i>	<i>Spring Cabbage</i>					<i>Net Price per lb.</i>	
	<i>Supply</i>	<i>Net Receipts</i>					
	lb.	%	£	s.	d.	%	
1955							
Mar. 27-Apr. 2	7,840	1	164	4	7	2	5·0
Apr. 3-9	28,090	4	657	14	2	9	5·6
10-16	55,800	8	1,237	18	3	17	5·3
17-23	62,570	9	1,047	12	9	15	4·0
24-30	87,568	12	994	17	10	14	2·7
May 1-7	64,100	9	529	10	6	7	2·0
8-14	80,910	12	519	19	4	7	1·5
15-21	96,600	14	664	3	0	9	1·3
22-28	71,700	10	549	0	2	8	1·8
29-June 4	46,880	7	342	18	1	5	1·8
June 5-11	52,560	7	247	13	2	3	1·1
12-18	35,750	5	199	0	2	3	1·3
19-28	12,030	2	55	17	3	1	1·1
Total	702,398	100	7,210	9	3	100	2·5

TABLE 52

Marketing of Cabbage

Method of Marketing	Transactions		Quantities		Gross Receipts			Gross Price per lb.	Deductions				
					£	s.	d.		d.	£	s.	d.	%
Growers' Co-operatives	185	30	290,116	32	4,104	17	1	63	3.4	309	7	5	7.5
Growers' Co-operatives	68	11	134,078	15	—	—	—	—	—	—	—	—	—
Local Markets	49	8	130,516	14	1,461	0	0	23	2.7	109	13	5	7.5
Local Merchants	95	15	110,380	12	—	—	—	—	—	—	—	—	—
Commission Salesmen:													
Alcester	6	1	27,800	3	—	—	—	—	—	—	—	—	—
Barnsley	3	—	13,560	2	140	0	0	2	2.5	14	0	0	10.0
Bristol	1	—	400	—	2	9	0	—	1.5	3	8	—	8.2
Birmingham	18	3	13,840	2	187	9	6	3	3.3	14	1	1	7.5
Birmingham	45	7	23,440	3	—	—	—	—	—	—	—	—	—
Cardiff	10	2	17,330	2	131	15	0	2	1.8	13	3	6	10.0
Coventry	35	6	15,760	2	143	18	0	2	2.2	10	17	1	7.6
Gloucester	40	6	38,080	4	293	2	1	5	1.8	22	0	1	7.5
Leeds	12	2	7,720	1	—	—	—	—	—	—	—	—	—
Leicester	7	1	4,230	—	—	—	—	—	—	—	—	—	—
London	1	—	800	—	4	0	0	—	1.2	—	8	0	10.0
Northampton	1	—	1,200	—	—	—	—	—	—	—	—	—	—
Sheffield	17	3	11,190	1	—	—	—	—	—	—	—	—	—
Stratford-on-Avon	1	—	120	—	16	6	—	1.7	—	1	3	—	—
Swindon	28	5	58,880	7	—	—	—	—	—	—	—	—	—
Total	622	100	899,440	100	6,469	7	2	100	—	493	15	6	7.6
Gross Sales	343	55	420,522	47	6,469	7	2	—	3.0	493	15	6	7.6
Net Sales	279	45	478,918	53	—	—	—	—	—	—	—	—	—

TABLE 53

Sales of Savoys

Method of Marketing	Transactions		Quantities		Gross Receipts			Gross Price	Deductions				
					£	s.	d.		d.	£	s.	%	
Growers' Co-operatives	22	40	23,960	42	162	12	6	45	1.6	13	7	6	8.0
Local Markets	5	9	3,720	7	20	13	6	6	1.3	1	11	2	7.5
Local Merchants	4	7	2,840	5	—	—	—	—	—	—	—	—	—
Commission Salesmen:													
Bristol	3	6	2,120	4	12	7	0	3	1.4	18	6	—	7.4
Gloucester	20	36	21,240	38	164	12	11	46	1.9	12	7	1	7.3
Northampton	1	2	2,600	4	—	—	—	—	—	—	—	—	—
Total	55	100	56,480	100	360	5	11	100	—	28	4	3	7.8
Gross Sales	50	91	51,040	90	360	5	11	—	1.7	28	4	3	7.8
Net Sales	5	9	5,440	10	—	—	—	—	—	—	—	—	—

Marketing of Cabbage

Deductions								Net Receipts		Net Price per lb.
Use of Empties		Handling Charges		Carriage		Total		£ s. d.	%	d.
£	s.	d.	£	s.	d.	£	s.	d.	£	%
88	17	0	2.2	—	—	7	12	4	0.2	405
38	14	0	2.6	—	—	—	—	—	—	16
—	—	—	—	—	—	148	7	5	10.1	9
1	0	0	0.7	—	—	15	16	11	11.5	30
—	—	—	—	10	0	10	0	20.4	1	16
—	—	—	—	17	6	15	17	2	8.5	4
9	17	0	7.0	3	5	23	6	2	17.3	36
11	18	0	4.1	—	—	19	14	0	13.9	43
—	—	—	—	—	—	7	1	6	2.4	13
—	—	—	—	12	6	2	2	4	52.5	3
1	6	9.1	—	9	4.5	—	—	—	—	6
150	7	6	2.3	21	14	92	0	5	1.4	757
150	7	6	2.3	21	14	92	0	5	1.4	18
—	—	—	—	—	—	—	—	—	—	4
150	7	6	2.3	21	14	757	18	4	11.7	11
150	7	6	2.3	21	14	—	—	—	—	7
—	—	—	—	—	—	—	—	—	—	—
8,674	1	5	100	—	—	—	—	—	—	2.3
5,711	8	10	66	—	—	—	—	—	—	2.6
2,962	12	7	34	—	—	—	—	—	—	1.9

Sales of Savoys

Deductions								Net Receipts		Net Price
Use of Empties		Handling Charges		Transport		Total		£ s. d.	%	d.
£	s.	d.	£	s.	d.	£	s.	d.	£	%
6	9	8	3.7	—	—	—	—	—	19	17
1	3	3	5.6	—	—	—	—	—	17	4
—	—	—	—	—	—	—	—	—	16	5
6	12	9	4.2	2	13	0	21.4	2	2	1.2
—	—	—	—	2	2	0	21.4	1	10	13.1
—	—	—	—	—	—	—	—	—	—	12.7
14	5	8	3.9	2	13	0	0.8	4	15	0
14	5	8	3.9	2	13	0	0.8	4	15	0
—	—	—	—	—	—	—	—	—	—	1.4
49	17	11	—	4	15	0	1.4	49	17	11
49	17	11	—	4	15	0	1.4	49	17	11
346	5	6	100	—	—	—	—	—	—	1.5
310	8	0	90	—	—	—	—	—	—	1.5
35	17	6	10	—	—	—	—	—	—	1.6

With regard to summer cabbage, the position was rather different. Here, the prices were at a rather low level and almost static until September, when there was a sharp improvement. However, as only a small quantity of the produce was marketed during this period, the change in the trend did not appreciably affect the average price of 0·8d. per lb., or 2s. 8d. per crate. The weekly distribution of supply and receipts are shown below:

Weeks	Summer Cabbage						Net Price per lb. d.
	Supply lb.	Supply %	Net Receipts £ s. d.	Net Receipts %			
1955							
June 29-July 2	1,816	3	7 11 6	3			1·0
July 3-9	5,200	7	22 6 4	9			1·0
10-16	2,280	3	2 14 0	1			0·3
17-23	1,960	3	5 0 6	2			0·6
24-30	2,800	4	9 3 2	4			0·8
31-Aug. 6	28,440	40	103 3 9	43			0·9
Aug. 7-13	11,920	17	35 14 2	15			0·7
14-20	11,456	16	34 6 11	14			0·7
21-27	3,440	5	7 19 0	3			0·6
28-Sept. 3	—	—	—	—			—
Sept. 4-10	720	1	3 12 0	1			1·2
11-17	320	—	2 0 0	1			1·5
18-24	320	—	2 9 4	1			1·9
25-Oct. 1	640	1	7 1 9	3			2·7
Oct. 2-8	240	—	1 16 11	—			1·8
Total	71,552	100	244 19 4	100			0·8

The winter cabbage crop consisted of two crops, one which overlapped the year 1954, and the other, the new crop, which was marketed at the end of 1955. The total quantity of produce was made up almost equally of the two crops. It was, however, mainly the crop sold at the end of 1955 which ensured the favourable price of 2·3d. per lb., or 7s. 8d. per crate. The weekly distribution of supply and receipts of winter cabbage is shown as follows:

Weeks	Winter Cabbage						Net Price per lb. d.
	Supply lb.	Supply %	Net Receipts £ s. d.	Net Receipts %			
1955							
Jan. 2-8	2,340	2	19 1 9	2			2·0
9-15	3,710	3	22 5 0	2			1·4
16-22	360	—	3 8 8	—			2·3
23-29	1,040	1	11 3 8	1			2·6
30-Feb. 5	4,020	3	39 2 8	3			2·3
Feb. 6-12	10,040	8	65 8 6	5			1·6
13-19	10,000	8	60 5 8	5			1·4
20-26	8,320	7	71 18 6	6			2·1
27-Mar. 5	9,340	7	74 3 7	6			1·9

Weeks	Winter Cabbage—contd.						Net Price per lb.
	Supply	Net Receipts					
1955	lb.	%	£	s.	d.	%	
Mar. 6-12	11,360	9	82	3	4	7	1·6
13-19	1,360	1	3	19	11	—	0·7
April	—	—	—	—	—	—	—
May	—	—	—	—	—	—	—
June	—	—	—	—	—	—	—
July	—	—	—	—	—	—	—
August	—	—	—	—	—	—	—
September	—	—	—	—	—	—	—
Oct. 23-29	8,040	6	99	2	4	8	3·0
30-Nov. 5	31,110	25	431	11	9	35	3·3
Nov. 6-12	9,910	8	107	13	3	9	2·6
13-19	4,000	3	35	8	3	3	2·1
20-26	8,220	7	73	5	2	6	2·1
27-Dec. 3	2,320	2	18	10	10	2	1·9
Total	125,490	100	1,218	12	10	100	2·3

The two distinct crops are shown above; the one which was cut at the beginning of the year averaged 1·8d. per lb. and the new crop 2·9d. per lb.

With regard to savoys, the marketing season, as shown in the data, was almost identical with that of the winter cabbage. This crop, too, consisted of two separate parts; one was the second half of the 1954/55, the other the first half of the 1955/56 crop. Due to very slight fluctuations in prices, the two part-crops returned very much the same net price, it being 1·4d. per lb. for the first and 1·6d. for the second part of the crop. Although the average net price obtained for savoys was lower than that for winter cabbage, the general trend in the price level, especially for the first part of the crop was very similar to that of cabbage, and there were several weeks when the two crops showed almost the same average price. The weekly distribution of the supply and receipts is given below:

Savoys

Weeks	Supply			Net Receipts				Net Price per lb.
	lb.	%	£	s.	d.	%	d.	
1955								
Jan. 9-15	2,400	4	12	2	0	3	1·2	
16-22	6,680	12	24	19	3	7	0·9	
23-29	3,240	6	13	16	5	4	1·0	
30-Feb. 5	2,800	5	17	7	0	5	1·5	
Feb. 6-12	1,200	2	6	11	3	2	1·3	
13-19	6,400	11	37	10	3	11	1·4	
20-26	4,640	8	41	12	11	12	2·2	
27-Mar. 5	3,800	7	28	3	9	8	1·8	
Mar. 6-12	4,640	8	28	14	9	8	1·8	
13-19	—	—	—	—	—	—	—	
20-26	—	—	—	—	—	—	—	
27-Apr. 2	1,560	3	11	11	4	3	1·8	

Savoys—contd.

Weeks	Supply		Net Receipts			Net Price per lb. d.
	lb.	%	£	s.	d.	
1955						
May	.	.	—	—	—	—
June	.	.	—	—	—	—
July	.	.	—	—	—	—
August	.	.	—	—	—	—
September	.	.	—	—	—	—
Oct. 23-29	.	.	880	2	5 16 6	2
30-Nov. 5	.	.	—	—	—	1.6
Nov. 6-12	.	.	2,840	5	22 1 9	7
13-19	.	.	1,960	3	12 19 3	4
20-26	.	.	3,760	7	21 2 3	6
27-Dec. 3	.	.	3,000	5	18 0 3	5
Dec. 4-10	.	.	920	2	6 6 5	2
11-17	.	.	3,160	6	20 4 4	6
18-24	.	.	2,600	4	17 5 10	5
Total	.	.	56,480	100	346 5 6	100
						1.5

The graphical illustration of the weekly fluctuation in net prices and supplies of cabbage and savoys is shown in Diagrams 17 and 18.

(c) *Cauliflower and Broccoli*

As in the case of cabbage, data prepared on cauliflower is based on the combined results of several distinct crops, such as summer, autumn and winter cauliflower and some late broccoli sold in the spring of 1955.

Of the 32 sample holdings there were 13 which grew cauliflower and broccoli during the cropping year in question. Among the various types of crops, the most important was summer cauliflower, which had the highest returns and formed the major part of the revenue derived from cauliflower. This crop consisted of both early and late varieties. The cutting season of the former variety, the plants of which were propagated under heated glass, ran until the end of June; that of the latter, or Driancourt variety, the plants of which were raised in cold frames, finished by the end of August. Of these varieties, it was the early, or potted crop, being the most valuable of all, which actually formed the basis of the data. In view of the overwhelming importance of this crop, the significance of the others became rather limited.

On the 13 holdings, the combined sale results of the cauliflower and broccoli crops averaged 481 dozens per acre at a return of £189, thus giving an average price of 7s. 10d. per dozen heads. The results of individual holdings showed a considerable variation which was due to the mixed nature of

Weekly Fluctuation of Supplies and Net Prices of Cabbage in 1955

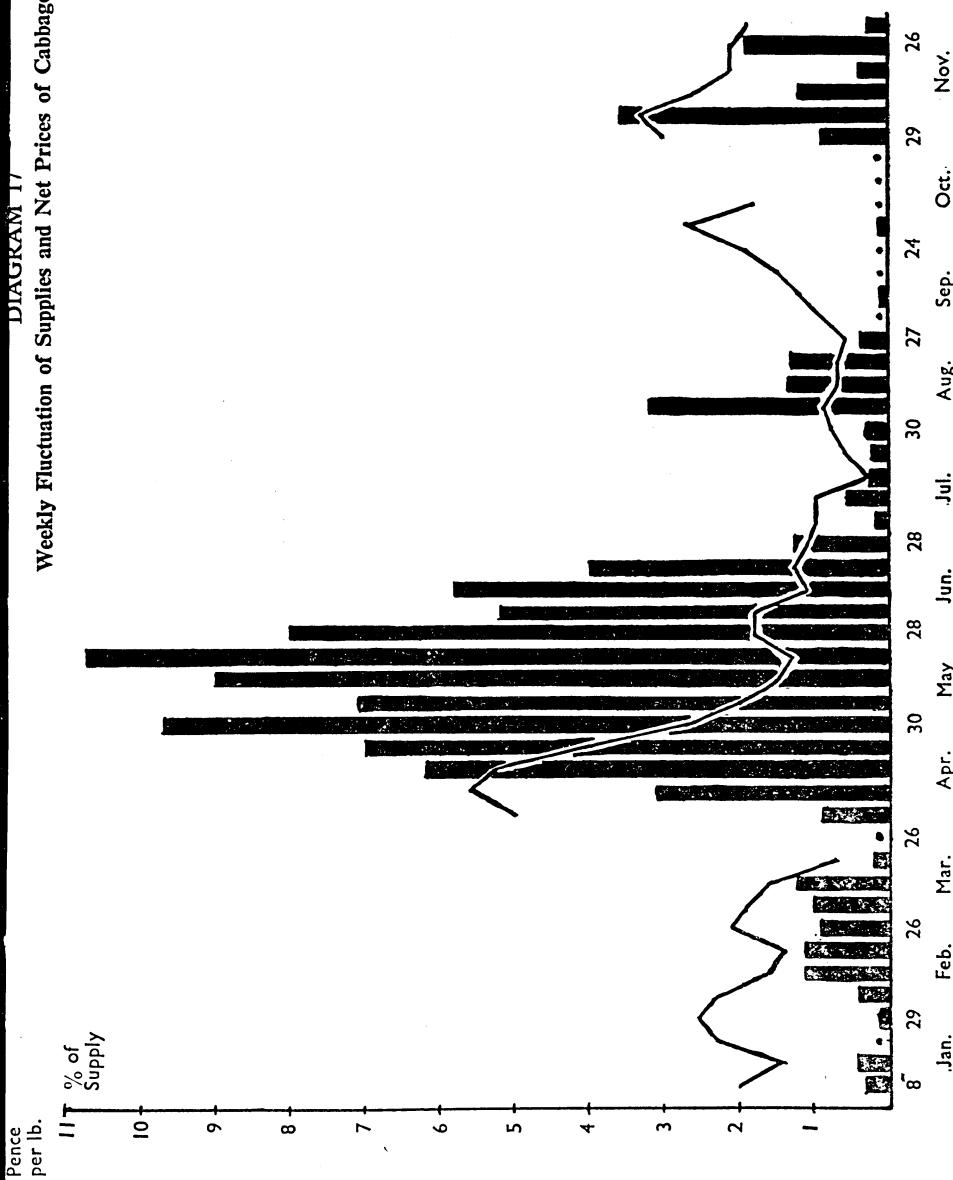
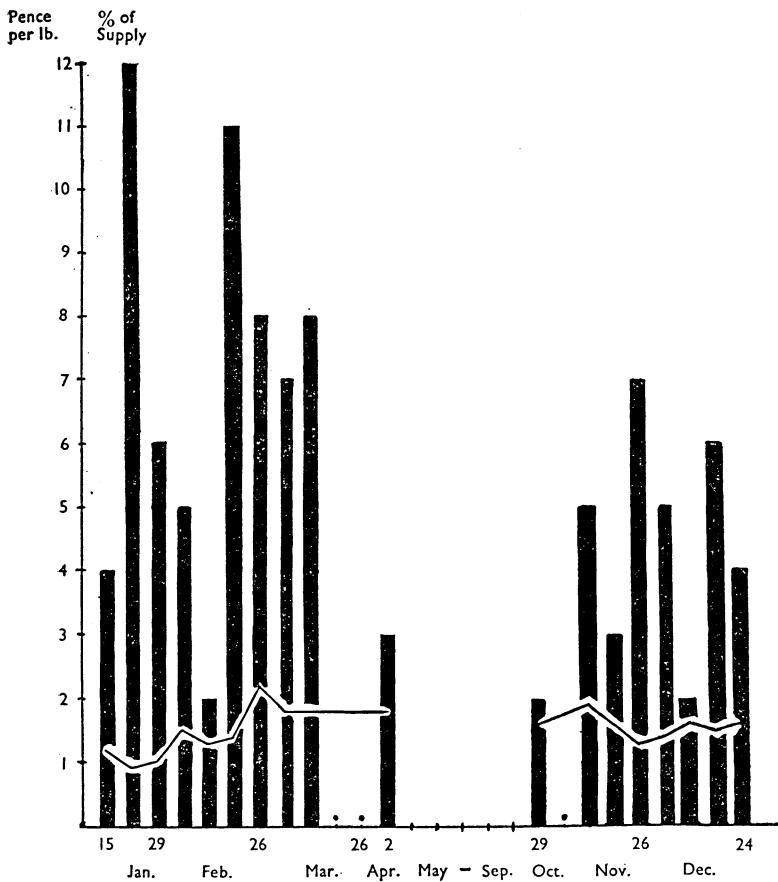


DIAGRAM 18

Weekly Fluctuation of Supplies and Net Prices of Savoys in 1955



the crop rather than the difference in the returns of one particular type of crop. In all, there were three crop failures; one was a complete failure whereas the others were partial failures returning 83 dozen and 173 dozen cauliflower at £36 and £53 per acre respectively. Apart from these unsuccessful crops the variation in yields and receipts ranged from 336 dozen to 1,230 dozen and from £129 to £396 per acre. By far the best average results were obtained on the small holdings of under 10 acres.

By taking into account the six-year results of 5 identical

holdings the 1955/56 season appeared to be a moderately successful one. This may perhaps be ascribed to the unequal incidence of low temperatures which prevailed during the month of May. The comparison between the annual per acre results showed the following picture:

Years	Cauliflower			Price per dozen. s. d.
	Quantity doz.	Net Returns £		
1950 . . .	531	132		5 0
1951 . . .	417	135		6 8
1952 . . .	524	228		8 8
1953 . . .	414	137		6 7
1954 . . .	420	185		8 10
1955 . . .	374	179		9 7
Average . . .	447	166		8 3

According to the above results the quantity sold in 1955 was the lowest, but owing to the favourable price received for sales the growers were somewhat recompensed financially. In the yearly averages, the proportions of the various kinds of crops may differ slightly so that the comparison has some limitations. However, the overall average results may be regarded as fairly representative of a crop which contains about 75 per cent of summer varieties.

Of the annual prices per dozen, the 1955 crop averaged 9s. 7d. from which about 11d. should be deducted for the cost of marketing. This share of market deductions represented 9.9 per cent of the receipts obtained from the combined gross and net sales of 17,111 dozen cauliflower and broccoli, giving a total cost of £731 on a receipt of £7,494.

Details of cauliflower and broccoli on a somewhat enlarged sample are given separately in Tables 54 and 55.

With regard to cauliflower, 75 per cent of the 16,107 $\frac{1}{4}$ dozen were marketed locally, whereas the rest of the crop was sold at eleven different markets all over the country, even as far as Glasgow. On the whole, the sale of the 1955 crop averaged 8s. 3d. per dozen paid net to the grower. Although this price has been derived from a different sample, it compares favourably with that of the 5 identical holdings after the deduction of market expenses. The difference between the results of local and other sales was about 11 per cent, which, in view of the mixed nature of the crop, can only be regarded as negligible. The results of these sales were as follows:

		Quantity	Net Receipts		Net Price per doz.	
		doz.	%	£	%	s. d.
Local Sales	.. .	12,010 $\frac{1}{2}$	75	5,073	77	8 5
Other Sales	.. .	4,097	25	1,560	23	7 7
Total	.. .	16,107 $\frac{1}{2}$	100	6,633	100	8 3

For those sales where the transactions were carried out in gross terms, the market charges amounted to 15.3 per cent of the gross returns. This relative cost of marketing is very much the same as that shown for cabbage, the difference being under 4 per cent lower than for cauliflower, possibly because there were some longer distances involved in marketing the latter crop. For instance, at Glasgow the market charges absorbed 38 per cent of the gross receipts of which 27.3 per cent was the transport cost. However, despite this high relative cost the grower averaged a reasonable net price of 7s. 7d. per dozen heads of cauliflower.

In the case of broccoli, the pattern of marketing was rather similar to that of cauliflower. Here, too, the major part of the crop, in all 77 per cent of the 993 $\frac{3}{4}$ dozen, was sold locally, whereas the rest of the crop was sent to markets at Birmingham, Leicester, and Sheffield, etc. The average price received for the crop worked out at 2s. 7d. per dozen which was considered to be a rather low return. The reason for this low price was that 64 per cent of the total crop was sold locally at the very poor price of 1s. 11d. per dozen. The difference between the local and other sales is shown below:

		Quantity	Net Receipts		Net Price per doz.	
		doz.	%	£	%	s. d.
Local Sales	.. .	759 $\frac{1}{4}$	77	80	61	2 1
Other Sales	.. .	234	23	50	39	4 3
Total	.. .	993 $\frac{3}{4}$	100	130	100	2 7

On the sale of broccoli, market charges amounted to 17.6 per cent of gross receipts of which the hire of empties, and the charge for handling the consignments amounted to 7.2 per cent and the cost of transport to 2.9 per cent.

As the figures given for the returns of cauliflower referred to three different crops, it may be of interest to know the proportions of these crops which were in the overall results. In the

marketing data the distribution of the various crops was as follows:

	<i>Quantity</i>	<i>Net Receipts</i>		<i>Net Price per doz.</i>	
	doz.	%	£	%	s. d.
Summer cauliflower . .	15,808	98	6,544	99	8 3
Autumn cauliflower . .	234	2	68	1	5 10
Winter cauliflower . .	65	—	21	—	6 6
Total	<u>16,107</u>	<u>100</u>	<u>6,633</u>	<u>100</u>	<u>8 3</u>

From the above figures it can be seen that the most predominant crop in the data was summer cauliflower. Furthermore, the real significance of the summer crop originated from the overwhelming proportion which the early cauliflower represented in the data. In the transactions this part of the crop produced 14,599 dozen for £6,264; this amounted to 92 and 94 per cent respectively of total sales. The average price for this crop was 8s. 7d. per dozen heads. The weekly distribution of supplies and prices of summer cauliflower are set out as shown below:

Summer Cauliflower

<i>Weeks</i>	<i>Supply</i>	<i>Net Receipts</i>		<i>Net Price per doz.</i>	
	doz.	%	£	s. d.	s. d.
May 15-21 . .	30	—	6 15 0	—	4 6
	48 $\frac{1}{4}$	—	24 9 10	—	10 1
	127 $\frac{3}{4}$	1	74 0 1	1	11 7
June 5-11 . .	499	3	274 10 4	4	11 0
	3,020 $\frac{1}{2}$	19	1,630 17 0	25	10 10
	7,708 $\frac{1}{2}$	49	3,050 17 5	47	7 11
	2,582	16	978 17 9	15	7 7
July 3-9 . .	583 $\frac{1}{2}$	4	223 19 6	3	7 8
	338 $\frac{1}{2}$	2	69 12 4	1	4 1
	255 $\frac{1}{2}$	2	40 17 7	1	3 2
	211	1	26 7 5	—	2 6
Aug. 7-13 . .	62 $\frac{1}{2}$	—	16 13 5	—	5 4
	32 $\frac{1}{2}$	—	12 5 3	—	7 7
	88	1	38 16 5	1	8 10
	114	1	40 11 3	1	7 1
28-Sept. 3 . .	106 $\frac{1}{2}$	1	34 2 10	1	6 5
	<u>15,808</u>	<u>100</u>	<u>6,543 13 5</u>	<u>100</u>	<u>8 3</u>

Only a small amount of autumn cauliflower, mainly the Majestic and Novo varieties, was included in the sample data,

Sales of Cauliflower

TABLE 54

Method of Marketing	Trans- actions		Quantities		Gross Receipts		Gross Price	Deductions	
								Commission	
	No.	%	dozen	%	£ s. d.	%	d.	£ s. d.	%
Growers' Co-operatives	103	25	4,262 $\frac{1}{2}$	26	2,020	0 11	42	113.7	168 7 0
Growers' Co-operatives	35	8	2,509 $\frac{1}{2}$	16	—	—	—	—	—
Local Markets	53	13	2,240 $\frac{1}{2}$	14	1,115	2 3	23	119.4	89 12 2
Local Merchants	85	20	2,998	19	—	—	—	—	—
Commission Salesmen:									
Birmingham	5	1	43	—	14	19	6	—	83.6
Birmingham	9	2	130 $\frac{1}{2}$	1	—	—	—	1	2 6
Bristol	12	3	1,062 $\frac{1}{2}$	7	535	15	0	11	121.0
Cardiff	4	1	223 $\frac{1}{2}$	1	89	5	0	2	95.7
Coventry	18	4	328	2	137	17	0	3	100.9
Glasgow	5	1	204 $\frac{1}{2}$	1	125	16	6	3	147.5
Gloucester	10	2	417 $\frac{1}{2}$	3	174	5	8	4	100.2
Leeds	2	1	69	—	—	—	—	—	—
Leicester	9	2	131 $\frac{1}{2}$	1	—	—	—	—	—
Manchester	15	4	919	6	537	12	0	11	114.3
Sheffield	23	6	487 $\frac{1}{2}$	3	—	—	—	—	—
Stratford-on-Avon	31	7	79 $\frac{1}{2}$	—	24	12	6	1	74.3
Total	419	100	16,107 $\frac{1}{2}$	100	4,775	6	4	100	—
Gross Sales	256	61	9,780 $\frac{1}{2}$	61	4,775	—	—	117.2	396 13 7
Net Sales	163	39	6,326 $\frac{1}{2}$	39	—	—	—	—	8.3

Sales of Broccoli

TABLE 55

Method of Marketing	Trans- actions		Quantities		Gross Receipts		Gross Price	Deductions	
								Commission	
	No.	%	dozen	%	£ s. d.	%	d.	£ s. d.	%
Growers' Co-operatives	5	12	70 $\frac{1}{2}$	7	13	11	8	78	46.4
Growers' Co-operatives	18	42	635 $\frac{1}{2}$	64	—	—	—	—	—
Local Merchants	2	5	54	6	—	—	—	—	—
Commission Salesmen:									
Birmingham	1	2	5 $\frac{1}{2}$	—	3	6	0	17	144.0
Leicester	4	9	60 $\frac{1}{2}$	6	—	—	—	—	—
Sheffield	10	23	161	16	—	—	—	—	—
Stratford-on-Avon	3	7	7	1	1	1	9	5	37.3
Total	43	100	993 $\frac{1}{2}$	100	17	19	5	100	—
Gross Sales	9	23	82 $\frac{1}{2}$	8	17	19	5	—	52.1
Net Sales	34	87	911	92	—	—	—	—	1 7 1

Sales of Cauliflower

Deductions												Net Receipts			Net Price					
Use of Empties			Handling Charges		Transport		Total			Net Receipts			d.							
£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.						
41	6	11	2.1	—	—	3	1	8	0.1	212	15	7	10.5	1,807	5	4	27	101.8		
39	5	1	3.5	—	—	—	—	—	—	128	17	3	11.5	988	15	6	15	94.6		
—	—	—	—	—	—	—	—	—	—	—	—	—	986	5	0	14	105.6			
—	—	—	—	—	—	—	—	—	—	—	—	—	1,290	6	6	20	103.3			
—	—	—	2	1	0	13.7	1	5	6	8.5	4	9	0	29.7	10	10	6	58.7		
—	—	—	46	19	6	8.8	47	10	0	8.8	134	13	0	25.1	401	2	0	1	77.7	
—	—	—	—	—	—	—	10	10	8	11.8	19	9	2	21.8	69	15	10	1	90.6	
8	4	0	6.0	2	13	2	1.9	16	1	10	11.7	37	6	3	27.1	100	10	9	2	74.9
4	0	9	2.3	3	19	9	3.2	34	8	3	27.3	47	16	9	38.0	77	19	9	1	91.4
—	—	—	—	—	—	—	—	—	—	—	17	2	4	9.8	157	3	4	2	90.4	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	33	1	0	1	115.0		
—	—	—	—	—	—	—	66	19	7	12.5	120	14	9	22.5	53	12	0	1	97.6	
1	19	3	8.0	1	5	6	5.2	—	—	—	5	1	11	20.7	416	17	3	6	108.9	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	177	12	9	3	87.4		
94	16	0	2.0	56	18	11	1.2	179	17	6	3.8	728	6	0	15.3	19	10	7	—	59.0
94	16	0	2.0	56	18	11	1.2	179	17	6	3.8	728	6	0	15.3	6,632	13	2	100	98.8
—	—	—	—	—	—	—	—	—	—	—	—	—	—	4,047	0	4	61	99.3		
—	—	—	—	—	—	—	—	—	—	—	—	—	—	2,585	12	10	39	98.1		

Sales of Broccoli

Deductions												Net Receipts			Net Price		
Use of Empties			Handling Charges		Transport		Total			Net Receipts			d.				
£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.			
9	7	3.5	—	—	—	—	—	—	1	10	0	11.0	12	1	8	9	41.3
—	—	—	—	—	—	—	—	—	—	—	—	60	7	6	46	22.8	
—	—	—	—	—	—	—	—	—	—	—	—	7	10	0	6	33.3	
—	—	—	11	0	16.7	10	1	15.3	1	6	1	39.5	1	19	11	1	87.1
—	—	—	—	—	—	—	—	—	—	—	—	11	7	6	9	45.1	
3	6	16.1	2	1	9.6	—	—	—	—	7	3	33.3	35	17	0	28	53.4
13	1	3.6	13	1	3.6	10	1	2.9	3	3	4	17.6	129	18	1	100	31.4
13	1	3.6	13	1	3.6	10	1	2.9	3	3	4	17.6	14	16	1	11	42.9
—	—	—	—	—	—	—	—	—	—	—	—	115	2	0	89	30.3	

yielding 234 dozen for £68. The weekly sales results of this crop were as follows:

Autumn Cauliflower

Weeks	Quantity	Net Receipts			Net Price per doz.
		doz.	%	£ s. d.	
1955					
Sept. 4-10	76	32		20 14 5	31
11-17	30	13		7 9 0	10
18-24	20	9		6 13 11	9
25-Oct. 1	1	—		3 9	—
Oct. 2-8	—	—		5	—
9-15	3 $\frac{1}{2}$	2		1 2 5	2
16-22	5 $\frac{3}{4}$	2		1 12 8	3
23-29	9	4		3 12 11	6
30-Nov. 5	2	1		1 1 7	1
Nov. 6-12	19	8		7 3 6	10
13-19	39 $\frac{1}{2}$	17		10 14 8	16
20-26	28	12		7 17 10	12
Total	234 $\frac{1}{2}$	100		68 7 1	100
					5 10

In the sample, the winter crop was even smaller than that of autumn cauliflower, yielding only 65 dozen for a return of £21. This crop was planted in June and July for cutting in December and January. Strictly speaking, some of it might have been broccoli, but on the market sales notes they were marked as cauliflower. The weekly results of the sales of this crop is given below:

Winter Cauliflower

Weeks	Quantity	Net Receipts			Net Price per doz.
		doz.	%	£ s. d.	
1955					
Nov. 27-Dec. 3	10	15		3 5 1	14
Dec. 4-10	9	14		2 18 4	14
11-17	6	9		2 4 0	10
18-24	13	20		4 12 3	24
25-31	6	9		1 11 2	8
1956					
Jan. 1-7	9	14		2 13 8	14
8-14	7	11		2 2 7	10
15-21	2	3		10 7 3	3
22-28	3	5		15 0 3	5 0
Total	65	100		20 12 8	100
					6 6

With regard to broccoli, no sprouting variety was included in the data. Details of broccoli sales were as follows:

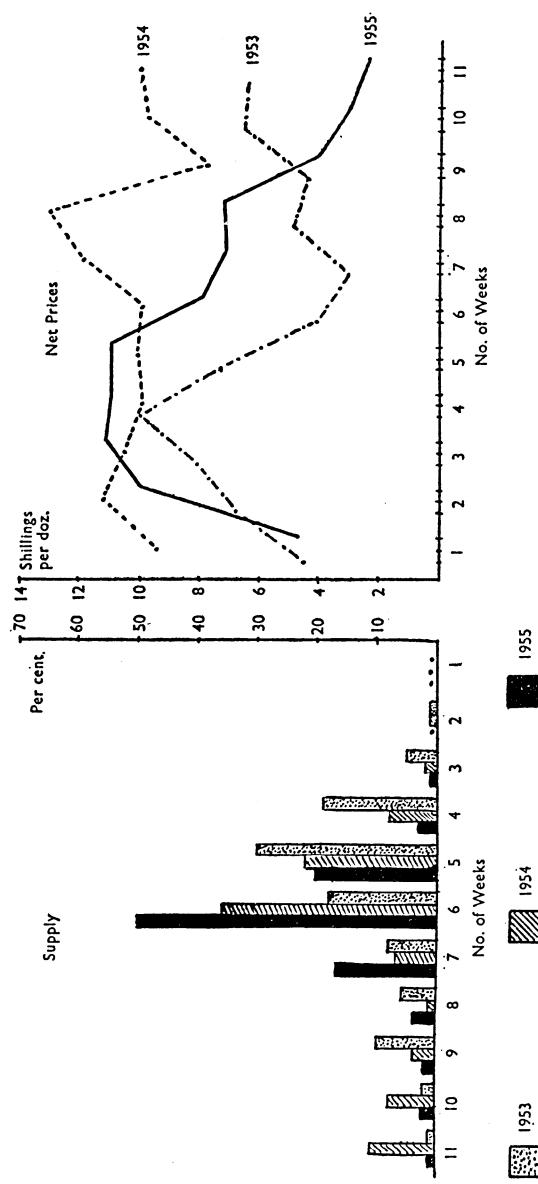
Broccoli

Weeks	Quantity	Net Receipts				Net Price per doz.	
		doz.	%	£	s.	d.	
1955							
Apr. 10-16	110	11		20	19	0	3 10
17-23	34	3		2	16	0	1 8
24-30	117	12		16	12	0	2 10
May 1-7	398	40		46	14	0	3 6
8-14	286 $\frac{1}{2}$	29		28	10	7	1 11
15-21	42	4		12	6	7	5 10
22-28							
29-June 4	5 $\frac{1}{2}$	1		1	19	11	7 3
Total	993 $\frac{1}{2}$	100		129	18	1	2 7

For the purpose of illustrating fluctuations in weekly supplies and prices, the summer cauliflower crop provided the required information. The actual marketing season of this crop covered 16 weeks of which early cauliflower represented about 8 weeks. As the major part of the crop was sold during the first 11 weeks of the season, and comparable data were available for the same length of time for 1953 and 1954, information based on this shorter period proved to be fully satisfactory for illustrating the trends involved. The weekly distributions of supply and the fluctuation of price levels are shown in Diagram 19.

Of the three years shown in the diagram the most successful one was 1954 with an average price of 9s. 1d. per dozen, whereas the least satisfactory one was 1953 with an average price of 5s. 4d., and in 1955 the net price averaged 8s. 3d. It is rather significant that in each year the first week of the season showed a comparatively low price, which was most probably due to the immature quality of the first samples of produce. Otherwise, there is very little similarity between the three years' results; the only common features seem to be that it was in the fifth and sixth week of the season that the supply reached its peak; until the fourth week of the season prices were either rising or remained steady at a reasonably high level. In all three years, during the week when the supply was most plentiful, prices started to fall. In 1954 this drop was hardly noticeable, but both in 1953 and 1955 it appeared to be substantial. The success of cauliflower in 1954 may be ascribed to the generally high price level; and the fairly good result of 1955 to the fact that growers managed to sell the greater part of their crops while the market was still favourable. In 1953, however, prices were far too low to obtain a more satisfactory average price than 5s. 4d. per dozen.

DIAGRAM 19
Weekly Fluctuation of Supplies and Net Prices of Summer Cauliflower During the Years 1953, 1954 and 1955



2. Roots and Onions

This group of crops consisted of carrots, parsnips, beetroot, leeks and salad onions. The acreages and returns of these crops are shown below:

Crops	Acres		Total Receipts		Receipts per Acre
	No.	%	£	%	
Carrots . . .	6	11	732	6	122
Parsnips . . .	4	8	446	3	112
Beetroot . . .	16	30	2,564	18	160
Leeks . . .	9	17	3,080	23	342
Onions . . .	18	34	6,867	50	381
Total . . .	53	100	13,689	100	258

The average return for this group worked out at £258 per acre, being almost twice as much as the £149 shown for the brassica crops. Of the five crops in question, reasonably high average returns were obtained in 1955 for beetroot, leeks and onions, whereas the returns for carrots and parsnips were only moderate.

(a) Carrots

On the whole, the carrot crop is perhaps one of the least typical crops grown in the Vale of Evesham. Only six of the sample holdings grew carrots and these only on a rather limited scale. On these holdings, the average sales of carrots was 8,839 lb. for £122 per acre, giving a price of 3·3d. per lb. Apart from one crop failure, individual results varied from 34 cwt. to $7\frac{1}{2}$ tons, and receipts from £35 to £294 per acre. The highest returns, needless to say, were achieved by the early crop sold in bunches.

Owing to the limited scope of the sample, it was not possible to prepare any information on the last six years' results for this particular crop. The only data available is a comparison between the 1954 and 1955 results, based on the returns of five identical holdings. Details of this comparison are as follows:

Years	Quantity	Receipts	Price per lb.
	lb.	£	d.
1954 . . .	9,761	141	3·5
1955 . . .	7,358	122	4·0

According to the above figures the 1954 crop fared only slightly better than the 1955 one. By taking about 11 per cent for market deductions, the net receipts per acre worked out at £125 and £109 respectively for these two years.

The marketing data on carrots have been derived from a somewhat different sample of holdings, where the supply of the early and main crop was more evenly represented. The average net price per lb., due to this feature of the data, is much lower than that of the 6 sample holdings, being only 1·9d. per lb. The details of marketing carrots are shown in Table 56. As can be seen from this table, 86 per cent of the crop, amounting to $13\frac{3}{4}$ tons, was sold locally, and only 14 per cent was sent to markets at Birmingham and Coventry. The results of the two types of sales were as follows:

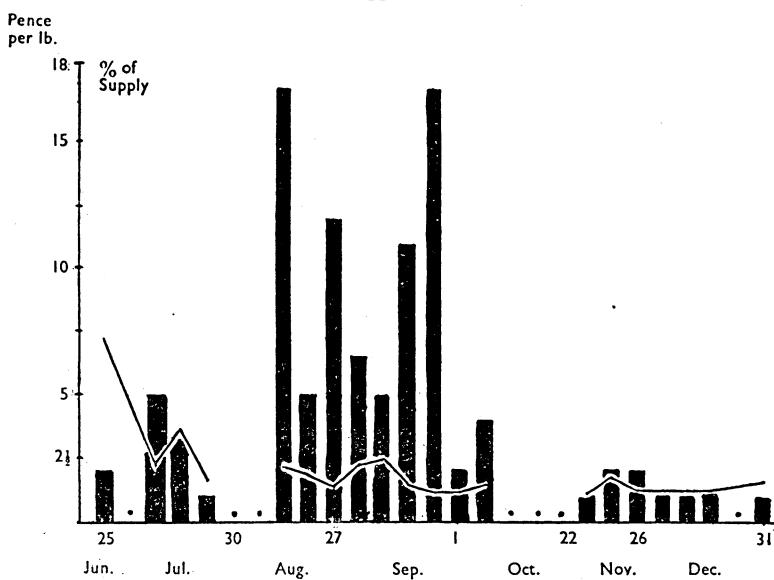
	Quantity		Net Receipts		Net Price per lb.
	lb.	%	£	%	d.
Local Sales . . .	26,894	86	220	92	2·0
Other Sales . . .	3,872	14	21	8	1·3
Total . . .	<u>30,766</u>	<u>100</u>	<u>241</u>	<u>100</u>	<u>1·9</u>

For those sales, where the transactions were made in gross terms, market deductions absorbed 10·8 per cent of gross receipts, which was fairly comparable with that shown for the brassica crops. On the distant markets the relative cost of marketing varied from 20–25 per cent of gross receipts, and on a small consignment sent to Manchester, probably due to its poor quality, the deductions amounted to as much as 83 per cent, the transport charge being only 59 per cent. The crop consisted of a number of varieties, and showed a fairly long marketing season extending over a period of 26 weeks; the marketing of the early crop fell in July, the main crop in August and September, and the later varieties were sold in November and December. The distribution of supplies and the fluctuation of net prices are shown in Diagram 20.

(b) *Parsnips*

There were only four holdings in the sample which grew parsnips during the cropping year of 1955/56. Although parsnips are a fairly common crop in the Vale, it seems that owing to changes in the pattern of crop rotation, it has disappeared altogether from the cropping programme of at least 3 holdings in the sample.

DIAGRAM 20
Weekly Fluctuation of Supplies and Net Prices of Carrots



On the four holdings in question the returns averaged 8,938 lb. for £112 per acre, giving a price of 3d. per lb. for the season. One holding failed completely with this crop; among the others the best result was just over 6 tons for £184 per acre.

As in the case of carrots, the limited scope of the sample allowed only a brief comparison to be made between the results of 1954 and 1955. This was based on the returns of three holdings and showed the following results.

Years	Quantity lb.	Receipts £	Price per lb. d.
1954 . . .	5,880	56	2.3
1955 . . .	7,341	107	3.3

From these figures, the sample holdings show that they were by no means successful with this crop. After allowing about 11 per cent for market charges, the net receipt paid to the grower in 1955 was not more than £95 per acre, or 2.9d. per lb. According to the data prepared on marketing, the average net price was 2.2d. per lb. The reason for the lower price may be due to the fact that the figures also included the results of some other growers in the Vale. The marketing results of the crop are shown in Table 57. Unlike any of the previous crops,

TABLE 56

Sales of Carrots

Method of Marketing	Trans- actions		Quantities		Gross Receipts		Gross Price	Deductions					
								Commission					
Growers' Co-operatives	No.	%	lb.	%	£	s.	d.	%	d.	£	s.	d.	%
Local Markets . . .	47	51	19,145	62	172	1	0	64	2.2	13	12	9	8.0
	18	20	7,749	24	71	4	0	27	2.2	5	7	10	7.5
Commission Salesmen:													
Birmingham . . .	1	1	112	—	16	0	—	1.7	—	1	3	—	7.8
Birmingham . . .	3	3	154	1	—	—	—	—	—	—	—	—	—
Coventry . . .	2	2	224	1	1	5	0	—	1.4	1	10	—	7.3
Gloucester . . .	8	9	2,604	9	18	17	0	8	1.7	1	8	5	7.4
Manchester . . .	1	1	140	1	15	0	—	—	1.3	1	6	—	10.0
Manchester . . .	3	3	218	1	—	—	—	—	—	4	6	—	7.8
Stratford-on-Avon . . .	9	10	420	1	2	17	9	1	1.7	—	—	—	—
Total	92	100	30,766	100	267	15	9	100	—	20	18	1	7.8
Gross Sales	86	93	30,404	99	267	15	9	—	2.1	20	18	1	7.8
Net Sales	6	7	362	1	—	—	—	—	—	—	—	—	—

TABLE 57

Sales of Parsnips

Method of Marketing	Trans- actions		Quantities		Gross Receipts		Gross Price	Deductions					
								Commission					
Growers' Co-operatives	No.	%	lb.	%	£	s.	d.	%	d.	£	s.	d.	%
Growers' Co-operatives	2	5	448	3	1	6	0	2	0.7	—	1	11	7.5
	3	9	3,808	29	—	—	—	—	—	—	—	—	—
Commission Salesmen:													
Birmingham . . .	4	12	672	5	8	13	0	16	3.1	13	4	—	7.5
Birmingham . . .	17	49	5,020	38	—	—	—	—	—	—	—	—	—
Gloucester . . .	1	3	196	2	10	6	—	—	0.6	10	—	7.9	—
Manchester . . .	6	17	2,590	20	44	17	0	82	4.2	4	9	4	10.0
Manchester . . .	2	5	320	3	—	—	—	—	—	—	—	—	—
Total	35	100	13,054	100	55	6	6	100	—	5	5	5	9.5
Gross Sales	13	37	3,906	30	55	6	6	—	3.4	5	5	5	9.5
Net Sales	22	63	9,148	70	—	—	—	—	—	—	—	—	—

Sales of Carrots

Use of Empties		Deductions						Net Receipts		Net Price	
£	s.	d.	£	s.	d.	%	£	s.	d.	%	d.
2	12	11	1·3	—	—	—	16	5	8	9·3	155
1	9	8	2·1	—	—	—	6	17	6	9·6	64
—	—	—	—	—	—	—	—	—	—	—	27
—	—	—	1	0	6·2	—	3	10	24·0	12	2
—	—	—	—	—	—	—	—	—	—	1·0	—
—	2	0	8·0	—	—	—	—	—	—	1	0
—	11	2	3·0	—	—	—	—	—	—	18	8
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	2	2	14·4	—	4	3	7	22·0	14
—	—	—	—	—	—	—	—	—	—	5	6
—	3	2	5·5	3	9	6·5	—	12	6	83·3	1
—	—	—	—	—	—	—	—	—	—	13	4
—	—	—	—	—	—	—	11	5	19·8	2	6
4	18	11	1·9	6	11	0·1	2	16	11	1·0	241
4	18	11	1·9	6	11	0·1	2	16	11	1·0	238
—	—	—	—	—	—	—	—	—	—	14	11
—	—	—	—	—	—	—	—	—	—	99	1
—	—	—	—	—	—	—	—	—	—	1	1·8
—	—	—	—	—	—	—	—	—	—	—	—

Sales of Parsnips

Use of Empties		Deductions						Net Receipts		Net Price	
£	s.	d.	£	s.	d.	%	£	s.	d.	%	d.
4	—	—	1·2	—	—	—	—	2	3	8·7	1
—	—	—	—	—	—	—	—	—	—	3	21
—	—	—	—	—	—	—	—	—	—	0	6
—	—	—	8	5	4·6	—	1	12	4	18·5	7
—	—	—	—	—	—	—	—	—	—	0	8
—	3	—	2·4	—	—	—	—	4	7	43·6	47
—	—	—	—	1	8	6	3·1	12	15	2	5
—	—	—	—	—	—	—	—	—	—	11	41
—	—	—	—	—	—	—	—	—	—	—	—
—	7	—	—	1	16	11	3·3	7	11	5	14
—	—	—	—	—	—	—	—	—	—	14	4
—	—	—	—	—	—	—	—	—	—	4	2·2
—	—	—	—	—	—	—	—	—	—	—	—
—	7	—	—	1	16	11	3·3	7	11	5	14
—	—	—	—	—	—	—	—	—	—	14	4
—	—	—	—	—	—	—	—	—	—	40	2·5
—	—	—	—	—	—	—	—	—	—	12	2·0
—	—	—	—	—	—	—	—	—	—	77	65

the greater part of the parsnip crop was sold at markets outside the Vale, such as Birmingham, Gloucester and Manchester. The difference between the results of the local and other sales are as shown below:

	<i>Quantity</i>	<i>Net</i>	<i>Net</i>
	lb.	£	Price per lb. d.
	%	%	
Local Sales . . .	4,256	32	1·5
Other Sales . . .	8,798	68	2·5
Total . . .	<u>13,054</u>	<u>100</u>	<u>2·2</u>
		118	100

For the gross transactions, market deductions represented 26·5 per cent of gross receipts, of which 13·7 per cent was absorbed by the transport cost. Although the relative cost of marketing both at Birmingham and Manchester was rather high, being 18·5 and 28·4 per cent respectively, the gross price was favourable enough, at 3·1d. and 4·2d., to ensure a reasonable net return to the grower. At Gloucester, on the other hand, market expenses absorbed 43·6 per cent of gross receipts on a small consignment, the sale of which only fetched 0·6d. per lb.

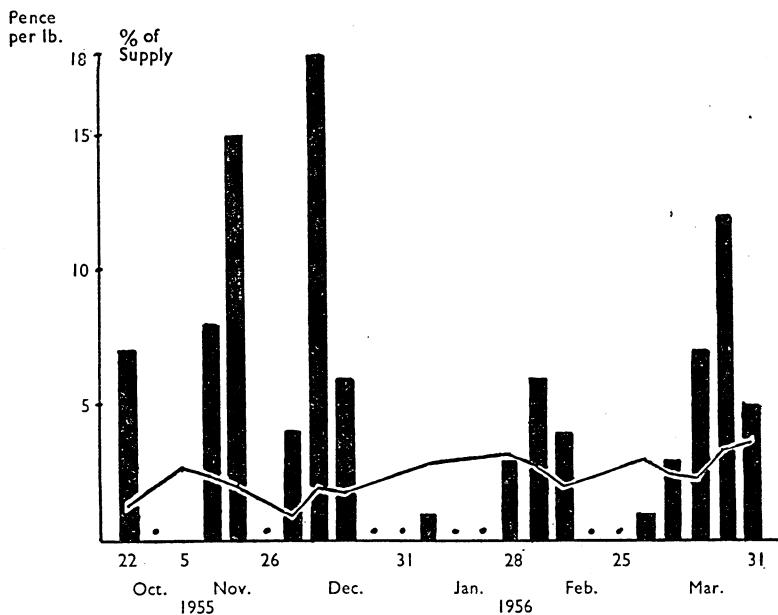
The marketing season for the 1955/56 parsnip crop covered 24 weeks, running from the end of October, 1955 until April, 1956. In the course of the season, the best prices were returned in January, February and March, and the poorest in November and December. The fluctuation of prices and the distribution of supplies are illustrated in Diagram 21.

(c) Beetroot

Unlike carrots and parsnips, beetroot was widely grown on the sample holdings. As many as 16 holdings grew this crop, and sent their supplies to the markets almost continuously from June until the end of January. However, the actual crop season finishes by the end of October, and usually quantities sold later in the year are negligible. Until August the crop is sold in bunches and after that by the pound. In order to ascertain the per acre returns for this crop, it has been necessary to adopt a conversion factor by which the quantities sold in bunches could be turned into pounds. For the purpose of determining this factor the weight of 2½ dozen bunches of early beetroot was taken as 28 lb.

On the 16 holdings, the returns averaged 12,697 lb. for £160 per acre giving a price of 3d. per lb. There were very wide variations in the returns of the 16 holdings. The best result

DIAGRAM 21
Weekly Fluctuation of Supplies and Net Prices of Parsnips



was almost 17 tons per acre for £414, and the poorest only averaged just over 1 ton for £21. On the whole, the success of the crop depended very largely on the sale of the bunched crop, particularly as the 1955 yield appeared to be rather moderate. However, in those years of heavy yields, the abundance of the crop often recompensed the low prices received for the bagged crop and provided good returns. This can be confirmed by the six years' results of those four sample holdings, which grew beetroot continuously from 1950 to 1955. The annual results per acre of these holdings were as follows:

Years		Quantity lb.	Receipts £	Price per lb. d.
1950	.	18,375	114	1.5
1951	.	8,339	103	2.9
1952	.	41,143	195	1.1
1953	.	45,680	148	0.8
1954	.	41,693	158	0.9
1955	.	15,055	189	3.0
Average		28,381	151	1.3

From these figures, the results of the years 1952, 1953 and 1954 show that despite the low average prices, growers managed to obtain satisfactory returns thanks to the heavy yields sold during these years. With regard to the 1955 crop, on the combined results of the gross and net sales the cost of marketing worked out at 11.6 per cent, which would eventually decrease the crop return of £189 per acre to £162, or 2.7d. per lb. The marketing data, shown in Table 58, which was prepared from the results of a somewhat different sample of growers, gives the net price per lb. as 2.1d. The reason for this lower average price is, most probably, due to the greater quantity of the early crop sold by holdings in the survey.

From the pattern of marketing it can be seen that most of the crop was sold locally, and only one-quarter of the produce was sold at distant markets. The results of the local and other sales are shown below:

	Quantity	Net		Net	
		lb.	%	Receipts	Price
		£	%	per lb.	d.
Local Sales	90,211	72	848	76	2.3
Other Sales	36,287	28	270	24	1.8
Total	126,498	100	1,118	100	2.1

According to the foregoing figures, the produce fetched a slightly better price on the local than on the distant markets. The reason for this was partly due to the higher cost of marketing. On these markets, deductions amounted to between 23 per cent and 30 per cent of gross receipts, of which the transport cost absorbed 10 to 20 per cent, subject of course to the distances involved. Taking into account the total gross sales, the marketing costs were 13.7 per cent of the gross returns, which was comparable with those for the other crops.

As mentioned before, the main marketing season for beetroot runs from July till November, and the success of the returns depends on the quantities sold at the beginning of the season. On the sample holdings, 45 per cent of the main crop was sold during the first four weeks of July averaging 3.2d. per lb., whilst the price for the whole crop was 2.3d. Price and supply fluctuations for the entire period during which the beetroot crop was marketed by the sample holdings is illustrated in Diagram 22.

DIAGRAM 22
Weekly Fluctuation of Supplies and Net Prices of Beetroot

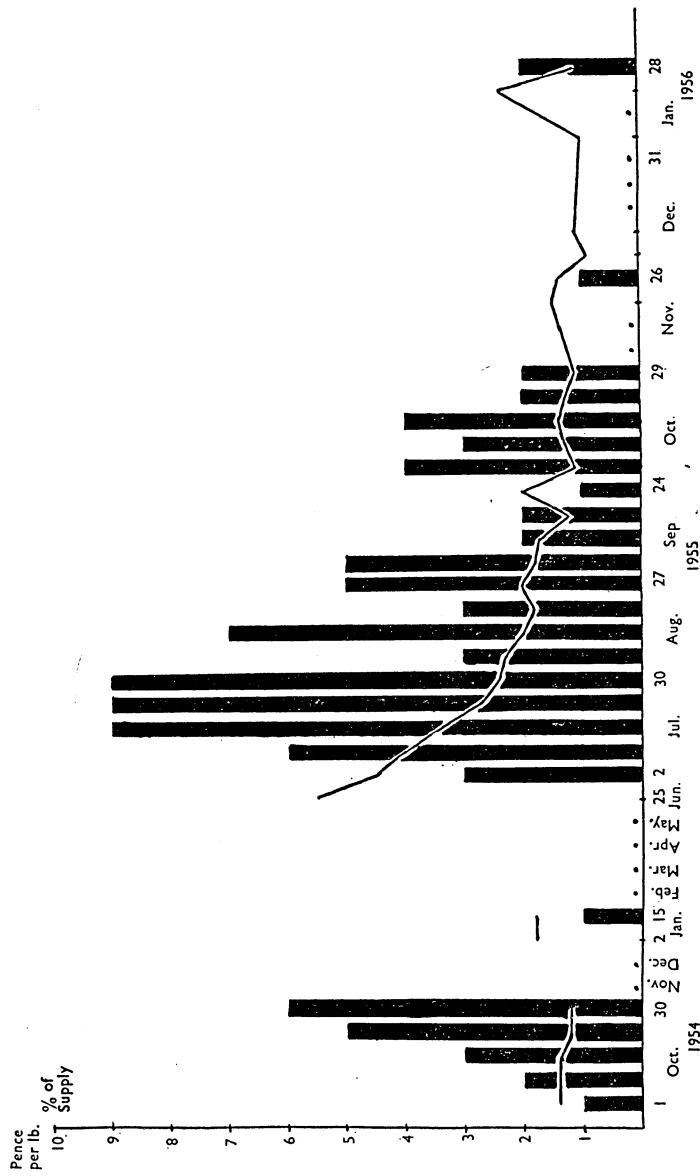


TABLE 58

Sales of Beetroot

Method of Marketing	Trans- actions		Quantities		Gross Receipts		Gross Price	Deductions	
								Commission	Commission
Growers' Co-operatives	No.	%	lb.	%	£ s. d.	%	d.	£ s. d.	%
Growers' Co-operatives	110	43	62,109	49	575 16 0	54	2.2	46 15 1	8.2
Local Markets . . .	22	8	10,626	9	—	—	—	—	—
Local Merchants . . .	35	14	14,830	12	207 17 2	20	3.4	15 12 0	7.5
Commission Salesmen:			2,646	2	—	—	—	—	—
Birmingham . . .	25	10	10,696	8	132 17 6	12	3.0	9 19 4	7.5
Birmingham . . .	17	7	5,314	4	—	—	—	—	—
Bristol . . .	8	3	8,624	7	63 18 0	6	1.8	4 16 0	7.5
Coventry . . .	6	2	3,192	2	28 12 6	3	2.2	2 3 2	7.5
Gloucester . . .	5	2	1,248	1	8 2 9	1	1.6	12 3	7.5
Manchester . . .	7	3	5,792	5	46 9 0	4	1.9	4 12 11	10.0
Manchester . . .	12	5	1,421	1	—	—	—	—	—
Total	255	100	126,498	100	1,063 12 11	100	—	84 10 9	8.0
Gross Sales	196	77	106,491	84	1,063 12 11	—	2.4	84 10 9	8.0
Net Sales	59	23	20,007	16	—	—	—	—	—

TABLE 59

Sales of Leeks

Method of Marketing	Trans- actions		Quantities		Gross Receipts		Gross Price	Deductions	
								Commission	Commission
Growers' Co-operatives	No.	%	lb.	%	£ s. d.	%	d.	£ s. d.	%
Growers' Co-operatives	93	35	39,004	43	783 8 9	77	4.8	61 2 11	7.8
Local Markets . . .	31	11	16,640	19	—	—	—	—	—
Local Merchants . . .	14	6	2,772	3	73 3 3	7	6.4	5 12 6	8.2
Commission Salesmen:			10,647	12	—	—	—	—	—
Birmingham . . .	26	10	5,391	6	111 16 6	11	5.0	8 7 8	7.5
Birmingham . . .	44	17	11,064	12	—	—	—	—	—
Coventry . . .	13	5	3,080	4	46 10 6	5	3.6	3 10 3	7.5
Leeds . . .	4	2	1,008	1	—	—	—	—	—
Manchester . . .	3	1	140	—	—	—	—	—	—
Total	263	100	89,746	100	1,014 19 0	100	—	78 13 4	7.7
Gross Sales	146	56	50,247	56	1,014 19 0	—	4.8	78 13 4	7.7
Net Sales	117	44	39,499	44	—	—	—	—	—

Sales of Beetroot

Deductions												Net Receipts			Net Price			
Use of Empties		Handling Charges		Transport		Total												
£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.				
8	9	11	1·4	—	—	—	—	—	55	5	0	9·6	520	11	0			
4	15	6	2·3	—	—	—	—	—	20	7	6	9·8	102	12	0			
—	—	—	—	—	—	—	—	—	—	—	—	—	187	9	8			
—	—	—	10	14	5	8·1	10	7	9	7·8	31	1	6	23·4	37	10	0	
—	—	—	3	15	10	5·9	7	10	8	11·8	16	2	6	25·2	101	16	0	
1	8	6	5·0	9	6	1·7	2	17	0	9·9	6	18	2	24·1	45	18	9	
6	6	6	4·0	—	—	—	1	3	9	14·6	2	2	6	26·1	47	15	6	
—	—	—	—	—	—	—	9	5	3	19·9	13	18	2	29·9	21	14	4	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	6	0	3		
15	0	5	1·4	14	19	9	1·4	31	4	5	2·9	145	15	4	13·7	1,117	11	4
15	0	5	1·4	14	19	9	1·4	31	—	5	2·9	145	15	4	13·7	917	17	7
—	—	—	—	—	—	—	—	—	—	—	—	—	—	199	13	9		
—	—	—	—	—	—	—	—	—	—	—	—	—	—	82	18	2·4		

Sales of Leeks

Deductions												Net Receipts			Net Price			
Use of Empties		Handling Charges		Transport		Total												
£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.				
17	15	7	2·3	—	—	2	6	—	79	1	0	10·1	704	7	9			
1	6	11	1·4	—	—	—	—	—	6	19	5	9·6	399	12	9			
—	—	—	—	—	—	—	—	—	—	—	—	—	66	3	10			
—	—	—	6	17	0	6·1	5	3	7	4·6	20	8	3	18·2	208	15	1	
1	18	6	4·1	1	2	0	2·4	3	7	10	7·3	9	18	7	21·3	91	8	3
—	—	—	—	—	—	—	—	—	—	—	—	—	201	6	9			
—	—	—	—	—	—	—	—	—	—	—	—	—	36	11	11			
21	1	0	2·1	7	19	0	0·8	8	13	11	0·9	116	7	3	11·5	15	4	0
21	1	0	2·1	7	19	0	0·8	8	13	11	0·9	116	7	3	11·5	15	4	0
—	—	—	—	—	—	—	—	—	—	—	—	—	6	16	0			
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	11·7			
21	1	0	2·1	7	19	0	0·8	8	13	11	0·9	116	7	3	11·5	1,730	6	4
—	—	—	—	—	—	—	—	—	—	—	—	—	898	11	9			
—	—	—	—	—	—	—	—	—	—	—	—	—	831	14	7			
—	—	—	—	—	—	—	—	—	—	—	—	—	53	4·3	5·1			

(d) *Leeks*

Although in certain districts, for example, Offenham, this crop is fairly common, its cultivation is rather moderate in most parts of the Vale. Among the 32 sample holdings there were only 9 which grew this crop during the year 1955/56, and only 4 of them were regular growers of leeks. In fact, there were only two holdings which included leeks in their cropping programme during the last six years. According to the findings of past surveys, during the years 1950 to 1954 the average yield per acre varied between 5 and 7 tons and the returns from £123 to £162, which may be considered as fairly static. In 1955/56, however, the crop appeared to be highly successful. While the yield of the 9 holdings remained average, being 14,077 lb., or just over 6 tons per acre, the cash returns rose to a record figure of £342, giving an average price per lb. of 5·8d. Among the individual holdings the highest return was 17½ tons for £817 per acre and the lowest about 2 tons for £123.

The success of the crop can be better appraised by comparing the results of those six sample holdings which grew leeks both in 1954 and 1955. This comparison gives the following picture:

Years	Quantity lb.	Receipts £	Price per lb. d.
1954	16,665	167	2·4
1955	17,055	419	5·8

Although in 1955 the quantity was only 390 lb. heavier than in 1954, the exceptionally good price nearly trebled the cash returns. Almost three-quarters of the 1955 crop was sold by net transactions, and the market charges on the total receipts worked out at only 6.3 per cent. Taking this cost into account, the net receipts to the grower in 1955 was £393 per acre.

As in the case of sprouts, this crop, too, appeared in two parts in the accounts of the holdings: the overlapping part of the previous year's crop was shown at the beginning of the financial year and the first part of the new crop at the end. Thus, in order to establish some facts on the success of the 1955 crop, it was necessary to ascertain which part of the crop was mainly responsible for the good returns. From data drawn up on the sale of 40 tons of leeks, it appeared that both parts of the crop were marketed from the end of November 1954 till the middle of May 1955, and from the end of October 1955 until the 31st March 1956. The marketing results of these two separate crops were as follows:

	Quantity		Net Receipts		Net Price per lb.
	lb.	%	£	%	d.
Old Crop . .	66,831	74	1,262	73	4·5
New Crop . .	22,915	26	468	27	4·9
Total . .	89,746	100	1,730	100	4·6

Although there is very little difference between the net prices in the foregoing figures, the larger quantity of the old crop suggests that, besides high prices, success was mainly due to the heavy yields achieved by the old crop.

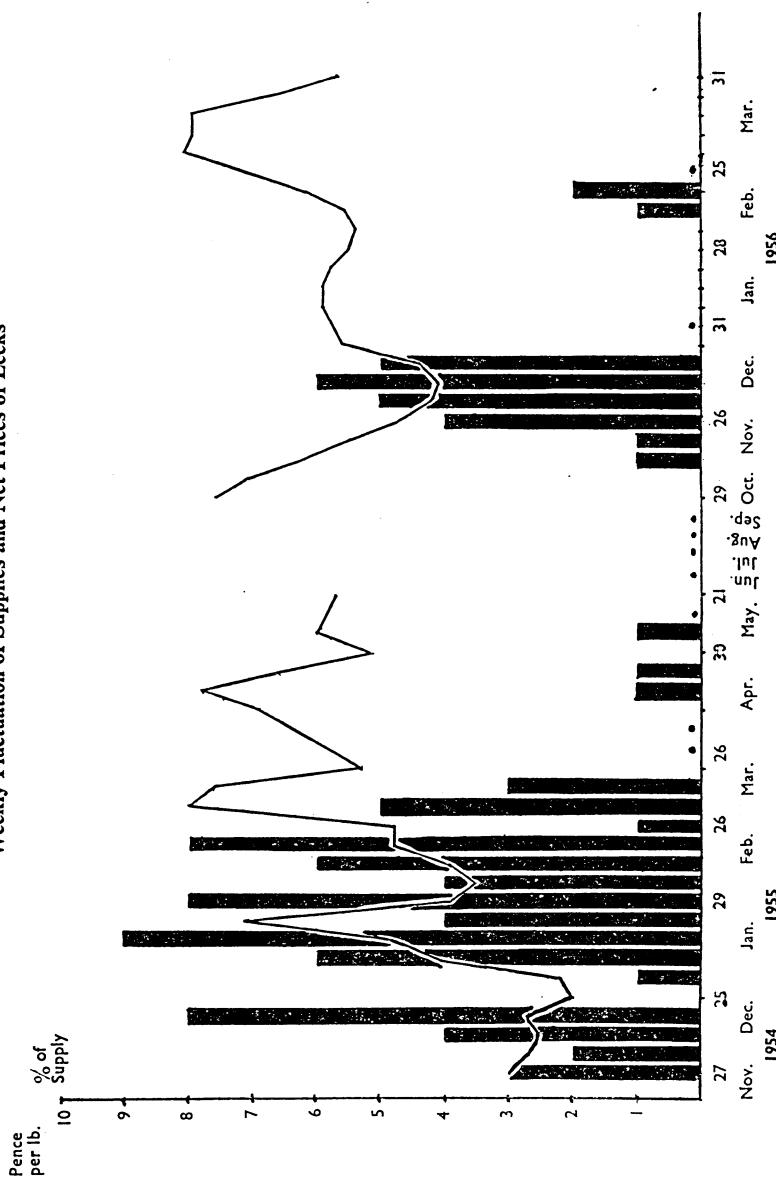
According to the marketing data shown in Table 59, 77 per cent of the crop was sold locally, and the rest sent to Birmingham, Leeds, Coventry and Manchester. The difference between the two types of sales showed the following results:

	Quantity		Net Receipts		Net Price per lb.
	lb.	%	£	%	d.
Local Sales . .	69,063	77	1,379	82	4·8
Other Sales . .	20,683	23	351	18	4·1
Total . .	89,746	100	1,730	100	4·6

As can be seen from these figures, there was only a negligible difference between the results of the local and other transactions. It was the smaller quantity and the actual dates of marketing rather than the differences in prices which were responsible for the somewhat lower returns shown from the distant markets. On the whole, the cost of marketing, as given in the gross transactions, amounted to 11·5 per cent of receipts.

The marketing season of the entire crop was, altogether, 44 weeks, of which the disposal of the old crop took 23, and that of the new 21 weeks. Although the average price per lb. of the two parts of the crop was almost identical, the trend in the weekly net prices was quite different. Prices paid for the old crop fluctuated at a moderate level, whilst those obtained for the new crop moved at a higher level. The scarcity of supply, however, prevented the growers from exploiting the favourable opportunity more fully. Diagram 23 shows the fluctuations in the supplies and prices.

DIAGRAM 23
Weekly Fluctuation of Supplies and Net Prices of Leeks



(e) *Onions*

On the sample holdings, especially in the smaller acreage groups, onions were one of the most important crops. The handling of this crop, notably the pulling and bunching, requires a considerable amount of labour, so that the growing of onions principally belongs to the typical small holding enterprises, where the required, possibly unpaid, family labour, is easily forthcoming. On these holdings, due to the high value of the onion income, and to the period, normally in March and April, when only a few crops are sold, onions are regarded as an important source of revenue upon which the grower has to rely.

Of the entire group of sample holdings, there were 18 which grew onions during the 1955/56 season. Like leeks, the crop was a highly successful one. Although the average yield of 9,437 lb. per acre was moderate, the growers managed to achieve a record revenue of £381 per acre, thanks to the very high prices obtained for the crop. Among the individual holdings, the lowest returns were 3,227 lb. for £116, and the highest 19,484 lb. for £1,041 per acre. There were altogether 7 holdings where the returns were under £200 per acre. On these holdings, the comparatively low returns may perhaps be associated with the drought in the summer of 1954, which by affecting the moisture of the soil delayed the germination of the seeds, and the backward crop thus suffered more by the hardness of the winter of 1955. Wherever the soil was regularly irrigated during the summer, it appeared that this was a factor which, most probably, had considerable bearing on the success of the subsequent onion crop.

In the light of six years' average results per acre of 10 identical holdings, the success of the 1955 crop can be assessed by the following comparison:

Years	Quantity	Price per lb.		
		lb.	£	d.
1950	18,928	307	3·9	
1951	14,793	421	6·8	
1952	16,596	448	6·5	
1953	13,625	341	6·0	
1954	5,872	319	13·0	
1955	10,077	482	11·5	
Average	13,315	387	7·0	

TABLE 60

Sales of Onions

Method of Marketing	Trans- ac-tions		Quantities		Gross Receipts			Gross Price per lb.	Deductions			
									Commission			
Growers' Co-operatives	246	27	80,679	42	3,452	17	8	65	10.3	273	10	0
Growers' Co-operatives	110	12	21,368	11	—	—	—	—	—	—	—	—
Local Markets	89	10	13,024	7	469	15	11	9	8.7	36	15	7
Local Merchants	17	2	1,944	1	—	—	—	—	—	—	—	—
Commission Salesmen:												
Birmingham	55	6	3,192	2	140	2	10	3	10.5	10	10	10
Birmingham	106	12	8,640	5	—	—	—	—	—	—	—	—
Bristol	27	3	5,550	3	170	0	1	3	7.4	12	15	4
Cardiff	17	2	5,656	3	181	4	2	4	7.7	18	2	8
Coventry	20	2	1,965	1	57	4	4	1	7.0	4	6	5
Gloucester	34	4	4,482	2	220	1	0	4	11.8	16	10	8
Leeds	19	2	4,598	2	—	—	—	—	—	—	—	—
Leicester	14	1	2,421	1	—	—	—	—	—	—	—	—
Liverpool	13	1	3,704	2	—	—	—	—	—	—	—	—
London	6	1	970	1	30	8	0	1	7.5	2	19	1
Manchester	41	4	16,425	9	445	11	0	8	6.5	44	11	1
Manchester	49	5	6,634	3	—	—	—	—	—	—	—	—
Nottingham	15	2	5,040	2	123	11	0	2	5.9	12	6	8
Sheffield	23	2	4,504	2	—	—	—	—	—	—	—	—
Stratford-on-Avon	19	2	924	1	17	18	6	—	4.7	1	6	11
Total	920	100	191,720	100	5,308	14	6	100	—	433	15	3
Gross Sales	569	62	137,907	72	5,308	14	6	—	9.2	433	15	3
Net Sales	351	38	53,813	28	—	—	—	—	—	—	—	—

TABLE 61

Sales of Broad Beans

Method of Marketing	Trans- ac-tions		Quantities		Gross Receipts			Gross Price	Deductions			
									Commission			
Growers' Co-operatives	47	26	27,166	20	348	0	11	21	3.1	28	13	10
Growers' Co-operatives	10	6	11,640	8	—	—	—	—	—	—	—	8.3
Local Markets	26	14	16,980	12	175	11	4	11	2.5	13	16	3
Local Merchants	2	1	360	—	—	—	—	—	—	—	—	—
Commission Salesmen:												
Birmingham	24	13	5,362	4	101	0	8	6	4.5	7	11	6
Birmingham	9	5	3,955	3	—	—	—	—	—	—	—	—
Cardiff	10	5	10,140	7	120	17	4	7	2.9	12	1	11
Coventry	3	2	540	—	4	8	0	—	2.0	6	8	7.6
Gloucester	9	5	2,796	2	29	18	11	2	2.6	2	5	1
Liverpool	4	2	16,080	11	—	—	—	—	—	—	—	—
Manchester	26	14	44,670	32	890	17	9	53	4.8	89	1	9
Manchester	11	6	1,440	1	—	—	—	—	—	—	—	—
Stratford-on-Avon	2	1	80	—	14	0	—	2.1	—	1	1	7.7
Total	183	100	141,209	100	1,671	8	11	100	3.7	153	18	1
Gross Sales	147	80	107,734	76	1,671	8	11	—	3.7	153	18	1
Net Sales	36	20	33,475	24	—	—	—	—	—	—	—	—

Sales of Onions

Use of Empties		Deductions				Total				Net Receipts		Net Price per lb.	
£	s.	£	s.	£	s.	£	s.	£	s.	£	%	d.	
22	18	2	0·7	—	—	8	18	11	0·2	305	7	8·8	
6	13	6	1·4	—	—	—	—	—	—	3,147	10	48	
—	—	—	—	—	—	43	9	1	9·2	664	10	7·5	
6	2	0·2	6	4	6	4·4	4	14	6	305	6	10	
—	—	—	9	3	0	5·4	9	3	10	426	6	10	
—	—	—	—	—	—	10	15	5	5·9	76	5	1	
3	5	6	5·7	1	17	0	3·2	2	16	3	—	1	
1	15	7	0·8	—	—	7	19	7	3·6	21	16	0	
—	—	—	—	—	—	—	—	—	15·5	118	6	2	
—	—	—	—	—	—	—	—	—	—	334	1	5	
—	—	—	1	3	7	3·9	2	6	10	31	2	2	
—	—	—	10	15	3	2·5	38	9	9	18·3	138	17	
—	—	—	—	—	—	—	—	—	—	152	6	2	
—	—	—	—	—	—	—	—	—	—	44	19	1	
—	—	—	—	—	—	—	—	—	—	193	15	2	
8	6	2·4	—	—	—	8	0	2·2	—	135	3	8	
35	7	5	—	29	9	2	—	94	16	10	11·1	89	13
35	7	5	0·6	29	9	2	0·5	94	16	10	6,519	4	100
—	—	—	—	—	—	—	—	—	1·8	351	14	5	
—	—	—	—	—	—	—	—	—	—	249	2	4	
—	—	—	—	—	—	—	—	—	—	101	14	9	
—	—	—	—	—	—	—	—	—	—	186	4	3	
—	—	—	—	—	—	—	—	—	—	15	15	1	
—	—	—	—	—	—	—	—	—	—	—	—	4·1	
35	7	5	—	29	9	2	—	94	16	10	11·1	6,519	4
35	7	5	0·6	29	9	2	0·5	94	16	10	72	4,715	5
—	—	—	—	—	—	—	—	—	—	1,803	18	9	
—	—	—	—	—	—	—	—	—	—	28	—	8·0	

Sales of Broad Beans

Use of Empties		Deductions				Total				Net Receipts		Net Price	
£	s.	£	s.	£	s.	£	s.	£	s.	£	%	d.	
9	4	8	2·6	—	—	—	—	—	—	37	18	6	
10	15	4	6·1	1	1	10	0·6	9	6	10·9	310	2	
—	—	—	—	—	—	—	—	—	—	172	15	10	
—	—	—	—	—	—	—	—	—	—	149	8	5	
—	—	—	8	14	11	8·7	8	0	8	14·9	4	1	
—	—	—	—	—	—	—	—	—	—	—	1	2·7	
—	—	—	—	—	—	—	—	—	—	45	3	2	
9	0	10·2	—	—	—	15	16	5	13·1	27	18	4	
13	11	2·3	—	—	—	13	6	—	—	1	23·1	2	
—	—	—	—	—	—	2	17	6	9·6	1	33·1	0	
—	—	—	—	—	—	—	—	—	—	24	2	5	
1	0	7·1	—	11	6·6	—	—	—	—	5	16	6	
21	3	11	1·3	9	17	8	0·6	142	10	4	21·4	184	5
21	3	11	1·3	9	17	8	0·6	142	10	4	—	687	3
—	—	—	—	—	—	—	—	—	—	14	19	0	
—	—	—	—	—	—	—	—	—	—	11	0	1	
—	—	—	—	—	—	—	—	—	—	—	—	1·7	
21	3	11	1·3	9	17	8	0·6	142	10	4	19·7	1,765	2
—	—	—	—	—	—	—	—	—	—	100	—	3·0	
21	3	11	1·3	9	17	8	0·6	142	10	4	19·7	1,343	18
—	—	—	—	—	—	—	—	—	—	76	3	3·0	
—	—	—	—	—	—	—	—	—	—	421	2	3·0	

From these figures it can be seen that in 1955, although the crop was below average in weight, the good price received enabled the growers to obtain the highest cash returns ever achieved during the period in question. After allowing 8.3 per cent for market deductions, which was the actual cost of marketing on the combined results of gross and net transactions, the 1955 returns had to be reduced by £40 to £442, in order to arrive at the net amount received per acre by the growers for their crop.

As in the case of some of the previous crops, the data on onions also included a small proportion of both the preceding and succeeding onion crop, according to the period covered by the financial year of the co-operating holdings. Actually, this extended period added some 8 weeks of trading to the marketing season of the main crop, namely 5 weeks from the end of 1954 and 3 from March 1956. However, the quantities of these part crops were very small, being about 1 per cent of the entire supply, so that their inclusion did not affect the overall results.

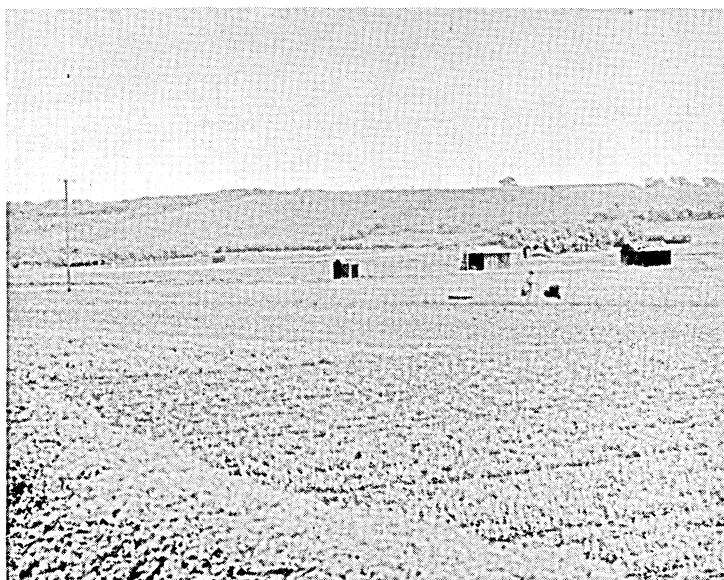
In the data on marketing shown in Table 60 the average net price was somewhat lower than on the sample holdings, being 8.2d. per lb. instead of about 10.5d. The reason for this difference is that the sample holdings marketed a larger quantity of the early crop than those where the results had been included in the marketing data. The information on the sale of the crop was based on 920 transactions, representing over 85 tons of onions. Of this supply, 61 per cent was sold in Evesham and Pershore; the other part of the crop was sent to 13 different markets all over the country. As most of the early produce was sold locally, the average net price obtained through these sales was higher than that achieved on other markets, and this difference was more marked with the onion crop than with any of those crops previously discussed. The comparison between the two types of sales is given below:

	Quantity		Net	Net	
	lb.	%	Receipts	Receipts	Price
			£	%	per lb.
Local Sales	117,015	61	4,315	66	8.9
Other Sales	74,705	39	2,204	34	7.6
Total	191,720	100	6,519	100	8.2

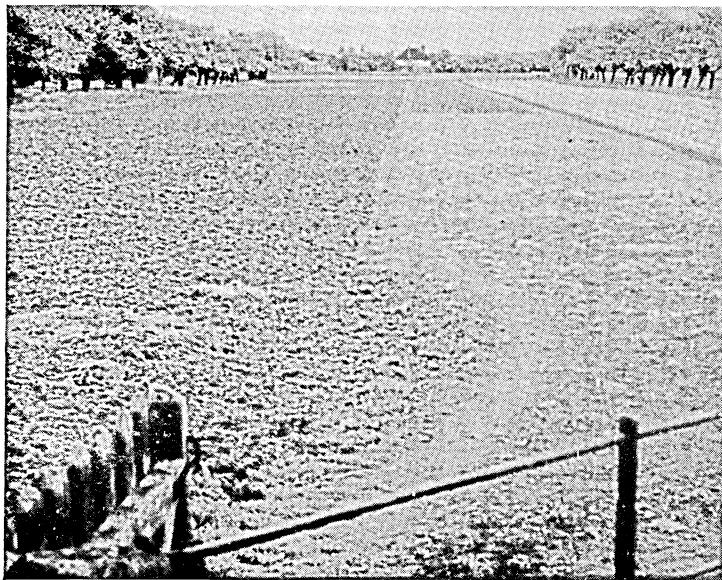
Where sales were transacted in gross terms, the cost of marketing worked out at 11.1 per cent of gross receipts, being



Grower's house on the holding.



Fragmentation of land: each shed indicates separate holding.



Fruit trees used for wind break.



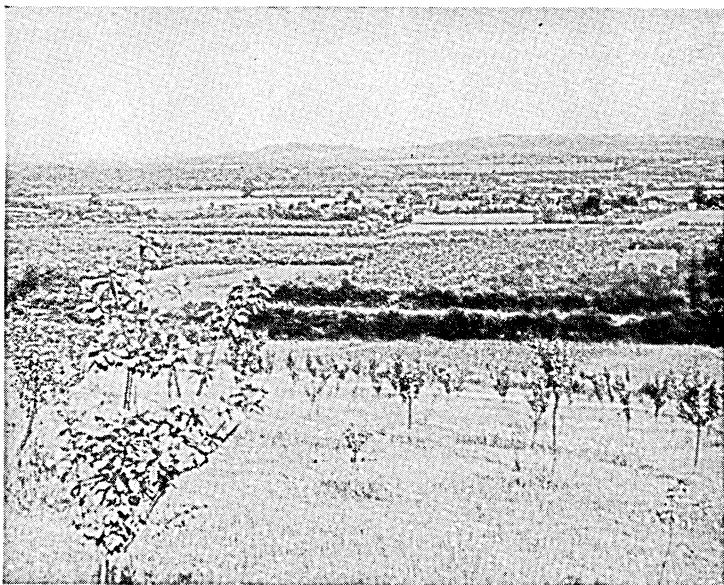
Cutting early potted cauliflower.



Inter-cropping spring onions in a young orchard.



Irrigation in preparation: water supply drawn from reservoir on the top of hill.



Layout of orchardings at Lenchwick.



Young cultivated orchard.

very much the same as that shown for the other crops. On the distant markets, the market deductions varied from 12 to 21 per cent, of which the cost of transport absorbed from 4 to 9 per cent of the gross returns. This relative share of market deductions depended very much on the dates when the consignments were sent to various markets. Sending to these markets rather late in the season results in rather high rates of deductions, and hence in greater variations in the net price.

As with the other crops, onions, too, consisted of a number of different varieties, such as early, mid-season and late ones. The marketing dates of these varieties often overlapped each other but as no reference was given to them on the market sales notes it was not possible to make any differentiation between the results. However, only one holding grew bulb onions in a very small quantity.

On the whole, onions were marketed from the middle of March until the middle of December. However, the bulk of the crop, amounting to 65 per cent, was cleared by the end of May. Those holdings with high returns per acre sold their crop in April or even earlier, and consequently achieved an average net price of 1s. 1d. per lb. Later on, during the months of July and August, prices rose again, but the limited supplies, which represented only 15 per cent of the total crop, had only very little effect on the overall returns. Diagram 24 accounts for the weekly distribution of the supply and the fluctuation of the net prices.

3. Legumes

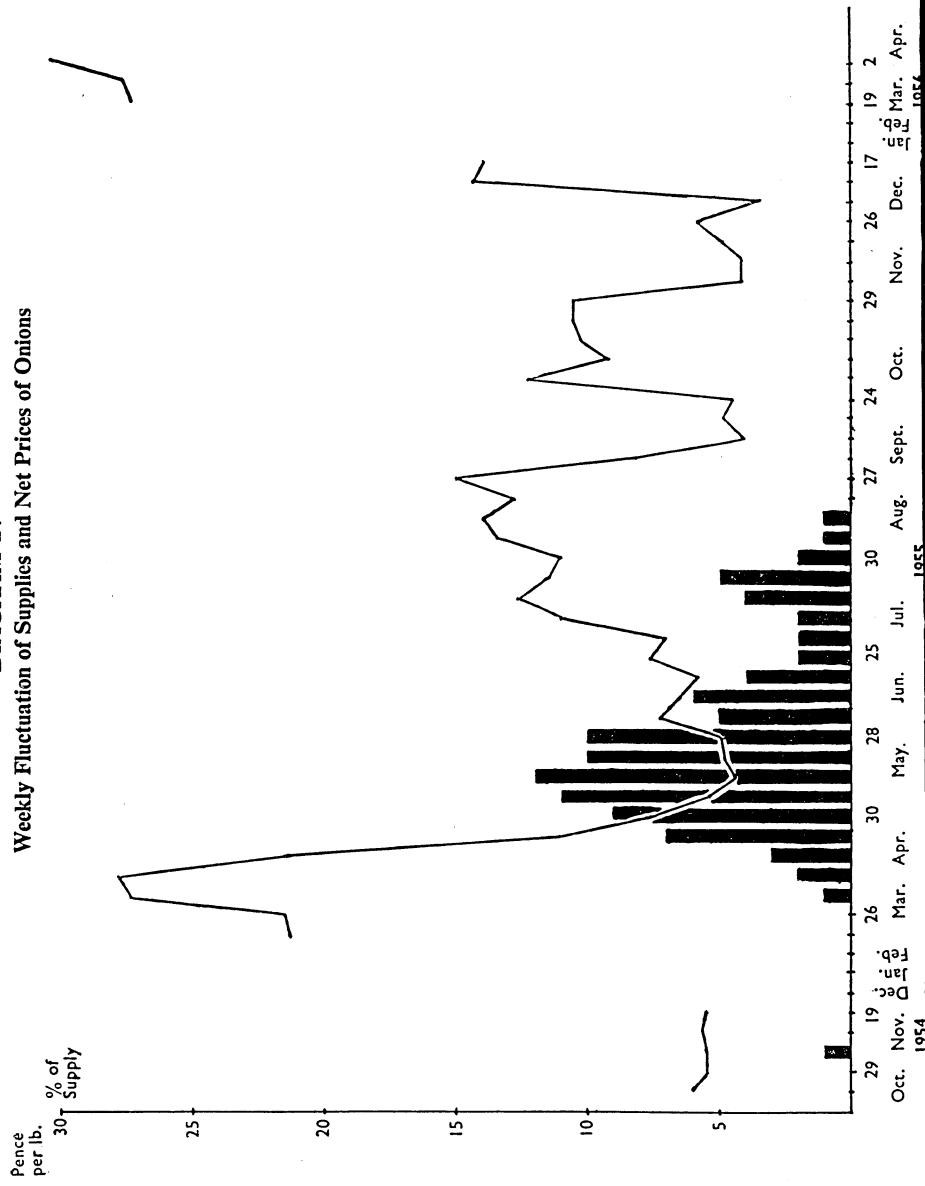
This group of vegetables included broad beans, runner and dwarf beans and peas. The acreage and output of these crops were as follows:

Crops	Acres		Total Receipts		Receipts per Acre
	No.	%	£	%	
Broad Beans .	15	25	748	9	50
Runner and Dwarf Beans	27	45	5,617	70	208
Peas	18	30	1,692	21	94
Total	60	100	8,057	100	134

Of all the vegetable crops, the returns for legumes were lowest at £134 per acre, and, among these, broad beans had the lowest return of only £50 per acre.

DIAGRAM 24

Weekly Fluctuation of Supplies and Net Prices of Onions



(a) *Broad Beans*

In the Vale, much of this crop consists of Seville Beans, the seed of which is generally sown in the autumn. It is quite a popular crop, especially on small holdings, as due to its early marketing period it leaves room for double-cropping.

Among the sample holdings, 15 of them grew broad beans in 1955/56. The average returns worked out at 4,049 lb. for £50 per acre, giving a price of 3d. per lb. The reason for this low return may be found in the fact that, on a number of holdings, the crop was severely damaged by frost, and even where it was not completely destroyed, the effect was felt in much reduced yields. On one specific holding, the crop completely failed and no attempt was made to resow it during the spring. Otherwise the lowest return per acre was 2,180 lb. for £10, and the highest 6,559 lb. for £120.

The extent of the crop failure may be assessed from the per acre results of 4 holdings which grew broad beans annually during the six-year period. These results are set out as follows:

Years	Quantity	Receipts	Price per lb.
	lb.	£	d.
1950 . .	3,397	24	1.7
1951 . .	4,225	82	4.7
1952 . .	6,022	131	5.2
1953 . .	9,611	94	2.3
1954 . .	9,488	130	3.3
1955 . .	4,180	50	2.9
Average . .	6,154	85	3.3

It can be seen from these figures that only the 1950 results were worse than those shown for 1955. However, the overall average results of £85 per acre for the six-year period may be regarded as fairly satisfactory, especially considering that the crop was cleared by the end of July, and the land could be used for a fresh enterprise and thus provide additional revenue within the same financial year. When market deductions are taken into account, the return shown for 1955 should be decreased by 15.7 per cent, which was the actual cost of selling the crop both in gross and net transactions.

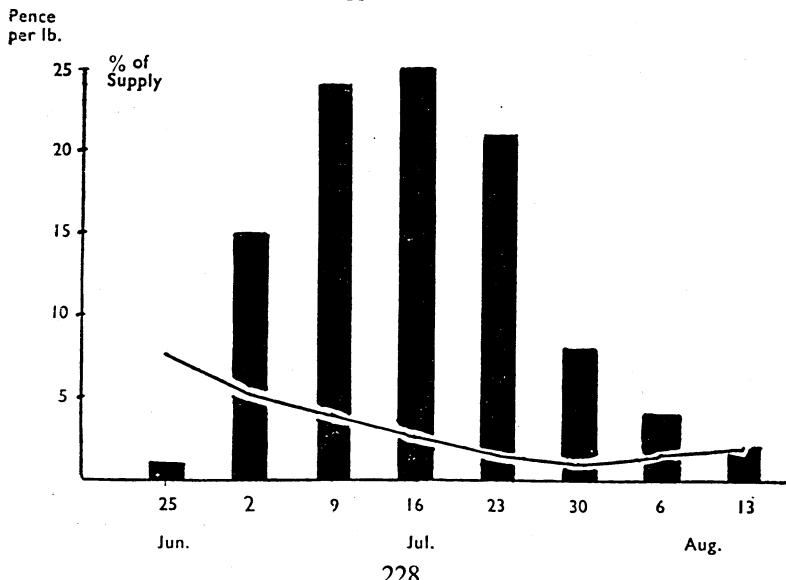
According to the special data prepared on the marketing of the crop and given in Table 61 the cost of marketing represented 19.7 per cent of gross receipts. Due to the low price, the broad bean crop was perhaps the most expensive to sell. On the whole, 40 per cent of the crop was sold locally, but the

major part of it was sent to markets as far afield as Liverpool, Manchester and Cardiff, etc. In view of the distances involved, the transport cost absorbed a higher proportion of the gross receipts at 8.5 per cent than on other crops. On distant markets the relative share of marketing costs varied from 19 to 33 per cent in accordance with the average gross price received for the crop. The results of marketing the crop both locally and further away is shown below:

	Quantity	Net Receipts		Net Price per lb.
	lb.	%	£ %	per d.
Local Sales . .	56,146	40	636 37	2.9
Other Sales . .	85,063	60	1,129 63	3.2
Total . .	141,209	100	1,765 100	3.0

As mentioned before, the marketing season of the crop is rather short, and in 1955 it ran from the end of June until the middle of August. Owing to short supply, prices were fairly high during the first half of the season, and the average price of 3d. per lb. for the crop was only achieved by the fact that growers marketed 65 per cent of their supplies under favourable conditions. The fluctuation of supply and prices are shown in Diagram 25.

DIAGRAM 25
Weekly Fluctuation of Supplies and Net Prices of Broad Beans



(b) *Runner and Dwarf Beans*

In the Vale of Evesham, runner and dwarf beans are very popular vegetable crops. The fairly high returns and the long picking season tend to make the crop rather attractive to any type of holding either small or large.

Among the sample holdings there were 27 which grew beans of some sort. However, the major part of the crop was runner beans which are grown either as "stick" or "ground" beans. The acreage of dwarf beans, including some french beans grown under heated glass, was about one-tenth of the acreage of runners.

With regard to average returns, the data have been based on combined returns for both runner and dwarf beans. The results of the 27 holdings showed a crop return of 7,202 lb. for £208 per acre, giving an average price of 6·9d. per lb. On the individual holdings the highest return was just over 9 tons for £644 per acre, and the lowest only 1½ cwt. for £39. As a matter of interest, it was the holdings which made use of irrigation that had the highest returns.

Of the 27 holdings, there were 16 which grew beans during the last six years. In the light of these results, the 1955 crop was the lowest for this particular period and the average price the highest. However, the differential was not sufficient to bring about a record revenue. The annual returns per acre together with the overall average results are given below:

Years	Quantity	Receipts	Price per lb.
	lb.	£	d.
1950 . .	9,822	92	2·3
1951 . .	8,652	163	4·5
1952 . .	10,691	265	6·0
1953 . .	10,407	158	3·7
1954 . .	9,378	255	6·5
1955 . .	8,173	246	7·2
Average . .	<u>9,520</u>	<u>197</u>	<u>5·0</u>

According to the foregoing figures, in both 1952 and 1954 the average return per acre was higher than in 1955. The return for the entire period, given as 4½ tons for £197 per acre, may be regarded as a satisfactory result for growing the crop on a long term basis. To arrive at the net return obtained by the growers, the 1955 receipts should be reduced by 11.9 per cent which was actually the cost of marketing the crop.

TABLE 62

Marketing of Runner Beans

Method of Marketing	Transactions		Quantities		Gross Receipts				Gross Price per lb.	Deductions		
										Commission		
Growers' Co-operatives	No.	%	Ib.	%	£	s.	d.	%	d.	£	s.	d.
	18	3	2,437	1	37	12	10	—	3·7	2	16	10
Growers' Co-operatives	25	4	3,970	1	—	—	—	—	—	—	—	—
Growers' Co-operatives	217	37	160,440	47	4,623	4	0	48	6·9	384	18	2
Local Markets	96	16	26,457	8	738	17	10	8	6·7	54	18	7
Local Markets	11	2	1,576	—	41	0	4	—	6·2	3	8	4
Local Merchants	6	1	1,225	—	—	—	—	—	—	—	—	—
Commission Salesmen:												
Barnsley		8	1	6,560	2	133	17	6	1	4·9	13	7
Birmingham		33	6	9,134	3	232	16	1	2	6·1	19	16
Birmingham		8	1	2,135	1	—	—	—	—	—	—	—
Bristol		30	5	21,015	6	826	10	9	9	9·5	62	3
Cardiff		15	3	13,530	4	384	14	4	4	6·9	38	9
Coventry		27	4	4,084	1	85	4	8	1	5·0	6	12
Leeds		1	—	180	—	6	15	0	—	9·0	13	6
Liverpool		2	—	700	—	18	12	0	—	6·4	1	7
Manchester		48	8	69,846	21	2,479	9	0	27	8·5	248	11
Manchester		27	5	3,009	1	—	—	—	—	—	—	—
Swindon		21	4	13,248	4	—	—	—	—	—	—	—
Total	593	100	339,546	100	9,608	14	4	100	7·4	837	5	0
Gross Sales	506	85	313,523	92	9,608	14	4	—	7·4	837	5	0
Net Sales	87	15	26,023	8	—	—	—	—	—	—	—	—

TABLE 63

Marketing of Dwarf and French Beans

Method of Marketing	Transactions		Quantities		Gross Receipts				Gross Price per lb.	Deductions		
										Commission		
Growers' Co-operatives	No.	%	Ib.	%	£	s.	d.	%	d.	£	s.	d.
	19	7	1,861	5	81	2	2	3	10·5	7	13	0
Growers' Co-operatives	24	8	4,782	14	—	—	—	—	—	—	—	—
Local Markets	8	3	1,600	5	66	3	4	2	9·9	5	11	7
Local Merchants	1	—	72	—	—	—	—	—	—	—	—	—
Commission Salesmen:												
Barnsley		18	6	3,228	10	406	6	6	14	30·2	40	11
Birmingham		41	14	4,599	13	439	7	2	15	23·0	32	19
Cardiff		1	—	19	—	19	6	—	—	12·2	1	11
Leeds		53	19	4,426	13	691	18	0	24	37·5	68	7
Liverpool		38	13	2,826	8	406	0	6	14	34·6	30	18
Manchester		43	15	4,938	15	798	2	6	28	38·8	59	18
Manchester		38	13	5,395	16	—	—	—	—	—	—	—
Stratford-on-Avon		6	2	250	1	4	13	0	—	4·4	7	1
Total	290	100	33,996	100	2,894	12	8	100	29·3	246	8	6
Gross Sales	227	82	23,751	70	2,894	12	8	—	29·3	246	8	6
Net Sales	63	18	10,245	30	—	—	—	—	—	—	—	—

Marketing of Runner Beans

Use of Empties		Deductions						Net Receipts			Net Price per lb.																
		Marketing Expenses			Cartage		Transport		Total																		
£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.				
5	10	0·8	—	—	—	—	—	—	—	—	—	3	2	8	8·3	34	10	2	3·4	—	—	—	—				
80	4	3	1·8	—	—	—	—	—	—	—	—	465	2	5	10·1	89	9	11	1	5·4	—	—	—				
13	14	3	1·9	—	—	—	—	—	—	—	—	68	12	10	9·3	4,158	1	7	46	6·2	—	—	—				
2	1	4	5·1	—	—	—	—	—	—	—	—	5	9	8	13·4	670	5	0	8	6·1	—	—	—				
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	35	10	8	—	5·4	—	—	—				
—	—	—	—	—	—	—	—	—	—	—	—	31	18	2	—	—	—	—	—	—	—	—	—	6·2			
3	2	6	1·4	6	13	7	2·9	—	—	15	15	1	11·8	29	2	10	21·8	104	14	8	1	3·8	—	—	—		
—	—	—	—	35	17	5	4·4	—	—	11	0	1	4·7	40	12	11	17·5	192	3	2	2	5·0	—	—	—		
—	—	—	—	—	—	—	—	—	—	32	10	6	3·9	130	11	6	15·8	33	17	1	—	3·8	—	—	—		
5	0	10	5·9	—	—	—	—	—	—	22	7	0	5·8	60	16	6	15·8	695	19	3	8	8·0	—	—	—		
—	—	—	—	—	—	—	—	—	—	6	14	7	7·9	20	0	0	23·5	323	17	10	4	5·7	—	—	—		
1	8	0·5	—	1	6	1·1	—	—	—	9	2	6·8	1	4	2	17·9	65	4	8	1	3·8	—	—	—			
—	—	—	—	4	2	1·1	—	—	—	1	4	7	6·6	2	18	4	17·9	5	10	10	—	7·4	—	—	—		
—	—	—	—	3	5	2	0·1	35	6	0	1·5	141	0	5	5·7	428	2	10	17·3	15	13	8	5·4	—	—	—	
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	97	4	0	1	7·7	—	—	—				
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	424	9	0	5	7·7	—	—	—				
104	10	8	1·1	46	1	10	0·5	36	17	9	0·4	231	1	5	2·4	1,255	16	8	13·1	9,029	15	10	100	6·4	—	—	—
104	10	8	1·1	46	1	10	0·5	36	17	9	0·4	231	—	5	2·4	1,255	16	8	13·1	8,352	17	8	93	6·4	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	676	18	2	7	6·3	—	—	—				

Marketing of Dwarf and French Beans

Deductions										Net Receipts				Net Price per lb.															
Use of Empties			Marketing Expenses		Cartage			Transport		Total																			
£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	d.					
5	5	0	0	3	5	5	5	2	8	6	3	6	5	8	7	7	7	19	6	9	23	7	15	8·0					
1	17	5	2	7	—	—	—	—	—	1	18	1	2	9	—	9	7	1	14	0	16	3	5	4·4					
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	5	0	—	—	7·5						
—	—	—	6	18	7	1	5	4	14	4	1	1	7	12	8	1	9	48	4	5	11	9	358	2	1	13	26·6		
—	—	—	—	—	4	1	7	4	14	3	1	3	5	11	11	1	2	50	4	5	11	3	389	17	0	9	14	20·3	
—	—	—	5	14	6	0	9	4	5	8	0	6	10	7	5	1	5	—	2	6	13	0	—	17	0	—	10·7		
—	—	—	3	19	2	1	0	3	18	4	1	0	6	16	7	1	7	88	14	10	12	9	603	3	2	22	32·7		
—	—	—	3	8	5	0	4	4	2	10	0	5	10	13	3	1	4	45	12	2	11	3	360	8	4	13	30·6		
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	78	2	9	9	8	719	19	9	26	34·9		
—	—	—	3	4	3	6	—	—	—	—	—	—	3	3	3	5	—	13	8	14·7	—	142	14	6	5	6·3			
2	2	10	0	1	25	17	0	0	9	17	1	5	0	6	49	8	10	1	7	340	8	7	12	1	2,787	5	0	100	19·7
2	2	10	0	1	25	17	0	0	9	17	1	5	0	6	49	8	10	1	7	340	8	7	12	1	2,554	4	1	92	25·8
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	233	0	11	8	5·4			

The above figures refer to a certain combination of runner, dwarf and hot-house beans, so that the average results require further clarification to show how the component crops were represented in the average figures. This is shown as follows:

		Quantity		Net Receipts		Net Price per lb.
		lb.	%	£	%	d.
Runner beans . . .		339,546	90	9,030	77	6·4
Dwarf beans . . .		17,593	5	454	3	6·2
Hot-house beans . . .		16,403	5	2,334	20	34·1
Total . . .		373,542	100	11,818	100	7·6

From these figures it may be seen that 90 per cent of the quantity and 77 per cent of the receipts shown in the data refer to runner beans. Despite the large proportion of runner beans the 1955 return of £246 seems to be biased somewhat by the inclusion of the hot-house crop which represents 20 per cent of the receipts. By excluding this particular part of the crop from the results of the 16 holdings, the returns for beans for 1955 would drop to £230 per acre and that for the six-year period to £194 per acre. Thus, especially on a long term basis, the effect of the hot-house beans on the overall average return is negligible.

In the enlarged data on the marketing of beans, runner and dwarf beans are dealt with separately. Details of the marketing results are shown in Tables 62 and 63.

With regard to runner beans, the 593 transactions showed that 57 per cent of the crop was sold locally, whereas the other 43 per cent was sent to nine different markets. The difference between the results of the two types of sales is as follows:

		Quantity		Net Receipts		Net Price per lb.
		lb.	%	£	%	d.
Local Sales . . .		196,105	57	5,020	55	6·1
Other Sales . . .		143,441	43	4,010	45	6·7
Total . . .		339,546	100	9,030	100	6·4

The difference between the two groups of transactions was negligible, and might have been due to the selling dates of single consignments rather than to the difference in prevailing

conditions on the various markets. In the gross sales, marketing costs of runner beans amounted to 13.1 per cent of gross receipts, which may be regarded as comparable with those for most of the other crops. On the markets outside the area, this cost varied between 15.7 and 23.5 per cent, subject, of course, to the gross price which the produce happened to realise. The 1955 marketing season covered 13 weeks, commencing towards the end of July and finishing by the middle of October. About 31 per cent of the total supply was sold during the first four weeks of the season at a net price of 8d. to 1s. 0d. per lb. During the ensuing three weeks, prices fell as low as 3d., but by improvement in the supplies of stick beans the crop could be sold at prices varying between 8d. to 10d. per lb. for the last five weeks of the season. Actually this part of the crop represented 29 per cent of the total supply. The weekly distribution of the supply and the fluctuation of net prices are shown in Diagram 26.

In the marketing data for dwarf and french beans, the figures show the combined results of both the out-of-door and hot-house crops. As only a very small quantity of dwarf beans was sold outside the area, comparison between the returns achieved on the local and outside markets has been ignored. However, figures shown in the data indicate that the average net price of 6.3d. per lb., obtained by local sales, was quite reasonable, and corresponds very closely with the overall average price obtained for runner beans. The cost of marketing dwarf beans on local markets worked out at 20 per cent of the gross receipts, including 5 per cent for paid transport. Without this transport charge, market deductions would have been only slightly higher than those for runner beans. Hot-house beans were sold entirely on distant markets and the more moderate figure of 11.3 per cent, for market expenses, left a net figure of 2s. 5d. per lb. to the grower.

The marketing season for dwarf beans coincided almost exactly with that for runners, and the general trend in the price level of both crops was very much the same. The hot-house beans, on the other hand, were marketed in two separate lots; the first from the middle of May until the end of July, and the second from the end of October till the middle of November. However, this latter part of the crop represented only 7 per cent of the total supply.

The distribution of supplies and the fluctuation of net prices of both dwarf and hot-house beans are shown weekly in Diagram 27.

DIAGRAM 26
Weekly Fluctuation of Supplies and Net Prices of Runner Beans

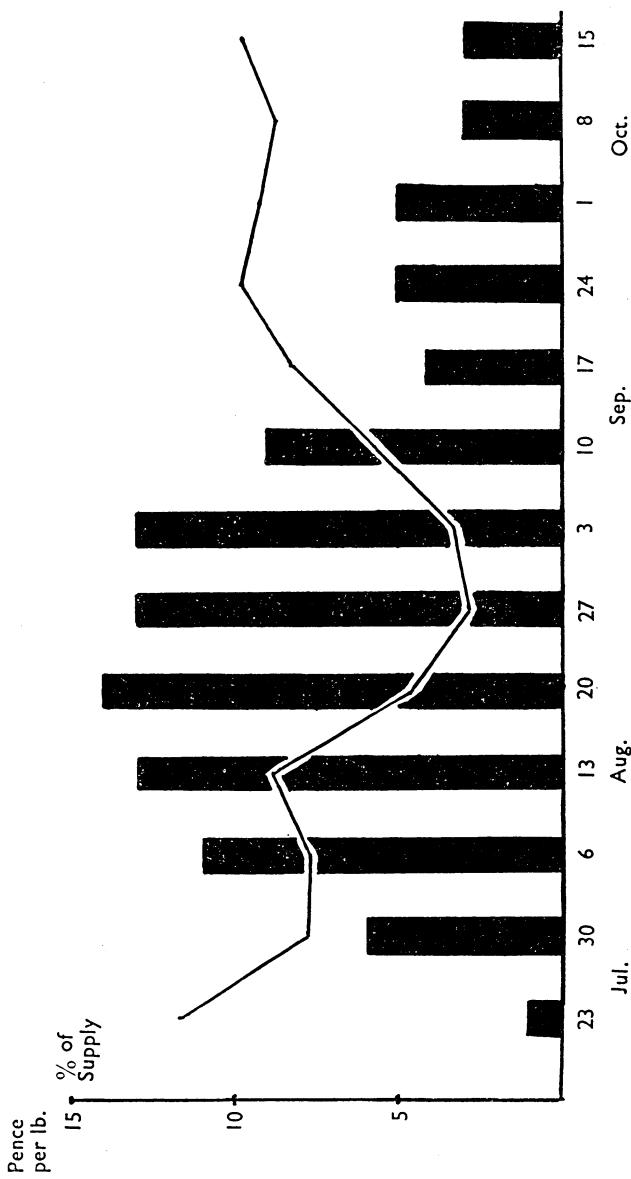
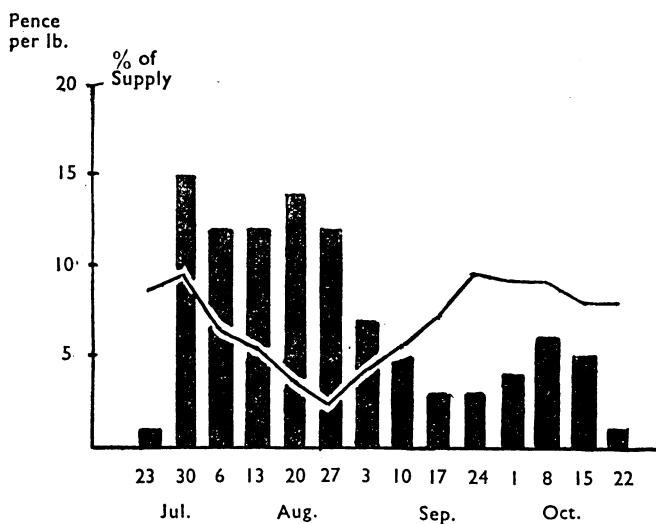


DIAGRAM 27

Weekly Fluctuation of Supplies and Net Prices of
Dwarf and Hot-house French Beans

Dwarf Beans



Hot House French Beans

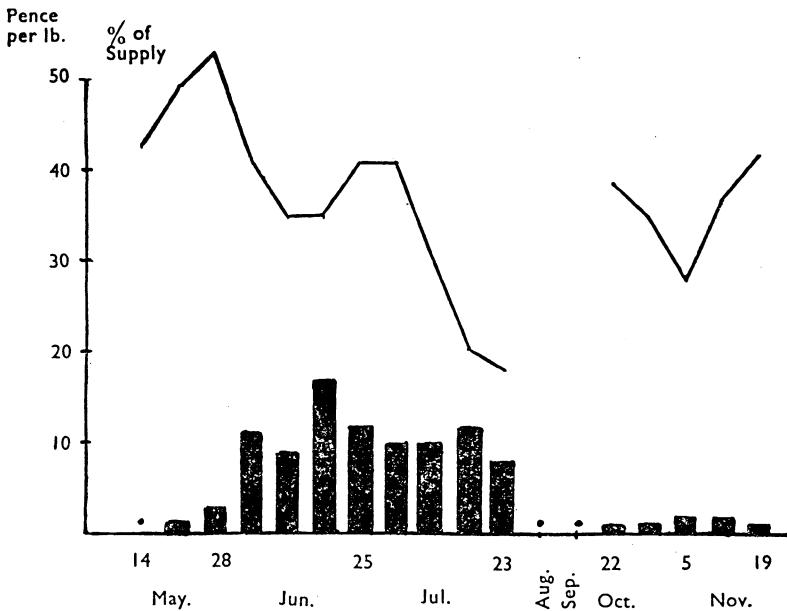


TABLE 64

Sales of Peas

Methods of Marketing	Transactions		Quantities		Gross Receipts		Gross Price per lb.	Deductions		
								Commission		
Growers' Co-operatives	No.	%	lb.	%	£ s. d.	%	d.	£ s. d.	%	
Growers' Co-operatives	47	20	58,724	18	1,530 8 9	53	6.3	127 2 4	8.2	
Local Markets	36	15	64,680	21	—	—	—	—	—	
Local Merchants	8	4	9,060	3	215 13 3	8	5.7	16 18 4	7.8	
Commission Salesmen:	34	15	93,390	30	—	—	—	—	—	
Birmingham	.	.	2,210	1	53 13 6	2	5.8	4 0 5	7.5	
Birmingham	.	.	7,383	3	—	—	—	—	—	
Bristol	.	.	3,690	1	98 12 6	3	6.4	7 8 0	7.5	
Cardiff	.	.	4,160	1	66 11 0	2	3.8	6 13 1	10.0	
Coventry	.	.	6,290	2	163 18 4	6	6.3	12 6 2	7.5	
Gloucester	.	.	3,500	1	59 10 3	2	4.1	4 9 4	7.5	
Leeds	.	.	840	—	—	—	—	—	—	
Leicester	.	.	390	—	—	—	—	—	—	
Manchester	.	.	36,690	12	636 4 9	22	4.2	63 12 4	10.0	
Northampton	.	.	19,260	6	—	—	—	—	—	
Sheffield	.	.	480	—	—	—	—	—	—	
Stratford-on-Avon	.	.	1,580	1	48 6 3	2	7.3	3 12 9	7.5	
Total	.	.	312,327	100	2,872 18 7	100	—	246 2 9	8.6	
Gross Sales	.	.	125,904	40	2,872 18 7	—	5.5	246 2 9	8.6	
Net Sales	.	.	186,423	60	—	—	—	—	—	

TABLE 65

Sales of Asparagus

Method of Marketing	Transactions		Quantities		Gross Sales		Gross Price per lb.	Deductions		
								Commission		
Growers' Co-operatives	No.	%	lb.	%	£ s. d.	%	d.	£ s. d.	%	
Growers' Co-operatives	44	10	2,671	21	2 13 0	—	15.9	—	4 5	8.3
Commission Salesmen:										
Birmingham	.	.	2,180	17	193 14 3	21	21.3	14 12 0	7.5	
Birmingham	.	.	1,179	9	—	—	—	—	—	
London	.	.	220	49	5,254 $\frac{1}{2}$	41	58.3	2 0	63	9.8
Manchester	.	.	1,064	9	593 2 0	63	27.1	58 4 7	10.0	
Stratford-on-Avon	.	.	396 $\frac{1}{2}$	3	111 6 3	12	25.1	11 2 5	2 16 6	7.6
Total	.	.	12,784 $\frac{1}{2}$	100	937 18 11	100	—	86 19 11	9.3	
Gross Sales	.	.	8,934 $\frac{1}{2}$	70	937 18 11	—	25.2	86 19 11	9.3	
Net Sales	.	.	3,850	30	—	—	—	—	—	

Sales of Peas

Deductions								Net Receipts			Net Price per lb.
Use of Empties		Handling Charges		Transport		Total		Net Receipts			
£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
27	17	0	1.9	—	—	154	19	4	10.1	1,375	9
5	10	4	2.6	—	—	22	8	8	10.4	960	17
—	—	—	—	—	—	—	—	—	—	193	4
—	—	—	4	14	3	8.8	3	8	10	1,522	13
—	—	—	—	—	—	—	—	—	—	41	10
—	—	—	8	0	0	8.1	7	11	4	124	7
—	—	—	—	—	—	—	6	1	7	75	13
6	11	0	4.0	13	4	0.4	10	16	0	12	14
1	17	5	3.1	—	—	—	1	5	0	53	16
—	—	—	—	—	—	—	—	—	—	133	11
—	—	—	—	—	—	—	—	—	—	51	18
—	—	—	—	—	—	—	—	—	—	17	17
—	—	—	—	—	—	—	—	—	—	4	11
—	—	—	—	—	—	—	—	—	—	480	15
19	9	2.0	—	19	9	2.1	—	—	—	335	15
42	15	6	1.5	14	7	4	0.5	120	19	3	42
42	15	6	1.5	—	—	—	—	—	—	4	16
—	—	—	—	—	—	—	—	—	—	42	14
42	15	6	1.5	14	7	4	0.5	120	19	3	0
—	—	—	—	—	—	—	—	—	—	1	6.5
42	15	6	1.5	14	7	4	0.5	120	19	3	100
42	15	6	1.5	—	—	—	—	—	—	4.2	—
—	—	—	—	—	—	—	—	—	—	2,448	13
—	—	—	—	—	—	—	—	—	—	45	4.7
—	—	—	—	—	—	—	—	—	—	2,970	16
—	—	—	—	—	—	—	—	—	—	55	3.8

Sales of Asparagus

Deductions								Net Receipts			Net Price per lb.
Hire of Empties		Handling Charges		Carriage		Total		Net Receipts			
£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
—	—	—	—	—	—	—	—	—	2	8	7
—	—	—	3	8	6	1.8	3	2	166	18	7
4	0	4	0.7	4	17	7	0.8	13	14	13	15
—	—	—	—	—	—	—	—	3	15	9	26.6
—	—	—	5	11	—	0.8	—	—	512	4	10
4	0	4	0.4	8	12	0	0.9	20	12	14	23.4
4	0	4	0.4	8	12	0	0.9	20	12	96	8
—	—	—	—	—	—	—	—	—	34	1	0
—	—	—	—	—	—	—	—	—	3	20	6
4	0	4	0.4	8	12	0	0.9	20	12	1,115	6
—	—	—	—	—	—	—	—	—	9	100	20.9
—	—	—	—	—	—	—	—	—	817	14	5
—	—	—	—	—	—	—	—	—	297	12	27
—	—	—	—	—	—	—	—	—	73	22.0	18.6

(c) Peas

Peas were fairly widely grown on the sample holdings because, with their numerous varieties, they can easily be fitted into the changes of crop rotation. In all, there were 18 holdings which grew this crop from the spring until the autumn. On only two of these holdings were peas grown as an inter-crop in young asparagus beds; on all the others they belonged to the main enterprises of crop production.

On the 18 holdings, the average return for the crop worked out at 4,771 lb. for £94 per acre giving an average price per lb. of 4·7d. Among the individual holdings, the highest return was just under 5 tons for £200 per acre, and the lowest only 8 cwt. for £19. On the two holdings which grew peas as an inter-crop, the yields amounted to 33 cwt. and 15 cwt. and the receipts to £60 and £39 per acre respectively.

In the light of the six-year results of 7 holdings which grew the crop regularly every year, the returns for 1955 may be regarded as fairly satisfactory. Although the yield fell somewhat below average, the revenue was very much the same as the six-year result of £119 per acre. The annual results are given as follows:

Years	Quantity	Receipts	Price per lb.
	lb.	£	d.
1950 . .	5,701	76	3·2
1951 . .	4,163	106	6·1
1952 . .	3,797	95	6·0
1953 . .	8,885	131	3·5
1954 . .	6,677	190	6·8
1955 . .	4,801	115	5·8
Average . .	5,671	119	5·2

As may be seen from the above figures, it was only the returns for 1953 and 1954 which were higher than the overall average result of £119 per acre. When it is considered that the crop occupies the ground for a relatively short period and thus provides a possibility for double-cropping the land, the overall returns seem to be quite adequate. In 1955 about half the crop was sold in net terms and the cost of marketing the entire crop worked out at 7·2 per cent of total receipts. By taking this cost into account, the results for 1955 showed that the receipts obtained by the grower were £107 per acre.

According to the 238 transactions included in the marketing data and given in Table 64, 72 per cent of the crop was disposed

of locally, of which as much as 30 per cent went to the local merchants who bought the produce outright. The rest of the crop was sent to 11 different markets scattered all over the country. The average net price per lb. shown in the data was only 4·2d. being about a penny lower than the price obtained by the 7 holdings. The reason for this was most probably due to the fact that in the marketing data the early crop was smaller. In the gross sales the cost of marketing was 14·8 per cent of gross receipts, which seems to be about average for most of the crops. On local markets deductions were about 10 per cent but in the other sales they varied from 12 to 24 per cent of gross receipts according to the distance involved and the gross price paid. For instance in Manchester the deductions absorbed 24·4 per cent of gross receipts, of which 14·4 per cent was for transport. In this case, the average gross price was 4·2d. per lb.

The difference between local and the other sales can be seen from the following results:

		Quantity		Net		Net
		lb.	%	Receipts	£	Price
					%	per lb.
Local Sales	.	225,854	72	4,052	74	4·3
Other Sales	.	86,473	28	1,368	26	3·8
Total	.	312,327	100	5,420	100	4·2

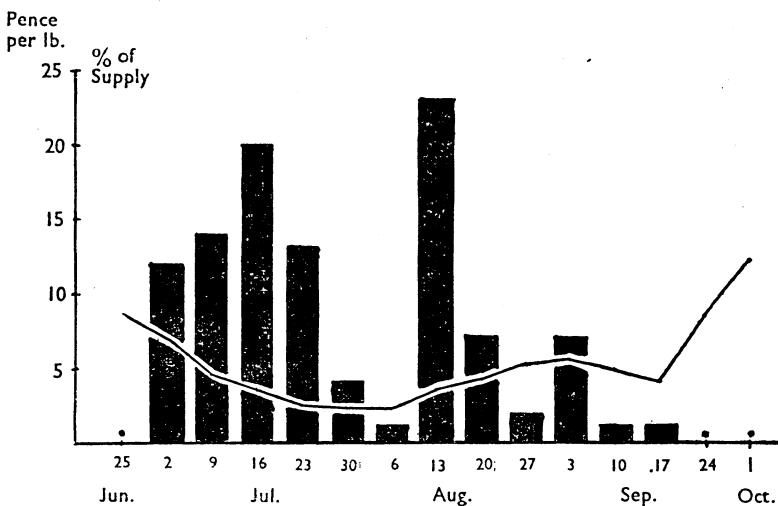
According to these figures the result achieved on the distant markets was a $\frac{1}{2}$ d. less than the price paid locally. This difference on the total yield per acre represents a discrepancy of only £10.

During the year under review, the marketing season of the crop ran from late June until the end of September, and lasted for 15 weeks. The pea is a quickly maturing crop, so it is obvious that the long season of 15 weeks included in the sales the early, mid and late-season crops combined. However, about 41 per cent of the crop was of early, and 11 per cent late varieties. The weekly distribution of the supply and the fluctuation of the net prices are illustrated in Diagram 28.

According to Diagram 28, the total supply of peas seems to be divided between three crops, of which the early varieties were sold until the end of July, the mid-season ones till the 27th August, and the late peas lasted till the 1st October. However, during the last two weeks of the season the weekly supplies fell below 1 per cent.

DIAGRAM 28

Weekly Fluctuation of Supplies and Net Prices of Peas



4. Other Vegetables

Besides brassicas, roots, onions and legumes, the sample holdings grew a great number of other vegetable crops as well, which, due either to their special species, e.g. asparagus and tomatoes, etc., or to their very limited scale of husbandry, could not be identified with any specific group of vegetables, and thus had to be referred to an artificial collective group of "other vegetables".

Average data has only been prepared from the returns of those crops which were grown on a reasonable acreage and provided information for a fair number of holdings. These crops were asparagus, lettuce, rhubarb and tomatoes.

There were other additional crops which had to be excluded from this form of examination because, first of all, the areas involved were far too small to be able to convert the returns into "one acre" results, and secondly, owing to their very scattered cultivation they could not be regarded as standard or representative crops of the Vale. However, as it is the aim of this report to give a full account of results arising from the utilisation of the layout, reference will, wherever possible, be made to the returns of these crops, which include radishes, cucumbers, marrows, early potatoes, spinach, sweet corn, shallots and vegetable plants.

The acreages and returns of the first group of crops were as follows:

Crops	Acres		Total Receipts		Receipts per Acre
	No.	%	£	%	
Asparagus . . .	8	22	836	3	105
Lettuce . . .	17	47	6,883	23	405
Rhubarb . . .	4	11	587	2	147
Tomatoes . . .	7	20	22,097	72	3,157
Total . . .	36	100	30,403	100	845

It can be seen from these figures that by far the most important crops were tomatoes and lettuce; the significance of asparagus and rhubarb was somewhat limited on the sample holdings.

(a) *Asparagus*

Generally speaking, asparagus is one of those traditional crops of the Vale of Evesham with which the area has been associated ever since commercial horticulture developed there. It is primarily a typical small-holder's crop, for its cultivation relies entirely on hand labour. On the whole, there are about 500 acres under asparagus plantations in the area, of which nearly 300 acres lie in the parishes of Badsey, Bretforton and the Borough of Evesham.

Of the sample holdings, there were 8, or 25 per cent, of the co-operators who grew asparagus. Although this number of holdings seemed representative enough, the sample itself proved to be rather too limited to assess a valid and acceptable return; for in considering the results of a comparatively small number of holdings, as in this case, any possible changes in the plantations especially in the proportion of bearing to non-bearing beds, must have an appreciable effect on the average returns. The average return for this crop, is believed to be between £200 to £300 per acre and is reckoned for the whole life-time of the bed. The figures for individual plantations would only be comparable if the proportion of young to old beds were more or less identical on each holding.

On most of the sample holdings, besides the bearing plantation there was always a young one to rotate with the ageing bed. Consequently, although returns based on the acreage of the two beds accounted for the revenue per acre received by the holdings, they did not produce satisfactory information

on the per acre returns achieved by the crop as a whole. Unfortunately, it was not possible to establish the average age of the plantations, but it can be assumed that they were between 2 and 3 years old.

With the above points in mind, the low returns of £105 per acre achieved by the 8 holdings becomes somewhat more explicable. The revenue figure represented a quantity of 1,337 lb. giving an average price of 1s. 7d. per lb. Part of the crop was sold in "bundles" so it was necessary to convert these consignments to pounds weight. For this purpose, the average weight of a bundle of asparagus was taken as $2\frac{1}{2}$ lb. Unfortunately, this calculation could only be prepared for the year 1955 as information for previous years was not available.

Five of the 8 holdings grew asparagus regularly during the last 6 years, and in the data the revenue figures reflect changes in the age of the beds, rather than any other factors, as, for example, climatic conditions. On these holdings, the annual receipts per acre showed the following variations.

	£
1950	160
1951	189
1952	167
1953	159
1954	128
1955	137
Average	157

On the most successful holding, the overall average for the period in question showed a return of £215 per acre, with an annual variation of from £105 to £301. The average returns quoted above refer only to the actual income of the crop and do not include any income from the fern of the plant, the by-product of asparagus. As an estimate, this would amount to about another £10 per acre.

The marketing data of the crop were based on 475 transactions including the sale of ferns. Details of these transactions were as follows:

	Transactions	Quantities	Net Receipts	Net Price
	No.	lb.	£	d.
Asparagus	446	12,785 bunches	1,115	20.9
Ferns	29	2,404	85	8.4
Total	475	—	1,200	—

It can be seen that trading in ferns was only a very small portion of the total revenue, and had practically no bearing on the success of the crop itself.

The sample holdings marketed their asparagus both on contract and on the open market. About 21 per cent of the total supply was sold locally, mainly on contract, whereas the majority of the crop went to Birmingham, London, Manchester and Stratford-on-Avon. Almost all the fern was sent to Birmingham. With regard to the crop itself, the difference between the local and other transactions can be shown as follows:

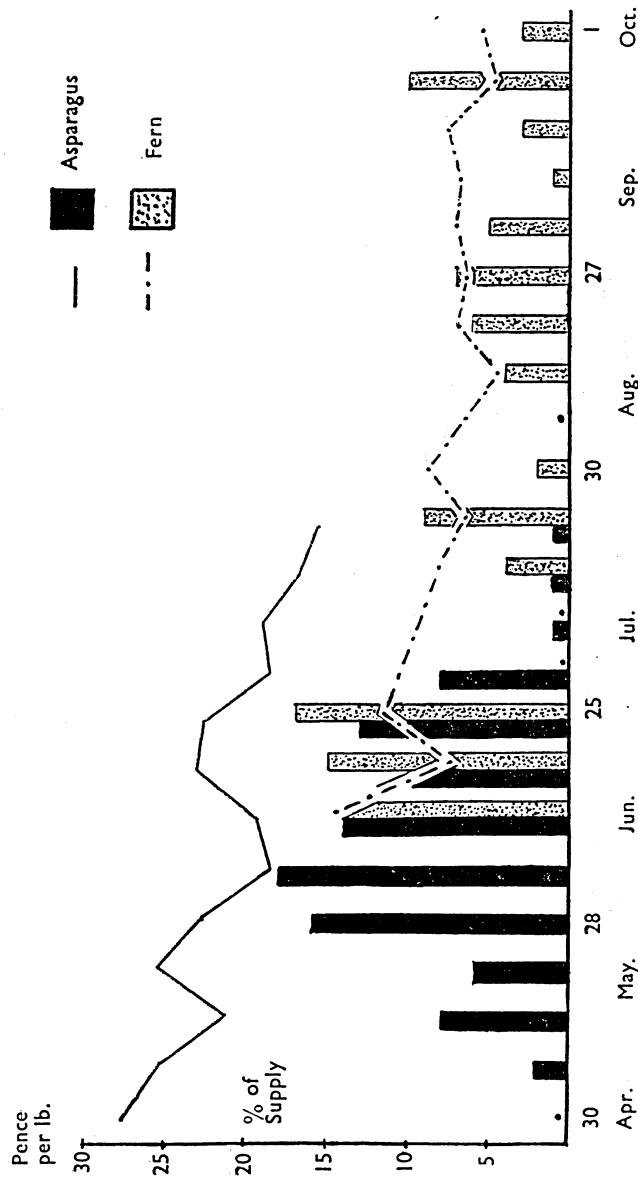
	Quantity		Net Receipts		Net Price per lb.
	lb.	%	£	%	d.
Local Sales	2,711	21	169	16	15·0
Other Sales	10,174	79	946	84	22·5
Total	12,885	100	1,115	100	22·0

The difference between the two systems of marketing showed that local sales averaged a net price which was 7d. lower than the others. The probable reason for this may be due to the short supply which prevailed during the year in question, otherwise the difference would have been more modified.

The pattern of marketing is given separately in Tables 65 and 66 for the crop and for the fern. In the gross sales, the average cost of marketing amounted to 12·8 per cent of the receipts from the asparagus and 22·4 per cent for the receipts from the fern. The high cost of marketing ferns was mainly due to the relatively low value of the commodity. For instance, at Birmingham the cost of marketing asparagus absorbed 10·9 per cent of the gross receipts, whereas that of fern amounted to 22·3 per cent.

In 1955 the marketing season of asparagus and its fern covered 17 weeks of which 13 weeks was for the crop alone. On the whole the trend in prices followed the changes in supply rather closely, but it was in the 5th week of the season when the supply reached its peak at 18 per cent of the total crop and the price fell to 1s. 6d. per lb. The marketing of the fern commenced as early as the second week of June and, with some minor gaps, lasted until the 1st October. The weekly variation in supply and the net prices for both the crop and the fern can be observed in Diagram 29.

DIAGRAM 29
Weekly Fluctuation of Supplies and Net Prices of Asparagus and its Fern



(b) *Lettuce*

Perhaps the most composite of all vegetable crops is the lettuce. Since it is grown all the year round, and cultivated both under glass and in the open, the returns may show great variation according to the actual types of crop and the method of cultivation.

There were 17 of the sample holdings which had lettuce on their ground. Only 2 of these holdings grew the crop mainly under glass (Dutch lights); on the others the lettuce enterprise was carried out entirely in the open and consisted of either one single crop or several successive crops. The average result of the combined crops worked out at 1,690 dozen for £405 per acre giving an average price of 4s. 9d. per dozen. The returns for the crop grown under glass were 3,230 dozen and the receipts £805 per acre. It was not only the crop grown under glass, however, which showed good returns; the outdoor crop, too, had highly satisfactory results. On the most successful holding an exceptionally good crop of May lettuce yielded 3,000 dozen for £810 per acre. On the whole, almost all the holdings fared well with their lettuce crop during the year in question and only 2 of them encountered failure due to frost damage on an over-wintered crop. The lowest result was 994 dozen for £166 per acre.

Of the 17 holdings, 8 grew lettuce regularly during the six-year period, and their results proved that 1955 was a record year for lettuce, due not only to the favourable price but also to the above-average yields. The annual and the overall average results are shown below:

Years	Quantity doz.	Receipts £	Price per doz. d.
1950	1,325	208	37.7
1951	1,154	192	39.9
1952	1,608	268	40.0
1953	1,495	202	32.4
1954	1,330	272	49.1
1955	1,693	386	54.7
Average	1,434	255	42.7

It is often thought that any average yields given for lettuce must be more apparent than real, depending entirely on the prevailing trend in demand. Under good market conditions the grower may sell the whole of his crop, but when prices are too low he has to decide to leave the bulk of his crop uncut. However, despite these rather unstable marketing conditions

TABLE 66

Sales of Asparagus Fern

Method of Marketing	Trans- actions		Quantities		Gross Receipts		Gross Price	Deductions			
	No.	%	bunches	%	£	s.	d.	£	s.	d.	%
Commission Salesmen:											
Birmingham	22	76	2,188	91	101	16	0	94	11·2	10	3
Manchester	7	24	216	9	7	6	0	6	8·1	14	7
Total	29	100	2,404	100	109	2	0	100	10·9	10	18
											2
											10·0

TABLE 67

Sales of Lettuce

Method of Marketing	Trans- actions		Quantities		Gross Receipts		Gross Price	Deductions			
	No.	%	doz.	%	£	s.	d.	£	s.	d.	%
Growers' Co-operatives	172	27	10,263	34	2,174	14	5	53	50·9	178	14
Growers' Co-operatives	18	3	1,805	6	—	—	—	—	—	—	—
Local Markets .	85	14	3,401	11	950	2	7	23	67·0	71	14
Local Merchants .	233	36	10,000	33	—	—	—	—	—	—	—
Commission Salesmen:											
Birmingham . . .	58	9	2,176	7	714	15	0	17	78·8	56	17
Birmingham . . .	34	5	1,046	4	—	—	—	—	—	—	—
Bristol . . .	11	2	512	2	114	19	0	3	53·9	8	12
Coventry . . .	12	2	151	1	24	18	0	—	39·6	1	17
Glasgow . . .	3	—	254	1	69	3	0	2	65·3	5	3
Gloucester . . .	7	—	398	1	58	14	4	2	35·4	4	8
Leeds . . .	1	—	21	—	—	—	—	—	—	—	—
Stratford-on-Avon .	10	2	35	—	4	14	6	—	32·4	7	2
Total	644	100	30,063	100	4,112	0	10	100	—	327	15
Gross Sales . . .	358	56	17,190	57	4,112	0	10	—	57·4	327	15
Net Sales . . .	286	44	12,873	43	—	—	—	—	—	—	—

Sales of Asparagus Fern

Deductions				Net Receipts		Net Price					
Handling Charges		Transport		Total							
£	s.	d.	£	s.	d.	£	s.	d.	%	d.	
6	7	2	6·2	6	3	3	22	14	0	22·3	79 2 0
—	—	—	—	1	1	11	1	16	6	25·1	5 9 6
6	7	2	5·8	7	5	2	24	10	6	22·4	84 11 6
										100	8·4

Sales of Lettuce

Deductions				Net Receipts		Net Price		
Use of Empties		Handling Charges		Transport				
£	s.	d.	%	£	s.	d.	%	d.
78	7	7	3·6	—	—	2 0	3	28
37	3	6	3·9	—	—	—	—	46·0
2	12	9	0·4	38	8	0	5·4	59·1
—	—	—	—	30	19	0	4·3	63·4
1	13	0	6·6	12	14	2	11·0	585
—	—	—	—	11	7	0	9·9	324
2	9	9	4·2	1	14	9	2·5	82
—	—	—	—	10	10	3	15·2	18
8	6	9·0	—	4	10	5·1	—	51
122	15	1	3·0	53	12	9	1·3	14
122	15	1	3·0	53	12	9	1·3	3,550
—	—	—	—	57	0	5	1·4	3,316
—	—	—	—	—	—	—	—	48
561	3	10	—	561	3	10	—	52
13·7	—	—	—	13·7	—	—	—	49·6
6,867	10	9	100	3,316	13	9	48	61·8

for lettuce, it is interesting to note from the annual averages that the quantities sold show only very moderate variations, and the deviation from the overall average is not more than 12 per cent. Thus, the success of the 1955 crop can be ascribed to the fact that the growers, thanks to the good demand, managed to sell about three-quarters of their crops at the favourable price of 4s. 7d. per dozen. The amount for market deductions on the combined gross and net sales worked out at 7½ per cent, which reduced the price by 4d. to 4s. 3d., and the per acre receipts by £29 to £357.

Most of the holdings grew several crops of lettuce, e.g. spring, summer and autumn crops, and very often the marketing seasons overlapped each other. It would hardly be possible therefore to separate the various crops from each other or to state with certainty the exact proportions in the combined crop of 1955. However, with the aid of marketing dates, which were available from the data, it was possible to draw up some estimates which would give guidance in assessing the distribution of the annual crop among the seasonal varieties. This distinction of the various types of crops included in the sample gives the following picture:

<i>Types of Lettuce</i>	<i>Quantity</i>	<i>Net Receipts</i>	<i>Net Price per dozen</i>
	doz.	£	d.
1954/55 Autumn and Winter	2,306	223	23·2
Spring	15,578	3,042	46·2
Summer	8,684	2,506	69·3
1955 Autumn and Winter	3,495	1,096	75·3
Total	30,063	6,867	54·8

According to the above figures it was the spring and summer crops which formed the greater part of the supply produced by the sample holdings, and the remaining crop from the autumn of 1954 and the winter 1954/55 represented only 8 per cent of the total quantity sold by them. However, the difference between the price for this crop and for that sold in the autumn and winter of 1955, is considerable, being only 1s. 11d. per dozen for the former and 6s. 3d. for the latter. This discrepancy in prices indicates quite clearly the chancy nature of lettuce growing. A possible explanation for the high price of the 1955 autumn and winter crop may be found in the fact that, owing to adverse weather conditions the shortage of the other salad crops must have increased the demand for lettuce and

hence most of the supply could be sold at favourable prices. This particular feature of the lettuce enterprise shows how different crops may compete with each other to enhance or spoil the grower's chances whilst raising the crop. Although the weather factor is beyond the grower's control, results shown for the six-year period indicate that on a long term basis, even with lettuce, good and bad results may be levelled up to a reasonable average return, provided, of course, that the grower is consistent in growing the same types of lettuce in each year and more or less on the same scale.

The marketing data for lettuce included some 644 transactions. The total quantity of produce was 30,063 $\frac{3}{4}$ dozen and the net receipts £6,868. Details of these figures are shown in Table 67.

According to these results of the marketing of lettuce, 84 per cent of the total crop was marketed locally, and what is interesting to note, 33 per cent of this part of the supply was sold outright to local merchants. The remaining 16 per cent of the crop was sent to various markets in the country as far afield as Glasgow and Leeds. The difference between the results of the local and other sales is as follows:

		Quantity	Net	Net
		doz.	Receipts	Price
		%	£	per doz.
Local Sales	.	25,470	84	5,745
Other Sales	.	4,594	16	1,123
Total	.	30,064	100	6,868
				53.7
				58.7
				54.8

From the foregoing figures, the average price paid by commission salesmen was 5d. higher per dozen than the price achieved by the local sales. However, considering the long marketing season of the crop and that only a relatively small quantity was sold through the latter channels, the price difference between the two types of sales was practically negligible.

As far as the cost of marketing is concerned, market deductions averaged 13.7 per cent of gross receipts. This figure is very similar to those for other produce, especially cabbage and cauliflower. The highest relative cost on distant markets was shown at Bristol where it was almost 28 $\frac{1}{2}$ per cent of gross receipts, whilst it was lowest at Birmingham at 18 per cent; the result at Gloucester was the same as on the local markets, being nearly 12 per cent of gross receipts.

With regard to the marketing season of the crop, records of the individual holdings showed an almost continuous trading in lettuce from the 3rd October, 1954, until the 17th December, 1955. The only gap which occurred during this rather long period was from the middle of January until the end of March, when no lettuce was sold off the sample holdings. Nevertheless the marketing season of the combined crop ran for 52 weeks in only 5 of which no lettuce was sold at all. However, despite the fact that each week of this long period showed some trading in lettuce, 94 per cent of the crop was sold between the beginning of April and the end of October, but the peak season fell in June, when 36 per cent of the total crop was disposed of. During the spring and summer, prices followed the trend in supply quite closely, but in the autumn, possibly due to the limited amount of trading, prices fluctuated more freely. The weekly distribution of supply and fluctuation in prices are shown in Diagram 30.

(c) *Rhubarb*

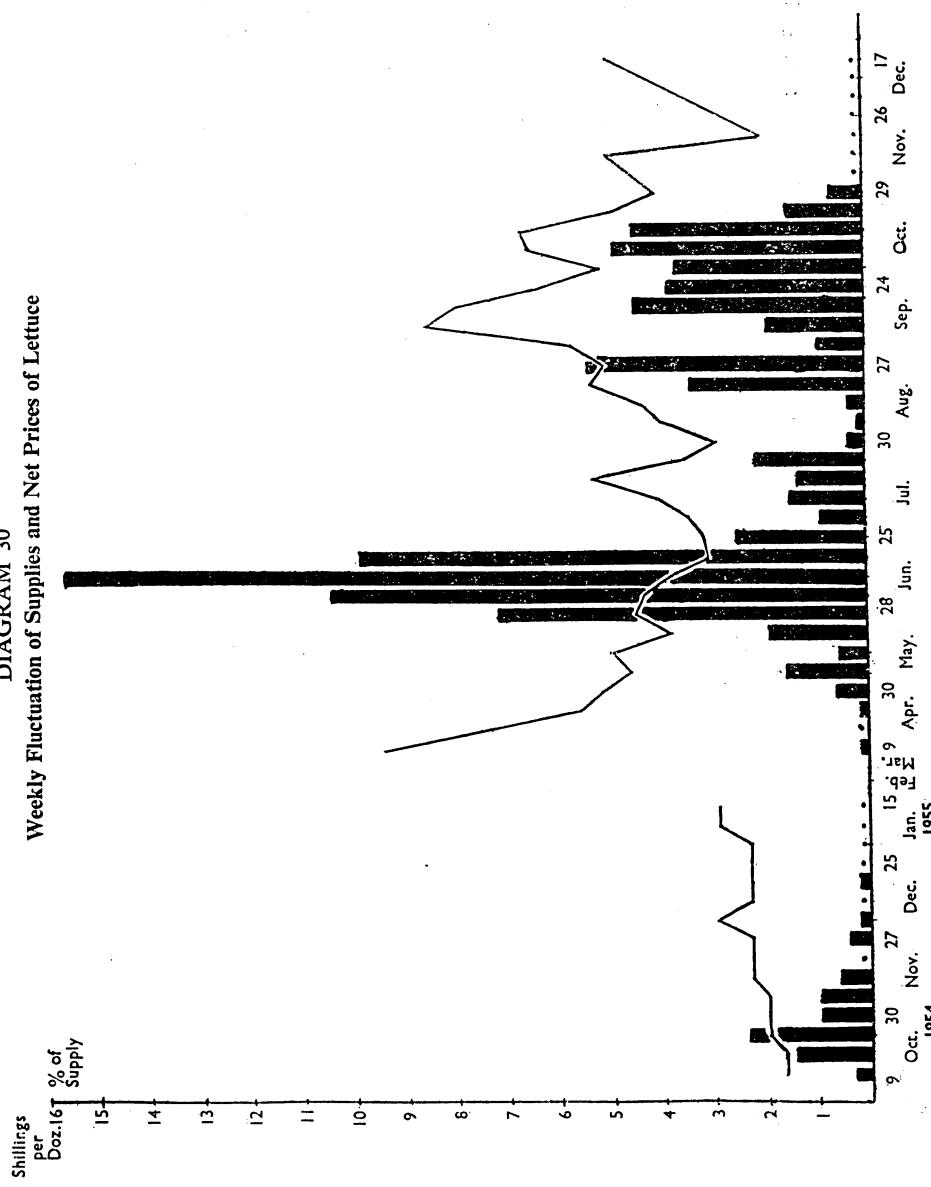
Rhubarb was not grown widely on the sample holdings and, in fact, only four of them included it among their regular enterprises. On three holdings the crop was grown on a commercial scale, but on one it appeared to be only a casual crop of no particular importance at all.

The average returns of rhubarb for the four holdings worked out at 8,912 lb. for £147 per acre giving a price of 4s. 0d. per lb. Apart from the one holding where the crop was not grown on a commercial scale, and the sale of rhubarb amounted to only 280 lb., the highest returns were 10 tons for £380 per acre, and the lowest 1½ tons for £95 per acre.

Not all the four holdings were participating in the survey scheme over the last 6 years, so that it was not possible to account for the annual variations covering this fairly long period. However, in view of the fact that rhubarb is by no means a typical crop of the Vale, the results of the last 3 years seem to be sufficient to provide some supporting information on the chances of the crop. These results are as follows:

Years	Quantity	Receipts	Price per lb.
	lb.	£	d.
1953	6,000	56	2·2
1954 . .	10,367	134	3·1
1955 . .	8,912	147	4·0
Average . .	8,426	112	3·2

DIAGRAM 30
Weekly Fluctuation of Supplies and Net Prices of Lettuce



On the whole, the average receipt of £112 per acre seems to be an adequate return for rhubarb, especially when considering the limited importance of the crop. On the best holding the receipts for rhubarb varied between £85 and £380 per acre. With regard to average receipts in net terms, market deductions which were 18 per cent of the combined gross and net sales, would have reduced the 1955 return from £147 to £121 per acre.

According to the marketing data shown in Table 68 the average net price of rhubarb for 1955 worked out at only 2·7d. per lb. The discrepancy between this figure and the price given for the four sample holdings is due to the modified nature of the data drawn up on marketing. However, after taking into account 18 per cent for market deductions, the net price achieved by the holdings would be decreased to 3·3d., showing a difference of not more than 0·6d. per lb.

As can be seen from the marketing results, most of the crop was sold outside the area, and only 12 per cent of the total supply was disposed of locally. The difference between the two types of sales is shown below:

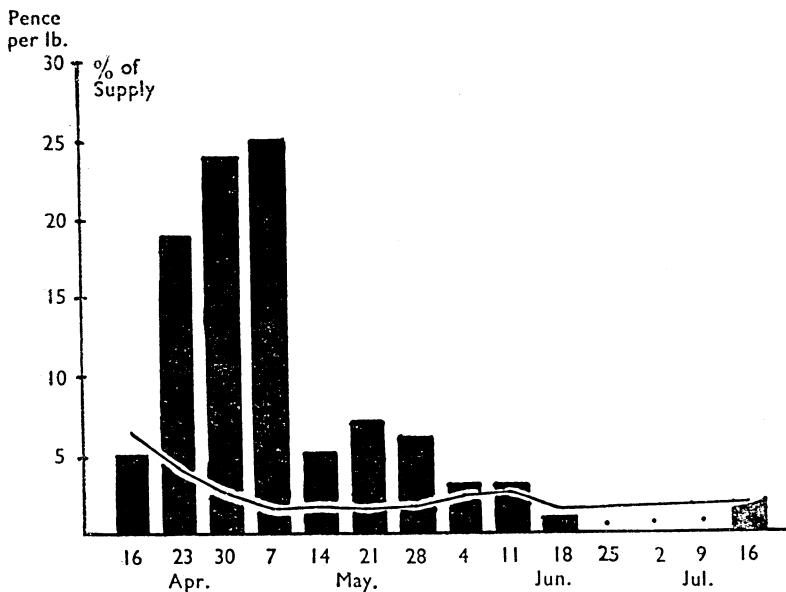
	Quantity	Net	Net
	lb.	Receipts	Price
	%	£	per lb.
Local Sales . . .	2,775	23	2·0
Other Sales . . .	19,213	224	2·8
Total . . .	<u>21,988</u>	<u>247</u>	<u>2·7</u>
	100	100	

Due mainly to the small quantity sold locally, the net price achieved was considerably lower than for that of other sales. For the combined results of both types of sales the relative cost of marketing absorbed as much as 21·7 per cent of gross receipts. The reason for this rather high cost is that most of the supply was sold at distant markets and thus more expense was involved. For instance, at Birmingham, deductions amounted to nearly 30 per cent of gross receipts, whereas on a small early consignment sold at Gloucester it represented only 9 per cent at 6½d. per lb.

In 1955 the marketing season for rhubarb was 14 weeks, running from the middle of April until the middle of July. Its main season finished by the middle of May, when about 73 per cent of the total supply had been sold. However, it was in the first three weeks of the season that the crop fetched the

best price; afterwards it dropped to below 2d. per lb. In the 8th and 9th weeks however the price again showed a recovery, but, owing to the small supplies, this hardly affected the overall average price. Diagram 31 illustrates the weekly distribution of the supply and fluctuation of the net price.

DIAGRAM 31
Weekly Fluctuation of Supplies and Net Prices of Rhubarb



(d) *Tomatoes*

Although the growing of tomatoes belongs to one of the most specialised sectors of the horticultural industry, a great many holdings in the Vale are engaged on this particular enterprise. The crop on the whole is grown both indoor and outdoor, but the major supplies come from either heated glasshouses or unheated Dutch light structures. On most of these holdings the tomato enterprise is more or less the major one and all other indoor crops, be they chrysanthemums, lettuce or vegetable plants, etc., are of a somewhat subsidiary nature, merely making use of the glasshouse space available when the seasonal breaks in tomato growing occur.

TABLE 68

Sales of Rhubarb

Method of Marketing	Trans- actions		Quantities		Gross Receipts			Gross Price per lb.	Deductions				
									Commission				
Growers' Co-operatives	No.	%	lb.	%	£	s.	d.	%	d.	£	s.	d.	%
Growers' Co-operatives	5	8	740	3	6	19	4	3	2.3	11	4	8.1	—
Local Merchants	5	8	2,016	9	—	—	—	—	—	—	—	—	—
Commission Salesmen:	1	1	19	—	—	—	—	—	—	—	—	—	—
Birmingham	3	5	360	2	4	8	6	2	3.0	6	10	7.7	—
Birmingham	13	21	1,948	9	178	10	0	69	3.9	13	7	9	7.5
Bristol	9	14	11,040	50	40	5	6	16	2.7	3	0	6	7.5
Coventry	11	18	3,520	16	2	11	7	6	4	17	1	7.5	—
Gloucester	1	1	420	9	16	6	5	6	2.0	1	5	0	7.7
Stratford-on-Avon	15	24	1,925	—	—	—	—	—	—	—	—	—	—
Total	63	100	21,988	100	257	17	3	100	—	19	8	6	7.5
Gross Sales	44	70	18,005	82	257	17	3	—	3.4	19	8	6	7.5
Net Sales	19	30	3,983	18	—	—	—	—	—	—	—	—	—

TABLE 69

Marketing of Tomatoes—1955

Methods of Marketing	Trans- actions		Quantities		Gross Receipts			Gross Price per lb.	Deductions				
									Commission				
Growers' Co-operatives	No.	%	lb.	%	£	s.	d.	%	d.	£	s.	d.	%
Growers' Co-operatives	206	12	52,346	17	2,574	8	9	32	11.9	194	9	11	7.5
Local Markets	360	22	57,143	19	1,877	8	10	23	7.9	147	16	8	7.9
Local Merchants	533	33	99,060	33	—	—	—	—	—	—	—	—	—
Birmingham Merchants	69	4	14,124	5	—	—	—	—	—	—	—	—	—
Commission Salesmen:													
Birmingham	405	27	68,376	23	3,259	15	6	40	11.4	256	18	5	7.9
Barnsley	17	1	5,688	2	291	6	3	4	12.3	29	2	6	10.0
Leeds	9	—	1,344	1	62	16	0	1	11.2	6	5	8	10.0
Stratford-on-Avon	18	1	444	—	20	18	9	—	11.3	1	11	10	7.5
Total	1,617	100	298,525	100	8,086	14	1	100	—	636	5	0	—
Gross Sales	1,015	63	185,341	62	8,086	14	1	—	10.5	636	5	0	7.9
Net Sales	602	37	113,184	38	—	—	—	—	—	—	—	—	—

Sales of Rhubarb

Use of Empties		Deductions						Net Receipts			Net Price per lb.	
		Handling Charges		Transport		Total						
£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£
5	9	4.1	—	—	—	—	17	1	12.2	6	2	2.0
—	—	—	—	—	—	—	16	3	3	16	3	1.9
—	—	—	—	—	—	—	7	1	—	7	1	4.5
—	—	—	12	6	14.1	7 11	9.0	1 7 3	30.8	3	1	2.0
—	—	—	13	16	0	7.7	13 16 0	7.7	40 19 9	28	10	3.5
2	4	0	5.5	7	4	0.9	2 19 11	7.4	19 22.9	137	10	3.0
3	6	1.5	—	—	—	—	8 11 9	—	21.3	31	13	2.2
19	3	5.9	19	3	5.9	—	1 0 7	9.0	—	10	6	5.9
—	—	—	—	—	—	—	3 3 6	19.5	—	13	2	1.6
3	12	6	1.4	15	15	1	6.1	17 3 10	6.7	55	19 11	21.7
—	—	—	—	—	—	—	—	—	—	246	18	2.7
3	12	6	1.4	15	15	1	6.1	17 3 10	6.7	55	19 11	21.7
—	—	—	—	—	—	—	—	—	—	201	17	2.7
—	—	—	—	—	—	—	—	—	—	45	0	2.7
—	—	—	—	—	—	—	—	—	—	18	—	—

Marketing of Tomatoes

Use of Empties		Deductions						Net Receipts			Net Price per lb.		
		Handling Charges		Carriage Cartage		Total							
£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	
14	9	8	0.6	—	—	—	208	19	7	2,365	9	2	
53	7	11	2.8	—	—	—	201	4	7	1,676	4	3	
—	—	—	—	—	—	—	—	—	4,070	1	10	20.7	
—	—	—	—	—	—	—	—	—	407	3	3	9.9	
7	18	1	0.2	42	18	2	1.3	83	15	1	2,868	5	9
—	—	—	—	—	—	—	15	14	9	246	9	0	
—	—	—	—	—	—	—	3	2	4	52	13	8	
4	0	1	—	14	4	1.1	4.9	44	17	3	15.4	—	2
—	—	—	—	—	—	—	6	2	4	16.0	1	9.4	
75	16	0	—	43	17	8	—	102	18	4	18	15	3
—	—	—	—	—	—	—	2	3	6	10.2	—	10.1	
75	16	0	0.9	43	17	8	0.5	102	18	4	858	17	0
—	—	—	—	—	—	—	—	—	10.6	7,227	17	1	
—	—	—	—	—	—	—	—	—	—	4,477	5	38	
—	—	—	—	—	—	—	—	—	—	62	9.4	9.5	

In the survey sample, 7 holdings specialised in the-growing of tomatoes. Of these, 2 grew the crop in heated glasshouses, 3 under Dutch lights, 1 partly under heated glass and partly in the open, and 1 raised the crop entirely out-of-doors. The average returns from these holdings worked out at 70,682 lb. of tomatoes for £3,157 per acre, giving a price of 10·7d. per lb. In view of the very mixed method of production, the interpretation of average results is rather limited, and at most could only be used as a production standard for growing the crop under unheated Dutch light structures. To obtain a more coherent picture of the crop returns it was necessary to dissect the results of the individual holdings according to the method of production and examine their returns accordingly. Although 7 holdings cannot be regarded as sufficiently representative for such examination, the long standing experience and high technical knowledge of the growers offer fair guidance in assessing the average returns for the various methods of production. To safeguard the consistency of the results, the returns for the holding with mixed production have been omitted from these figures. The results per acre of the 6 holdings are as follows:

	Quantity per Acre		Receipts per Acre		Price per lb.
	lb.	%	£	%	d.
Heated Glass	120,850	56	6,272	65	12·5
Unheated Glass	64,497	31	2,551	27	9·5
Out-of-door	29,180	13	785	8	6·5
Average	77,387	100	3,497	100	10·8

From these figures it can be seen that, in the average results, more than half the crops referred to hot-house tomatoes, about one-third to cold-house produce, and only 13 per cent to crops grown in the open. While interpreting the average results, it is rather interesting to note the difference between the returns of the heated glasshouses and the unheated structures. According to the results for 1955, the quantity of tomatoes produced under heated glass was almost twice the output of Dutch lights, and the cash returns from the former method was about two-and-a-half times higher than that of the latter. One year's results, however, are too limited to say whether or not the differences in yields and receipts were due to the advantages of growing the crop under heated glass, or merely to seasonal circumstances. It would be necessary to examine the results for a number of years before this could be confirmed. Unfortun-

ately, the scope for such comparison is rather restricted, as on most of the sample holdings considerable changes took place in the glasshouse areas during the years prior to 1954. Therefore, the comparison has to be confined to the results achieved by the 6 holdings only during the year 1954. The results of this particular year are shown below:

	Quantity per Acre		Receipts per Acre		Price per lb.
	lb.	%	£	%	d.
Heated Glass	79,649	52	4,722	59	14·2
Unheated Glass	64,880	42	4,043	38	11·3
Out-of-door	8,851	6	239	3	6·5
Average	60,415	100	3,135	100	12·5

According to these figures for 1954, both the yield and returns from heated glasshouses were considerably lower than those shown for 1955, whereas cold-house production averaged practically the same yield but almost £500 more was received for the produce. From this comparison, it can be assumed that by means of heated glass it is possible to obtain about a 50 per cent heavier yield of produce but, quite obviously, higher costs are bound to be incurred to achieve a revenue which is approximately twice as great as that obtained for a crop grown under Dutch lights. However, whatever the advantages or disadvantages of one particular method of production, one point is quite clear, namely that hot-house cultivation by producing an earlier crop ensures better prices and hence higher receipts than a crop grown under Dutch lights. In both years the difference in price was about 3d. per lb., being almost 30 per cent higher than the price received for the cold-house crop. With regard to the outdoor crop, the 1955 returns were rather exceptional and may be ascribed to the favourable weather conditions prevailing in the summer of 1955. However, even the 1954 result seems to be rather high, for in previous years outdoor production, on a number of occasions, brought in less than £100 per acre. The combined per acre results of tomato production for 1954 and 1955 are as follows:

	Quantity per Acre		Receipts per Acre		Net Price per lb.
	lb.	%	£	%	d.
Heated Glass	100,249	55	5,497	62	13·2
Unheated Glass	64,639	35	2,764	32	10·3
Out-of-door	18,985	10	512	6	6·5
Average	68,900	100	3,300	100	11·5

From these results of individual holdings the following ranges of production per acre can be distinguished:

		<i>Quantity per Acre</i>	<i>Receipts per Acre</i>
		Tons	£ £
Heated Glass	.	35-56	4,200-7,300
Unheated Glass	.	24-33	2,400-3,500
Out-of-door	.	4-13	239- 785

With regard to the outdoor crop these ranges may be better observed from the annual results of the holding concerned over a period of six years. These are shown below:

<i>Years</i>		<i>Quantity per Acre</i>	<i>Receipts per Acre</i>	<i>Price per lb.</i>
		lb.	£	d.
1950	.	25,702	261	2·4
1951	.	21,493	476	5·3
1952	.	15,000	337	5·4
1953	.	18,909	346	4·4
1954	.	8,851	239	6·5
1955	.	29,180	785	6·5
Average		<u>19,856</u>	<u>407</u>	<u>4·9</u>

The above figures of a successful outdoor producer show the unusually high returns for the 1955 crop. Nevertheless the overall result may be regarded as a fair average for the turnover of the crop.

As mentioned before, the cash returns for the combined 1955 crop from six holdings worked out at £3,497 per acre, or 10·8d. per lb. This average result included the returns from all the sales transacted, both in gross and net terms, so it was necessary to ascertain the share of the market deductions to see what was the actual net return received by the grower. In the marketing data drawn up on the results of sales of the sample holdings, and some additional holdings, the total sum received was £12,574 for 298,525 lb. of tomatoes; the amount for market deductions was £859. In relative terms, this sum represented 6·8 per cent of the combined gross receipts from both gross and net sales. By relating this share of market deductions to the per acre result, the cost of marketing would reduce the average return by £238 to £3,259, and the price per lb. by 0·7d. to 10·1d. per lb.

Since some of the sample holdings commenced their accounting year on the 1st October, 1954, the results also included a small share of the tail end of the 1954 crop. In order to see the effect of the old crop on the overall results, it is necessary to separate the two crops from each other and examine whether or not the inclusion of the old crop has biased the average results. According to the marketing data the relationship between the two crops was as follows:

	Quantity		Receipts		Price
	lb.	%	£	%	per lb. d.
Old Crop . .	17,827	6	557	5	7.5
New Crop . .	280,698	94	11,148	95	9.5
Total . .	298,525	100	11,705	100	9.4

From the foregoing figures it can be seen that the old crop was not more than 6 per cent of the total quantity and the share of receipts from it was only 5 per cent of the total revenue. Thus, it is fair to say that the effect of the old crop on the average results was quite negligible, and its exclusion would by no means alter the returns. The difference between the average net price of 9.4d. given in the marketing data and that of 10.1d. shown in the per acre results is due to the larger quantity of the outdoor crop included in the data prepared on marketing.

In interpreting average results there is a further important point to be considered, and that is the quality of the crop. As a rule, tomatoes, especially those grown under glass, are sold in the customary commercial grades. If the tomato crop fails to produce a good enough sample of the best grades, the effect of the imperfect crop will show itself in low prices and, consequently, in unsatisfactory returns per acre. On the sample holdings, the grading technique varied slightly; some of them were rather meticulous and even used additional grades and trade marks for their produce, while others were content to stick to the grades required by the trade. In grading the 1955 crop of the sample holdings, the following grades were taken into account: "Pink and White"; "White"; "Pink"; "Blue"; "Blue and White"; and finally the "ungraded" quality, which also included "chutney" and other imperfect grades. However, in view of the fact that practically the entire outdoor crop was marketed without grading, the ungraded part of the crop has no bearing on the blemished proportion

of the produce sold. Unfortunately, it was not possible to separate the outdoor crop from the glasshouse produce, mainly because their autumn seasons coincided with each other, and on most of the sale records no such distinction is made, and consequently differences in their marketing conditions could not be examined.

From details of the marketing data, the distribution of quantities and receipts among the various grades were as follows:

Grades	Quantity	Receipts		Price per lb. d.	
		£	%		
Pink and White	145,789	49	6,210	53	10·2
White	35,796	12	1,267	11	8·5
Pink	31,104	10	1,399	12	10·8
Blue	29,856	10	933	8	7·5
Blue and White	4,836	2	98	1	4·8
Ungraded	51,144	17	1,798	15	8·4
Total	298,525	100	11,705	100	9·4

These figures indicate that about 83 per cent of the 1955 crop was graded, and 59 per cent of the produce belonged to the best grades of "Pink and White" and "Pink". It is interesting to note that the price for ungraded produce was 8·4d. per lb. This was mainly due to the fact that, especially at the beginning of the season, some fair quantities of tomatoes were sold without reference being made to any particular grade. Although the prices received for these quantities were slightly lower than the receipts for the "Pink and White" grade, these consignments, no doubt, consisted of high quality tomatoes, and would have improved the overall results had they been sold in their appropriate grades.

The pattern of marketing tomatoes is shown in Table 69. According to this detailed information, 69 per cent of the crop was disposed of locally; the rest of the supply went to markets at Birmingham, Barnsley, Leeds and Stratford-on-Avon. At home, quite a large proportion of the crop was purchased outright by local merchants, greengrocers, hotels and by the general public. Gross transactions showed the cost of marketing to be 10·6 per cent of gross receipts with only very moderate variations between the markets concerned. However, due to transport costs deductions were highest at Leeds and Barnsley being 16 per cent and 15·4 per cent respectively of the gross receipts. Nevertheless, despite the higher market deductions, the net price per lb. achieved at both markets was in line with

the average price. The results of local and other sales are shown below:

	Quantity		Net Receipts		Net Price per lb.
	lb.	%	£	%	d.
Local Sales .	208,549	69	8,112	69	9.3
Other Sales .	89,976	31	3,593	31	9.6
Total .	<u>298,525</u>	<u>100</u>	<u>11,705</u>	<u>100</u>	<u>9.4</u>

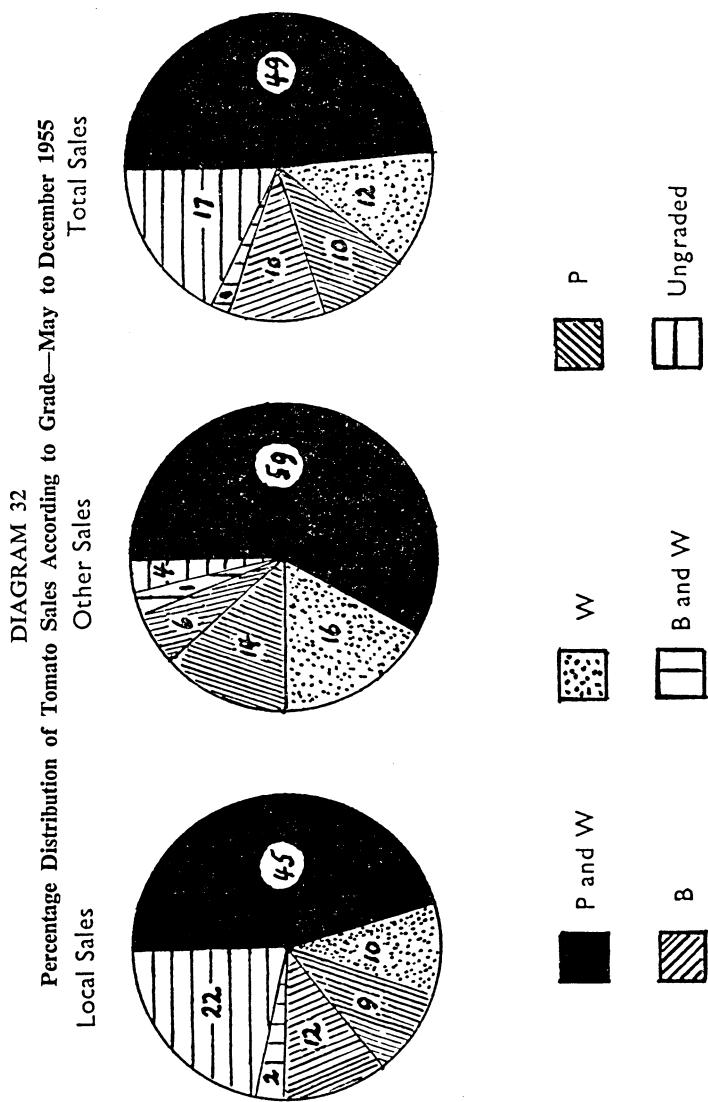
From these results it can be seen that there was only a very little difference between the average net prices achieved by the two kinds of transactions. However, when it is considered that the consignments sold in both groups of transactions were comprised of different grades, each grade having its own value, then the meaning of even the existing small price difference becomes insignificant.

The distribution of the various grades which were included in the two groups of transactions are compared with that for total sales and illustrated in Diagram 32.

From Diagram 32 it can be seen that the supply sold outside the area was better graded, and partly because of this it averaged a higher net price for the grower. Details of the distribution of supplies among the different marketing agencies is shown in Table 70 according to the different grades.

Data given in Table 70 indicate quite clearly the effect which the distribution of different qualities had on average prices returned by various agencies. However, besides grading the produce, there is another factor which has an important bearing on the average price, and that is the time of marketing.

On the sample holdings tomatoes were sold from the first week of October until Christmas 1954, and from the last week of May until the beginning of December, 1955. Thus, the combined season covering both the old and new crop represented 40 weeks, of which the sale of the new crop covered 28 weeks. To a large extent the success of the crop depended on the quantities sold at different times of the season, and on the combination of quality, expressed in grades, which various consignments represented. Thus, within the seasonal distribution of the total supply, it was the grading which defined the average price and the returns achieved by the crop. Taking the new crop only into consideration, the distribution of the monthly supplies was as follows:



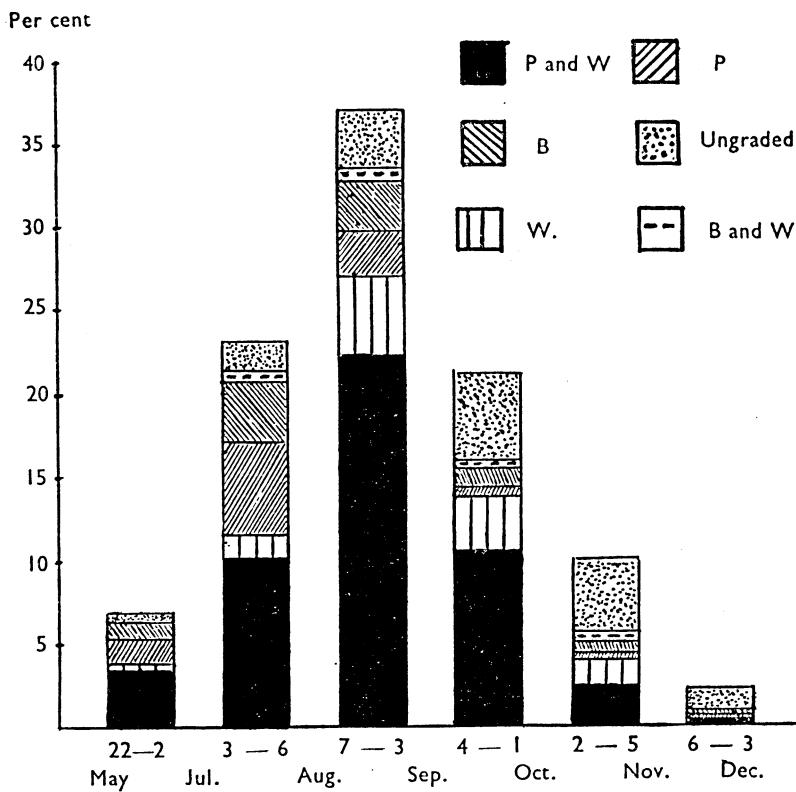
<i>Period of Marketing</i>	<i>Quantity</i>	<i>Receipts</i>	<i>Net Price per lb.</i>
	lb. %	£ s. d.	d.
1955			
May 22-June 2	18,601 7	1,231 13 8	15.9
June 3-Aug. 6	63,844 23	3,300 15 4	12.4
Aug. 7-Sept. 3	105,251 37	3,412 19 9	7.8
Sept. 4-Oct. 1	57,446 21	1,796 18 8	7.5
Oct. 2-Nov. 5	30,228 10	1,155 12 6	9.3
Nov. 6-Dec. 3	5,328 2	250 3 5	11.3
Total	280,698 100	11,148 3 4	9.5

According to the foregoing figures, the prices, by and large, followed the trend in supply. It was only in the month of September that the decrease in supply did not result in a higher price. This was mainly due to the relatively high proportion of the ungraded produce which realised only 6.6d. per lb. If this part of the supply had been graded, it could have improved the price level to at least that for August. The relative importance of the various grades in the monthly supplies is illustrated in Diagram 33.

As seen from the details of Diagram 33 the supply of the "Pink and White" grade steadily increased until the fourth month, when it started to drop first to 51 per cent, then to 26 per cent and finally to 13 per cent of the total quantities sold during September, October and November. The quality of the "White" grade showed an increasing tendency rising from 3 per cent to 19 per cent of the monthly sales, almost right through the whole season; it was only in November that it dropped back to 4 per cent. The reason for this unusual trend was that some quantities of the outdoor crop were sold in this particular grade. On the other hand, the early part of the crop consisted of the "Pink" grade which averaged the highest price of 10.8d. per lb. In the first and second month's sales it was 22 per cent and 24 per cent respectively. The distribution of the "Blue" graded tomatoes was very similar to that of the "Pink" being 21 per cent of the monthly supply in June and 16 per cent in July. The significance of the "Blue and White" grade was quite negligible as it varied between 1 and 2 per cent of the supplies. These two latter grades proved to be the cheapest qualities, the "Blue" averaging 7.5d. per lb., and the "Blue and White" only 4.8d. The price for ungraded produce at 8.4d. per lb. seems to be unusually high, being almost as much as that for the "White" grades. The reason for this may be found in the fact, that, especially at the beginning of the season,

DIAGRAM 33

Relative Importance of Graded and Ungraded Produce in the Monthly Supplies of Tomato Sales—May to December 1955



although in small quantities, fair amounts of tomatoes were sold to the public at more or less retail prices. In both the June and July sales these prices averaged 2s. 1d., and 1s. 2d. respectively and naturally showed a higher return than any of the graded qualities. The proportion of ungraded produce stayed at a reasonably low level, not more than 8 per cent of the monthly supplies, until September, when, due mainly to the outdoor crop, it rose to 25 per cent then to 43 and finally to 73 per cent of the supply. The monthly fluctuation of net prices as shown by the different grades can be summarised as follows:

Period of Marketing	P. & W.	W.	P.	B.	B. & W.	Un- graded	All Qualities
							1955
May 22-July 2	16.2	17.4	14.6	13.4	14.5	24.8	15.9
July 3-Aug. 6	13.9	13.4	11.4	8.6	8.1	14.1	12.4
Aug. 7-Sept. 3	8.0	8.1	8.7	6.2	4.3	7.5	7.8
Sept. 4-Oct. 1	9.1	6.2	5.5	3.0	3.7	6.6	7.5
Oct. 2-Nov. 5	11.9	9.2	9.5	7.4	5.4	7.7	9.3
Nov. 6-Dec. 3	16.2	11.5	13.0	9.1	—	10.5	11.3
Average	10.2	8.5	10.8	7.5	4.8	8.4	9.4

As can be seen from these figures, the price of 9.4d. per lb. covers 6 different qualities of tomatoes, and naturally the return per acre depends very largely on the favourable distribution of the various qualities within the overall supply. As seen already, this distribution seemed to be quite favourable on the sample holdings and, considering the crop also included some outdoor tomatoes, the average price of 9.4d. per lb. can be regarded as a fairly satisfactory return.

A picture of the proportions of the different grades of produce which comprised the monthly supplies, together with the prices obtained, provide a fairly good background to the formation of the average price of 9.4d. per lb. The trend in supplies and prices, however, can better be observed from the results of the weekly sales. According to these results, during the first 14 weeks of the season, covering the period from the 22nd May until the 27th August, the weekly supplies showed an evenly distributed increase from 0.1 to 10.3 per cent of the total crop and net prices a decrease from 2s. 7d. per lb. to 7d. During the following week, when the first samples of the outdoor crop appeared on the market, the supply dropped to 8.6 per cent, and the net price fell to 4½d. per lb. However, in the course of the following weeks, the gradual decrease in supplies resulted in a steady rise in prices so that by the end of the season, which fell on the 3rd December, the growers received 11.3d. per lb. for the last consignments of their crop. On the whole, during the 1955 season conditions had been rather favourable for both indoor and outdoor crops, but as far as the outdoor crop was concerned, the 1954 season appeared to be less favourable than that of 1955. The tail end of the 1954 crop which was included in the data, showed that the sale of this crop from the 2nd October until the 24th December, 1954, averaged 7½d. per lb., whereas the quantity sold for a comparable period in 1955 worked out at 9½d. The late marketing season of 1954 did not necessarily coincide with the harvest of the crop, since it is a

fairly common practice to keep tomatoes in store to ripen, especially when the price happens to be low on the market. However, in 1954 the expectation of better prices did not materialise, as during the last 3 weeks of the season prices, instead of rising, dropped considerably, so that the last consignment fetched only 0·7d. per lb. Diagram 34 gives an account of the weekly distribution of the supply and the fluctuation in prices.

(e) *Sundry Crops*

This group of crops includes radishes, early potatoes, marrow, cucumbers, spinach, sweet corn, shallots and vegetable plants.

Radishes. Among the above mentioned crops, radishes are perhaps the most widely grown, especially on small market garden holdings. Its quick maturity, and long growing season makes it one of the most suitable "catch crops" on these types of holdings.

Of the sample holdings, 9 grew radishes on a rather varying scale. The largest area devoted to the crop covered $\frac{1}{3}$ of an acre, and the smallest only $\frac{1}{20}$ of an acre. On average, on the sample holdings, it was about $\frac{1}{10}$ of an acre on which the crop was grown. On a "one acre basis" the average returns for radishes were as follows:

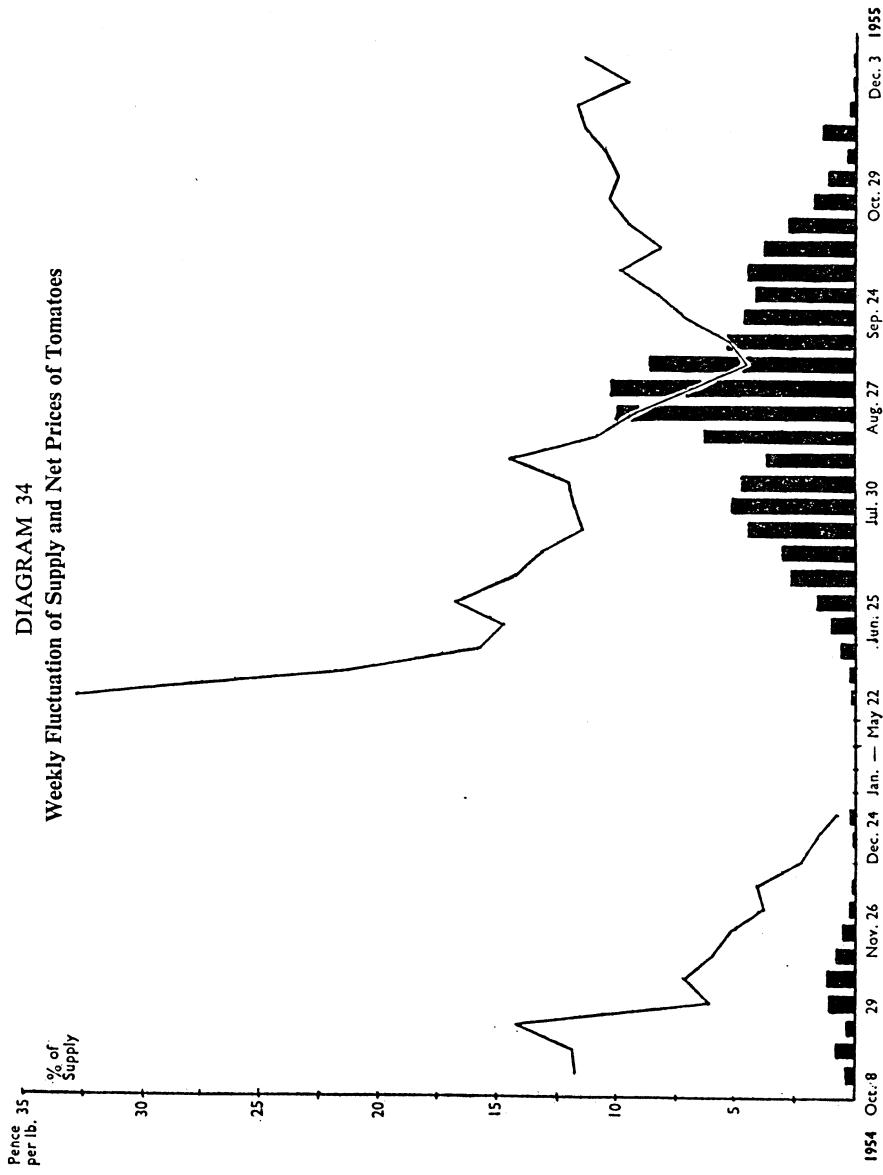
Quantity dozen bunches	Receipts £	Price per Dozen Bunches	
		d.	18·0
2,473	185		

On the individual holdings the highest return worked out at £400 for 4,500 dozen bunches per acre, and the lowest at £33 for 300 dozen bunches per acre. After deducting market expenses, which amounted to 7·2 per cent of the combined sum of gross and net sales, the net return to the growers was £172 per acre.

According to the pattern of marketing, shown in Table 71, 79 per cent of the total supply was disposed of locally, and the rest of the crop went to markets as far as Leeds, Barnsley and Covent Garden, etc. The difference between the local and distant sales is shown below.

	Quantity dozen bunches	%	Net Receipts £ %		Net Price per Dozen Bunches d.
			£	%	
Local Sales . .	9,310	79	708	76	18·3
Other Sales . .	2,617	21	225	24	20·6
Total . .	11,927	100	933	100	18·8

DIAGRAM 34
Weekly Fluctuation of Supply and Net Prices of Tomatoes



These results indicate that the difference between the two types of sales of radish was only 2·3d. per dozen bunches. Taking into consideration that the price received for this crop is liable to very wide fluctuation, the apparent discrepancy can be regarded as negligible. In the gross transactions market deductions worked out at 11·3 per cent of gross receipts. This appears to be quite reasonable, and compares favourably with that of a number of other vegetable crops. The highest relative cost of marketing was carried by a consignment sent to Barnsley, which absorbed 24·7 per cent of gross receipts. However, despite the high rate of deductions the net price of 3s. per dozen bunches paid to the grower proved to be quite a satisfactory return for the crop.

Generally speaking, radish may be marketed as early as the beginning of March and sold continuously throughout most of the spring and summer months. However, in 1955, due to the severe and prolonged winter, the sample holdings could not start to market the crop before April, but, on the other hand, managed to go on selling it until the beginning of August. Quite obviously, this long marketing season included several continuously sown crops, the combined sale of which resulted in the previously mentioned returns. As a rather rough estimate derived from the sale notes, the 18 weeks' marketing might have represented as many as four subsequent crops grown in the open. Besides these, there was a very small quantity of radishes grown under glass and sold in the first two weeks of February. However, due perhaps to the poor quality, the net price paid for this sample was only 3s. 5d. per dozen bunches, which was far below the price achieved by the first consignments of the outdoor crop which averaged 6s. 4d. per dozen bunches. With the gradual increase in the supply, the price showed a steady decrease, so that in the seventh week, when the quantity sold amounted to 25·6 per cent of the total supply, the price dropped to 10d. per dozen bunches. In the following week, however, when the supply fell to 4·5 per cent, the price rose to 2s. 4d. and kept fluctuating between this and 1s. 0d. until the end of the season. Diagram 35 accounts for the weekly distribution of the supply and the fluctuation of the net prices.

New Potatoes. Although potatoes were grown on a number of the co-operating holdings, they were primarily devoted to home consumption, or to provide some feedingstuff for the livestock, if any. In all, only 2 holdings grew early potatoes on a commercial scale. The enterprise on these holdings

Shillings
per Doz. Bcls.

DIAGRAM 35

Weekly Fluctuation of Supplies and Net Prices of Radishes in 1955

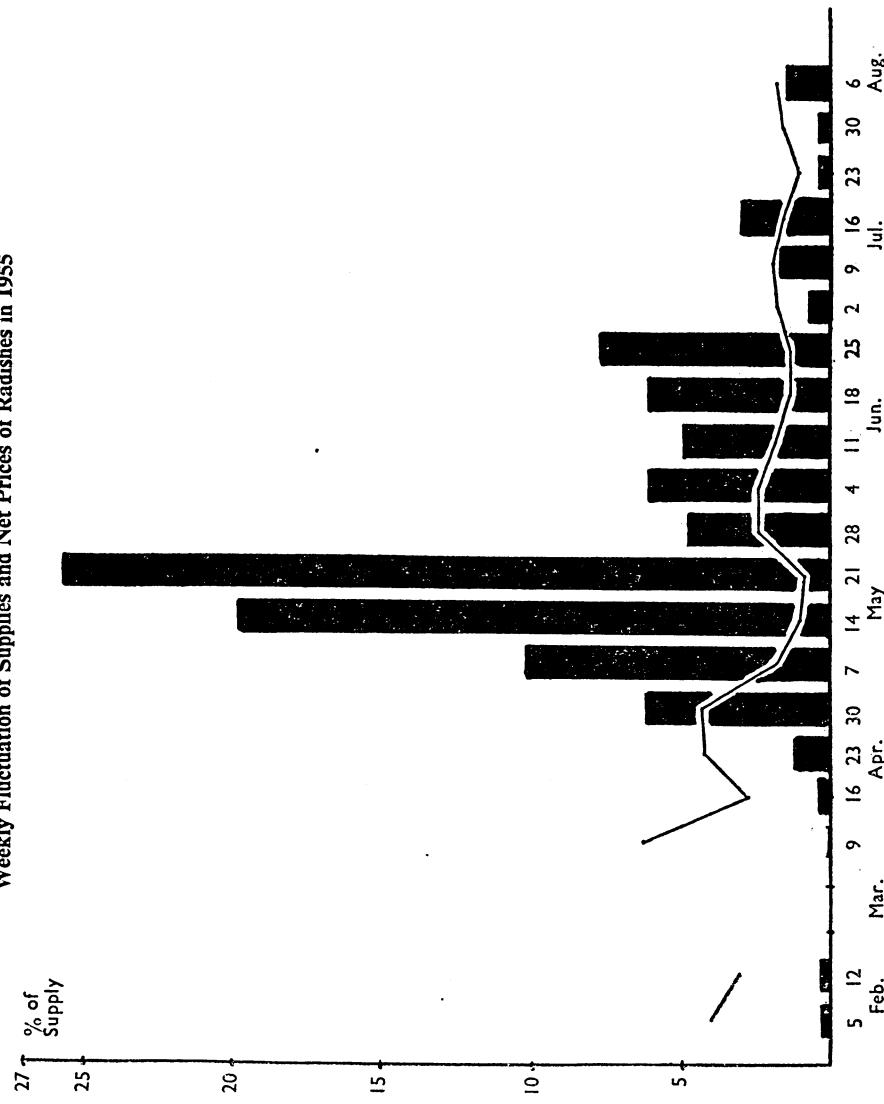


TABLE 70

Distribution of Supplies Among the Various Methods of Marketing—1955

Methods of Marketing	Pink and White			White			Pink		
	lb.	%	Net Price per lb.	lb.	%	Net Price per lb.	lb.	%	Net Price per lb.
Growers' Co-operatives . . .	22,759	43	d. 11.9	3,380	6	d. 10.7	12,996	25	d. 11.8
Local Markets . . .	23,604	41	8.0	1,956	3	6.5	3,072	5	9.7
Local Merchants . . .	46,614	47	9.8	15,832	16	7.7	2,268	2	12.4
Birmingham Merchants . . .	8,520	60	7.2	2,844	20	5.6	1,788	13	9.1
Commission Salesmen:									
Birmingham . . .	40,716	60	10.9	11,064	16	10.1	8,700	13	10.0
Barnsley . . .	2,736	48	11.5	552	10	7.1	2,004	35	10.5
Leeds . . .	840	62	9.9	168	13	6.8	276	21	9.7
Stratford-on-Avon . . .	—	—	—	—	—	—	—	—	—
Total	145,789	49	10.2	35,796	12	8.5	31,104	10	10.8

TABLE 71

Sales of Radishes—1955

Methods of Marketing	Trans- actions		Quantities		Gross Receipts		Gross Price	Deductions				
	No.	%	Dozen	Bunches	£	s.	d.	%	d.	s.	%	
Growers' Co-operatives	51	29	6,276	53	438	18	2	69	16.8	35	17	8.2
Growers' Co-operatives	18	10	1,053	9	—	—	—	—	—	2	5	7.5
Local Markets .	4	2	165	1	30	5	5	5	44.0	—	—	—
Local Merchants .	42	24	1,816	16	—	—	—	—	—	—	—	—
Commission Salesmen:												
Barnsley . . .	1	1	8	—	1	12	0	—	48.0	3	2	9.9
Birmingham . . .	28	16	1,325 $\frac{1}{2}$	11	145	12	6	23	26.4	10	18	7.5
Birmingham . . .	19	11	871 $\frac{1}{2}$	7	—	—	—	—	—	—	—	—
Covent Garden . . .	1	1	13	—	1	7	0	—	25.0	2	8	10.0
Leeds . . .	2	1	22	—	5	2	6	1	56.0	10	3	10.0
Leeds . . .	5	3	295	2	—	—	—	—	—	—	—	—
Nottingham . . .	2	1	60	1	11	10	0	2	46.0	1	2	10.0
Manchester . . .	2	1	22	—	4	8	4	—	48.2	6	7	7.5
Total	175	100	11,927	100	638	15	11	100	—	51	6	8.0
Gross Sales	91	52	7,891 $\frac{1}{2}$	66	638	15	11	—	19.4	51	6	8.0
Net Sales	84	48	4,035 $\frac{1}{2}$	34	—	—	—	—	—	—	—	—

Distribution of Supplies Among the Various Methods of Marketing—1955

Blue			Blue and White			Chutney etc.			Ungraded			Total		
lb.	%	Net Price per lb.	lb.	%	Net Price per lb.	lb.	%	Net Price per lb.	lb.	%	Net Price per lb.	lb.	%	Net Price per lb.
7,296	14	d. 8·0	60	—	d. 12·2	—	—	d. 2·1	5,855	12	d. 5·4	52,346	100	d. 10·9
3,696	7	4·2	2,124	4	4·3	48	—	2·1	22,643	40	6·0	57,143	100	7·0
13,872	14	8·8	1,212	1	5·3	1,016	1	4·8	18,246	19	12·9	99,060	100	9·9
864	6	4·1	60	1	5·3	48	—	2·3	—	—	—	14,124	100	6·9
3,708	5	5·6	1,344	2	5·0	468	1	5·1	2,376	3	6·7	68,376	100	10·1
360	6	7·4	36	1	4·6	—	—	—	—	—	—	5,688	100	10·4
60	4	8·0	—	—	—	—	—	—	444	100	10·1	1,344	100	9·4
—	—	—	—	—	—	—	—	—	—	—	—	444	100	10·1
29,856	10	7·5	4,836	2	4·8	1,580	—	4·8	49,564	17	8·6	298,525	100	9·4

Sales of Radishes—1955

Deductions												Net Receipts			Net Price per dozen bchs.					
Use of Empties			Handling Charges			Transport			Total			£	s.	d.	%					
£	s.	d.	%	£	s.	d.	%	£	s.	d.	%	£	s.	d.	%	d.				
6	3	0	1·4	—	—	—	—	42	0	4	9·6	396	17	10	43	15·2				
—	8	3	1·3	—	—	—	—	—	2	13	8	8·8	94	3	6	10	21·5			
—	—	—	—	—	—	—	—	—	—	—	—	27	11	9	3	40·1				
—	—	—	—	—	—	—	—	—	—	—	—	189	10	0	20	25·0				
—	—	—	—	6	5	10	4·1	5	2	9	14·8	1	4	1	—	36·0				
—	—	—	—	—	—	—	—	22	7	1	15·0	123	5	5	13	22·3				
—	—	—	—	—	—	—	—	—	—	—	—	59	14	11	7	27·9				
—	—	—	—	—	—	—	—	—	—	—	—	1	1	11	—	20·2				
—	—	—	—	—	—	—	—	—	—	—	—	3	18	10	—	43·0				
—	—	—	—	—	—	—	—	—	—	—	—	23	0	0	3	18·7				
—	—	—	—	—	—	—	—	—	—	—	—	9	7	2	1	37·4				
—	—	—	—	1	3	1	4	12·0	2	2	10	18·5	3	9	11	—	38·1			
6	11	3	1·1	6	9	1	1·0	7	11	11	1·2	71	19	0	11·3	933	5	4	100	18·8
6	11	3	1·1	6	9	1	1·0	7	11	11	1·2	71	19	0	11·3	566	16	11	61	17·2
—	—	—	—	—	—	—	—	—	—	—	—	366	8	5	39	21·8				

involved a fair acreage and the income derived therefrom was substantial; it may thus be of interest to give an account of the returns for the potato crop for the year of 1955. These returns, on a "per acre" basis, were as follows:

<i>Quantity</i>	<i>Receipts</i>	<i>Price</i>
lb.	£	per lb. d.
20,496	323	3·8

Market deductions absorbed only 2·7 per cent, or £9 of the above receipts. This gave a net return of £314 per acre to the growers. This result indicates the high value of the crop. However, heavy costs of production, together with the risk of frost damage, and the availability of casual labour for lifting, are some of the limitations which, on many holdings, may easily prevent the crop from being grown. As the marketing season of the crop coincides with the harvesting time for peas, it is often difficult to find sufficient labour for lifting which is not such a clean and easy job, for instance, as picking peas.

On the sample holdings about half of the crop was sold locally and the other half was sent to Swindon. The difference between the two types of transactions can be set out as follows:

	<i>Quantity</i>		<i>Net</i>	<i>Net</i>
	lb.	%	Receipts	Price per lb. d.
Local Sales .	166,596	47	2,556	3·7
Other Sales .	189,784	53	3,087	3·9
Total . .	356,380	100	5,643	3·8

Although the difference seems to be negligible, being only 0·2d. per lb., it would amount to £17 on a "per acre basis", which on a larger acreage might add up to quite a substantial sum.

The pattern of marketing early potatoes is shown in Table 72. In the gross transactions the market deductions, which actually represented the costs charged by the local co-operative organisations, worked out at 8·5 per cent of gross receipts. However, the result of these sales proved to be most satisfactory, averaging a net price of 4d. per lb.

As far as the marketing season of early potatoes is concerned, in 1955 it represented 6 weeks running from the 12th June until

the 23rd July. The weekly distribution of supply and the fluctuation in the net prices were as follows:

<i>Period of Marketing</i>		<i>Quantity</i>		<i>Net Price per lb.</i>
	1955	lb.	%	d.
June	12-18	16,352	5	4.5
	19-25	75,488	21	4.2
July	26-July 2	150,612	42	3.7
	3-9	69,688	20	3.6
	10-16	43,792	12	3.6
	17-23	448	—	4.4
Total		<u>356,380</u>	<u>100</u>	<u>3.8</u>

As can be seen from these figures, only 26 per cent of the total supply was sold at a reasonably high price, whereas the disposal of the major part of the crop fell in those weeks when the price was at about its lowest. A possible explanation of this may be given either by assuming that the crop was not fully mature for earlier marketing, or that the lack of labour was the cause of the apparent delay.

Vegetable Marrows. There were 6 holdings which grew marrows during the year in question. As a rule, this is not a representative crop of the Vale, and the relatively high number of holdings growing the crop was due to the fact that the young beans were destroyed by frost and had to be replaced by some other crop, which happened to be marrows. Due mainly to the fact that improvisation was the reason for its cultivation, the crop proved to be of no particular success. Although the yield was quite substantial, the cash return did not reach a satisfactory level. The returns per acre for the crop are as follows:

<i>Quantity</i>	<i>Receipts</i>	<i>Price per Piece</i>
singles	£	d.
2,950	80	6.5

On these sales, market deductions amounted to 15.6 per cent of receipts. After taking the cost of marketing into account the net receipt per acre to the grower was only £68. This appears to be far below the economic level of production for the crop. Among the individual holdings, the highest return was £147 per acre for a yield of 6,500 pieces of marrow and the lowest only £20 for 580 pieces of marrow.

The average net price for the crop as a whole was 5·5d. per marrow. This product is sold mostly per piece, so that the average price refers to marrows of all sizes. Unfortunately the market sale notes contained no indication of the quality of the consignments, but from the rather low price it can be assumed that the crop was not of the most satisfactory quality.

As can be seen from Table 73, 62 per cent of the crop was sold locally, and the rest was sent to markets as far as Manchester and Coventry, etc. The difference between the local and other sales is as follows:

	Quantity		Net		Net
	Singles	%	Receipts	£	Price
				%	per Piece
Local Sales	1,776	62	37	57	5·0
Other Sales	1,104	38	29	43	6·3
Total	2,880	100	66	100	5·5

The difference between the two types of transactions was 1·3d. per marrow, to the advantage of the distant sales. Although this may appear to be a substantial difference, it is far less marked when it is considered that, due to the low returns, it would not have amounted to more than £9 per acre even if the whole crop had been sold at the higher price. In the sales transacted in gross terms the cost of marketing was 16·9 per cent of the gross receipts. In comparison with other crops, this share of market deductions appears to be rather high; no doubt this was due to the low gross price realised for the crop. In Birmingham this relative cost of marketing amounted to 31·2 per cent and in Manchester to 30·5 per cent. In both cases, it was the cost of transport which was mainly responsible for the high rate of deduction.

The marketing season of marrows in 1955 covered a period of 17 weeks, running from the 3rd July until the 5th November. This rather long selling period indicates that the average results might refer to two distinct crops, namely the main crop being sold by the middle of August and to the late marrows which were planted to replace the beans killed by frost. It is, perhaps, on this account that the weekly distribution of the supply appears to be rather irregular with several peak periods scattered between the 6th, 9th and 11th weeks of the marketing season. On the other hand, the fluctuation of prices seems to be more normal and quite consistent with the trend shown by the supply. For instance, in the 6th week of the season the price

dropped to 3·9d., and in the 9th week to 4·0d. per marrow, but in the 11th week, when the supply tended to decrease, the price rose to 6·8d. This relationship between the supply and prices is shown in Diagram 36.

Cucumbers. As a rule, this crop is a subsidiary enterprise to the growing of tomatoes under glass. When growing cucumbers with tomatoes, the cucumber plants usually occupy the space of the glasshouse wall and owing to this particular position of the plants it is well-nigh impossible to convert the returns into figures per acre.

Of the sample holdings, four grew cucumbers under glass, two of them mixing the crop with tomatoes, but the other two employed separate glasshouses for the enterprise. On these two holdings it was possible to work out the returns per acre, which although they may not be fully representative, are as follows:

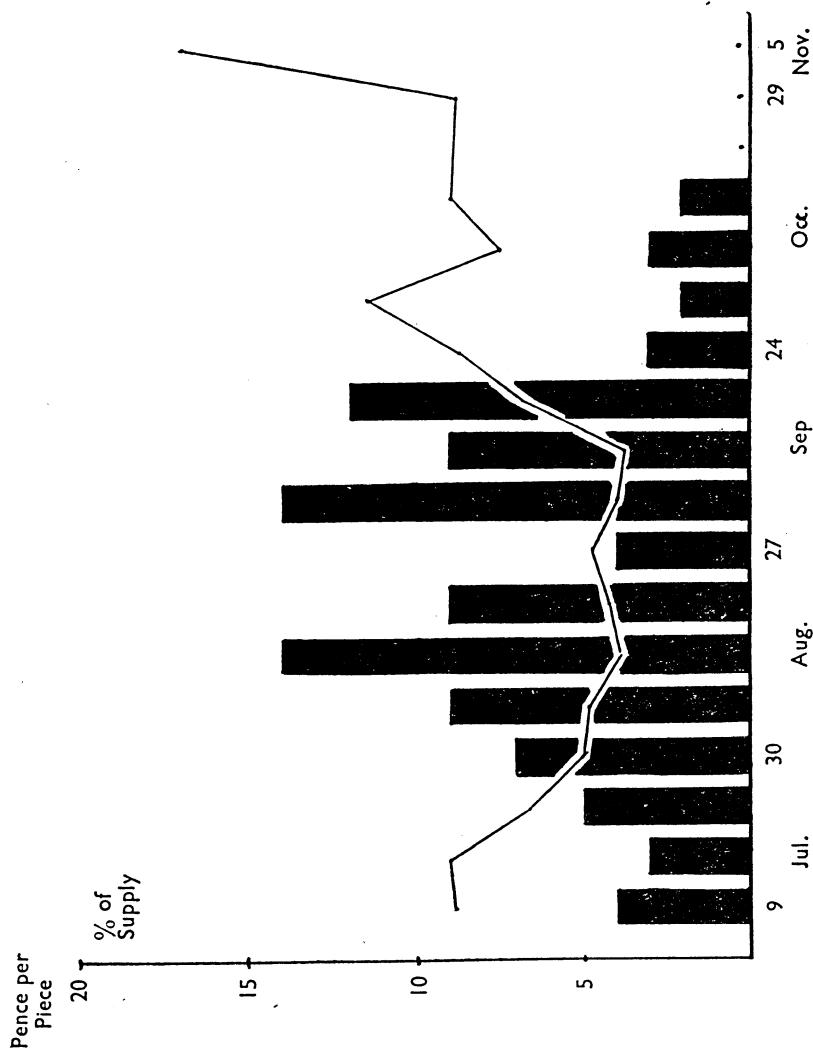
Quantity	Receipts	Price	
		per	Piece
Singles 14,302	£ 584	d.	9·8

On the combined results of the gross and net sales, market deductions amounted to 4·6 per cent. After allowing £27 for the cost of marketing, the net return per acre was £557 or 9·3d. per piece. By comparison with the returns for tomatoes, this income seems to be rather low. However, as the crop was grown in cold houses, and the quality of the produce was not perhaps quite of a satisfactory standard, the low return may have several explanations. The market sale notes contained no details of grading, so that it is not possible to comment on the quality of the crop.

According to the details of marketing shown in Table 74 the entire crop was sold locally, chiefly through the services of auction markets, and through merchants who bought the produce outright from the growers. In the sales transacted in gross terms the cost of marketing represented only 7·9 per cent of gross receipts, including commission and the charge for the hire of empties.

The marketing season of the crop covered altogether 17 weeks, commencing on the 19th June and finishing on the 15th October. With regard to the distribution of weekly supplies, the quantities seemed to be almost evenly divided from the 3rd to the 14th week, so that during this period the fluctuation was between 6 and 10 per cent of the total supply. Unlike the prices for the other crops, prices for cucumbers showed a

DIAGRAM 36
Weekly Fluctuation of Supplies and Net Prices of Vegetable Marrows



steadily rising tendency for the first six weeks and only in the 9th week did this decrease. A possible explanation for this rather unusual trend in prices may be found in the fact that early samples of the crop are likely to be of imperfect quality. The distribution of the supply and the fluctuation of prices are shown in Diagram 37.

Spinach. Only two holdings grew this particular crop. Unfortunately, neither of them made a success of it. The total yield was only 2,000 lb. of produce for £30 per acre. After allowing 16 per cent for market deductions, the net income left to the grower was only £25. Fortunately, on both holdings only a very small area of land was devoted to this crop, and thus the loss was not felt too badly. However, the 1½ acres of land could have been more beneficially employed by growing any crop of more certain returns.

Details of marketing spinach are shown in Table 75. The average net price achieved both in local and other sales was the same, namely 3·2d. per lb. Due to this rather low return in the sales transacted in gross terms the relative cost of marketing amounted to 21 per cent of gross receipts, which was one of the highest costs of all the vegetable crops. In the local sales, market deductions absorbed 27 per cent of the gross receipts, whereas at Birmingham and Gloucester it worked out at 19 per cent.

The total quantity of sales represented two separate crops of which one was sold in May and the other in October. However, despite this difference in season, the average net price received for the two crops was almost the same at 3·3d. per lb. for the spring crop, and 2·5d. for the autumn crop. The weekly distribution of the supply and the fluctuation of prices were as follows:

<i>Period of Marketing</i>	<i>Quantity</i>	<i>Net Price per lb.</i>	
	lb.	%	d.
1955			
May 15-21	228	8	3·7
22-28	818	29	3·1
29-June 4	1,348	49	3·3
June	—	—	—
July	—	—	—
August	—	—	—
September	—	—	—
Oct. 2-8	48	2	3·0
9-15	72	3	3·0
16-22	72	3	3·0
23-29	60	2	2·0
30-Nov. 5	96	4	1·9
Total	2,742	100	3·2

TABLE 72

Sales of New Potatoes

Method of Marketing	Transactions		Quantities		Gross Receipts			Gross Price
Growers' Co-operatives	No. 24	% 47	lb. 100,296	% 28	£ 1,807	s. 4	d. 8	% 100 d. 4.3
Local Merchants	13	26	66,300	19	—	—	—	—
Commission Salesmen: Swindon	14	27	189,784	53	—	—	—	—
Total	51	100	356,380	100	1,807	4	8	100 —
Gross Sales	24	47	100,296	28	1,807	4	8	— 4.3
Net Sales	27	53	256,084	72	—	—	—	—

TABLE 73

Sales of Marrows

Method of Marketing	Transactions		Quantities		Gross Receipts			Gross Price	Deductions				
									Commission				
Growers' Co-operatives	No. 26	% 29	Singles 1,434	% 50	£ 32	s. 18	d. 8	% 46	d. 5.5	£ 2	s. 14	d. 11	% 8.3
Local Markets	12	13	342	12	9	14	3	14	6.8	14	8	—	7.6
Commission Salesmen: Birmingham	1	1	24	1	12	0	—	6.0	—	11	—	7.6	
Birmingham	2	2	24	1	—	—	—	—	—	—	—	—	
Coventry	18	20	468	16	15	12	0	23	8.0	1	3	7	7.6
Manchester	2	2	126	4	4	18	0	7	9.3	9	9	9	10.0
Manchester	11	12	276	9	—	—	—	—	—	—	—	—	
Stratford-on-Avon	19	21	186	7	6	17	0	10	8.8	10	5	—	7.6
Total	91	100	2,880	100	70	11	11	100	—	5	14	3	8.1
Gross Sales	78	86	2,580	90	70	11	11	—	6.5	5	14	3	8.1
Net Sales	13	14	300	10	—	—	—	—	—	—	—	—	—

TABLE 74

Sales of Cucumbers

Methods of Marketing	Transactions		Quantities		Gross Receipts			Gross Price
Growers' Co-operatives	No. 11	% 12	Singles 507	% 9	£ 20	s. 15	d. 0	% 16 d. 9.8
Local Markets	41	46	2,393	45	109	4	6	84 10.9
Local Merchants	38	42	2,472	46	—	—	—	—
Total	90	100	5,372	100	129	19	6	100 —
Gross Sales	52	58	2,900	54	129	19	6	— 10.8
Net Sales	38	42	2,472	46	—	—	—	—

Sales of New Potatoes

Deductions				Net Receipts				Net Price
Commission		Use of Empties		Total				
£ 135 15 5	s. 5	d. 5	% 7.5	£ 17 17 11	s. d. 11	% 1.0	£ 153 13 4	s. d. 4
—	—	—	—	—	—	—	£ 1,653 11 4	s. d. 4
—	—	—	—	—	—	—	902 11 0	16
—	—	—	—	—	—	—	3,087 6 0	55
135 15 5	7.5	17 17 11	1.0	153 13 4	8.5	5,643 8 4	100	3.8
135 15 5	7.5	17 17 11	1.0	153 13 4	8.5	£ 1,653 11 4	29	4.0
—	—	—	—	—	—	3,989 17 0	71	3.8

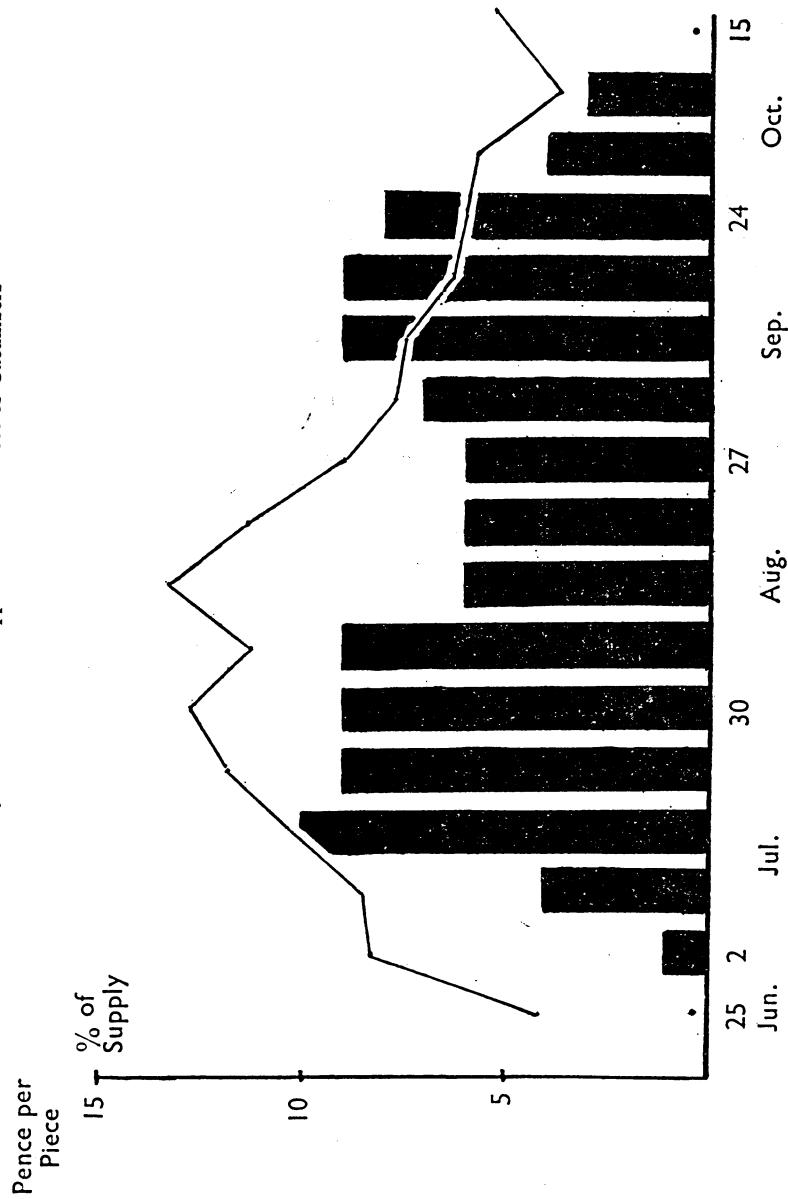
Sales of Marrows

Deductions				Net Receipts				Net Price
Use of Empties		Handling Charges		Transport		Total		
£ 1 6 3	s. 4.0	d. —	% —	£ —	s. —	d. —	£ 4 1 2	s. d. 12.3
12 6	6.4	—	—	—	—	—	1 7 2	14.0
—	—	1 6	12.5	1 4	11.1	3 9	31.2	8 3 1 4.8
—	—	3 3	1.0	1 6 4	8.4	3 12 8	23.3	15 6 1 7.8
19 6	6.3	—	—	1 0 1	20.5	1 9 10	30.5	11 19 4 18 6.1
—	—	—	—	—	—	—	3 8 2	5 6.5
—	—	7 9	5.7	—	—	1 3 2	16.9	6 7 6 10 5.5
5 0	3.6	—	—	—	—	—	5 13 10	8 7.3
3 3 3	4.5	12 6	0.9	2 7 9	3.4	11 17 9	16.9	65 17 2 5.5
3 3 3	4.5	12 6	0.9	2 7 9	3.4	11 17 9	16.9	58 14 2 89 5.5
—	—	—	—	—	—	—	7 3 0	11 5.7

Sales of Cucumbers

Deductions				Net Receipts				Net Price
Commission		Use of Empties		Total				
£ 1 14 8	s. 8.3	d. —	% 8.3	£ 2 0	s. d. 0.5	% 0.5	£ 1 16 8	s. d. 8.8
8 5 7	7.6	—	—	2 10	0.1	—	8 8 5	7.7
—	—	—	—	—	—	—	—	—
10 0 3	7.7	4 10	0.2	—	—	—	10 5 1	7.9
10 0 3	7.7	4 10	0.2	—	—	—	10 5 1	7.9
—	—	—	—	—	—	—	—	—
10 0 3	7.7	4 10	0.2	10 5 1	7.9	208 11 10	100	9.3
10 0 3	7.7	4 10	0.2	10 5 1	7.9	119 14 5	57	9.9
—	—	—	—	—	—	88 17 5	43	8.6

DIAGRAM 37
Weekly Fluctuation of Supplies and Net Prices of Cucumbers



Sweet Corn. This crop, too, was of rather limited significance on the sample holdings. In fact, there were only two holdings which grew sweet corn in 1955. The crop yielded 668 cobs for £95 per acre which on average cannot be regarded as a satisfactory result. However, on one of the holdings, which grows the crop regularly year after year, the yield was 835 cobs for £130 per acre, which though still rather low, is comparable with the returns from other vegetable crops.

The entire crop on both holdings was sold at Birmingham through the services of commission salesmen, and the net price obtained by the growers averaged 2·8d. per cob of all sizes. In the gross sales market deductions were 23·8 per cent of gross receipts. Details of the gross and net transactions are shown in Table 76.

The marketing season of the crop lasted from the 7th August until the 17th September covering altogether a period of 6 weeks. The weekly fluctuation in the supply and net prices were as follows:

<i>Period of Marketing</i>	<i>Quantity</i>		<i>Net Price per lb.</i>
	<i>No. of Cobs</i>	<i>%</i>	<i>d.</i>
1955			
Aug. 7-13	54	2	5·0
14-20	126	6	1·5
21-27	900	40	2·9
28-Sept. 3	520	23	2·4
Sept. 4-10	335	15	4·3
11-17	324	14	2·0
Total	2,259	100	2·8

As seen from the above figures, the fluctuation of net prices appears to be rather inconsistent with that of the supply. A possible reason for this may be found in the rather limited demand for the crop and in the fact that the quality of the cobs may vary considerably. If, owing to adverse weather conditions, the cobs did not mature properly, the price paid for the imperfect quality might be very low. From the available data, it can be assumed that on the holdings in question, the 1955 season was rather a poor one, as generally the returns from sweet corn average over £200 per acre, and the net price around 4d. per cob.

Shallots. This crop too was of limited importance on the sample holdings as it was produced on only two of them. On both holdings the crop was unsuccessful. The returns averaged

TABLE 75

Sales of Spinach

Method of Marketing	Transactions		Quantities		Gross Receipts			Gross Price	Deductions				
	No.	%	lb.	%	£	s.	d.	%	d.	£	s.	d.	%
Growers' Co-operatives	3	19	192	7	1	7	9	4	1.7	2	1	7.5	
Growers' Co-operatives	2	12	480	18	—	—	—	—	—	—	—	—	
Local Markets	6	38	584	21	9	2	0	26	3.7	15	2	8.3	
Commission Salesmen:													
Birmingham	4	25	1,396	51	23	6	0	68	4.0	1	15	0	7.5
Gloucester	1	6	90	3	16	6	2	2	2.2	1	1	3	7.5
Total	16	100	2,742	100	34	12	3	100	—	2	13	6	7.7
Gross Sales	14	—	2,262	82	34	12	3	—	3.7	2	13	6	7.7
Net Sales	2	—	480	18	—	—	—	—	—	—	—	—	—

TABLE 76

Sales of Sweet Corn

Method of Marketing	Transactions		Quantities		Gross Receipts			Gross Price	Deductions				
	No.	%	Cobs	%	£	s.	d.	%	d.	£	s.	d.	%
Commission Salesmen:													
Birmingham	3	33	180	8	2	11	0	100	3.4	—	3	10	7.5
Birmingham	6	67	2,079	92	—	—	—	—	—	—	—	—	—
Total	9	100	2,259	100	2	11	0	100	—	3	10	7.5	

TABLE 77

Sales of Shallots

Method of Marketing	Transactions		Quantities		Gross Receipts			Gross Price	Deductions				
	No.	%	lb.	%	£	s.	d.	%	d.	£	s.	d.	%
Growers' Co-operatives	1	17	280	69	—	—	—	—	—	—	—	—	—
Local Markets	1	17	24	6	18	0	60	9.0	1.6	—	—	—	8.3
Commission Salesmen:													
Birmingham	2	33	79	19	—	—	—	—	—	—	—	—	—
Stratford-on-Avon	2	33	24	6	12	6	40	6.3	1.0	—	—	—	8.0
Total	6	100	407	100	1	10	6	100	—	2	6	—	8.2
Gross Sales	3	50	48	12	1	10	6	—	7.6	—	2	6	8.2
Net Sales	3	50	359	88	—	—	—	—	—	—	—	—	—

Sales of Spinach

Deductions				Net Receipts				Net Price								
Use of Empties		Handling Charges		Transport		Total										
£	s.	d.	%	£	s.	d.	%	£	s.	d.	%	£	s.	d.	%	d.
2	5	8.7		—	—	—	—	4	6	16.2		1	3	3	3	1.5
1	0	3	11.1	—	—	16	3	8.9	2	11	28.3	9	0	0	25	4.5
—	5	2.5		1	7	0	5.8	1	2	9	4.9	4	4	9	31.2	6.0
1	3	1	3.3	1	7	0	3.9	2	2	6	6.1	7	6	1	21.0	10.0
1	3	1	3.3	1	7	0	3.9	2	2	6	6.1	7	6	1	21.0	3.2
—	—	—	—	—	—	—	—	—	—	—	—	27	6	2	75	2.9
—	—	—	—	—	—	—	—	—	—	—	—	9	0	0	25	4.5

Sales of Sweet Corn

Deductions				Net Receipts				Net Price								
Handling Charges		Transport		Total												
£	s.	d.	%	£	s.	d.	%	£	s.	d.	%	£	s.	d.	%	d.
5	10	11.4		—	2	6	4.9	—	12	2	23.8	1	18	10	7	2.6
—	—	—	—	—	—	—	—	—	—	—	—	24	14	11	93	2.9
5	10	11.4		2	6	4.9		12	2	23.8	—	26	13	9	100	2.8

Sales of Shallots

Deductions				Net Receipts				Net Price								
Use of Empties		Handling Charges		Total												
£	s.	d.	%	£	s.	d.	%	£	s.	d.	%	£	s.	d.	%	d.
—	5	2.3		—	—	—	—	5	0	0	58	16	1	9	4.3	8.0
—	4	2.7		—	4	2.7		—	1	8	13.4	2	6	1	27	7.0
9	2.5			4	1.1			3	7	11.8	8	13	0	100	5.1	5.4
—	9	2.5		4	1.1			—	3	7	11.8	1	6	11	16	6.7
—	—	—	—	—	—	—	—	—	—	—	—	7	6	1	84	4.9

only 2,060 lb. of produce for £45 per acre. Practically the whole crop was sold in net terms, so that the cash return needs no correction. In view of the fact that on both holdings only a very small piece of land was devoted to the crop, the failure of the enterprise had no particular effect on their overall volume of production. However, on a small holding, even such a minute piece of land as 1/10th of an acre ought, needless to say, to be employed to the best advantage.

The pattern of marketing shallots is shown in Table 77. According to these details the cost of marketing carried by the gross transactions was 11.8 per cent of the gross receipts. This relatively low figure was due to the fact that the sales were transacted locally and at the nearby market of Stratford-on-Avon.

The total yield of the crop was only 407 lb. which consisted of three different lots. One part of the crop was sold in August, and the others in September and November. The supply and price fluctuation of the total crop was as follows:

<i>Period of Marketing</i>	<i>Quantity</i>		<i>Net Price per lb.</i>	
1955	lb.	%		
Aug. 14-20	79	19	7.0	
Sept. 11-17	280	69	4.3	
Sept. 18-24	24	6	8.0	
Oct. 30-Nov. 5	12	3	5.7	
Nov. 6-12	12	3	5.1	
Total	407	100	5.1	

Vegetable Plants and Seedlings. Most of the sample holdings produced their own plants for the crops which they intended to grow. However, on three holdings plant production was carried out on a commercial scale, and, in fact, it constituted one of the major enterprises in employing all the available space under glass for this particular purpose. Thus, tomato production was coupled with the raising of tomato plants, cauliflower and other plants instead of using the glasshouse, or frames etc., for actual crop production. Needless to say, these holdings were specialists in producing the following plants, namely, tomato, cauliflower, lettuce, sprouts, cabbage and leeks, and their transactions represented a substantial amount of trading. They sold off their land more than one million mized plants with a turnover of over £2,000. Unfortunately, it was not possible to assess this turnover on an

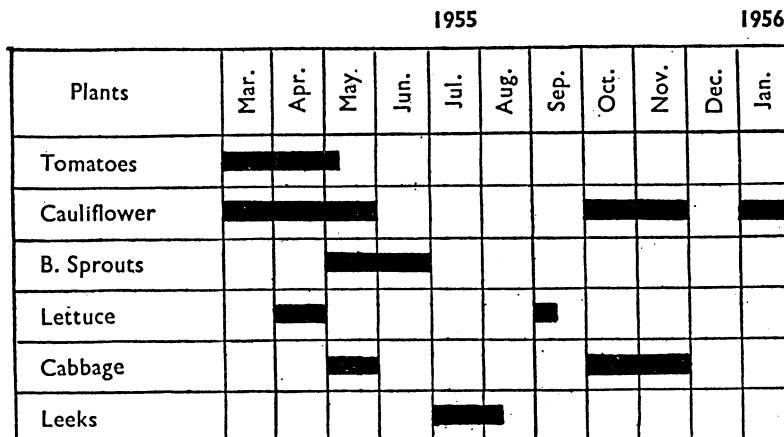
acreage basis for each type of plant, but the combined sale of all the plants averaged £464 per acre. On the particular holding, where the main income of plant sales came from tomato and cauliflower plants, the result worked out at £1,100 per acre.

On the whole, the great majority of plants were sold on contract to local merchants, and only a small fraction of the supply was sent to the other local agencies such as the co-operatives, or auction markets. However, despite differences in the quantities and possibly in the time of marketing the average prices of the various plants were very much the same in the different types of transactions. Details of these sales are shown in Table 78.

The marketing seasons of the plants in question are illustrated in Diagram 38.

DIAGRAM 38

Marketing Seasons of Vegetable Plants and Seedlings



According to the details shown in Diagram 38, plants were sold every month, with the exception of December, from March 1955 until February 1956. Although the main season for selling plants is the spring, the holdings sold a considerable quantity of cabbage and cauliflower plants in October and November.

Sales of Top Fruit

There were 53 acres of top fruit and the total sales amounted to £5,834, thus giving an average return of £110 per acre. The

crops included plums, apples and pears. On one particular holding there were also some sour cherries grown, but this plantation was far too young to be included for the purpose of measuring average crop returns.

In the above sample the acreage and receipts of the individual crops were as follows:

Fruit	Acres		Total Receipts		Receipts per Acre
	No.	%	£	%	
Plums . . .	23	44	3,076	52	134
Apples . . .	15	28	1,733	30	116
Pears . . .	15	28	1,025	18	68
Total . . .	53	100	5,834	100	110

The average return of £110 per acre for the combined sale of top-fruit was rather low, for which, primarily, the poorly represented pear plantations were responsible. However, relevant explanations concerning the individual crop returns will be seen from the following details.

1. Plums

The most typical top fruit crop of the Vale is the plum, and in the orchards of the sample holdings not less than 26 of its different varieties are represented. There were altogether 23 holdings which had plum orchards included in their layout of crops, indicating that besides sprouts and runner beans, plums were one of the most widely grown crops. It has already been described earlier in this report that the physical condition of these orchards were found to be ageing. About 58 per cent of the plum trees belonged to the Yellow Egg and Victoria varieties. Whilst ascertaining the average returns of the fruit, the following features of the orchards have an important bearing on the overall results.

The 1955 results for the 23 holdings showed that, on average the orchards yielded 9,750 lb. of fruit for £134 per acre giving a price of 3·3d. per lb. for plums of all varieties. In the combined results of gross and net sales, market deductions worked out at 6·3 per cent of total receipts. By taking this cost into account, the cash return per acre was reduced by £8 to £126,

and the price per lb. to 3·1d. As far as the results of the individual holdings are concerned, the returns showed considerable variation in accordance with location, age, and the prevailing varieties grown in the orchard. The highest per acre return achieved by the individual holdings was 156 cwt. of fruit for £210 and the lowest only 24 cwt. for £31. Of the 23 holdings, there were 7 where the returns fell below £100 per acre. Some of the low results were due to the fact that certain acreages of young non-bearing orchards were also included in the plum acreage, but the main reason for the poor crop was the gales which damaged the blossom of the egg plum varieties in orchards which happened to be in an exposed position, on or near the crest of a ridge. On the other hand, several nearby orchards further down the slope had heavy yields despite the fact that egg plums comprised quite a high proportion of the trees.

As mentioned before, returns depend very much on the varieties grown. In order to account for the values of the different varieties, receipts obtained for them have been related to the number of trees of each variety, and by employing an average number of 181 trees to the acre, approximate returns per acre were established. These results refer to the orchards of 18 holdings, where the number of trees were counted and their varieties identified. These results are shown in Table 79.

Although the orchards included in these particular data form only a part of the total number of plum-growing holdings, the results clearly indicate the varieties to which the success of the 1955 season may be attributed. For instance, among the major varieties, the Victoria, with its heavy yield, was one of the factors which helped to ensure the overall results. Besides Victorias, though on a much smaller scale, Damsons, Prolifics, Belle de Louvain, Monarch and Wyedale, were also responsible for achieving satisfactory average returns. On the other hand, the result of the most important variety, the Yellow Egg plum, was rather low at £54 per acre, and, due to the considerable acreage involved, it greatly affected the overall returns of the plum orchards.

On the whole, 1955 was a favourable year for the plum grower. The results of 15 holdings, which were available for the last 6 years, showed that the receipts at £131 per acre were the highest during the period in question. This favourable result was due to the fairly high yield and to the more reasonable price which the crop realised. The results of these holdings per acre can be set out annually as follows:

TABLE 78

Sales of Plants and Seedlings

Method of Marketing	Transactions		Quantities		Gross Receipts		Gross Price
	No.	%	Singles	%	£ s. d.	%	£ s. d.
Growers' Co-operatives:							
Lettuce	3	5	2,800	—	1 11 6	7	1 11 3
Brussels Sprouts	1	1	1,000	—	1 6 0	4	1 6 0
Cabbage	7	10	18,500	—	21 16 9	81	1 3 6
Local Markets:							
Cabbage	1	1	2,000	—	2 5 0	8	1 7 0
Local Merchants:							
Tomatoes	4	6	5,160	—	—	—	—
Lettuce	2	3	79,000	7	—	—	—
Brussels Sprouts	16	23	345,520	32	—	—	—
Cabbage	7	10	218,500	23	—	—	—
Red Cabbage	2	3	81,000	8	—	—	—
Cauliflower	24	35	301,450	28	—	—	—
Leeks	2	3	23,000	2	—	—	—
Total	69	100	1,077,930	100	26 19 3	100	—
Gross Sales	12	17	24,300	2	26 19 3	—	1 2 6
Net Sales	57	83	1,053,630	98	—	—	—

TABLE 80

Marketing of Plums

Methods of Marketing	Transactions		Quantities		Gross Receipts		Gross Price per lb.	Deductions	
								Commission	
Growers' Co-operatives	222	19	lb	%	£	s.	d.	£	s. d.
Growers' Co-operatives	296	26	217,544	22	3,465	13	6	62	3·8
Local Markets	118	10	292,714	29	—	—	—	62	19 11
Local Merchants	190	17	43,468	4	831	15	2	14	4·6
			333,356	33	—	—	—	—	—
Commission Salesmen:									
Birmingham	81	7	24,674	2	478	13	6	9	4·7
Birmingham	49	4	13,105	1	—	—	—	—	—
Bromyard	1	—	1,920	—	—	—	—	—	—
Coventry	29	3	9,600	1	204	12	9	4	5·1
Gloucester	5	—	15,480	2	—	—	—	—	—
Leeds	1	—	696	2	10	3	0	—	3·5
Leeds	9	1	5,460	1	—	—	—	—	—
Leicester	11	1	5,396	1	—	—	—	—	—
Manchester	60	5	14,011	1	397	10	3	7	6·8
Manchester	8	1	1,200	—	—	—	—	—	—
Newcastle	9	1	7,328	1	144	3	6	3	4·7
Sheffield	13	1	11,376	1	—	—	—	—	—
Stratford-on-Avon	41	4	3,854	1	76	17	2	1	4·8
Wolverhampton	1	—	384	—	—	—	—	—	—
Total	1,144	100	1,001,566	100	5,609	8	10	100	—
Gross Sales	561	49	321,175	32	5,609	8	10	—	4·2
Net Sales	583	51	680,391	68	—	—	—	—	—

Sales of Plants and Seedlings

Deductions						Net Receipts		Net Price
Commission		Transport		Total				
£ s. d.	%	£ s. d.	%	£ s. d.	%	£ s. d.	%	£ s. d.
2 5	7.7	—	—	2 5	7.7	1 9 1	—	10 5
2 0	7.7	—	7	2 7	9.9	1 3 5	—	1 3 5
1 11 3	7.2	4 11	1.1	1 16 2	8.3	20 0 7	1	1 6 0
3 5	7.6	—	—	3 5	7.6	2 1 7	—	1 0 9
—	—	—	—	—	—	86 11 0	4	12 15 2
—	—	—	—	—	—	111 5 0	6	1 8 3
—	—	—	—	—	—	398 7 0	19	1 3 1
—	—	—	—	—	—	219 0 6	11	1 0 6
—	—	—	—	—	—	101 5 0	5	1 5 0
—	—	—	—	—	—	1,089 18 6	53	3 12 8
—	—	—	—	—	—	28 5 2	1	1 4 6
1 19 1	7.2	5 6	1.0	2 4 7	8.3	2,059 6 10	100	1 18 2
1 19 1	7.2	5 6	1.0	2 4 7	8.3	24 14 8	1	1 0 4
—	—	—	—	—	—	2,034 12 2	99	1 18 7

Marketing of Plums

Deductions						Net Receipts		Net Price per lb.
Use of Empties		Handling Charges		Transport		Total		
£ s. d.	%	£ s. d.	%	£ s. d.	%	£ s. d.	%	£ s. d.
89 17 0	2.6	—	—	—	—	381 0 1	11.0	3,084 13 5
27 1 6	3.2	—	—	—	—	90 1 5	10.8	3,035 8 8
—	—	—	—	—	—	—	—	741 13 9
—	—	—	—	—	—	—	—	3,152 9 4
1 0 6	0.2	43 4 5	9.0	28 15 2	6.0	108 19 4	22.7	369 14 2
—	—	—	—	—	—	—	—	178 7 10
—	—	—	—	—	—	—	—	40 0 0
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	152 2 7
—	—	—	—	—	—	—	—	135 9 0
—	—	—	—	—	—	—	—	5 10 6
—	—	—	—	—	—	—	—	72 15 6
—	—	—	—	—	—	—	—	68 5 11
—	—	—	—	—	—	—	—	304 19 8
10	—	9 9 6	2.3	42 7 0	10.6	92 10 7	23.2	11 14 6
—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	99 8 8
—	—	—	—	—	—	—	—	135 0 6
1 13 2	2.4	4 4	—	2 6 1	2.8	9 18 2	13.0	66 19 0
—	—	—	—	—	—	—	—	8 17 4
119 13 0	2.1	56 15 0	1.0	140 13 4	2.6	784 7 1	14.0	11,663 10 4
119 13 0	2.1	56 15 0	1.0	140 13 4	2.6	784 7 1	14.0	4,825 1 9
—	—	—	—	—	—	—	—	41 59
—	—	—	—	—	—	—	—	3.6 2.4

Years	Quantity	Receipts	Price per lb.	
			lb.	£
1950	9,126	116		3.0
1951	10,592	118		2.7
1952	9,710	69		1.7
1953	6,631	106		3.8
1954	11,897	103		2.1
1955	11,055	131		2.8
Average	9,835	107		2.6

The very low return shown for 1952 was the result of the severe glut when about 40 per cent of the egg plums had to be left unpicked. The rather light yield of 1953 was also attributed to the glut conditions of the previous year, as according to common belief the trees were too exhausted to bear a satisfactory yield after the glut. The average return for the six-year period of £107 per acre is rather moderate, and is hardly sufficient to provide an adequate income especially for the small plum grower. On the six-year basis, the highest individual returns showed 136 cwt. and £203 per acre; the lowest were 39 cwt. and £64 per acre.

As a rule, the bulk of the plum crop is sold locally both on the open market and on contract. For the purpose of examining the pattern of marketing more fully, and the supply and price relationship of single varieties, special data have been drawn up based on the results of 1,144 transactions representing 447 tons of fruit and £11,664 net receipts. According to this information, 88 per cent of the total supply was disposed of at home, and the rest of the fruit was sent to 11 different markets all over the country. The results of these sales are shown in Table 80. The difference in the receipts obtained from the home and distant sales is given below:

	Quantity	Net Receipts		Net Price per lb.	
		lb.	%	£	%
Local Sales	887,082	88		10,014	85
Other Sales	114,484	12		1,620	15
Total	1,001,566	100		11,634	100

As can be seen from these figures, the average net price

TABLE 79
Returns per Acre According to Varieties

Varieties	Total No. of Trees	Yield		Receipts		Net Price per lb.
		per Tree	per Acre	per Tree	per Acre	
Yellow Egg	3,544	lb.	lb.	shillings	£	d.
Victoria	2,692	40.8	7,367	6.0	54	1.8
Burbanks	881	68.9	12,471	14.8	134	2.6
Purples	831	40.6	7,349	10.1	91	2.9
Damsons	613	55.6	10,064	13.0	118	2.8
Prolific	555	56.6	10,245	23.2	210	4.9
Czar	361	39.1	7,077	17.9	162	5.6
Belle de Louvain	228	38.6	6,987	13.7	124	4.3
Laxton's	253	60.8	11,005	29.0	262	5.7
Marjory's Seedling	191*	26.8	4,851	10.0	91	4.5
Gages	115*	2.6	471	1.0	9	4.6
Magnum	73	3.3	597	1.2	11	4.4
Coe's	65	33.7	6,100	6.0	54	2.1
W. Drooper	50	66.3	12,000	10.1	91	1.8
Orleans	41	2.1	380	0.4	4	2.5
Wyedale	41	20.2	3,656	4.5	41	2.7
Heron	34	80.8	14,625	60.9	551	9.0
Pond's Seedling	26	27.6	4,996	11.6	105	5.0
Monarch	21	41.7	7,548	12.0	109	3.5
President	22	58.4	10,570	27.0	244	5.5
J. Moore	10	18.0	3,258	9.0	81	6.0
Blaisdon Red	10	20.2	3,656	3.5	32	2.1
Waterloo	4	15.0	2,715	6.0	54	4.8
Average	181	48.7	8,815	11.7	106	3.0

* Young Plantations.

realised in the local sales was 2.7d. per lb. lower than the price obtained at distant markets. The reason for this discrepancy lies in the fact, that practically all the processing plums were sold at home, and only the better quality dessert plums were sent to markets outside the Vale. Bearing this point in mind, the difference between the results of the two types of sales was quite negligible. Where transactions were carried out in gross terms, the cost of marketing amounted to 14 per cent of the gross receipts. Although this figure does not seem excessive, there were markets where the share of this cost was consider-

able. For instance at Leeds it absorbed 50 per cent, and at Newcastle 31 per cent of gross receipts. However, thanks to the fairly high gross price in both cases, the net returns proved satisfactory to the grower, averaging 3·3d. net per lb. of fruit. Transport was mainly responsible for the high relative cost of marketing at distant markets. However, the gross price proved to be reasonable enough to ensure a higher net price, after deducting the marketing costs, than on the local market. As mentioned before, the main reason for the difference was not due to better marketing conditions at distant markets, but chiefly to the varietal difference in the composition of the quantities sold in the two types of transactions. In the local sales the Victoria plum constituted only 27 per cent of the total quantity but in the distant sales the proportion of this variety amounted to 51 per cent; the Yellow Egg plum formed 24 per cent of the local sales, but only 4 per cent of the other sales. Diagram 39 accounts for the difference between the composition of the quantities sold locally and at the distant markets.

In 1955 the marketing season of plums covered thirteen weeks, from the beginning of August until the end of October. During this period the sample holdings marketed not less than 30 different varieties each of them constituting a commodity with its own distinct supply and demand conditions. For instance, the Yellow and Purple Egg varieties, although both are processing plums, cannot be linked together, as the latter, due perhaps to its shorter supply, consistently seems to average higher prices than the former. On the whole, marketing conditions of single varieties depend on the time of their maturity, namely whether it falls in the early, mid, or late part of the season. The marketing seasons of the different varieties grown by the 32 holdings are shown in Diagram 40.

As can be seen from the details of Diagram 40 it was in the week ending the 3rd September that 14 different varieties were sold on the markets. During the preceding week and the two succeeding ones there were 12 varieties sold. Of all the varieties the Victoria and the Yellow Egg plum had the longest marketing seasons covering 8 and 7 weeks respectively. Damsons, too, had a selling season of 7 weeks, and a number of damson varieties were included in this fairly long period. Thus, besides changes in supply and demand, the seasonal fluctuation of plum returns depends largely on the kind of varieties grown and the relative importance of single varieties in the average price, be it weekly, monthly, or covering the entire season.

DIAGRAM 39
Composition of Varieties in the Sales of Plums

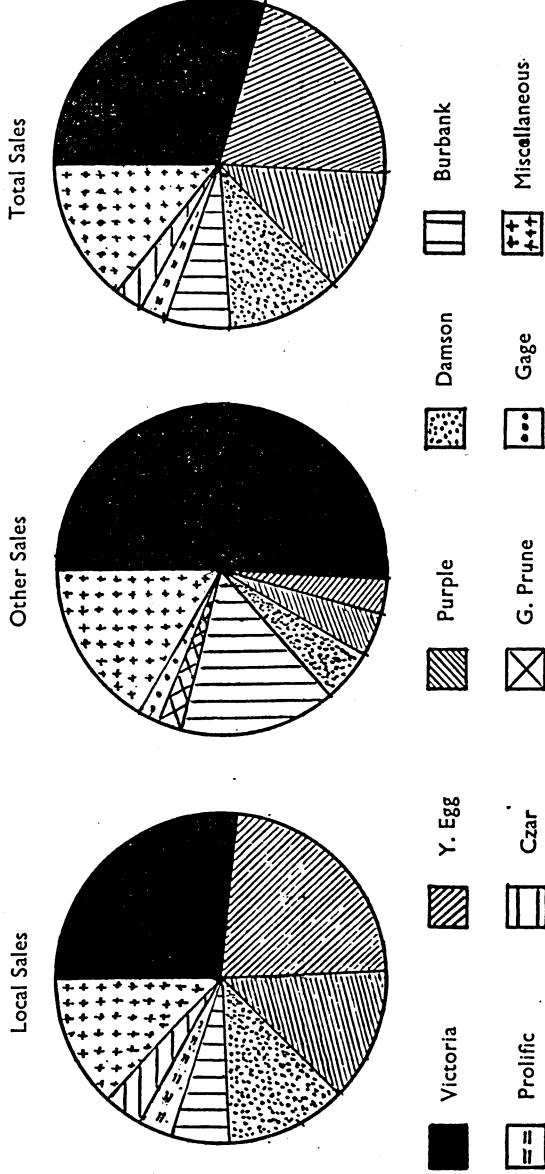
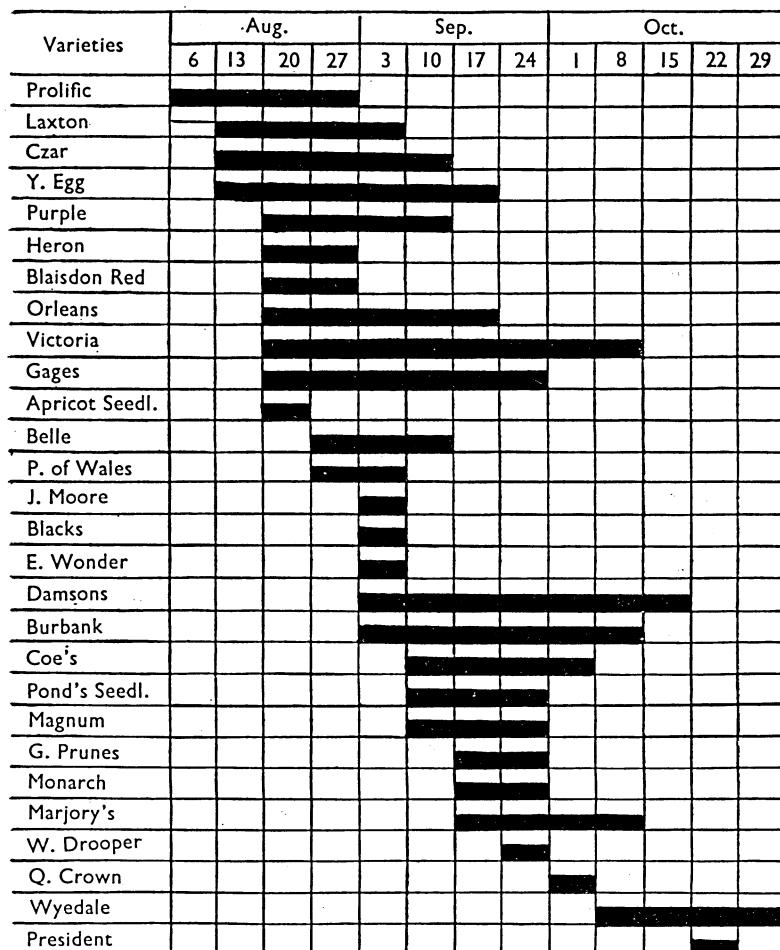


DIAGRAM 40
Marketing Seasons of Plum Varieties



In 1955 the combined weekly results of plum sales showed the following fluctuations in supply and prices:

<i>Period of Marketing</i>	<i>Quantity</i>	<i>Net Price per lb.</i>
1955	lb.	d.
July 31-Aug. 6	1,176	8·1
Aug. 7-13	33,723	5·3
14-20	113,260	2·7
21-27	234,159	2·1
28-Sept. 3	127,601	2·9
Sept. 4-10	163,182	2·3
11-17	130,715	2·7
18-24	118,756	3·2
25-Oct. 1	46,082	4·5
Oct. 2-8	24,266	4·3
9-15	4,956	6·8
16-22	324	6·7
23-29	228	8·4
Total	998,428	2·8

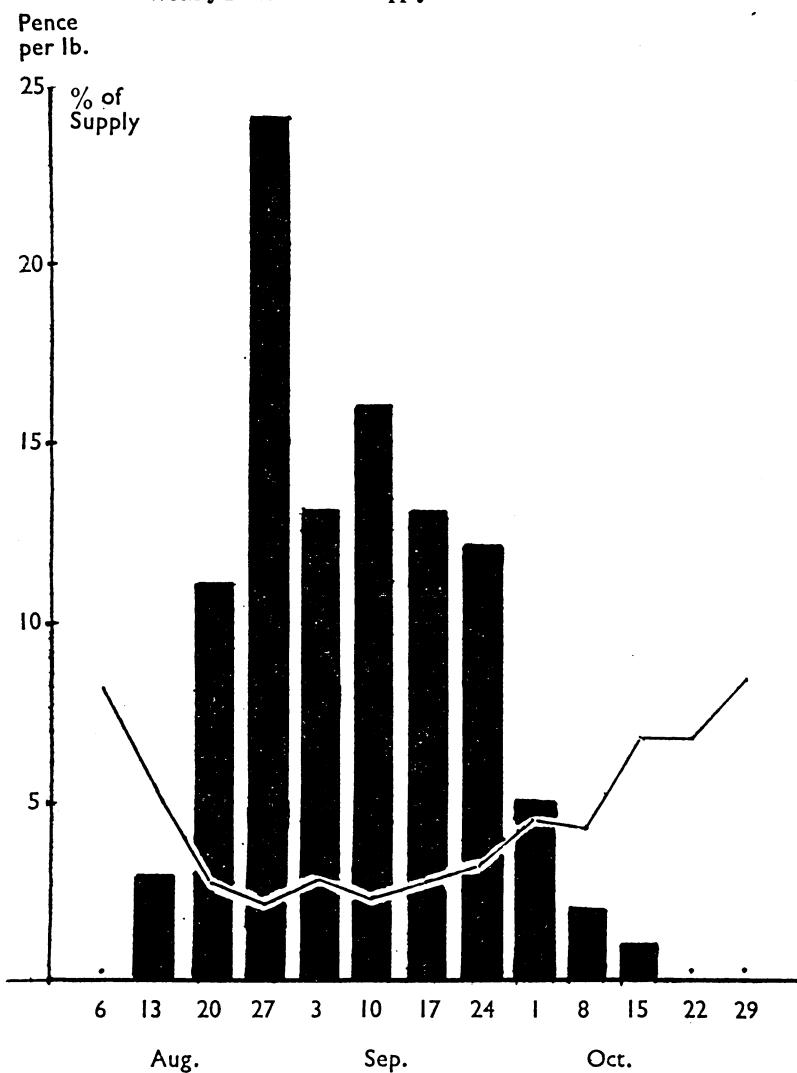
As can be seen from these figures, it was in the third week of the season that the drop in the price was most marked, falling from 5·3d. to 2·7d. per lb. Although the decrease in price was partly due to the growing supply of fruit, the main reason for the sharp fall was attributable to the fact that 64 per cent of the weekly supply consisted of Yellow Egg plums which were sold for 1·7d. per lb. Victoria plums representing 52 per cent of the weekly supply, were responsible for the slight improvement shown in the fifth week. During the following two weeks this particular variety dominated the supply at 2·1d. and 2·0d. per lb., and more or less determined the average price per lb. of plums for these weeks. From the seventh week onwards, the average prices showed a gradually increasing tendency, thanks to better prices paid for damsons and the late season plums such as Burbanks and Monarchs. The graphical illustration of the distribution of weekly supplies and the fluctuation of net prices are shown in Diagram 41.

On the whole, although there were thirty varieties of plums sold, the number of main varieties which actually determined the returns from the plum orchards was not more than fourteen. Besides these varieties there were several other valuable plums grown on the holdings, such as Herons, Marjory's Seedling, Wyedale and gages etc., but their returns, owing to their limited representation, hardly affected the overall result. The relative importance of the main varieties in the fortnightly distribution of the supply is illustrated in Diagram 42.

In order to exclude rather small quantities as shown in the

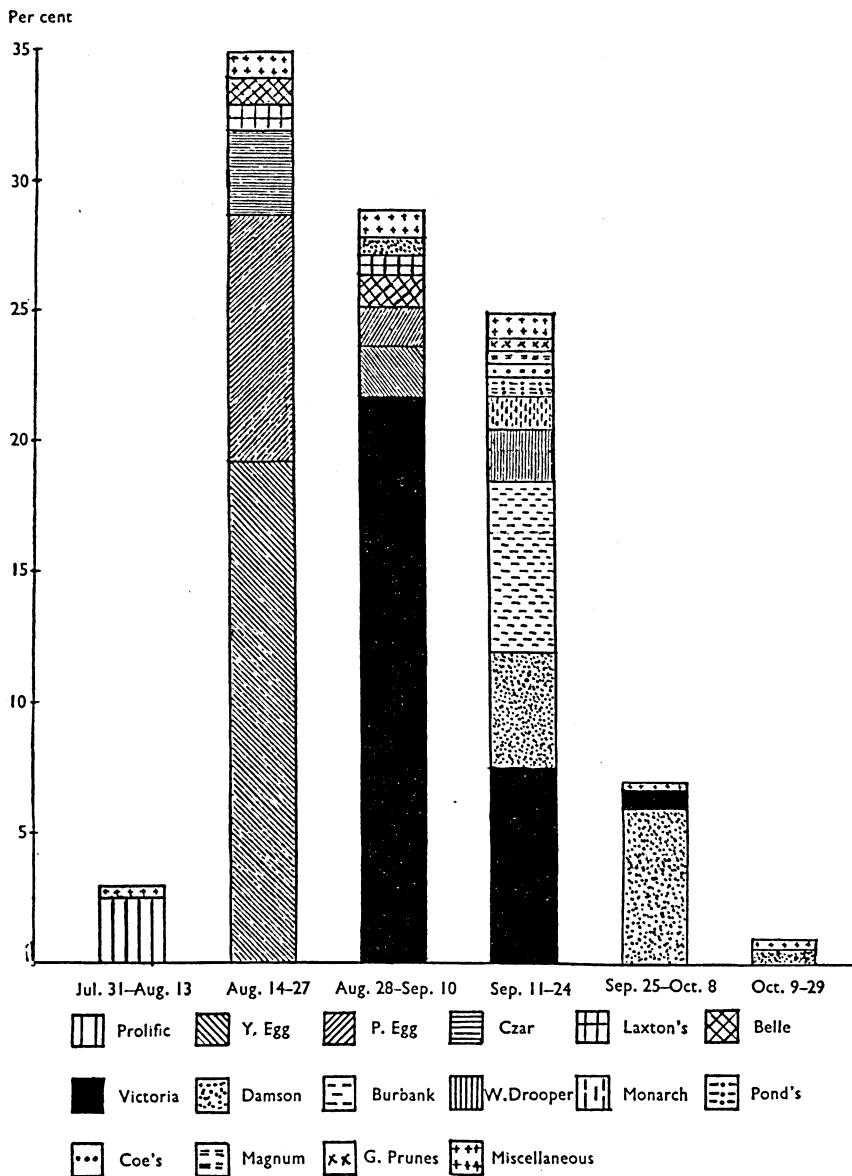
DIAGRAM 41

Weekly Fluctuation of Supply and Net Prices of Plums



weekly distribution of supply, data illustrating the relative importance of single varieties have been based on fortnightly results of sales. As illustrated in Diagram 42 the second half of August was the season for processing plums, the third period until the 10th September for Victorias, and in the

DIAGRAM 42
Proportional Distribution of the Major Plum Varieties
in Fortnightly Supplies



fourth period, Victorias, Burbanks and damsons were of almost the same importance. In the sixth fortnightly period, however, practically the entire supply came from damsons. Thus, while examining the market trends of plum prices which actually affected the survey holdings, sufficient explanations can be obtained from the results of the previously mentioned four varieties. However, as the major part of the processing plums and damsons were sold on contract, and the main season of the Burbank was only three weeks, it is only the Victoria plum which seems to be suitable for closer examination.

Of the total supply of the 1955 plum crop, Victoria plums amounted to 302,526 lb. or 30 per cent of all plums sold from the orchards. In contrast to Victorias, Yellow Eggs represented 22 per cent, damsons 12 per cent, and Purple Eggs 11 per cent. Although numerically there may be more Yellow Egg trees in the orchards, it is the Victoria which probably determines the annual returns of the plum crop. As mentioned before, the satisfactory plum returns for 1955 were mainly due to the heavy yield of Victoria plums, averaging 12,670 lb. per acre. The net price of 2·6d. per lb. seemed to be rather low, but thanks to the high yield, this particular variety ensured an income of £135 per acre to the grower, and, by and large, proved to be sufficient to offset the poor returns of the Yellow Egg which were 7,367 lb. for £54 per acre. By taking the average price of 1·7d. per lb. for the Yellow Egg plum, the comparable yield of this variety should have been 19,060 lb. per acre in order to obtain the same financial result as the Victoria. It is true to say that, generally speaking, the Yellow Egg is a heavier and perhaps more regular cropper than the Victoria, but it is rather unlikely, at least in the orchards of the sample holdings, to obtain such an exceptionally high yield from the Yellow Egg plum even if the trees were somewhat younger and the crop had not been set back by gale damage, as was the case in 1955.

On the whole, the growers sold their Victoria plums on contract and on the open markets both locally and all over the country. However, the major part of the supply was disposed of locally, and only 19 per cent of the total quantity went to markets like Birmingham, Leeds and Manchester. With regard to contract sales, it is hardly possible to assess the quantity involved, as such sales were transacted both with local merchants and co-operatives and appeared to be rather mixed up with the transactions carried out through auctions or private sales. However, a fair estimate of the quantity sold on

contract can be put at 40 per cent of the total supply. The actual pattern of marketing the 1955 crop of Victoria plums is given in Table 81. According to these figures the average net price worked out at 2·3d. per lb., which is somewhat lower than the price quoted before; however, the ½d. discrepancy may be due to the enlarged sample on which the marketing data are based. The difference between local and other sales may be set out as follows:

		Quantity		Net		Net
		lb.	%	Receipts	%	Price per lb.
Local Sales	.	244,428	81	2,155	73	2·1
Other Sales	.	58,098	19	801	27	3·3
Total	.	302,526	100	2,956	100	2·3

The low price shown for local sales was the result of transactions through local merchants. The quantity of these transactions represented 37 per cent of the total supply and the average price received for it worked out at only 1·4d. per lb. A possible explanation for this very low price may be that the quality of the consignments was only fit for processing and therefore could not command a better price. The average price per lb. paid by co-operatives was 2·7d. and by the local markets 3·0d. On the other hand, the more favourable price received from distant markets suggests that the produce sent to them might have been of better quality and also earlier consignments. Where the sales were transacted in gross terms, the market charges absorbed 18 per cent of the gross receipts. The gross price averaged 4·1d. per lb., despite the considerable rate of deductions, and it proved to be sufficient to leave a net price of 3·4d. for the grower. The highest relative cost of marketing was at Newcastle at 27·2 per cent and at Coventry at 26 per cent. Although there is a considerable difference in the distance between the Vale and these two markets, similarity in the rate of deductions is the result of the marked difference between the gross prices received at the two markets, namely 4d. at Coventry and 5·7d. at Newcastle.

In 1955 the marketing season of Victoria plums covered 8 weeks, lasting from 14th August until the 8th October; however, the quantities sold during the first and the last week were negligible. The weekly distribution of supply and the fluctuation of prices were as follows:

Marketing Period 1955	Quantity lb.	%	Net Price per lb. d.
Aug. 14-20 . .	528	—	3.7
21-27 . .	3,427	1	5.1
28-Sept. 3 . .	65,724	22	2.9
Sept. 4-10 . .	153,605	51	2.1
11-17 . .	68,871	23	2.0
18-24 . .	6,681	2	3.6
25-Oct. 1 . .	2,418	1	5.5
Oct. 2-8 . .	1,272	—	3.0
Total . . .	302,526	100	2.3

As can be seen from the foregoing figures, the peak of the season fell in the fourth week, and by taking the preceding and succeeding weeks into account, almost the entire crop was sold during the three weeks in question. Most of the contract deliveries took place during the fourth and fifth weeks of the season which suggest that consignments might have contained a fair proportion of small "bottling" plums, or fruit only suitable for pulping.

In contrast to other plum varieties, the marketing season of Victoria plums is the longest, and the possibility of spreading the picking of the fruit over a longer period perhaps makes this variety popular among the growers. With the exception of damsons and damascenes, there is no other variety where the picking can be extended over a longer period than that of the Victoria. When the other two most important varieties, the Yellow and Purple Egg plums are considered, the difference in the weekly distribution of supplies shows the rather short space of time during which picking has to be completed. The weekly fluctuation of supplies and net prices of the Yellow and Purple Egg plum varieties is given below:

Marketing Period	Yellow Egg			Purple Egg		
	Quantity	Net Price per lb.		Quantity	Net Price per lb.	
1955	lb.	%	d.	lb.	%	d.
Aug. 7-13 . .	96	—	2.6	—	—	—
14-20 . .	72,746	34	1.7	2,442	2	2.9
21-27 . .	119,356	56	1.7	86,795	83	2.5
28-Sept. 3 . .	20,909	10	1.8	15,078	14	2.4
Sept. 4-10 . .	1,056	—	2.2	843	1	2.7
11-17 . .	336	—	2.1	—	—	—
Total . . .	214,499	100	1.7	105,158	100	2.1

According to the foregoing figures, 90 per cent of the Yellow Egg plums had to be picked in the first fortnight, whereas 83 per cent of the Purple was gathered and sold during one week. Needless to say, this rather fast rate of picking causes considerable pressure, especially to the small grower, who apart from having other plum varieties maturing at the same time, also has several other crops which await attention. The case of damsons is rather different, since the several varieties they represent allow the picking season to be more evenly spread over than any of the plums or gages. In 1955 the marketing season of damsons and damscenes covered a period of seven weeks during which the distribution of the weekly supplies and the fluctuation of prices showed the following picture:

<i>Marketing Period</i>	<i>Quantity</i>	<i>Net Price per lb.</i>
	lb.	% d.
1955		
Aug. 28-Sept. 3 . . .	2,254	2 4.3
Sept. 4-10 . . .	5,559	5 4.8
11-17 . . .	14,843	13 4.9
18-24 . . .	31,027	27 4.5
25-Oct. 1 . . .	39,608	33 4.5
Oct. 2-8 . . .	21,732	18 4.2
9-15 . . .	3,372	2 5.9
Total . . .	118,395	100 4.4

From these figures it can be seen that the picking of the bulk of the damson crop was spread over a period of four weeks and that the quantity picked during the height of the season was only 33 per cent of the total supply. The steady trend in prices was due to the fact that the main part of the crop was sold on contract.

2. Apples

Unlike plums, the apple orchards of the sample holdings consisted mainly of young plantations, which naturally had a bearing on the financial returns. There were altogether 15 holdings in the sample which grew apples on a rather varied scale. Whereas on a number of holdings the production of apples was one of the major enterprises, on others it appeared to be more or less a side line. In the orchards of the 15 holdings there were at least 25 different apple varieties grown, the composition of which varied considerably from holding to

holding. In view of the difference in the varieties grown in an orchard, the age of the plantation, the proportion of the trees bearing biannually (e.g. Newtons) and the possibility of carrying over into the following financial year some part of the previous year's crop as stock make it rather difficult to work out average returns on apple orchards. However, in discussing the 1955 results, reference will be made, whenever possible to some of these background factors, so that the returns may give a fairly clear picture.

Bearing in mind that the orchards of the 15 holdings had a considerable acreage of young trees, the 1955 returns for apples was fairly good. On the whole, the average was 7,771 lb. for £116 per acre giving a price of 3·6d. per lb. of fruit. Of the individual holdings, the highest return obtained was from a small orchard growing only the Worcester Pearmain variety and yielding 10 tons for £428 per acre. The next best result was achieved by a small orchard where only the Newton Wonder variety was grown and which returned 13 tons of fruit for £280 per acre. These two orchards, however, cannot be regarded as representative apple growing enterprises. The best result for orchards with a substantial acreage, and growing a fair number of varieties of both dessert and culinary apples, was about 7 tons of fruit per acre for £199.

To assess the success of the 1955 crop, a comparison has been made between the average results of 9 identical holdings over the last six years. On these holdings nearly half of the trees were only three to eight years old, so that the annual averages also account for the progressive increase in the returns due to the gradual development of the young stock. The per acre results of these orchards are given below:

Years	Quantity	Receipts	Price per lb.
	lb.	£	d.
1950 . . .	2,700	37	3·3
1951 . . .	15,305	123	1·9
1952 . . .	4,975	65	3·1
1953 . . .	7,065	132	4·5
1954 . . .	10,970	156	3·4
1955 . . .	7,341	126	4·1
Average . . .	8,059	107	3·2

As can be seen from these figures, it was in 1953 that the young plantations began to have a marked effect on the returns. The satisfactory result for 1951 was due mainly to the high

yield of cooking apples. In 1952, however, these varieties bore only a negligible quantity of fruit; hence the poor return shown for this year. On the combined results of the gross and net transactions for 1955 the costs of marketing worked out at 7·6 per cent of the receipts. Taking this rate of market deduction into account, the 1955 net returns worked out at £116 per acre.

On holdings where the accounting year ends at the beginning of October or by the end of December, there may be a certain quantity of apples left in stock, the sale of which takes place during the following financial year. At a first glance this may seem to distort the annual apple returns, but nevertheless this carry-over each year eventually levels itself out over a longer period of years. In 1955, the quantity of fruit which was carried over by the holdings from the 1954 crop was only about 6 per cent of the total quantity sold during the period September, 1954 to April, 1956. This rather modest figure has been confirmed by a somewhat enlarged sample specially drawn to study the marketing of apples. The result of this particular sample is given in Table 82 showing details of the carry-over in accordance with the different varieties. The most affected varieties were Newtons and Bramleys and to a certain extent Cox's and Ellisons.

Unlike plums, the effect of the different varieties on apple returns is more clearly discernible, and holdings producing only dessert varieties may have lower average yields yet receive higher prices than those growing mixed or culinary varieties. In view of the fact that a considerable part of the surveyed orchards consisted of immature trees, it is difficult to assess the 1955 returns from single varieties. However, an attempt has been made to gauge these results in order to provide a useful background to the overall average returns. As shown before, the average returns for 1955 worked out at 7,771 lb. for £116 per acre. Of the 15 holdings, these results refer to only 11 holdings where the trees were counted. The combined returns of the single varieties may confirm the above figures and indicate those varieties which contributed mostly to the success of the season. To calculate the returns of the different varieties it was decided to take as a yardstick 144 trees to the acre; this figure represents the average number of trees found in the 11 orchards. The results of this calculation are shown in Table 83. According to these figures, the overall per acre results of these holdings showed only 3,802 lb. for £97. Although the cash return is comparable with that of the 15 holdings, the yield

TABLE 81

Marketing of Victoria Plums

Methods of Marketing	Transactions		Quantities		Gross Receipts			Gross Price per lb.	Deductions				
									Commission				
	No.	%	lb.	%	£	s.	d.	%	£	s.	d.	%	
Growers' Co-operatives	34	11	27,360	9	365	19	3	31	3·2	31	16	2	8·7
Growers' Co-operatives	97	29	94,128	31	—	—	—	—	—	—	—	—	—
Local Markets	15	5	9,636	3	140	14	9	12	3·5	10	11	7	7·5
Local Markets	9	3	2,016	1	25	18	0	2	3·1	2	3	5	8·3
Local Merchants	62	19	111,288	37	—	—	—	—	—	—	—	—	—
Commission Salesmen:													
Birmingham	33	10	12,298	4	221	11	6	19	4·3	17	0	0	7·5
Birmingham	9	3	2,988	1	—	—	—	—	—	—	—	—	—
Coventry	9	3	2,772	1	46	0	0	4	4·0	3	9	2	7·5
Gloucester	5	1	15,480	5	—	—	—	—	—	—	—	—	—
Leeds	4	1	2,400	1	—	—	—	—	—	—	—	—	—
Leicester	5	1	2,388	1	—	—	—	—	—	—	—	—	—
Manchester	27	8	10,512	3	292	3	0	25	6·7	30	5	8	10·4
Manchester	2	—	96	—	—	—	—	—	—	—	—	—	—
Newcastle	4	1	2,660	1	63	5	0	5	5·7	6	6	6	10·0
Sheffield	6	2	5,496	2	—	—	—	—	—	—	—	—	—
Stratford-on-Avon	9	3	1,008	—	18	16	0	2	4·5	1	8	5	7·4
Total	330	100	302,526	100	1,174	7	6	100	—	103	0	11	8·9
Gross Sales	140	42	68,262	23	1,174	7	6	—	4·1	103	0	11	8·9
Net Sales	190	58	234,264	77	—	—	—	—	—	—	—	—	—

TABLE 82

Sales of Apples

Varieties	Old Crop				Net Price per lb. d.		
	Quantity		Receipts				
	lb.	%	£	s.	%		
Early Victoria	—	—	—	—	—		
A. Turner	—	—	—	—	—		
Grosvenor	—	—	—	—	—		
Warner's King	—	—	—	—	—		
Beauty of Bath	—	—	—	—	—		
Gladstone	—	—	—	—	—		
Worcester	—	—	—	—	—		
Jam, Cider etc.	1,000	3	5	9	4	1	1·3
L. Derby	240	1	1	0	9	—	1·0
L. Lambourne	—	—	—	—	—	—	—
Laxton F.	230	1	8	1	11	2	8·4
Bramleys	5,892	18	58	1	2	14	2·4
Hering Pippin	1,113	3	18	7	7	4	4·0
Ellison	2,154	7	31	7	5	7	3·5
Newtonns	17,320	52	170	15	0	40	2·4
Cox's	2,886	8	103	14	6	25	8·6
J. Grieves	—	—	—	—	—	—	—
Blenheim	—	—	—	—	—	—	—
D. of Glos.	—	—	—	—	—	—	—
Rival	—	—	—	—	—	—	—
Russett	520	2	5	17	0	1	2·7
Edwards	1,400	4	17	15	8	4	3·0
Laxtons S.	—	—	—	—	—	—	—
Sunset	—	—	—	—	—	—	—
P. Albert.	—	—	—	—	—	—	—
Allington P.	—	—	—	—	—	—	—
Ribstone P.	—	—	—	—	—	—	—
M. de M.	360	1	6	2	0	2	4·1
Total	33,115	6	426	12	4	5	3·1

Marketing of Victoria Plums

Use of Empties		Deductions						Net Receipts			Net Price per lb.
£	s.	£	s.	£	s.	£	s.	£	s.	£	d.
11	5	4	3.0	—	—	43	1	6	11.7	322	17
4	8	3	3.2	—	—	14	19	10	10.7	1,034	11
1	18	4	7.4	—	—	4	1	9	15.7	125	14
—	—	—	—	—	—	—	—	—	—	21	17
15	6	0.3	22	14	7	10.3	12	3	8	52	13
—	—	—	—	—	—	8	9	11	18.5	19	1
—	—	—	—	—	—	—	—	—	—	26.0	1
—	—	—	—	—	—	—	—	—	—	34	0
—	—	—	—	—	—	—	—	—	—	135	9
—	—	—	—	—	—	—	—	—	—	32	18
—	—	—	—	—	—	—	—	—	—	30	7
—	—	—	—	6	11	6	2.2	29	14	6	10.2
—	—	—	—	—	—	—	—	66	11	8	22.8
—	—	—	—	1	13	0	2.6	9	4	9	14.6
—	—	—	—	—	—	—	—	17	4	3	27.2
12	0	3.2	—	—	—	—	13	3	3.5	2	13
—	—	—	—	—	—	—	—	2	13	8	14.1
18	19	5	1.6	30	19	1	2.5	60	6	1	5.1
—	—	—	—	—	—	—	—	213	5	6	18.1
18	19	5	1.6	30	19	1	2.5	60	6	1	5.1
—	—	—	—	—	—	—	—	213	5	6	18.1
—	—	—	—	—	—	—	—	—	—	961	2
—	—	—	—	—	—	—	—	—	—	1,995	7
—	—	—	—	—	—	—	—	—	—	67	3
—	—	—	—	—	—	—	—	—	—	33	2.0

Sales of Apples

Quantity		Receipts		Net Price per lb. d.	Quantity		Receipts		Net Price per lb. d.	
lb.	%	£	s.		lb.	%	£	s.		
2,946	—	35	0	8	—	2.9	2,946	1	2.9	
36	—	1	7	7	—	9.8	36	—	9.8	
248	—	1	1	7	—	1.0	248	—	1.0	
4,209	1	69	5	11	1	3.9	4,209	1	3.9	
511	—	20	2	9	—	9.5	511	—	9.5	
635	—	9	5	6	—	3.5	635	—	3.5	
88,391	18	1,538	14	1	18	4.2	89,391	17	4.2	
43,660	9	226	17	8	3	1.2	43,900	8	1.2	
933	—	10	16	5	—	2.8	933	—	2.8	
41,172	9	819	2	10	9	4.8	41,172	8	4.8	
8,792	2	185	8	0	2	5.1	9,022	2	5.1	
70,142	14	1,594	19	3	18	5.5	76,034	15	5.5	
428	—	3	5	11	—	1.9	1,541	—	1.9	
19,101	4	338	4	3	4	4.2	21,255	4	4.2	
112,948	23	1,275	14	4	14	2.7	130,268	25	2.7	
56,492	12	2,137	14	7	24	9.1	59,378	12	9.1	
3,519	1	51	8	7	1	3.5	3,519	1	3.5	
310	—	6	3	10	—	4.8	310	—	4.8	
200	—	2	5	10	—	2.7	200	—	2.7	
200	—	3	5	0	—	3.9	200	—	3.9	
1,020	—	32	13	5	—	7.7	1,540	—	7.7	
240	—	1	10	2	—	1.5	1,640	—	1.5	
30,178	6	467	10	9	5	3.7	30,178	6	3.7	
1,394	—	41	12	11	1	7.2	1,394	—	7.2	
360	—	4	14	5	—	3.2	360	—	3.2	
40	—	13	7	—	—	4.1	40	—	4.1	
40	—	8	4	—	—	2.5	40	—	2.5	
—	—	—	—	—	—	—	360	—	4.1	
488,145	94	8,879	8	2	95	4.4	521,260	100	4.3	4.3

appears to be much lower. This discrepancy may account for the possible dissimilarity in the age of the trees, the proportional distribution of the varieties involved and so forth. However, the results of the 11 orchards show that the return of £97 per acre was ensured primarily by Bramleys, Newtons, Worcesters and Cox's. The best returns were shown by the rather unusual variety of Hering Pippin; its significance, however, was very limited as there were only 8 trees of this particular variety in one of the orchards.

According to details of the data on marketing, specially drawn up from the sales from the sample holdings and some additional ones, most of the apple crop was sold locally and only 22 per cent of the supply was sold at distant markets. The difference in the results of the two types of sales is given below:

		Quantity		Net		Net
		lb.	%	Receipts	£	Price
					%	per lb.
Local Sales	:	407,039	78	6,961	75	4·1
Other Sales	:	114,221	22	2,345	25	4·9
Total	.	521,260	100	9,306	100	4·3

Despite the considerable difference which the variety and the quality of the apple may represent, the results of the local and distant sales were very much the same. The slightly higher average price achieved on the distant markets may suggest that in these sales there were more dessert and perhaps better graded apples. The proportional distribution of these sales is shown according to major varieties in Diagram 43.

As can be seen from the details of Diagram 43, there were no ungraded apples, fit only for cider or jam, sold at distant markets, which seems to be one of the reasons for the lower average price shown by the local sales. The actual proportion of this inferior quality amounted to 17 per cent of the supply sold locally. Most of the Bramley apples were sold at distant markets as the price was sufficiently favourable to ensure a satisfactory return after the deduction of marketing costs. While these apples fetched 5d. per lb. in 1955, in 1956 growers had great difficulty in disposing of their crop.

In the gross sales, market deductions absorbed 11·3 per cent of the gross receipts. On the whole this rate of market deduction seems to be quite reasonable and falls within the range of

DIAGRAM 43
Distribution of Apple Varieties in the Sales

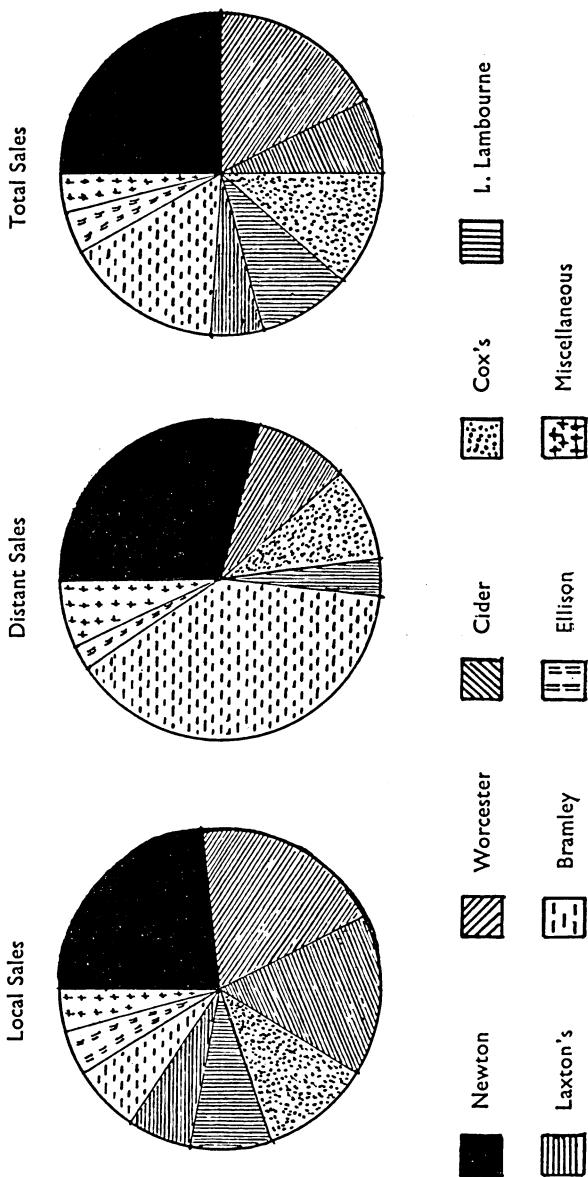


TABLE 83
Returns per Acre According to Varieties

Varieties	Total No. of Trees	Yield		Receipts		Net Price per lb.	Age of Plantation
		per Tree	per Acre	per Tree	per Acre		
Cox's . .	4,036	16.2	2,332	14.3	103	10.8	40 young
Lord Lambourne	1,435	7.4	1,066	4.2	30	6.8	60 young
Worcester . .	511	35.7	5,141	14.6	105	4.9	20 young
Russett . .	190	5.3	763	3.4	25	7.7	100 young
Ellison . .	162	24.1	3,470	10.8	78	5.4	70 young
Laxton's Fortune	117	6.5	936	4.4	32	8.2	100 young
Blenheim . .	100	2.0	288	0.7	5	4.2	100 young
Sunset . .	100	5.4	778	4.5	32	9.9	100 young
Laxton's Superb	81	19.0	2,736	5.3	38	3.3	60 young
Beauty of Bath .	48	10.6	1,526	8.4	61	9.6	60 young
Hering Pippin .	8	192.8	27,763	54.1	390	3.4	old
Ribstone Pippin .	6	6.7	965	1.3	9	2.2	old
Bramley . .	395	115.0	16,560	47.8	344	5.0	old
Newton . .	272	68.0	9,792	22.8	164	4.0	old
Early Victoria .	25	28.0	4,032	5.2	37	2.2	old
Annie Elizabeth .	18	51.9	7,474	12.5	90	2.9	old
Prince Albert .	12	30.8	4,378	7.8	56	3.1	old
Average . .	144	26.4	3,802	13.5	97	6.1	50 young

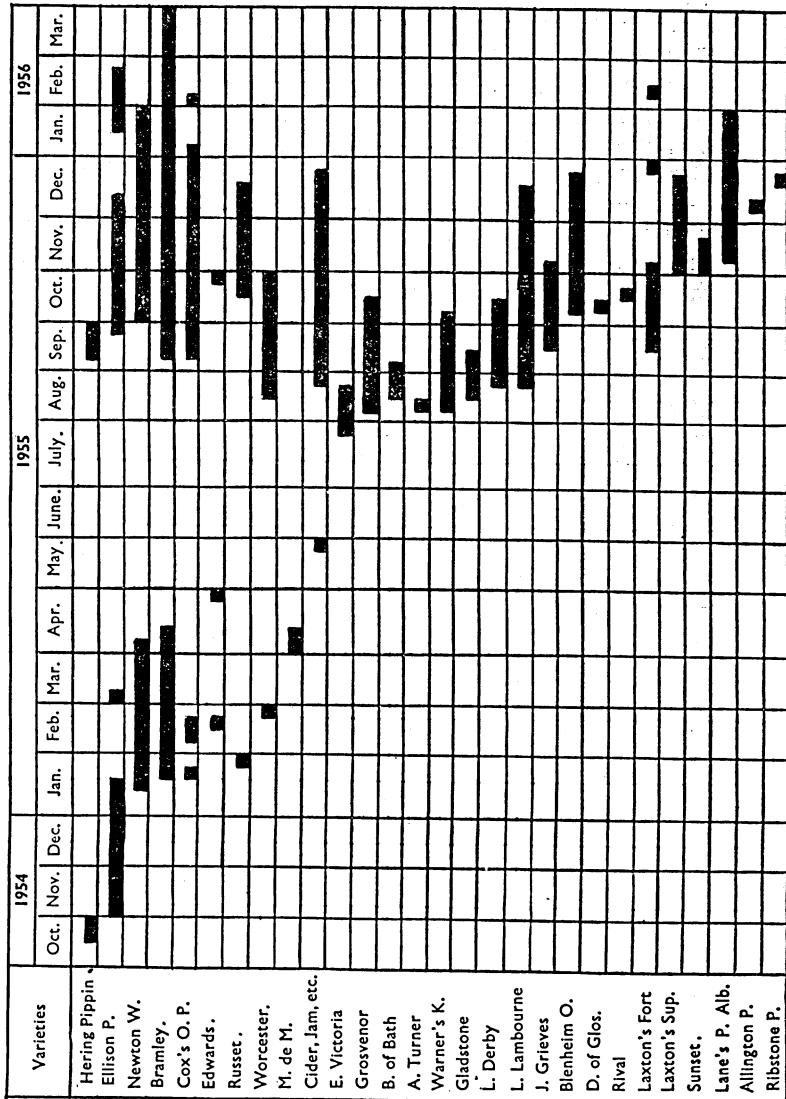
costs shown by most of the horticultural crops. Of the different varieties, only the Bramley apples showed a fairly high relative cost of marketing at 17.2 per cent of gross receipts, while the others varied between 10 and 13 per cent. This rate of deduction, however, was due to the fact that almost the entire crop was sold at markets outside the Vale. The overall pattern of the marketing of apples is shown in Table 84.

As apples can be stored longer than any other horticultural crop, it is difficult to depict an exact picture of their seasonality. However, from details of the marketing data it was possible to ascertain the dates of sales of each variety, which gave a clue to their principal seasons of marketing. With regard to the crop carried over from the previous year these dates of sale gave some indication of the period during which they were kept in store. The marketing seasons of the different varieties of apples are shown in Diagram 44.

The details in Diagram 44 show that from October, 1954 until the end of March, 1956, it was only May, June and July when none, or only a very negligible quantity of apples were sold from the holdings. In May there was a small amount of unspecified apples sold, and in July some Early Victorias, but

DIAGRAM 44

Marketing Season of Apples According to Varieties



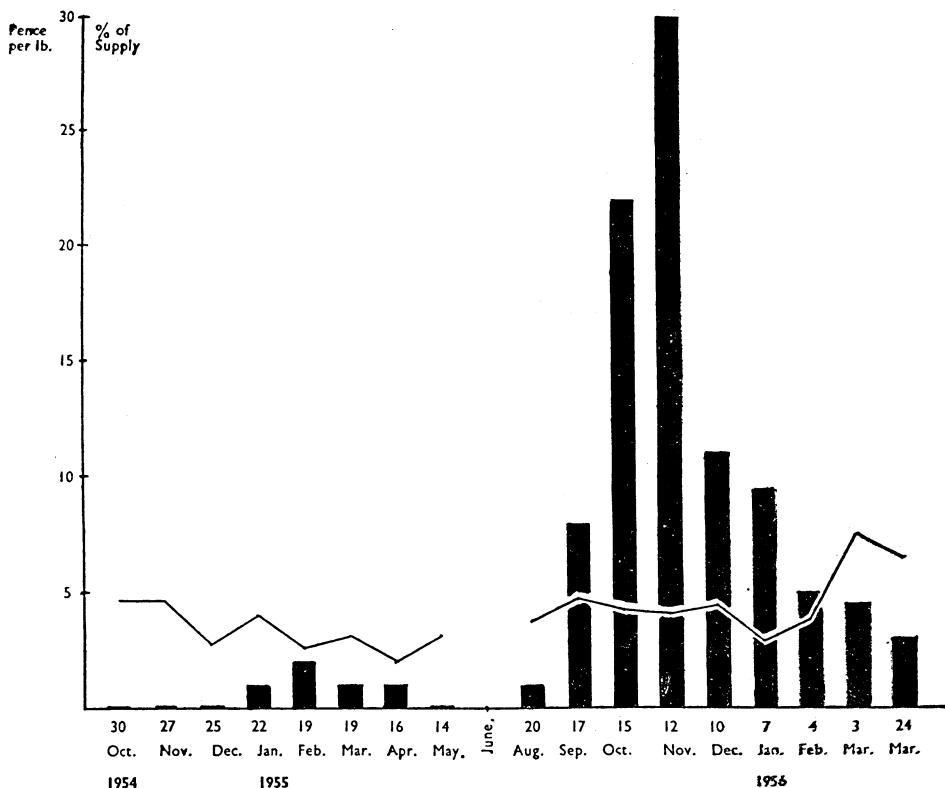
in June no apples whatsoever were marketed. On the other hand, it was in the month of October that most of the varieties, 17 in all, were sent to market. In August there were 10 varieties, in September 14, and in November and December 12. Of the different varieties, it was Bramleys, Newtons, Cox's and Ellisons which had the longest marketing season. Both Bramleys and Newtons could be kept until the beginning of April. Among the dessert apples Ellisons proved to be the best keepers, and were selling until the end of February; Cox's, too, were marketed until the beginning of February, 1956. However, the length of the marketing period depends very much on the kind of weather which prevails during the summer. Generally speaking, after a wet season it is not likely that the crop can be stored as long as after a dry summer.

On a four weekly basis, the bulk of the crop was disposed of during the periods September 18th—October 15th and October 16th—November 12th. This represented 54 per cent of the total supply which was marketed from October, 1954 until April, 1956, or 58 per cent of the 1955 crop only. Despite the great difference in the combination of varieties comprising the quantities sold during the four-weekly periods, the fluctuation in prices received by the growers was quite moderate. As far as the new fruit was concerned, it fluctuated between 3d. and 7½d. per lb. during the long marketing period of 35 weeks. Even this degree of fluctuation would have been narrower, but for the good prices paid for Bramleys which helped to close the season with an average price of 7½d. per lb. at the beginning of March and 6½d. per lb. at the end. The distribution of the supply and the fluctuation of net prices during the four weekly periods are shown in Diagram 45.

As mentioned before, the average price illustrated in Diagram 45 for the four-weekly marketing periods was, to a considerable extent, the result of the varietal combination of quantities sold during these periods. The old crop, sold between the end of October, 1954 and May, 1955, was hardly representative for such examination, but the new crop gave the required information. For the first four-weekly period the price of 3·7d. per lb. was almost entirely due to the Early Victoria apple; for the second and third periods the average price showed 4·7d. and 4·3d. per lb. respectively which was ascribed mainly to the Worcester Pearmain; those varieties responsible for the price of 4·1d. and 4·5d. for the fourth and fifth periods were the Newton Wonder and Cox's Orange Pippin; the supply of Laxton's Superb also had a notable share in the formation of

DIAGRAM 45

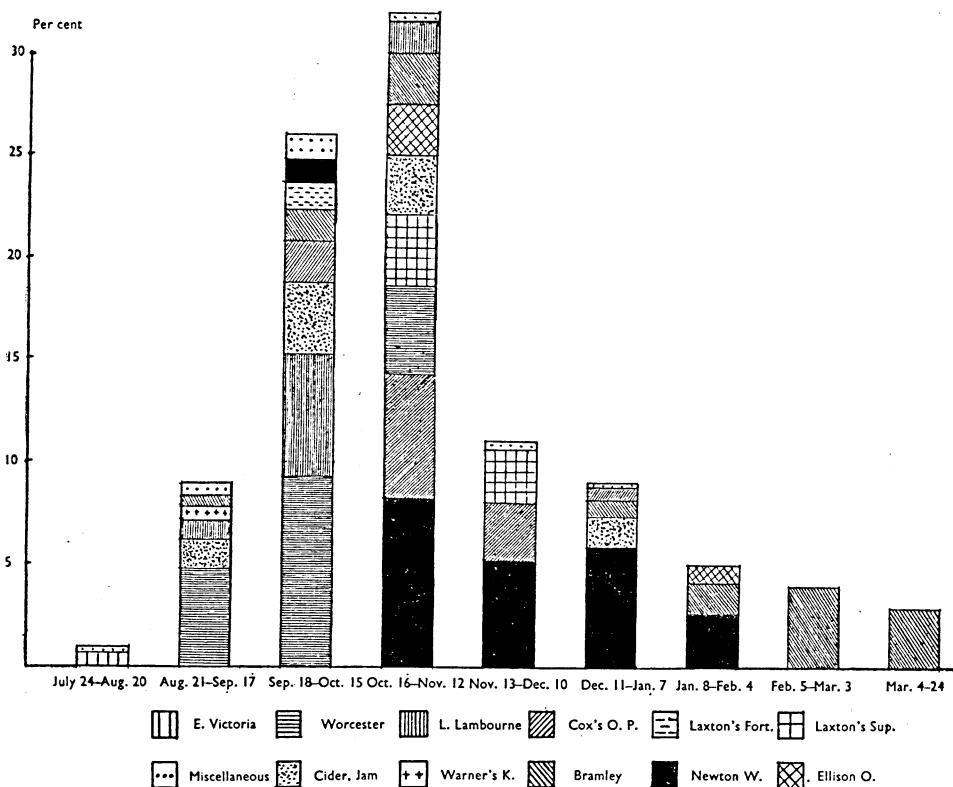
Four-Weekly Fluctuation of Supplies and Net Prices of Apples



the above prices; the 3d. per lb. for the sixth period was almost entirely due to Newtons, and that of 3.9d. for the seventh period to Newtons and Bramleys; in the eighth and ninth periods 7½d. and 6½d. was achieved entirely by Bramleys. During these nine marketing periods the proportional distribution of the supply of different varieties of apples is illustrated in Diagram 46.

From the details of Diagram 46 it may be noticed that in the second, third and fourth marketing periods there was a substantial quantity of apples sold as cider and jam fruit. This part of the crop was fruit which was found to be unfit for human consumption, either by being immaturely fallen off the trees or which, owing to blemish, fell below the standard

DIAGRAM 46

Varietal Distribution of the Apple Crop
in Four-Weekly Marketing Periods

grades; it amounted to 43,900 lb. which was 8 per cent of the total supply of 520,158 lb. This proportion may be regarded as fairly moderate, and price received for it of 11s. 2d. per cwt. quite adequate. Almost all the dessert varieties were graded either by the growers themselves or by their co-operative organisations, and at least two of the growers marketed their crops under their own trade mark.

On the whole, the most important varieties of apples were Newtons, Bramleys, Worcesters, Cox's and Lord Lambourne's. The total quantity of these five varieties amounted to 394,283 lb., or 76 per cent of the entire supply, and the receipts to £7,703, or 83 per cent of the total turnover of £9,304.

Of the above varieties, at least as far as quantity is concerned,

the most important apple was the Newton, which represented 25 per cent of the total supply. This apple was mostly sold locally and only 25 per cent of its total supply was sent to distant markets, mainly in the Midlands. The difference between the results of the two kinds of sales is given below:

		Quantity		Net		Price
		lb.	%	Receipts	%	per lb.
				£		d.
Local Sales	.	97,376	75	1,016	70	2.5
Other Sales	.	32,892	25	430	30	3.1
Total	.	<u>130,268</u>	<u>100</u>	<u>1,446</u>	<u>100</u>	<u>2.7</u>

The marketing season for this apple lasted from the 1st October, 1955 until the end of January, 1956, covering a period of 18 weeks. A small quantity from the 1954 crop was sold in February, March and April, 1955, but the new crop was completely sold by the end of January, 1956. The bulk of the crop was sold in October and December, and, although prices were quite favourable in November, only a relatively small proportion of the supply was disposed of during that particular month. The net price of the new crop fluctuated between 1½d. and 4.3d. per lb. This range of variation, however, was due rather to the quality of fruit than to changes in demand.

The next variety of importance was the Bramley, and the quantity of this apple sold represented about 15 per cent of the total supply of apples, and the receipts 18 per cent of the total cash returns. Unlike Newtons, these apples were mainly sold at distant markets, chiefly in the Midlands, and only 34 per cent of the supply was disposed of locally. The results of the two types of sales are as follows:

		Quantity		Net		Price
		lb.	%	Receipts	%	per lb.
				£		d.
Local Sales	.	25,967	34	643	39	6.3
Other Sales	.	50,067	66	1,010	61	4.8
Total	.	<u>76,034</u>	<u>100</u>	<u>1,653</u>	<u>100</u>	<u>5.2</u>

The marketing season of this apple represented 29 weeks with considerable gaps between the sales; there were some quantities sold during September and October, but practically

TABLE 84

Marketing of Apples

Methods of Marketing	Transactions		Quantities		Gross Receipts			Gross Price per lb.	Deductions				
									Commission				
Growers' Co-operatives	No.	%	lb.	%	£	s.	d.	%	d.	£	s.	d.	%
Growers' Co-operatives	186	31	264,939	51	4,789	10	10	70	4.3	393	12	3	8.2
Growers' Co-operatives	18	3	29,582	6	—	—	—	—	—	—	—	—	—
Local Markets . . .	86	14	37,301	7	1,266	12	11	19	8.2	104	11	3	8.3
Local Merchants . . .	102	17	75,217	14	—	—	—	—	—	—	—	—	—
Commission Salesmen:													
Birmingham . . .	31	5	22,482	4	709	2	0	10	7.6	53	8	4	7.5
Birmingham . . .	47	8	25,711	5	—	—	—	—	—	—	—	—	—
Coventry . . .	22	3	2,951	1	49	10	6	1	4.0	3	15	0	7.6
Leicester . . .	18	3	11,743	2	—	—	—	—	—	—	—	—	—
Manchester . . .	1	—	90	—	2	5	0	—	6.0	—	5	6	12.2
Sheffield . . .	74	12	50,035	10	—	—	—	—	—	—	—	—	—
Stratford-on-Avon . . .	23	4	1,209	—	19	1	3	—	3.8	1	8	9	7.6
Total	608	100	521,260	100	6,836	2	6	100	—	557	1	1	8.2
Gross Sales	423	69	379,002	73	6,836	2	6	—	4.3	557	1	1	8.2
Net Sales	185	31	142,258	27	—	—	—	—	—	—	—	—	—

TABLE 86

Marketing of Pears

Method of Marketing	No. of Transactions		Quantities		Gross Receipts			Gross Price per lb.	Deductions				
									Commission				
Growers' Co-operatives	No.	%	lb.	%	£	s.	d.	%	d.	£	s.	d.	%
Growers' Co-operatives	22	15	13,840	31	417	17	6	65	7.3	33	8	10	8.0
Growers' Co-operatives	14	9	8,616	19	—	—	—	—	—	—	—	—	—
Local Markets . . .	25	17	9,684	21	171	6	8	27	4.2	12	17	8	7.5
Local Merchants . . .	32	22	5,238	12	—	—	—	—	—	—	—	—	—
Birmingham Merchants	10	7	1,464	3	—	—	—	—	—	—	—	—	—
Commission Salesmen:													
Birmingham . . .	6	4	504	1	14	7	6	2	7.1	1	1	8	7.3
Bristol . . .	2	1	360	1	7	16	0	1	5.2	11	9	—	7.5
Coventry . . .	4	3	764	2	9	16	0	2	3.1	1	16	2	18.4*
Leicester . . .	4	3	1,136	3	—	—	—	—	—	—	—	—	—
Manchester . . .	17	11	840	2	19	15	0	3	5.6	1	19	6	10.0
Sheffield . . .	6	4	2,568	5	—	—	—	—	—	—	—	—	—
Stratford-on-Avon . . .	4	3	140	—	1	19	6	—	3.4	—	3	1	7.7
Wolverhampton . . .	1	1	60	—	—	—	—	—	—	—	—	—	—
Total	147	100	45,214	100	642	18	2	100	—	51	18	8	8.1
Gross Sales	80	54	26,132	58	642	18	2	—	5.9	51	18	8	8.1
Net Sales	67	46	19,082	42	—	—	—	—	—	—	—	—	—

* Includes other market expenses as well.

Marketing of Apples

Deductions						Net Receipts			Net Price per lb.												
Use of Empties		Handling Charges		Transport		Total															
£	s.	d.	£	s.	d.	£	s.	d.	%												
134	3	7	2.8	—	—	527	15	10	11.0												
25	3	7	2.0	—	—	129	14	10	10.3												
—	—	—	—	—	—	—	—	—	—												
2	1	8	0.2	25	14	1	3.7	23	4	3	3.2	104	8	4	14.7	604	13	8	7	6.5	
—	3	—	—	—	—	4	12	4	9.3	—	8	7	7	16.9	589	13	4	6	5.5		
—	—	—	—	1	3	2.8	—	4	4	—	—	—	—	—	—	41	2	11	—	3.3	
—	—	—	—	—	—	—	—	—	—	—	—	167	4	6	2	—	3.4	—	—	—	—
—	10	4	2.6	—	—	—	—	10	5	2.6	—	11	1	24.6	—	1	13	11	—	4.5	
—	—	—	—	—	—	—	—	—	—	—	—	923	19	6	10	—	4.4	—	—	—	—
161	19	5	2.4	25	15	4	0.4	28	11	4	0.4	773	7	2	11.3	9,306	0	6	100	4.3	
161	19	5	2.4	—	—	28	11	4	0.4	—	773	—	2	11.3	—	6,062	15	4	75	3.8	
—	—	—	—	—	—	—	—	—	—	—	—	3,243	5	2	25	—	5.5	—	—	—	—

Marketing of Pears

Deductions						Net Receipts			Net Price per lb.										
Use of Empties		Handling Charges		Transport		Total													
£	s.	d.	£	s.	d.	£	s.	d.	%										
7	7	11	1.8	—	—	40	16	9	9.8										
—	—	—	—	—	—	377	0	9	39	6.5									
4	15	0	2.8	—	—	17	12	8	10.3	190	14	8	19	5.3					
—	—	—	—	—	—	153	14	0	15	3.8									
—	—	—	—	—	—	109	6	3	11	5.0									
—	—	—	—	—	—	31	3	3	3	5.1									
—	—	—	1	6	4	3	1	5	20.5	5.4									
—	—	—	11	3	7.5	12	6	7.5	22.5	4.0									
—	5	6	2.6	1	10	1	0	0	25.0	2.3									
—	—	—	—	6	5	1.6	18	2	21.3	7.6									
—	—	—	—	—	—	2	9	6	—	6.1									
—	—	—	—	—	—	34	8	0	3	7.3									
—	—	—	—	—	—	15	10	11	2	4.4									
—	—	—	—	—	—	39	10	6	4	3.7									
—	—	—	—	1	9	5.1	—	—	—	2.8									
12	8	5	1.9	2	7	7	0.4	11	10	0.5	1	12	11	—	6.2	—	—	—	—
12	8	5	1.9	—	—	3	11	10	0.5	70	6	6	10.9	979	5	2	100	5.2	
—	—	—	—	—	—	70	—	—	—	572	11	8	59	5.3	—	—	—	—	5.1

no transactions took place in November and December. Thus the greater part of the crop was sold during January, February and March 1956. The net prices received by growers for the new crops fluctuated between 1·5d. and 8·6d. per lb., and this very wide range of variation was mainly due to the good demand for the apple during the first three months of 1956, possibly because there were no more Newtons available.

The third important variety of apple was the Worcester Pearmain. This particular variety represented 15 per cent of the total apple supply, and its cash return was 17 per cent of the total receipts. This apple was sold almost entirely locally, and only 11 per cent of its supply was sent to distant markets. The results of the local and distant sales are given below:

		Quantity		Net		Net
		lb.	%	Receipts	%	Price per lb.
				£		d.
Local Sales	.	79,401	89	1,337	86	4·0
Other Sales	.	9,990	11	207	14	5·0
Total	.	89,391	100	1,544	100	4·2

The marketing periods of the Worcester apples covered eleven weeks from the end of August until the end of October; the actual disposal of the crop took eight weeks. Within this rather short marketing season, the weekly supplies showed a fairly even distribution, possibly due to the fact that the early crop required a continuous disposal. In any case, following this apple there are many other dessert varieties appearing on the markets with good keeping qualities, so that the storage of Worcesters does not seem to be necessary. There was a fairly wide fluctuation in price of between 1·8d. and 6·3d. per lb. About 16 per cent of the supply was sold at 1·8d. per lb.; this, no doubt, was paid for the poorest quality of the crop. The average net price paid for three-quarters of the crop, however, varied between 3·6d. and 6d. per lb.

The most popular dessert variety is, perhaps, Cox's Orange Pippin. On the sample holdings, however, due to the young plantations, the yield of this variety ranked only fourth and represented only 11 per cent of the total supply of apples. On the other hand, thanks to the high prices paid for this particular apple, the receipts surpassed those for all other varieties being 24 per cent of the total apple returns. This apple, too, was mainly sold locally, and only 19 per cent of its

supply found buyers at Birmingham and Sheffield. The difference between the results shown by the local and distant sales is given below:

	<i>Quantity</i>		<i>Net</i>		<i>Net</i>
	lb.	%	Receipts	£	Price per lb.
				%	d.
Local Sales . . .	48,472	81	1,740	77	8·6
Other Sales . . .	10,906	19	500	23	11·0
Total . . .	<u>59,378</u>	<u>100</u>	<u>2,240</u>	<u>100</u>	<u>9·1</u>

The marketing season of Cox's covered a period of 22 weeks, but the time during which appreciable quantities were disposed of was not longer than 14 weeks, commencing at the end of September and finishing by the beginning of January. However, the bulk of the crop was sold in October and November, and the growers only kept about 13 per cent of the supply for the Christmas trade. The price of the new crop fluctuated between 2·7d. and 1/- per lb. Actually, only 8 per cent of the total supply was sold for 2·7d. and 2·9d. per lb., which no doubt represented a below-grade quality. On the other hand, the net prices paid for 79 per cent of the crop varied between 8·8d. and 11·2d. per lb. It was in Christmas week that the price received by the growers for Cox's averaged 1/- per lb., but this was only for 2 per cent of the total supply.

Lord Lambourne apples represented 8 per cent of the total apple crop, and 9 per cent of total receipts. Of the total supply of this variety only 5 per cent was sold at Birmingham, averaging 6·3d., but the returns from local sales showed a net price of 4·7d. per lb. The marketing season of this variety ran from the end of August until the beginning of December, covering a period of 15 weeks. The actual season, however, when appreciable quantities were sold, was not more than 12 weeks, and it was during the month of October that 81 per cent of the total supply was disposed of. The net price for this apple fluctuated from 1·6d. to 6·7d. per lb.; only 3 per cent of the crop was sold for 1·6d., but the greater part of it fetched between 2·6d. to 5½d. per lb.

The weekly distribution of the supply and the fluctuation of the net prices for Newtons and Bramleys are shown in Diagram 47 and for Worcesters, Lord Lambourne's and Cox's in Diagram 48.

DIAGRAM 47

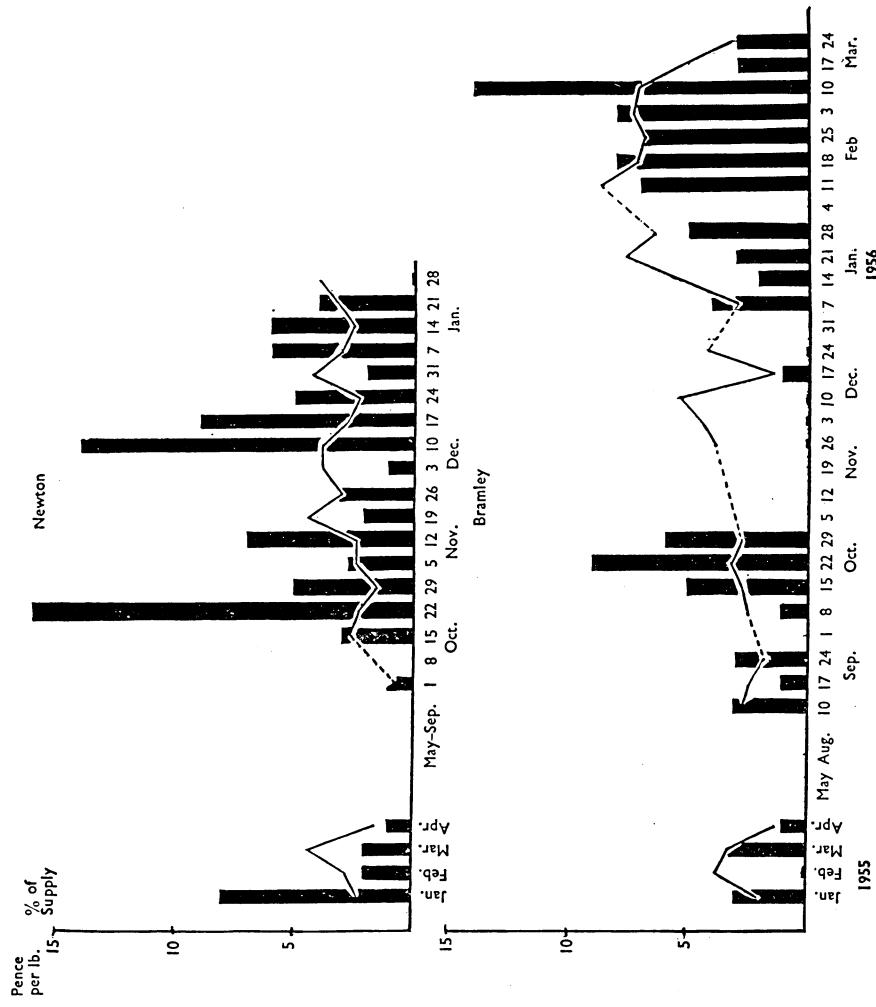
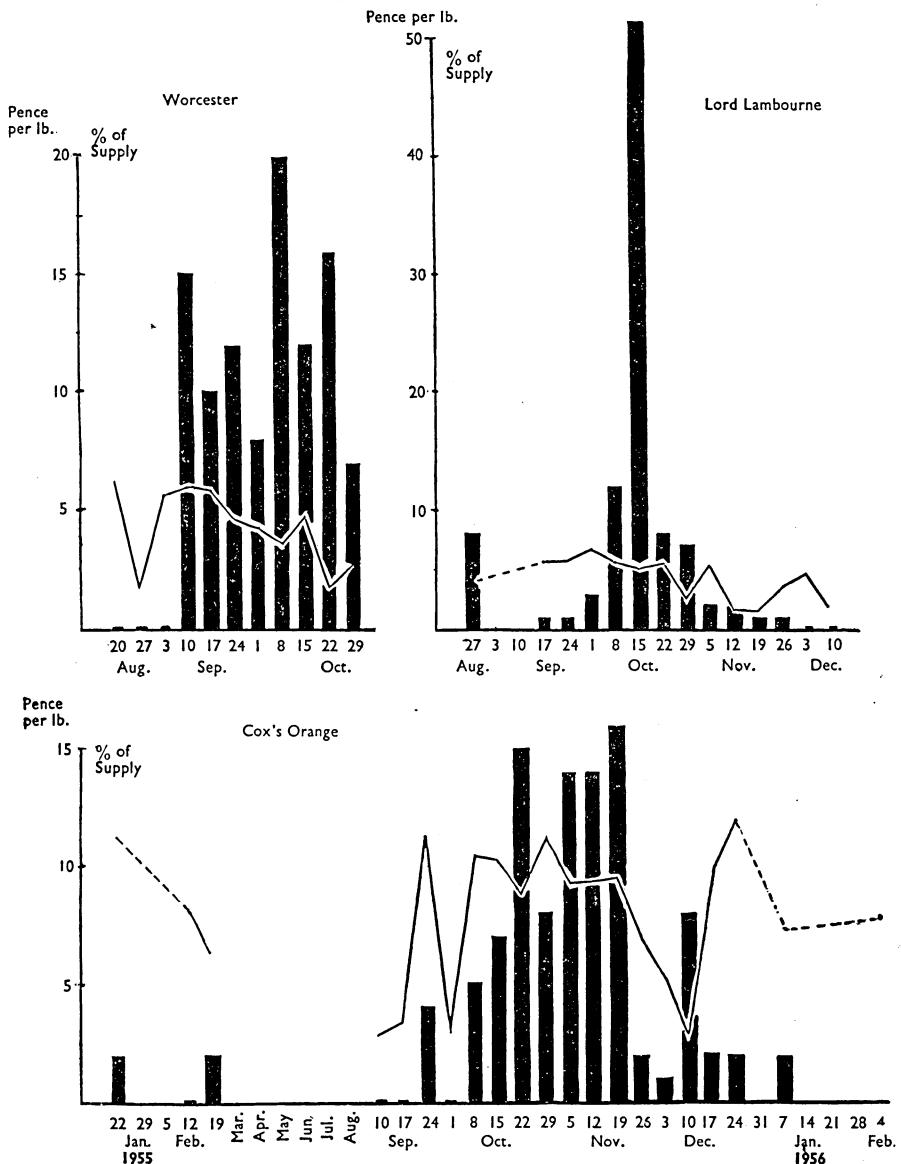
Weekly Fluctuation of Supply and Net Prices of
Newton and Bramley Apples

DIAGRAM 48

Weekly Fluctuation of Supply and Net Prices of
Worcester, Lord Lambourne and Cox's Apples



3. Pears

Of the 32 sample holdings 15 of them grew pears, but, as mentioned earlier in this report, on a number of holdings pear trees did not constitute a compact orchard layout but were scattered at random in apple or plum orchards. It was mainly the young plantations which were set out as proper orchards, consisting mostly of Conference pears.

This rather mixed form of pear production showed an average return per acre of 3,111 lb. of fruit for £68, giving a price per lb. of 5·2d. The best per acre result was 10,616 lb. of pears for £220 and the poorest only 232 lb. for £3. The highest result was achieved on a properly established orchard, and the lowest on a holding where some pears were grown in "other" orchards on old, unfruitful trees. Taking market deductions into account, the average return of £68 per acre would have to be reduced by 6·6 per cent in order to arrive at the net return obtained by the grower; this would modify the return to £64 per acre.

There were altogether 7 holdings where the pear records were available for the last six years. Although a fairly high proportion of the trees were rather young on these holdings, the results for the year 1955 showed that it was not a successful season for pears. The average results per acre were as follows:

Years	Quantity	Receipts	Price	
			lb.	per lb. d.
1950 . . .	1,403	24		4·1
1951 . . .	2,721	47		4·7
1952 . . .	3,321	70		5·1
1953 . . .	2,270	70		7·4
1954 . . .	5,820	71		2·9
1955 . . .	2,493	51		4·9
Average . . .	3,006	56		4·5

These figures indicate that the low yield for 1955 was probably due to the heavy crop in 1954, when the low price was probably the result of the high yield.

The cause of the poor results in 1955 can be assessed by examining the per acre returns of the different varieties which were found in those ten orchards, where the number of trees had been counted during the course of this survey. By taking 157 trees to the acre, the per acre results of individual varieties have been assessed as shown in Table 85.

TABLE 85
Average Returns per Acre of the Main Pear Varieties

Variety	Total No. of Trees	Yields		Receipts		Net Price per lb.
		Per Tree	Per Acre	Per Tree	Per Acre	
Conference	765	lb. 20	lb. 1,523	shillings 9·6	£ 75	d. 11·8
Laxton's Superb	132	1	188	0·3	3	3·8
Avonside	38	66	10,315	8·7	68	1·6
Burgamot	10	62	9,797	17·2	135	3·3
Average	157	19	2,983	8·3	65	5·1

According to the above results, the cause of the poor returns was almost entirely due to the Laxton's Superb variety which practically failed to produce any fruit at all in 1955. As 14 per cent of the trees were of this variety, their failure obviously had a considerable bearing on the average returns.

In order to include a greater selection of varieties and to provide an increased number of markets where the fruit was sold, the marketing data on pears, too, have been based on a somewhat increased number of holdings. The pattern of marketing pears is shown in Table 86. As can be seen from the details of this Table most of the fruit was sold locally, and only 17 per cent of the total supply travelled to markets as far afield as Manchester and Bristol. The difference between the results of the home and distant sales are as follows:

	Quantity	Net	Net
	lb.	Receipts	Price
	%	£	per lb.
Local Sales	37,378	83	831
Other Sales.	7,836	17	148
Total	45,214	100	979
			100
			5·2

As can be seen from these figures, the result of local sales was slightly more favourable than the distant sales. However, this might have been due to varietal differences in the consignments as well as to the time of sale. For those sales which were transacted in gross terms, market deductions absorbed 10·9 per cent of gross receipts. This rate of deduction is quite comparable with that for most other horticultural produce. On the distant markets, transport and handling charges were

responsible for the high market charges which varied between 18 and 25 per cent of gross receipts. Although these data have been based on the sale of a greater number of varieties, and on the returns from a greater number of markets, the average net price of 5·2d. per lb. was almost the same as that for the surveyed holdings. The distribution of the returns both in quantity and receipts is shown in the following Table 87.

TABLE 87
Distribution of Returns According to Varieties

Varieties	Quantities		Net Receipts				Net Price per lb.
	lb.	%	£	s.	d.	%	
Conference	34,359	76	830	13	8	85	5·8
Laxton's	645	1	13	8	0	1	5·0
Catton	640	1	7	2	10	1	2·7
Williams	1,548	3	31	9	4	3	4·9
Clapp's	648	2	17	8	0	2	6·4
Dr. Jules	120	—	3	10	0	—	7·0
Fertility	432	1	5	19	0	1	3·2
Magnum	1,368	3	14	10	0	2	2·5
Avonside	2,496	6	16	17	11	2	1·6
Kessel	168	—	2	2	0	—	3·0
Burgamot	1,728	4	21	12	11	2	3·0
Hazel	666	2	7	17	6	1	2·8
Pitmaston	264	1	3	17	0	—	3·5
Catillac	132	—	2	17	0	—	5·2
Total	45,214	100	979	5	2	100	5·2

From the details of the foregoing table it can be seen that the overwhelming majority of the crop was comprised of Conference pears; the effect of the other varieties on the seasonal distribution of supply and on average returns was therefore negligible. This may well suggest that for the purpose of obtaining information on the seasonality of the supply and on the fluctuation of prices, it is quite sufficient to examine the results of Conference pears only.

As may be expected from the overall marketing results, almost the entire supply of Conference pears found its market locally; only 16 per cent of the crop was sent to markets at

Bristol, Manchester, Sheffield, Leicester, Birmingham and Coventry. The difference between the results of local and other sales are as shown below:

	Quantity	Net Receipts		Net Price per lb.	
		lb.	%	£	%
Local Sales	28,855	84		712	86
Other Sales.	5,504	16		119	14
Total	34,359	100		831	100
					5.8

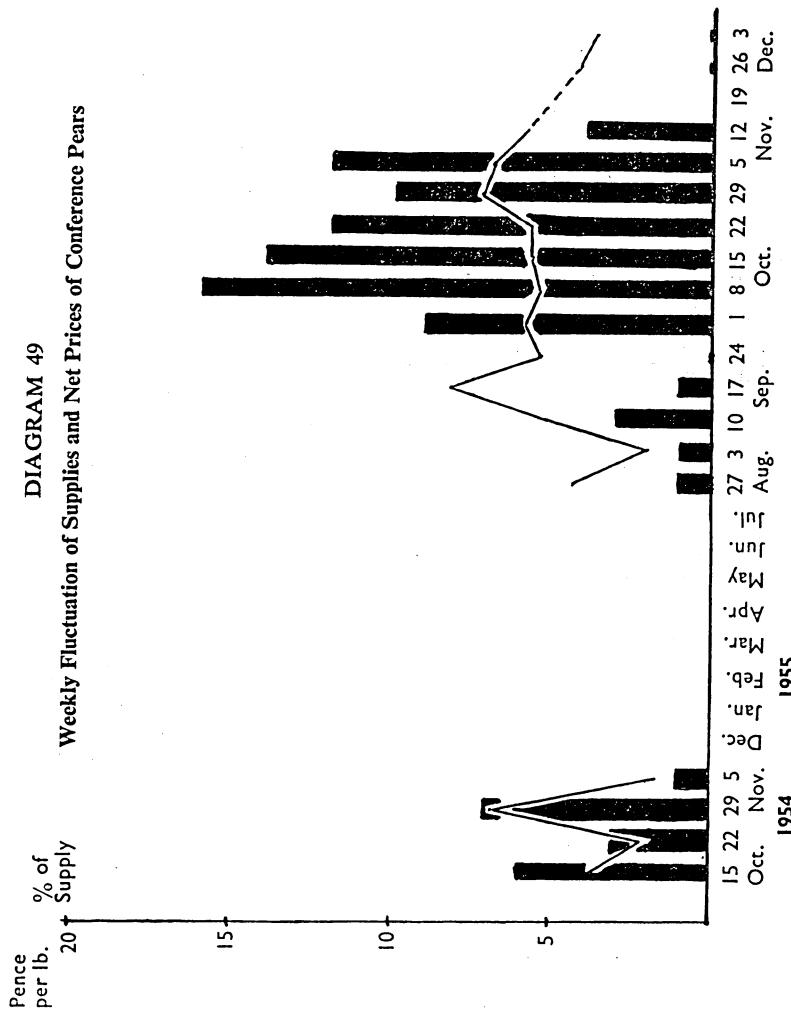
The market deductions for those sales which were transacted in gross terms, worked out at 10.3 per cent of the gross receipts, but on distant markets the cost of marketing was 22.2 per cent on an average gross price of 5.6d. per lb.

Of the total supply of 34,359 lb., 5,446 lb. for £106 were carried over in the financial accounts of the holdings from the 1954 crop at a net receipt of £106, showing an average net price of 4.6d. per lb. The net return to the grower for the new crop was 6.2d. per lb.

In 1955, the marketing season of pears covered a period of weeks running from the end of August until the beginning of December. However, in spite of this fairly long season, the main part of the crop was sold in the seven-week period between 1st October and 12th November. During this period the net price was almost steady, fluctuating only between 5.3d. and 7.2d. per lb.; otherwise it varied between 2d. and 8.2d. per lb. The very low price of 2d. per lb. for Conference pears was paid at the beginning of the season for fruit which had fallen off the trees, but the quantity of this consignment was only 1 per cent of the total crop. The weekly distribution of supply and the fluctuation of net prices are shown in Diagram 49.

Sales of Soft Fruit

There were 47 acres of soft fruit included in the average returns of the 32 sample holdings, and the turnover of this acreage amounted to £8,034, thus giving an average return of £171 per acre. The distribution of acreage and returns is given below according to the crops involved.



Crops	Acres		Total Receipts		Receipts Per Acre
	No.	%	£	%	
Strawberries . . .	13	28	3,718	46	286
Gooseberries . . .	15	32	1,218	15	81
Black Currants . . .	7	15	1,077	13	154
Red Currants . . .	2	4	538	7	269
Raspberries . . .	4	9	861	11	215
Blackberries (cult.) . . .	3	6	464	6	155
Loganberries . . .	3	6	158	2	53
Total	47	100	8,034	100	171

As in the case of all permanent crops, the returns from soft fruit depend largely on the age of the plantation, the varieties involved, the rate of inter-cropping, and on many other factors, the effect of which may be more marked than on annual crops. In the soft fruit plantations of the sample holdings, many different varieties of all ages were well represented and cultivated both in the open and grown as inter-crops. Thus the return of £171 per acre may be regarded as a fair average for the combined result of soft fruit production achieved in 1955. In 1954, on a somewhat larger acreage, the per acre return for these crops worked out at £174. However, the success of individual crops is extremely variable, so that the similarity between the results of the two years was rather more an accident than design.

1. Strawberries

On the 13 holdings which grew strawberries, the average per acre returns were 4,881 lb. of fruit for £286. The variation in the per acre results of individual holdings showed a range of 360 lb. to 9,660 lb. of fruit for between £30 and £630. The low yield was the first return from a new plantation. However, on a plantation, where only the Royal Sovereign variety was grown, a yield of 3,940 lb. was obtained for £388 per acre, while on another holding, where the crop consisted only of processing varieties the comparable returns were 9,055 lb. for £230. On some of the holdings strawberries were also grown between young fruit trees, and in one case the result of this method of production averaged 1,138 lb. of fruit for £62 per acre.

In considering the average returns from strawberries on a six-year basis, although the overall result may be affected to a certain extent by the varietal difference and the age of plantations, the effect of grubbing and replanting is far less marked

than in the case of other soft fruit crops where the maturing process is considerably longer than that of strawberries. Thus the possible discrepancy which may be created by the comparatively short life-time of the plantation and the equally short time taken for new runners to come into bearing will most likely be levelled up in the average returns of the six years' results. In all, there were 6 holdings, which grew strawberries from 1950 to 1955, and the average returns per acre were as follows.

Year	Quantity	Receipts		Price per lb. d.
		lb.	£	
1950	3,361	139		9.9
1951	3,296	189		13.8
1952	3,314	256		18.5
1953	3,360	234		16.7
1954	3,580	228		15.3
1955	6,758	397		14.1
Average	3,945	241		14.7

The above results show that on the holdings in question the year 1955 was a favourable one for strawberries. Although the price was lower than in the previous three years, the exceptionally high yield ensured substantial receipts. This satisfactory result in 1955 was no doubt due to the period of sunny weather prior to and during the fruiting season of the plantations. During this year the market deductions worked out at 4.6 per cent of total sales, which tended to reduce the average receipts to £379 per acre.

As far as the marketing of strawberries was concerned, 71 per cent of the crop was sold through local channels, whereas the rest of the supply went to eight different markets including London, Cardiff, Manchester, Leicester and Sheffield. Details of these marketing results are shown in Table 88. The difference between the local and other sales are as follows:

	Quantity	Net		Net Price per lb. d.
		lb.	%	
Local Sales	61,652	71		12.1
Other Sales	25,195	29		13.0
Total	86,847	100		12.4

This comparison shows a somewhat lower average net price received from the local than from the distant sales. The difference was no doubt due to the processing and second quality fruit, which had to be sold locally as it was unfit for transport. The proportion of this fruit can hardly be assessed, but the low price of 10·1d. per lb. paid by local merchants may suggest that it might have been as much as 48 per cent of the total supply. In the gross sales, market deductions absorbed 12·2 per cent of gross receipts, which is quite comparable with those for other crops. The returns from sales at distant markets showed that deductions varied between 14 and 23 per cent; at Stratford-on-Avon, however, the market deduction worked out at only 10 per cent, thanks to the high average gross price of 1s. 6d. per lb.

In 1955, the marketing season of strawberries ran for six weeks lasting from the 19th June until the end of July. Although in other years the season may commence earlier, the six-week period for selling the crop seems to be quite general. For instance in 1953 the season started in the first week of June, in 1954 in the second week, and in 1955 in the third week, but in all three years it covered a period of six weeks. During these seasons, the distribution of weekly supplies showed the following comparison:

<i>Marketing Period</i>	1953	1954	1955
Week	%	%	%
1st	1	1	—*
2nd	12	8	9
3rd	26	43	34
4th	37	32	42
5th	21	14	14
6th	3	2	1
Total . . .	100	100	100

* Under 1 per cent.

Although there was a considerable difference in the details of the distribution of supply for the three years, the trend in the increase and decrease of quantities was rather similar. In all three years for instance the peak of the season appeared to be in the third and fourth weeks; in the fifth week there were still fair quantities sold, but the supply in the sixth week was only negligible.

As far as the variations of net prices were concerned, the results of the three seasons showed no fluctuation at all, but

TABLE 88

Sales of Strawberries

Method of Marketing	Trans- ac-tions		Quantities		Gross Receipts			Gross Price per lb.	Deductions			
	No.	%	lb.	%	£	s.	d.	%	£	s.	d.	%
Growers' Co-operatives	52	23	14,571	17	1,151	0	3	65	18.9	95	3	6
Growers' Co-operatives	11	5	2,018	2	—	—	—	—	—	—	—	—
Local Markets	35	15	3,442	4	246	6	6	14	17.2	20	10	10
Local Merchants	33	15	41,621	48	—	—	—	—	—	—	—	—
Commission Salesmen:												
Birmingham		8	3	54	—	5	2	0	22.7	7	10	7.7
Birmingham		10	4	688	1	—	—	—	—	—	—	—
Cardiff		2	1	84	—	6	0	0	17.1	12	1	10.0
Coventry		27	12	3,086	4	210	13	0	12	15	16	10
Leicester		5	2	944	1	—	—	—	16.4	—	—	7.5
London		16	7	17,220	20	—	—	—	—	—	—	—
Manchester		9	4	612	1	49	1	0	19.2	4	17	11
Manchester		1	—	6	—	—	—	—	—	—	—	—
Sheffield		6	3	1,220	1	—	—	—	—	—	—	—
Stratford-on-Avon		14	6	1,281	1	98	4	7	18.4	7	7	6
Total	229	100	86,847	100	1,766	7	4	100	—	144	16	6
Gross Sales	147	64	23,130	27	1,766	7	4	—	18.3	144	16	6
Net Sales	82	36	63,717	73	—	—	—	—	—	—	—	—

TABLE 89

Sales of Gooseberries

Method of Marketing	Trans- ac-tions		Quantities		Gross Receipts			Gross Price	Deductions				
	No.	%	lb.	%	£	s.	d.	%	£	s.	d.	%	
Growers' Co-operatives	25	10	4,116	7	148	17	0	17	8.7	12	8	1	
Growers' Co-operatives	85	34	25,858	43	—	—	—	—	—	—	—	—	
Local Markets	23	9	9,199	15	344	3	10	39	9.0	25	17	2	
Local Merchants	29	11	3,469	6	—	—	—	—	—	—	—	—	
Commission Salesmen:													
Birmingham		24	10	2,931	5	143	9	8	16	11.7	10	15	2
Birmingham		26	10	7,452	12	—	—	—	—	—	—	—	—
Coventry		1	—	72	—	2	8	0	—	8.0	3	8	7.6
Gloucester		7	3	971	1	57	11	8	7	14.2	4	6	4
Manchester		25	10	4,580	8	190	7	6	21	10.0	19	0	7
Manchester		1	—	262	—	—	—	—	—	—	—	—	—
Sheffield		7	3	1,896	3	—	—	—	—	—	—	—	—
Total	253	100	60,806	100	886	17	8	100	—	72	11	0	
Gross Sales	105	42	21,869	36	886	17	8	—	9.7	72	11	0	
Net Sales	148	58	38,937	64	—	—	—	—	—	—	—	—	—

Sales of Strawberries

Deductions							Net Receipts			Net Price per lb.			
Hire of Empties			Handling Charges		Carriage		Total						
£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.		
18	3	6	1·5	—	—	—	113	7	0	9·8	1,073	13	
—	—	—	—	—	—	—	—	—	120	3	8		
11	18	2	4·9	—	—	—	32	9	0	13·2	213	17	
—	—	—	—	—	—	—	—	—	1,743	14	9		
—	—	—	3	4	3·3	3	6	3·4	14	8	14·4		
—	—	—	—	—	—	—	—	—	52	11	10		
—	—	—	—	—	—	—	—	—	4	14	6		
24	3	10	11·5	2	3	0	1·0	6	19	8	13·2	161	5
—	—	—	—	—	—	—	—	—	48	18	0		
—	—	—	—	—	—	—	—	—	860	4	—		
—	—	—	—	—	—	—	—	—	41	11	5		
—	—	—	—	—	—	—	—	—	101	0	3		
1	14	10	1·8	1	0	9	1·0	—	—	10	3	1	
—	—	—	—	—	—	—	—	—	88	1	6		
56	0	4	3·2	3	7	1	0·2	10	8	3	0·6	214	12
—	—	—	—	—	—	—	—	—	12	2	—		
56	0	4	3·2	3	7	1	0·2	10	8	3	0·6	214	12
—	—	—	—	—	—	—	—	—	12	2	—		
—	—	—	—	—	—	—	—	—	1,551	15	2		
—	—	—	—	—	—	—	—	—	2,927	1	6		
—	—	—	—	—	—	—	—	—	35	65	65		
—	—	—	—	—	—	—	—	—	16·1	11·0	—		

Sales of Gooseberries

Deductions							Net Receipts			Net Price			
Use of Empties			Handling Charges		Transport		Total						
£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.		
18	7	0·6	—	—	—	—	13	6	8	8·9	135	10	
—	—	—	—	—	—	—	25	17	2	7·5	663	7	
—	—	—	—	—	—	—	—	—	318	6	8		
—	—	—	6	18	3	4·8	7	13	1	5·3	17	8·3	
—	—	—	—	—	—	—	—	—	86	7	6		
—	—	—	—	—	—	—	—	—	—	—	5·0		
—	—	—	—	—	—	—	—	—	118	3	2		
2	0	4·2	6	18	3	4·8	7	13	1	5·3	209	13	
—	—	—	—	—	—	—	—	—	1	19	1		
—	—	—	—	—	—	—	—	—	—	—	—		
—	—	—	—	—	—	—	—	—	48	10	4		
—	—	—	—	—	—	—	—	—	156	16	4		
—	—	—	—	—	—	—	—	—	7	9	3		
—	—	—	—	—	—	—	—	—	55	6	0		
1	0	7	0·1	8	18	7	1·0	25	1	7	2·8	107	11
—	—	—	—	—	—	—	—	—	9	6	100		
—	—	—	—	—	—	—	—	—	12	1	7·1		
1	0	7	0·1	8	18	7	1·0	25	1	7	2·8	107	11
—	—	—	—	—	—	—	—	—	9	6	100		
—	—	—	—	—	—	—	—	—	12	1	7·1		
—	—	—	—	—	—	—	—	—	779	5	11		
—	—	—	—	—	—	—	—	—	1,022	3	7		
—	—	—	—	—	—	—	—	—	45	55	55		
—	—	—	—	—	—	—	—	—	8·6	6·3	—		

merely a steady decrease. The average weekly net prices received per lb. were as follows:

<i>Marketing Period</i>	1953	1954	1955
<i>Week</i>	s. d.	s. d.	s. d.
1st	2 6	2 1	2 11
2nd	2 0	1 8	1 8
3rd	1 8	1 6	1 1
4th	1 4	1 3	1 0
5th	1 1	1 2	10
6th	10	1 2	1 0
Average . . .	1 5	1 5	1 0½

The low average price per lb. for 1955 was mainly due to the high yield, 34 per cent being sold in the third week of the season and thus reducing the price from 1s. 8d. to 1s. 1d. In 1953 and 1955 this drop was not so marked, and, due to the higher prices prevailing, had a lesser effect on the overall prices. Diagram 50 gives an account of the weekly distribution of the supply and of the fluctuation of net prices.

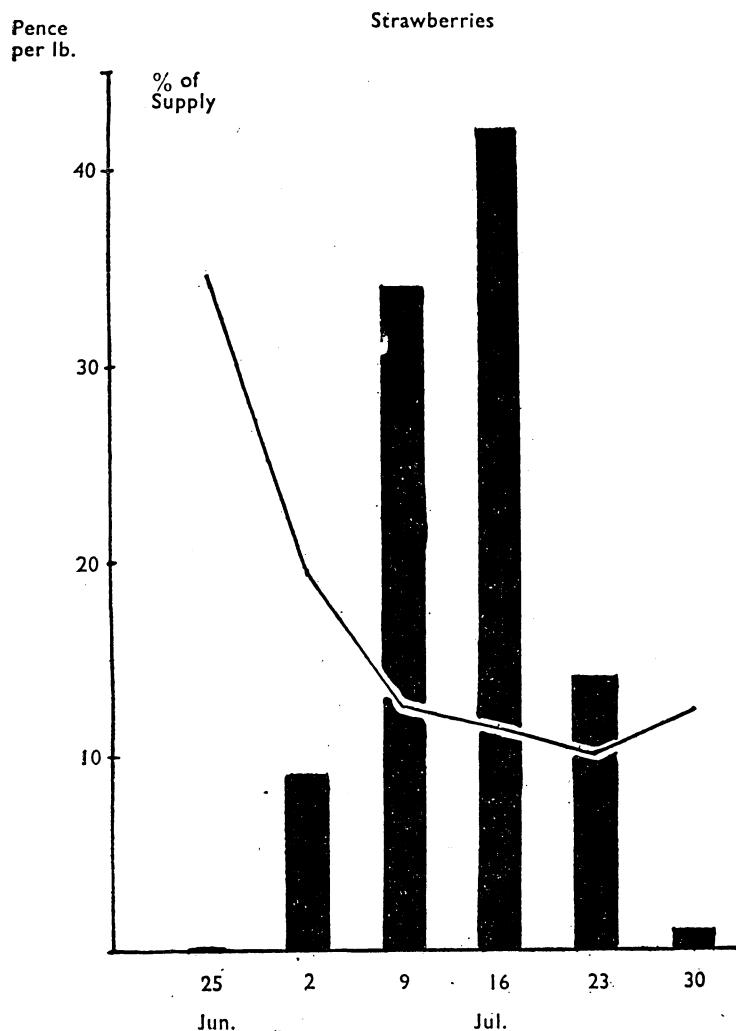
2. Gooseberries

In the sample there were 15 holdings with gooseberry plantations but more than half of them were inter-cropped in plum orchards. In these inter-cropped plantations it is hardly possible to assess the returns accurately on a "one acre" basis. In such cases, if the bushes have been sparsely planted, or many of them died, or were grubbed in the course of the years, there may be a considerable discrepancy between the actual and recorded area of fruit. However, as it is a rather common feature of plum orchards to include inter-cropped gooseberry bushes, the average returns may provide a fair picture of this method of growing gooseberries and give some indication of the additional revenue obtained from the orchards.

By estimating about 50 per cent of the total acreage to be for inter-cropping, the average yield per acre for the 15 plantations worked out at 2,616 lb. of fruit for £81. In view of the different methods of growing the fruit, the returns from individual holdings varied considerably. However, the best per acre result was 9,264 lb. for £226, which referred to a plantation on its own. On the other hand the poorest result per acre was only 960 lb. of fruit for £5 which was obtained from an old, unattended, inter-cropped plantation. The yields from inter-cropped bushes varied, on average, from 1,155 lb. to 1,730 lb.,

for between £32 and £56 per acre, and this seems to be the actual additional revenue which should be added to the receipts of the inter-cropped plum orchards.

DIAGRAM 50
Weekly Fluctuation of Supplies and Net Prices of Strawberries



There were no changes in the gooseberry acreage on the sample holdings in recent years, so that the six years' results should reflect, fairly faithfully, the annual variations in the returns. Of the 15 holdings, the records of 8 were available for the six-year period. The results per acre of these holdings are as follows:

Years	Quantity	Receipts	Price per lb.	
			lb.	£
1950 . . .	1,891	62		7.9
1951 . . .	2,175	71		7.8
1952 . . .	1,982	59		7.1
1953 . . .	3,844	71		4.7
1954 . . .	3,828	107		6.7
1955 . . .	3,134	99		7.6
Average . . .	2,809	78		6.7

The above figures indicate that, of the six years, 1954 and 1955 were the best years for the gooseberry crop, when both yields and cash returns showed the highest result. Compared with many other crops, the annual prices did not vary much, and with the exception of 1953, the prices ranged between 6.7d. and 7.9d. per lb. Almost half of the crop was sold locally in net terms, so that the market deduction which tended to decrease the return for 1955, was only 5.5 per cent. Taking this cost into account, the £99 return was reduced to a net sum of £94 per acre received by the growers.

The pattern of marketing is given in Table 89. According to these data 70 per cent of the 1955 gooseberry crop was sold locally, and the other part of the supply went to markets at Birmingham, Coventry, Gloucester, Manchester and Sheffield. The result of the local and distant sales were as follows:

	Quantity	Net Receipts		Net Price per lb.
		lb.	%	
Local Sales . . .	42,642	70		6.8
Other Sales . . .	18,164	30		7.9
Total . . .	60,806	100		7.1

The reason for the discrepancy shown by the two types of sales was most probably due to the amount of dessert fruit (Levellers) which was sent to the distant markets, whereas the home sales also included some transactions made on contract.

In the gross transactions, the rate of market deductions was 12.1 per cent of the gross receipts, thus being the same as for strawberries. On distant markets these costs varied between 16 and 19 per cent.

The 1955 marketing season for gooseberries covered not less than 11 weeks running from the end of May until the middle of August. Of this rather long season, at least the last two weeks were devoted to dessert varieties. However, of the total supply more than half of the crop was sold during the 4th, 5th and 6th week of the period. There was a moderate fluctuation of prices of between 6.4d. and 11.7d. per lb.; the latter figure, however, referred to Levellers and not to the usual varieties. During the peak marketing period the net price per lb. ranged between 6.4d. and 7.8d. The weekly distribution of supplies and the fluctuation of net prices are given in Diagram 51.

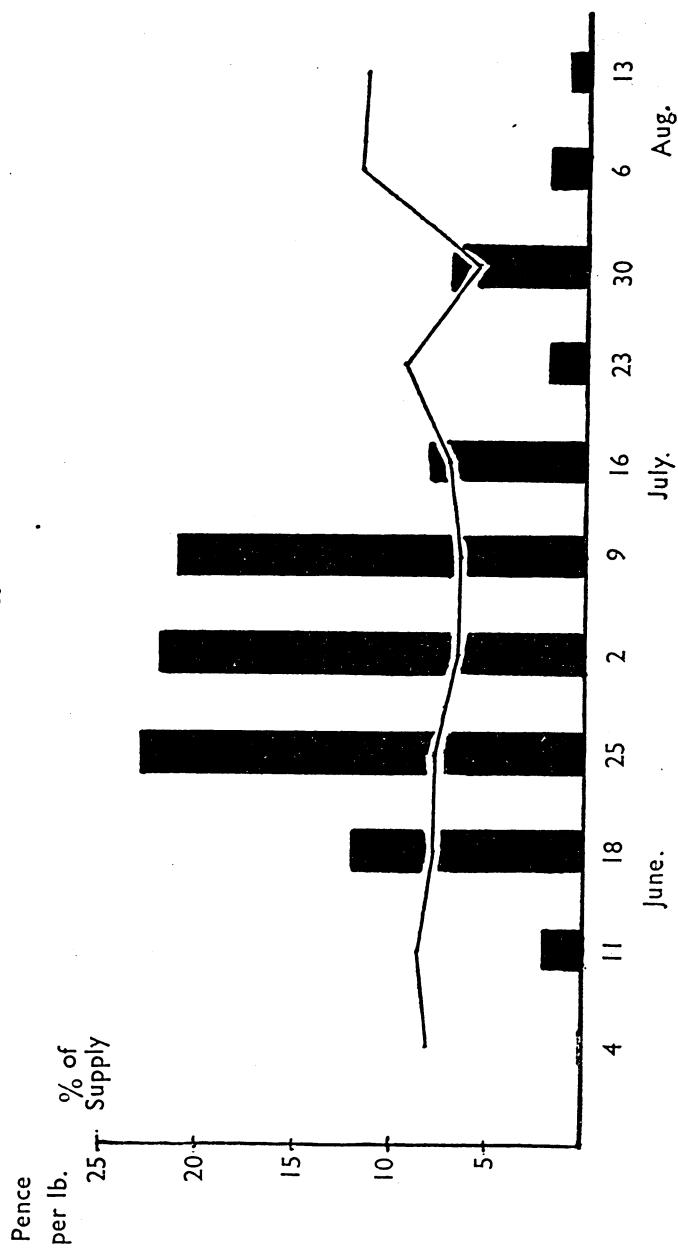
3. Black Currants

Among the sample holdings, there were only 7 black currant plantations of which at least two were inter-cropped between plum trees. On two holdings a fair proportion of the crop was grown on contract, but the greater proportion of the yield was sold on the open market. The average yields from the holdings in question amounted to 2,604 lb. per acre for £154. The best individual per acre result was 6,004 lb. for £396, and the poorest only 700 lb. for £40. The high returns were achieved on a well sheltered plantation of about 7 years old; on the other hand, the low yield referred to a holding where black currants were grown as an inter-crop.

On the four holdings, where black currants were grown continuously since 1950, the plantations returned a fairly steady yield, but this fell far below the standard of the big commercial growers which averages about 3—4 tons of fruit per acre. The six-year results of the four holdings were as follows:

Years	Quantity	Receipts	Net Price per lb.
	lb.	£	d.
1950	2,462	74	7.2
1951	3,049	131	10.3
1952	3,700	150	9.7
1953	6,029	229	9.1
1954	3,327	156	11.3
1955	3,410	207	14.6
Average	3,663	158	10.6

DIAGRAM 51
Weekly Fluctuation of Supplies and Net Prices of Gooseberries
Gooseberries



As shown by the above figures, the year 1955 was quite a successful season for this crop. Although the plantations returned only moderate yields, the high price, due possibly to the steadily increasing demand for the fruit, ensured one of the best returns per acre, of £207, achieved during the six-year period. As the crop was almost entirely sold to the local marketing agencies, mostly on net terms, there were practically no market deductions; they actually worked out only at 1 per cent of total receipts.

The data on marketing the fruit are shown in Table 90, which, in order to provide wider information, also included the marketing results of three additional holdings from the Vale. According to the figures of the ten holdings, 38 per cent of their black currant crop was disposed of through the services of local agencies, and as much as 62 per cent of the supply went to processors and merchants who bought the crop on contract. The difference between the results shown by the contract and other sales is given below:

	Quantity	Net Receipts	Price per lb.
	lb.	£	d.
	%	%	
Contract Sales . . .	43,344	2,205	12·2
Other Sales . . .	26,578	1,400	12·6
Total . . .	69,922	3,605	12·4

As can be seen from the above figures, the difference between the sales on contract and on the open market was negligible. In fact, there seems to be a growing tendency, especially among larger holdings, to produce and sell this particular crop on contract. By growing black currants on a long term contract for a well-known firm of processors, the growers are not only provided with a special interest in growing the fruit but also have a guaranteed market for it. This method of growing and disposing of the fruit is rather unique in horticultural production, and the pre-fixed minimum price and expert technical advice on husbandry attached to the contract provides the grower with good security in helping him to obtain fair returns for his black currant crop year after year. For those sales transacted in gross terms on open markets, the deductions absorbed 10·8 per cent of the gross receipts.

In 1955, the marketing season of the crop lasted for six weeks, running from the beginning of July until the middle of

August. Over the years, there may be some difference in the dates of the beginning and end of the season, but the results of the years of 1953-1955 tended to confirm that the marketing season of this crop is likely to be spread over six weeks whether or not it happens to be early or late. This is demonstrated by the distribution of the corresponding weekly supplies sent to markets and contractors during these three years.

<i>Marketing Period</i>	1953	1954	1955
	%	%	%
June 25-July 2	2	—	—
July 3-9	38	6	5
10-16	30	25	2
17-23	29	27	19
24-30	1	26	42
31-Aug. 6	—*	13	32
Aug. 7-13	—	3	—*
Total	100	100	100

* Under 1 per cent

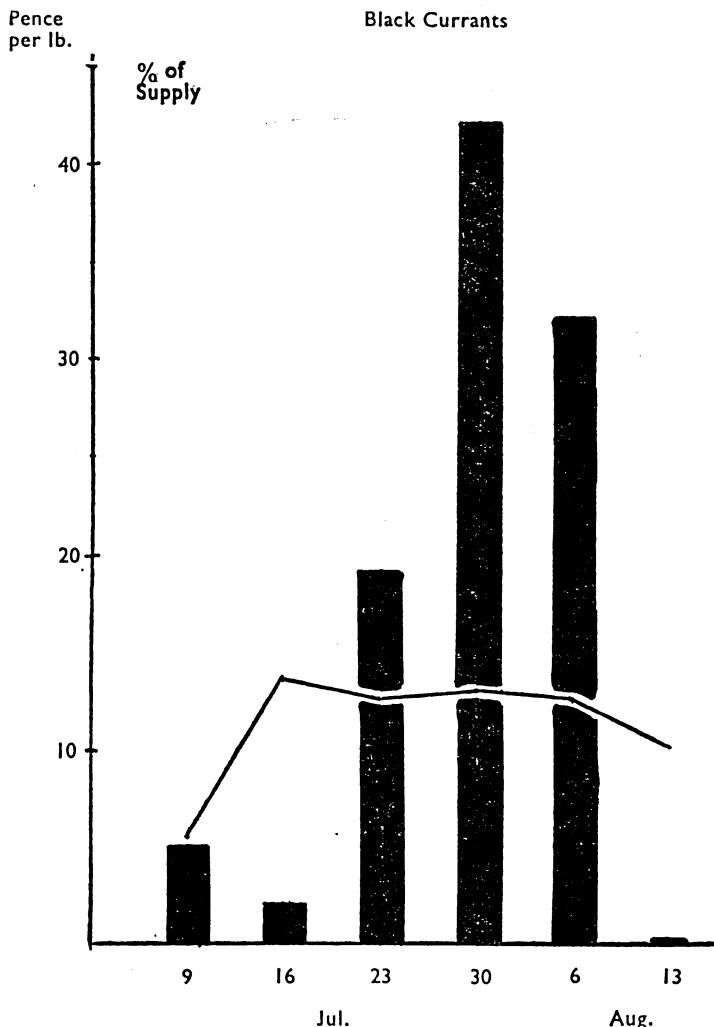
Of these three years 1953 had an early and short season, 1954 was late and long, and 1955 late and short. The average net price received from the open markets was 7·2d. per lb. in 1953, 10·9d. in 1954, and 13·5d. in 1955. On the other hand, the prices paid on contract and by the local merchants varied between 10d. per lb. in 1953, 9·7d. in 1954, and 12·2d. in 1955. During these years the weekly fluctuation of net prices showed the following comparison:

<i>Marketing Period</i>	1953	1954	1955
Week	s. d.	s. d.	s. d.
1st	9	1 0	6
2nd	8	10	1 2
3rd	9	10	1 0
4th	9	10	1 1
5th	10	10	1 1
6th	1 2	10	1 0
Average	9	10	1 0½

In each week a considerable part of the supply was sold on contract, so that there was hardly any fluctuation in the price level of these three years. In fact, these sales had a stabilising effect on the prices, and considerably helped the growers to arrange the picking in accordance with the maturity of the fruit rather than with market demands. Diagram 52 shows the weekly distribution of the supply and the fluctuation of the net prices.

DIAGRAM 52

Weekly Fluctuation of Supplies and Net Prices of Black Currants



4. Red Currants

Only two of the sample holdings grew this crop and on a rather small scale too. As a matter of fact, due perhaps, to the limited demand for it, the red currant is not a popular crop in the Vale. Most of the red currant plantations are only used for the purpose of inter-cropping. However, on the

TABLE 90

Sales of Black Currants

Method of Marketing	Transactions		Quantities		Gross Receipts			Gross Price
Growers' Co-operatives	No.	%	lb.	%	£	s.	d.	d.
Growers' Co-operatives	11	19	930	2	55	17	1	14.4
Local Markets	5	9	5,068	7				
Local Merchants	16	28	1,600	2	105	16	10	15.8
Contract Sales	12	21	18,964	27	—	—	—	—
Commission Salesmen:			43,344	62	—	—	—	—
Birmingham	1	2	16	—	—	—	—	—
Total	57	100	69,922	100	161	13	11	100
Gross Sales	27	47	2,530	4	161	13	11	—
Net Sales	30	53	67,392	96	—	—	—	15.3

TABLE 91

Sales of Red Currants

Method of Marketing	Transactions		Quantities		Gross Receipts		Gross Price	Deductions	
								Commission	
Growers' Co-operatives	No.	%	lb.	%	£	s.	d.	d.	%
Local Merchants	8	22	3,016	57	—	—	—	—	—
Commission Salesmen:			706	13	—	—	—	—	—
Birmingham	1	3	60	1	3	0	0	12.0	4 5 7.4
Birmingham	8	21	309	6	—	—	—	—	—
Manchester	7	19	1,032	20	34	18	6	8.1	3 9 10 9.0
Oxford	3	8	132	3	—	—	—	—	—
Total	37	100	5,255	100	37	18	6	100	8.3
Gross Sales	8	22	1,092	21	37	18	6	—	3 14 3 9.8
Net Sales	29	78	4,163	79	—	—	—	—	—

TABLE 92

Sales of Raspberries

Method of Marketing	Transactions		Quantities		Gross Receipts		Gross Price	Deductions	
								Commission	
Growers' Co-operatives	No.	%	lb.	%	£	s.	d.	d.	%
Local Markets	19	17	1,013½	13	106	7	1	25.2	8 0 3 7.5
Local Merchants	43	39	868	10	46	2	6	12.8	3 17 2 8.4
Commission Salesmen:					—	—	—	—	—
Birmingham	10	9	420	5	31	14	4	18.1	2 9 2 7.8
Birmingham	9	8	844	10	—	—	—	—	—
Brentford	1	1	96	1	4	16	0	12.0	9 6 9.9
Total	111	100	8,391	100	188	19	11	100	—
Gross Sales	59	53	2,397½	29	188	19	11	—	18.9
Net Sales	52	47	5,993½	71	—	—	—	—	14 16 1 7.8

Sales of Black Currants

Deductions						Net Receipts		Net Price
Commission		Use of Empties		Total		£ s. d.	%	d.
£ s. d.	%	£ s. d.	%	£ s. d.	%	£ s. d.	%	d.
4 13 1	8.3	4 10	0.4	4 17 11	8.7	50 19 2	1	13.2
8 15 0	8.3	3 17 5	3.6	12 12 5	11.9	283 14 7	8	13.4
—	—	—	—	—	—	93 4 5	3	14.0
—	—	—	—	—	—	970 18 9	27	12.3
—	—	—	—	—	—	2,204 18 3	61	12.2
13 8 1	8.3	4 2 3	2.5	17 10 4	10.8	16 0	—	12.0
13 8 1	8.3	4 2 3	2.5	17 10 4	10.8	3,604 11 2	100	12.4
—	—	—	—	—	—	144 3 7	4	13.7
13 8 1	8.3	—	—	—	—	3,460 7 7	96	12.3

Sales of Red Currants

Deductions						Net Receipts		Net Price
Handling Charges		Transport		Total		£ s. d.	%	d.
£ s. d.	%	£ s. d.	%	£ s. d.	%	£ s. d.	%	d.
—	—	—	—	—	—	76 17 10	54	6.1
—	—	—	—	—	—	17 14 0	12	6.0
2 11	4.9	1 8	2.8	9 0	15.1	2 11 0	2	10.2
13 10	3.8	3 3 0	8.2	7 6 8	21.0	10 19 0	8	8.5
—	—	—	—	—	—	27 11 10	19	6.4
16 9	2.2	3 4 8	8.5	7 15 8	20.5	6 12 0	5	12.0
16 9	2.2	3 4 8	8.5	7 15 8	20.5	143 5 8	100	6.5
—	—	—	—	—	—	30 2 10	21	6.6
16 9	2.2	—	—	—	—	112 2 10	79	6.5

Sales of Raspberries

Deductions						Net Receipts		Net Price
Use of Empties		Handling Charges		Transport		Total		£ s. d.
£ s. d.	%	£ s. d.	%	£ s. d.	%	£ s. d.	%	d.
1 17 8	1.9	—	—	—	—	9 17 11	6.4	22.8
2 15 3	6.0	—	—	—	—	6 12 5	14.4	10.9
—	—	—	—	—	—	—	326 8 8	15.2
—	—	1 6 9	4.2	14 10	2.3	4 10 9	14.3	15.5
—	—	—	—	—	—	14 2	14.8	15.1
4 8	4.9	—	—	—	—	—	4 1 10	10.2
4 17 7	2.6	1 6 9	0.7	14 10	0.4	21 15 3	11.5	15.6
4 17 7	2.6	1 6 9	0.7	14 10	0.4	21 15 3	11.5	16.7
—	—	—	—	—	—	—	167 4 8	30
—	—	—	—	—	—	—	379 7 10	70
—	—	—	—	—	—	—	—	15.2

previously mentioned two holdings, the crop showed very good returns in 1955, averaging 7,714 lb. of fruit per acre, for £269. On the whole, this was an exceptionally good year for the fruit, since the combined results of the past five years only showed 5,739 lb. per acre for £148. On both holdings the bushes were planted as an inter-crop.

Most of the crop was sold locally, and the quantity sold at Birmingham, Manchester and Oxford represented only 30 per cent of the total yield. Details of red currant sales are shown in Table 91. According to these figures local sales averaged 6·1d. per lb. of fruit and others 7·5d. Almost 80 per cent of the crop was sold on net terms, mostly locally, and thus only those sales transacted at Birmingham and Manchester had any market deductions. These deductions worked out 15 per cent of gross receipts for the former market, and 21 per cent for the latter.

The marketing season of this crop covered a period of four weeks lasting from the 10th July until the 6th August 1955. The distribution of weekly supplies and the fluctuation of net prices were as follows:

<i>Marketing Period</i>		<i>Price per lb.</i>
1955	%	d.
July 10-16	31	6·6
17-23	46	6·5
24-30	22	6·2
31-Aug. 6	1	12·0
Total	100	6·5

The above figures indicate that in 1955 the crop matured rather quickly, so that most of the yield was able to be picked and sold during the first fortnight of the season. Due to the short season, perhaps, prices showed hardly any variation, with the exception of a small consignment sold during the last week.

5. Raspberries

Only four holdings grew raspberries and the returns from the crop averaged 2,927 lb. per acre for £215. Of these holdings the best per acre result was 4,183 lb. of fruit for £410, and the lowest 1,340 lb. for £57, this being on a very young plantation inter-cropped with broad beans. Most of the plantations were rather young, in fact only one of them was over eight years old. The six years' records of these holdings showed the following returns:

<i>Years</i>	<i>Quantity</i>	<i>Receipts</i>	<i>Price per lb.</i>
	lb.	£	d.
1950 . . .	1,887	105	13·4
1951 . . .	2,083	128	14·7
1952 . . .	4,146	279	16·1
1953 . . .	4,278	260	14·6
1954 . . .	4,817	276	13·8
1955 . . .	2,927	215	17·6
Average . . .	<u>3,420</u>	<u>215</u>	<u>15·1</u>

According to the above figures, the 1955 yield was one of the lowest since 1951, but the good price received for the crop helped to ensure the moderate return of £215 per acre. The annual results probably account for the variations in the returns and the extent to which they contributed to the overall average; the yields, however, give the impression of gradually developing plantations. The steady increase in returns from the progressive establishment of a young plantation may be illustrated by the results of a holding where two-year-old bushes were planted out in the autumn of 1954.

<i>Year</i>	<i>Quantity</i>	<i>Receipts</i>	<i>Year</i>	<i>Quantity</i>	<i>Receipts</i>
	lb.	£		lb.	£
1950	150	7	1953	4,773	346
1951	1,006	57	1954	6,450	440
1952	5,293	397	1955	4,183	410

These per acre results indicate that it was in the third year that the plantation became properly established, and showed a full return both in yield and cash. The six-year average for this plantation worked out at 3,643 lb. per acre for £276. Although these results seem to be promising, the ultimate success of the plantation will depend on the length of its productive lifetime.

As the growers sold more than half their crops on net terms, the market charge on the total sales was only 3·9 per cent. This rate of deduction reduces the 1955 receipts from £215 to £207 per acre.

The pattern of marketing raspberries is shown in Table 92, details of which have been derived from the sales of six holdings. According to these data 84 per cent of the crop was sold locally, and the rest found buyers at Birmingham and Brentford. The difference between the returns of the local and other sales is given below:

		Quantity	Net Receipts	Net Price per lb.
		lb.	£	%
Local Sales . . .		7,031	84	462 84 15.8
Other Sales . . .		1,360	16	85 16 14.9
Total . . .		8,391	100	547 100 15.6

Although the above data have been derived from not less than 111 transactions, the difference between the two methods of marketing is quite insignificant. In the gross transactions, market deductions represented 11.5 per cent of gross receipts; at Birmingham and Brentford, however, they absorbed, respectively, 14 and 15 per cent of the gross price.

The 1955 marketing season for this fruit was rather long, and lasted from the end of June until the end of August, covering a period of nine weeks. However, 74 per cent of the crop was sold within a period of four weeks, from the 10th July until the 6th August. Due to the long marketing season, weekly supplies were fairly evenly distributed, but prices showed considerable fluctuation between 1s. 2d. and 2s. 5d. per lb. During the last three weeks of the season prices remained steady at 1s. 3d. per lb. The weekly distribution of the supply and the fluctuation of net prices can be seen from Diagram 53.

6. Blackberries (cultivated) and Loganberries

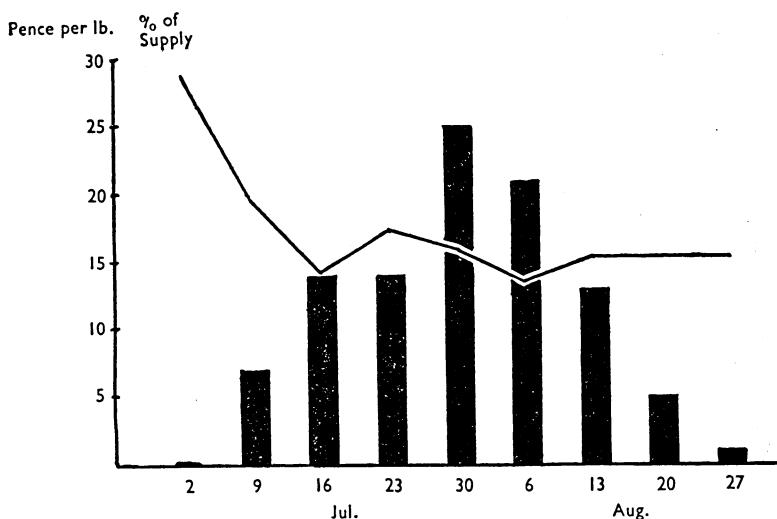
Although these crops may occasionally be found on small holdings, they belong primarily to the enterprises of large fruit farms. For instance, the establishment of a plantation on a fairly large acreage, together with the installation and maintenance of supporting poles and wirings require a considerable outlay, which is more feasible on a large than a small holding.

Three of the sample holdings had blackberries among their fruit enterprises; one of these holdings was under 50 and the others were around 100 acres. Both of the latter holdings were large producers of blackberries with plantations occupying more than 10 acres each.

The average returns of the three holdings showed a yield of 2,518 lb. of fruit per acre for £155; the highest return was 3,330 lb. for £215, while the lowest was 1,460 lb. for £100. Unfortunately, only one holding had records available for the six-year period. On this holding the combined results for the six years showed a yield per acre of 3,788 lb. of fruit for £193.

As shown in Table 93, most of this crop was sold at markets outside the Vale as far afield as Manchester, Leeds and London

DIAGRAM 53

Weekly Fluctuation of Supplies and Net Prices of Raspberries
Raspberries

and the quantity which happened to be sold locally only amounted to 5 per cent of the total supply. Of the distant sales, 67 per cent of the crop was bought up by a London cannery for about £105 per ton. Owing to the large proportion of distant sales, the rate of deductions appeared to be rather high, averaging 18.2 per cent of gross receipts.

The marketing season of this fruit lasted from the beginning of August until the middle of October, covering a period of 10 weeks. However, the bulk of the crop was sold in the middle of September, representing a period of only four weeks. In view of the fact that more than half of the crop was sold on contract, the average weekly prices showed hardly any fluctuation.

With regard to loganberries, although there were three holdings cultivating the crop, the results proved to be too unrepresentative. On one of these holdings, the plantation was not yet in bearing, whereas on the other two the 1955 returns were too low to be worthy of consideration. The entire crop on these holdings was sold to local merchants and the price averaged 1s. 1d. per lb.

The length of the marketing season covered seven weeks, lasting from the middle of July until the beginning of

September; however, by the middle of August almost the entire crop had been sold. The sales were most probably transacted on contract, so that the weekly prices showed almost no variation at all. The distribution of weekly supplies and the fluctuation of net prices of blackberries and loganberries is shown in Diagram 54.

Sales of Herbs and Flowers

Both herbs and flowers were grown mainly on small holdings, especially those of under 20 acres. Although the production of herbs, such as parsley, sage and thyme is quite common in the Vale, only the two former crops were grown on seven holdings in the sample. With regard to flowers, they were grown regularly on nine of the holdings, but, owing to the great number of varieties of flowers, the per acre returns had to be restricted to those which had an important effect on the total output of the holdings. The acreages and returns for herbs and flowers were as follows:

Crops	Acres		Total Receipts		Receipts Per Acre
	No.	%	£	%	
Parsley . . .	4	25	1,030	10	258
Sage . . .	3	19	471	5	157
Flowers . . .	9	56	8,743	85	972
Total . . .	16	100	10,244	100	641

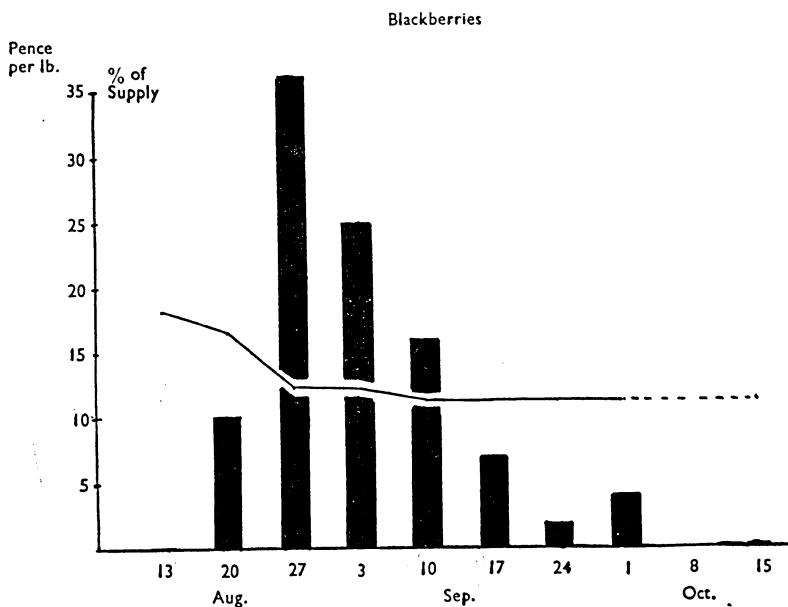
From the returns for herbs and flowers, it can be seen that although they are generally grown only on a small acreage, these crops were of high value, and, in accordance with the extent to which they were grown, contributed substantially to the turnover of the holdings concerned.

1. Parsley

There were altogether four holdings which grew this crop practically the whole year round. The combined results of the spring, summer and winter crop gave a yield of 4,500 lb. per acre for £258. Whereas the best result was 9,420 lb. per acre for £570, the lowest was only 600 lb. for £32. As these holdings had grown no parsley before, it was not possible to review the success of this crop in the light of the results of previous years. However, the return of £258 per acre is confirmed by the 1950-1954 results of three other holdings where

DIAGRAM 54

Weekly Fluctuation of Supplies and Net Prices of
Blackberries and Loganberries



Loganberries

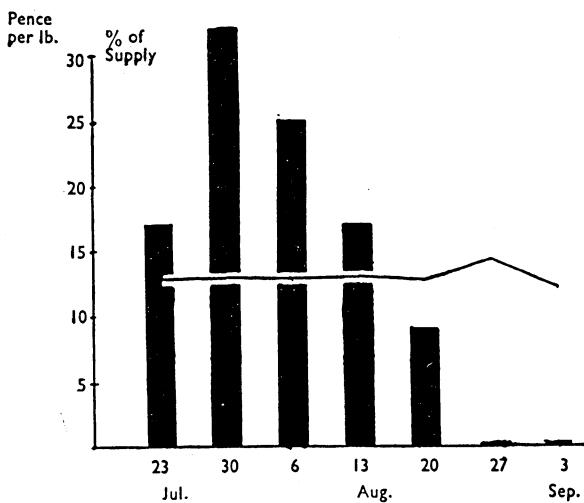


TABLE 93

Marketing of Blackberries

Method of Marketing	Trans- actions		Quantities		Gross Receipts		Gross Price per lb.	Deductions			
	No.	%	lb.	%	£	s.	d.	£	s.	d.	%
Local Markets . . .	4	4	146	—	9	19	8	2	16	4	8.3
Local Merchants . . .	11	11	1,622	5	—	—	—	—	—	—	—
Commission Salesmen:											
Birmingham . . .	10	10	210	1	16	1	0	4	18.3	1 4 6	7.6
Leeds . . .	6	6	1,152	4	—	—	—	—	—	—	—
Leicester . . .	10	10	1,446	4	—	—	—	—	—	—	—
London . . .	24	25	21,730	67	—	—	—	—	—	—	—
Manchester . . .	11	12	1,594	5	111	10	3	27	16.8	13 18 11	12.5
Newcastle . . .	10	10	3,440	10	272	10	3	67	19.0	27 5 0	10.0
Sheffield . . .	11	12	1,188	4	—	—	—	—	—	—	—
Total	97	100	32,528	100	410	1	2	100	18.3	43 5 1	10.5
Gross Sales	35	36	5,390	16	410	1	2	—	18.3	43 5 1	10.5
Net Sales	62	64	27,138	84	—	—	—	—	—	—	—

TABLE 94

Sales of Parsley

Method of Marketing	Trans- actions		Quantities		Gross Receipts		Gross Price	Deductions			
	No.	%	lb.	%	£	s.	d.	£	s.	d.	%
Growers' Co-operatives . . .	62	57	9,080	77	473	18	6	84	12.5	36 11 4	7.8
Growers' Co-operatives . . .	2	2	100	1	—	—	—	—	—	—	—
Local Markets . . .	31	29	2,070	18	80	4	6	14	9.3	6 13 7	8.3
Commission Salesmen:											
Birmingham . . .	9	8	420	4	9	2	6	2	5.2	13 7	7.4
Birmingham . . .	1	1	5	—	—	—	—	—	—	—	—
Gloucester . . .	2	2	20	—	7	6	—	—	4.5	7	7.8
Manchester . . .	1	1	20	—	—	—	—	—	—	—	—
Total	108	100	11,715	100	563	13	0	100	—	43 19 1	7.8
Gross Sales	104	96	11,590	98	563	13	0	—	11.7	43 19 1	7.8
Net Sales	4	4	125	2	—	—	—	—	—	—	—

Marketing of Blackberries

Deductions										Net Receipts			Net Price per lb.
Use of Empties		Handling Charges		Transport		Total							
£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	%	
8	8	4.4	—	—	—	—	—	—	85	15	8	5	14.3 12.7
—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	13 3	4.1	8 10	2.8	2 6 7	14.5	13 14 5	—	71 18 0	—	4	15.7 15.0
—	—	—	—	—	—	—	—	—	—	89 12 6	—	6	14.9
—	—	—	—	—	—	—	—	—	—	1,032 13 1	61	11.2	
—	—	3 6 5	3.0	4 5 5	3.8	21 10 9	19.3	89 19 6	—	222 16 10	13	5	13.5
—	—	5 1 8	1.9	17 6 9	6.3	49 13 5	18.2	71 0 10	—	71 0 10	4	14.4	
8 8	0.1	9 1 4	2.2	22 1 0	5.4	74 16 1	18.2	1,686 5 2	100	—	—	—	12.4
8 8	0.1	9 1 4	2.2	22 1 0	5.4	74 16 1	18.2	335 5 1	20	1,351 0 1	80	14.9	11.9

Sales of Parsley

Deductions										Net Receipts			Net Price
Use of Empties		Handling Charges		Transport		Total							
£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	%	
10 14 10	2.2	—	—	—	—	47	6	2	10.0	426 12 4	83	11.3	
2 7 0	2.9	—	—	1 2 0	1.4	10	2	7	12.6	10 0 0	2	24.0	
—	—	1 18 5	21.1	1 4 3	13.3	3 16 3	41.8	5 6 3	—	70 1 11	14	8.1	
—	2	2.2	—	—	1 0	13.3	—	1 9	23.3	5 9	—	6.0	
—	—	—	—	—	—	—	—	—	—	10 0	—	3.5	
13 2 0	2.3	1 18 5	0.4	2 7 3	0.4	61 6 9	10.9	512 18 9	100	—	—	—	6.0
13 2 0	2.3	1 18 5	0.4	2 7 3	0.4	61 6 9	10.9	502 6 3	98	10 12 6	2	10.4	20.4

the output of the parsley crop ranged between £80 and £240, averaging £173 per acre for the five-year period.

Of the three different crops of parsley included in the average return it was the spring cutting which provided the major part of the yield and returns; the winter crop also accounted for a fair share of the average results, but the significance of the summer cutting was only negligible. The effect of the three crops on the average returns are shown by the sales which were as follows:

		Quantity	Net Receipts		Net Price per lb.	
		lb.	%	£	%	d.
Winter Crop	.	4,385	38	211	41	11·4
Spring Crop	:	5,990	51	263	51	10·6
Summer Crop	.	1,280	11	39	8	7·3
Total	.	11,655	100	513	100	10·5

As can be seen from the foregoing figures, almost the entire crop was comprised of winter and spring cuttings, and each fetched very much the same value.

The marketing data of parsley are shown in Table 94. According to these figures only 4 per cent of the crop was sold at Birmingham, Gloucester and Manchester; this was mainly from the summer cutting and may be the reason for the very low prices returned by these markets. In the gross sales, market deductions absorbed 10·9 per cent of gross receipts, which was much the same rate as for most other produce.

As mentioned before, the crop was sold the whole year round, covering altogether 33 weeks. However, there were some gaps between the sales of winter, summer and spring cuttings but these never appeared to be longer than four weeks. The season of the winter crop lasted until the middle of February, the spring one until the beginning of June, and the late summer crop was finished by the end of September. Of the total crop, the supplies of the winter and the summer crops seemed to be quite evenly spread over their marketing periods; the sale of the spring crop on the other hand showed its peak during the last week of April and the first week of May. The prices for the spring parsley showed a steady decline, but those for the other two crops fluctuated considerably, despite the even distribution of their supplies. This rather inconsistent relationship between supplies and prices might have been due not only to the difference in the quality of the weekly consignments, but also to a number of

other factors. The weekly distribution of the supply and the fluctuation of the net prices are illustrated in Diagram 55.

2. Sage

Sage was grown on three holdings where the return per acre was 1,566 dozen bunches for £157. The best result was an average of 2,169 dozen bunches for £218, whilst the lowest was only 661 dozen bunches for £66. Despite the limited number of sage-growing holdings, the 1955 returns seem to be quite reasonable, as the results of nine other holdings which grew the crop during the years 1950-1954 averaged 2,137 dozen bunches per acre for £174. Among the sample holdings, there was only one where the crop was grown over the last six years. On this holding the six-year average showed a yield of 1,672 dozen bunches per acre for £130.

As can be seen from Table 95 most of the crop was sold locally and only 7 per cent of the supply was sent to Birmingham and Manchester. Almost the entire quantity disposed of locally was sold on contract at £50 per ton to growers' co-operative organisations. To convert to pounds those sales where the transactions were carried out per dozen bunches, the rate of 10 dozen bunches to 40 lb. was used. In these transactions which were carried out at the open markets the crop returned a net price of £57 per ton, or 6·1d. per lb. However, the demand for this particular crop on the open market may be very inconsistent, so that to grow and dispose of the crop on contract seems to be a better safeguard for the grower.

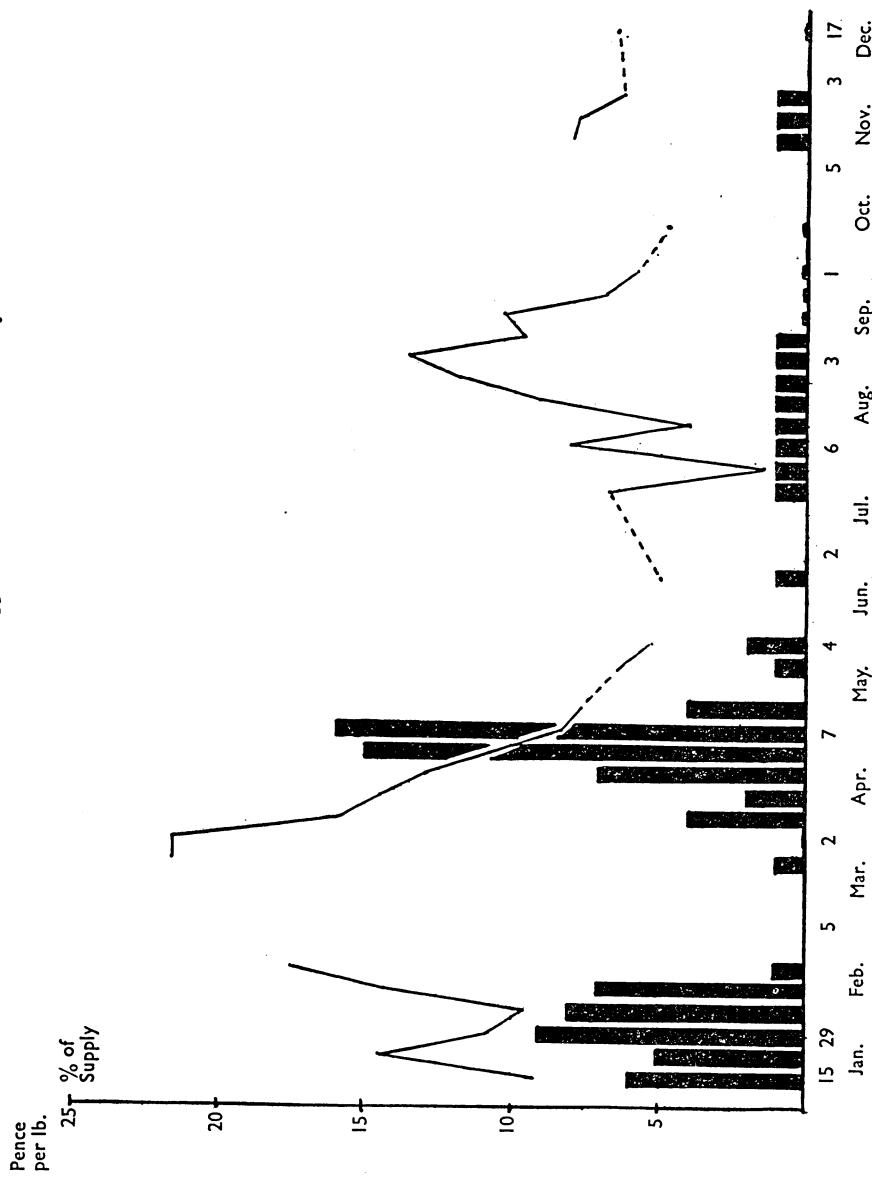
The sample holdings marketed their sage crop from the end of June until the end of December. However, the quantity sold until the middle of September represented less than 1 per cent of the total supply. Actually, it was in the second half of October, when the bulk of the crop was disposed of. In view of the fact that at least 90 per cent of the supply was sold on contract, the weekly average prices showed almost no fluctuation at all. Diagram 56 accounts for the weekly distribution of the supply and the prevailing price level.

3. Flowers

Among all the horticultural crops, flowers are the most difficult for which to assess average returns. In such an attempt, the many different kinds of crops together with their innumerable varieties, and the very small areas on which they are generally grown, make it too complex to arrive at a fairly reliable result. Clearly, to assess average returns of individual flower crops, it would be necessary to consider the results of

DIAGRAM 55

Weekly Fluctuation of Supplies and Net Prices of Parsley



a number of specialist holdings where many of these crops are grown on an appreciable scale.

Of the 32 sample holdings there were 9 which grew flowers of some sort. Three of these holdings used a part of their glasshouse area to grow chrysanthemums and tulips, but the other holdings grew mixed flowers in the open. The flower-growing enterprise included in all 21 different crops, from which the average returns worked out at £971 per acre. However, this figure alone, without any reference to component details, is rather uninformative and in order to throw more light on the meaning of the average result, it is necessary to establish the identity of the flowers included in the sales and to ascertain the relative importance which they represent in the per acre return.

As mentioned before, the enterprise included 21 flower crops and some bedding plants, the returns from which made up the average results. These crops together with their returns are given in Table 96 as follows:

TABLE 96
Sale of Flowers

Crops	Units	Quantities	Net Receipts				Net Price
			£	s.	d.	%	
Chrysanthemums	blooms	39,936	864	14	8	30	5.2
Hyacinths	pots	48	4	3	8	—	20.9
Ferns	bunches	1,146	26	0	0	1	5.4
Tulips	blooms	48,942	659	9	0	24	3.2
Freseias.	blooms	3,372	34	7	0	1	2.4
Irises	blooms	7,158	189	15	9	7	6.4
Daffodils	bunches	24	1	1	0	—	11.0
Wallflowers	bunches	5,604	61	8	0	2	2.6
Narcissus (bulbs)	singles	990	12	0	11	—	2.9
Narcissus	bunches	1,404	39	4	10	1	6.7
Gypsophila	bunches	3,752	186	14	2	7	11.9
Pinks	bunches	48	—	14	8	—	3.7
Pyrethrums	bunches	108	4	10	8	—	10.0
Sweet Williams	bunches	2,928	51	13	5	2	4.2
Scabious	bunches	1,192	33	8	11	1	6.7
Lilac	bunches	60	1	0	10	—	4.2
Statice	bunches	26,640	468	7	9	17	4.2
Gladioli	blooms	1,514	21	16	1	1	3.5
Asters	bunches	2,262	90	19	11	3	9.6
Incarna	bunches	1,392	36	14	6	1	6.3
Carnations	bunches	120	4	2	10	—	8.3
Bedding Plants	boxes	329	61	5	3	2	44.7
Total	—	—	2,853	13	10	100	—

TABLE 95

Sales of Sage

Method of Marketing	Transactions		Quantities		Gross Receipts		Gross Price	Deductions	
	No.	%	lb.	%	£ s. d.	%		£ s. d.	%
Growers' Co-operatives									
Commission Salesmen:	No.	%	lb.	%	£ s. d.	%	d.	£ s. d.	%
Birmingham	15	21	848	3	20 10 0	100	5.8	1 11 0	7.6
Birmingham	21	30	556	2	—	—	—	—	—
Manchester	15	21	544	2	—	—	—	—	—
Total	71	100	26,176	100	20 10 0	100	—	1 11 0	7.6
Gross Sales	15	21	848	3	20 10 0	—	5.8	1 11 0	7.6
Net Sales	56	79	25,328	97	—	—	—	—	—

TABLE 97

Marketing of Flowers (all varieties)

Method of Marketing	Transactions		Gross Receipts		Deductions	
	No.	%	£ s. d.	%	£ s. d.	%
Growers' Co-operatives	47	4	47 16 7	2	3 14 8	7.7
Growers' Co-operatives	28	3	—	—	—	—
Local Markets	21	2	22 19 2	1	1 15 3	7.6
Local Merchants	117	11	—	—	—	—
Commission Salesmen:						
Birmingham	684	63	2,624 13 3	86	264 1 4	10.0
Birmingham	17	2	—	—	—	—
Bristol	4	—	39 6 0	1	3 18 8	10.0
Coventry	5	—	13 12 0	—	1 0 6	7.4
Liverpool	41	4	180 12 4	6	16 2 5	8.9
Manchester	41	4	113 14 10	4	11 7 11	10.0
Manchester	61	5	—	—	—	—
Stratford-on-Avon	17	2	7 10 6	—	11 5	7.5
Total	1,083	100	3,050 4 8	100	302 12 2	—
Gross Sales	860	79	3,050 4 8	—	302 12 2	9.9
Net Sales	223	21	—	—	—	—

Sales of Sage

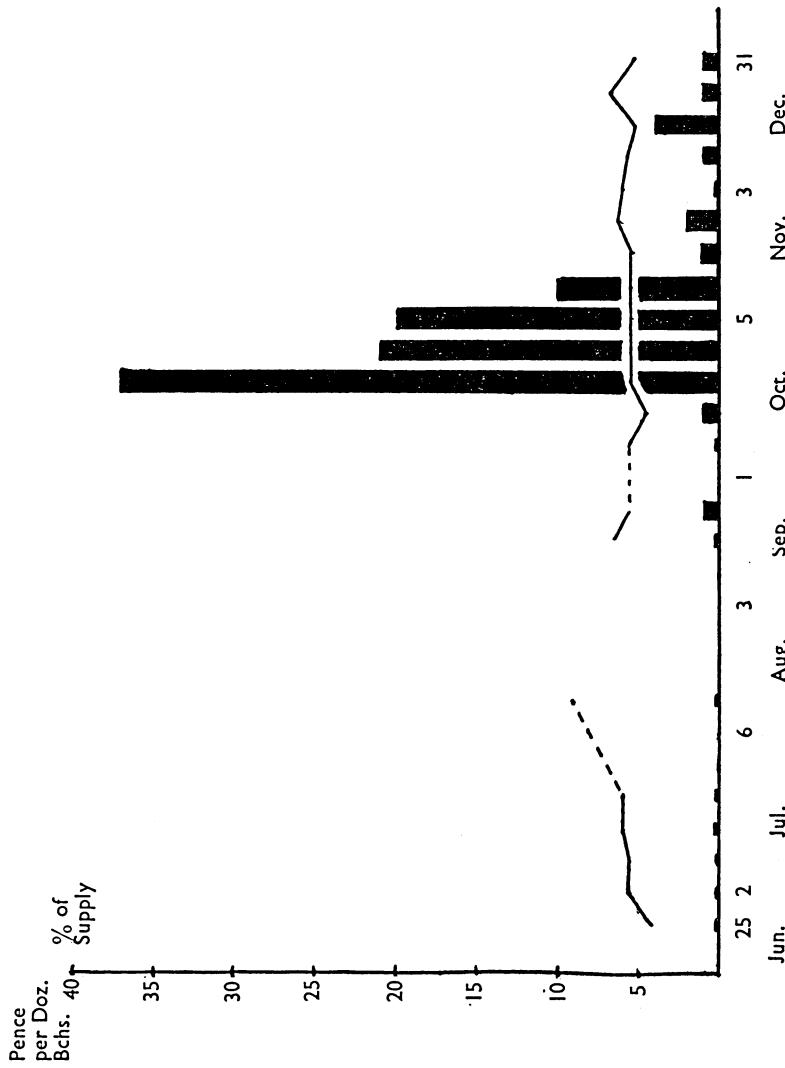
		Deductions				Net Receipts			Net Price	
Handling Charges		Transport		Total						
£	s.	d.	£	s.	d.	£	s.	d.	%	
1	6	6	6.5	1	7	7	6.7	4	5	1
—	—	—	—	—	—	—	—	—	—	20.8
1	6	6	6.5	1	7	7	6.7	4	5	1
—	—	—	—	—	—	—	—	—	—	20.8
1	6	6	6.5	1	7	7	6.7	4	5	1
—	—	—	—	—	—	—	—	—	—	20.8
542	10	8	92	16	4	11	3	591	19	1
—	—	—	—	18	11	6	3	—	—	8.0
14	12	0	2	14	12	0	2	—	—	6.4
591	19	1	100	16	4	11	3	575	14	2
—	—	—	—	575	14	2	97	—	—	5.5

Marketing of Flowers (all varieties)

		Deductions				Net Receipts					
Use of Empties		Handling Charges		Transport		Total					
£	s.	d.	%	£	s.	d.	%	£	s.	d.	%
1	6	1	0.6	5	6	0.6	1	0	4	7	3
—	—	—	—	—	—	—	—	—	—	—	—
—	3	—	—	—	—	—	—	1	15	6	7.6
—	—	—	—	—	—	—	—	—	—	—	—
1	17	0	0.1	106	7	4	4.0	103	7	8	3.9
—	—	—	—	—	—	—	—	—	475	13	4
—	—	—	—	—	—	—	—	—	18.0	2,148	19
—	—	—	—	—	—	—	—	—	—	—	75
—	—	—	—	—	—	—	—	—	—	32	7
—	—	—	—	—	—	—	—	—	—	32	1
—	—	—	—	—	—	—	—	—	—	2	1
—	9	0	3.3	1	4	4	3.1	1	5	10	3.3
—	—	—	—	—	—	—	—	—	6	8	10
—	—	—	—	—	—	—	—	—	16.4	32	17
—	—	—	—	—	—	—	—	—	18.0	11	2
—	—	—	—	—	—	—	—	—	—	2	5
—	—	—	—	—	—	—	—	—	—	127	14
—	—	—	—	—	—	—	—	—	—	4	4
—	—	—	—	—	—	—	—	—	—	83	15
—	—	—	—	—	—	—	—	—	—	1	3
—	—	—	—	—	—	—	—	—	—	143	2
—	—	—	—	—	—	—	—	—	—	5	5
4	0	2.6	—	6	9	4.6	—	2	0	1.3	1.6
—	—	—	—	—	—	—	—	—	1	4	2
2	16	4	—	137	6	5	—	132	1	7	—
—	—	—	—	—	—	—	—	—	574	16	6
—	—	—	—	—	—	—	—	—	—	2,853	13
—	—	—	—	—	—	—	—	—	—	100	10
2	16	4	0.1	137	6	5	4.5	132	1	7	4.3
—	—	—	—	—	—	—	—	—	574	16	6
—	—	—	—	—	—	—	—	—	18.8	2,475	8
—	—	—	—	—	—	—	—	—	—	378	5
—	—	—	—	—	—	—	—	—	—	87	13

DIAGRAM 56

Weekly Fluctuation of Supplies and Net Prices of Sage



From the details of the foregoing Table 96 it can be seen that the major part of the receipts was obtained from chrysanthemums, tulips and statice which made up 71 per cent of total sales. However, the sales of one holding which grew mixed out-door flowers, such as irises, gypsophila, asters, scabious and incarna, represented 19 per cent of the total receipts. The per acre results of those crops which were grown on an appreciable acreage were as follows:

<i>Crops</i>	<i>Unit</i>	<i>Quantities</i>	<i>Net Returns £</i>
Chrysanthemums . . .	dozen blooms	6,854	1,782
Tulips	dozen blooms	22,831	3,653
Mixed out-door flowers . . .	dozen bunches	1,337	548
Statice	dozen bunches	738	155
Wallflowers	dozen bunches	1,213	141
Narcissus (bulbs and flowers)	—	—	240

Unfortunately, the returns for other crops were unobtainable owing to the fact that the areas occupied by them were immeasurably small, very often consisting of only one or two short rows.

On the whole, the holdings marketed their various flower crops during the entire year. However, the main season appeared to be in July and August when not less than nine different kinds of flowers were sent to the markets. In the summer months many flowers are competing with each other, but the autumn, winter and spring crops are in a more favourable position in this respect. For instance, chrysanthemums, during their fairly long season, had hardly any rivals, except perhaps only in January when there were tulips and freesias, or in September when there were gladioli and a few other out-door flowers. The marketing seasons of the flowers sold off the nine holdings are shown in Diagram 57.

Unlike vegetables and fruit, most of the flower crops were sold outside the Vale, and only 11 per cent of the total net receipts came from sales which were transacted locally. The pattern of marketing flowers is shown in Table 97. According to these figures 76 per cent of the net receipts were obtained from Birmingham; nevertheless some of the consignments, especially those of statice, were sent as far afield as Manchester and Liverpool. Market expenses on flowers worked out at 18.8 per cent of gross receipts, which, due to the fact that the greater part of the crop was sent to distant markets, was a considerably higher rate of deduction than for other horticultural crops.

With regard to the financial returns from flowers, the most important crop was the chrysanthemum which accounted for 30 per cent of the total net receipts. The returns of this crop consisted of two part-crops, namely the crop which was sold from October 1954 until February 1955, and of that which matured from September 1955 until January 1956. Thus, trading in chrysanthemums covered a period of 33 weeks and embraced at least 50 different varieties. Actually, the length of the season very largely depends on the composite varieties and by his choice of these the grower can more or less ensure an even flow of supply for the entire season of the crop. On the sample holdings the length of the marketing season of one full crop can be estimated at about 20 weeks. In the course of the season market prices tend to fluctuate, so that the selection of varieties has a rather important bearing on the overall return of the crop.

As mentioned before, the average return of chrysanthemums was derived from the results of two part-crops alone. Of these the success of the sales can mainly be ascribed to that crop which was cut and sold in the autumn and winter of 1955. The difference in the value of the two part-crops is given below:

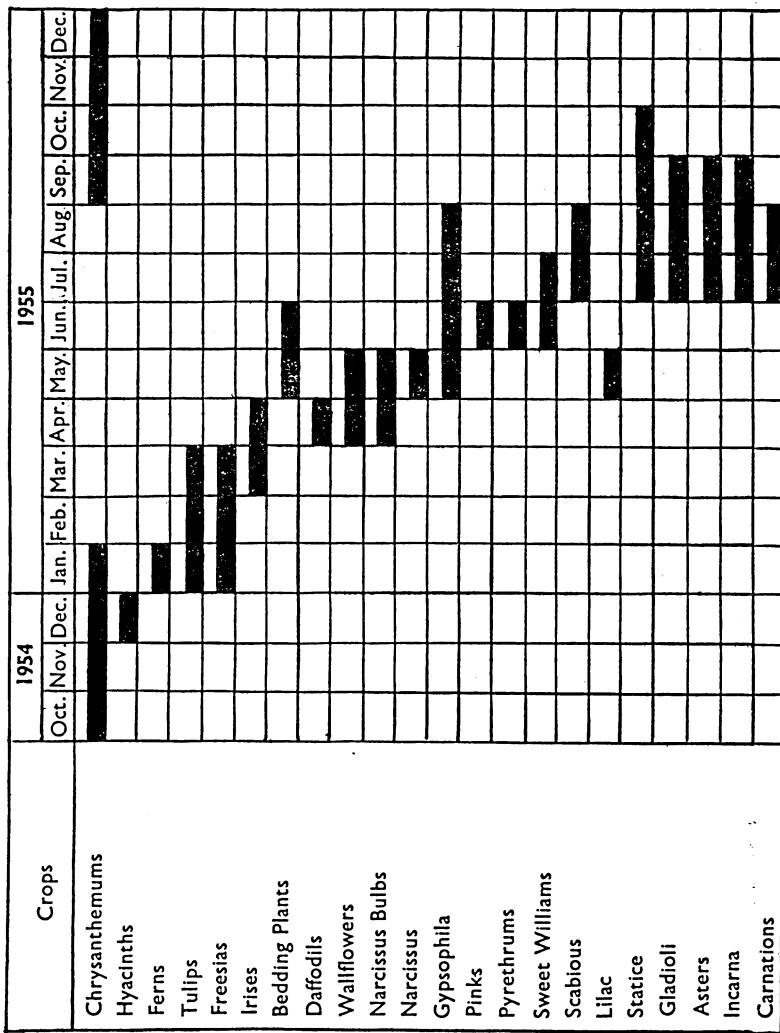
		Quantity		Net		Price
		blooms	%	Receipts	%	per
				£		Bloom
Old Crop . . .		21,243	53	344	40	3.9
New Crop . . .		18,693	47	520	60	6.7
Total . . .		<u>39,936</u>	<u>100</u>	<u>864</u>	<u>100</u>	<u>5.2</u>

One of the reasons for the considerable discrepancy between the average prices of the two seasonal sales was the extremely low price of between 1s. 2d. and 1s. 5d. per dozen blooms, which the outdoor crop fetched in October 1954. In October 1955, when the low price level reached 1s. 8d., the growers stopped sending supplies to the market, and thus hardly any transactions were shown for this month. Furthermore, the price of the 1955 indoor crop was also more favourable, not only because it did not include the January 1956 transactions, but because the prices of the November and December sales moved at a higher level.

According to the data drawn up on the marketing of chrysanthemums, and given in Table 98, 82 per cent of the total crop was sent to Birmingham, and it was mainly the outdoor

DIAGRAM 57

Marketing Seasons of Flower Crops



varieties which were sold locally. On the sales at Birmingham, market deductions were 18 per cent of gross receipts.

The main marketing season of this crop is November and December. In 1954, 34 per cent and, in 1955, 42 per cent, of the total supply was disposed of during these months. The weekly distribution of the supply and the fluctuation of the net prices are illustrated in Diagram 58.

The other main flower crop was the tulip, the receipts of which represented 24 per cent of the total sales. Like chrysanthemums this crop, too, consisted of many varieties blooming from the early season till the late season. The sample crop included about ten varieties thus ensuring adequate supplies for a period of three months. Although the per acre returns show a very high figure, the growing of this crop is rather expensive due to the considerable costs involved in importing bulbs, raising them to maturity, and in the cutting, grading and packing. Needless to say, the selection of blooms according to varieties and size, preservation of their freshness, and attractive packing requires great skill and a substantial amount of costly hand labour.

As can be seen from Table 99 almost the entire crop was sold at Birmingham, and only a very small quantity was bought by local merchants for retailing and making wreaths. The relative cost of selling the crop at Birmingham came to 14 per cent of gross receipts which proved to be 4 per cent lower than the marketing of chrysanthemums there.

The marketing season for tulips lasted from 23rd January until the 26th March, covering altogether nine weeks. During this period the available supply was mainly governed by the kind of varieties included in the crop. Although the weekly quantities showed a fairly even distribution, there were certain weeks, when only a small supply reached the market, probably due to the lack of variety, which would otherwise have filled the gap. Despite the number of varieties included in the weekly sales, prices hardly fluctuated at all and the slight changes in the price level seemed to be caused by the difference in the quality rather than in the variety of the flower. Diagram 59 accounts for the weekly distribution of supplies and the fluctuation of net prices.

The third flower crop of importance was statice, which accounted for 17 per cent of the flower sales. On the whole, statice is one of the most popular flower crops in the Vale, and whereas other kinds of flowers are cultivated on specialist-type holdings, statice is grown on many small holdings alongside

DIAGRAM 58

Weekly Fluctuation of Supplies and Net Prices of Chrysanthemums

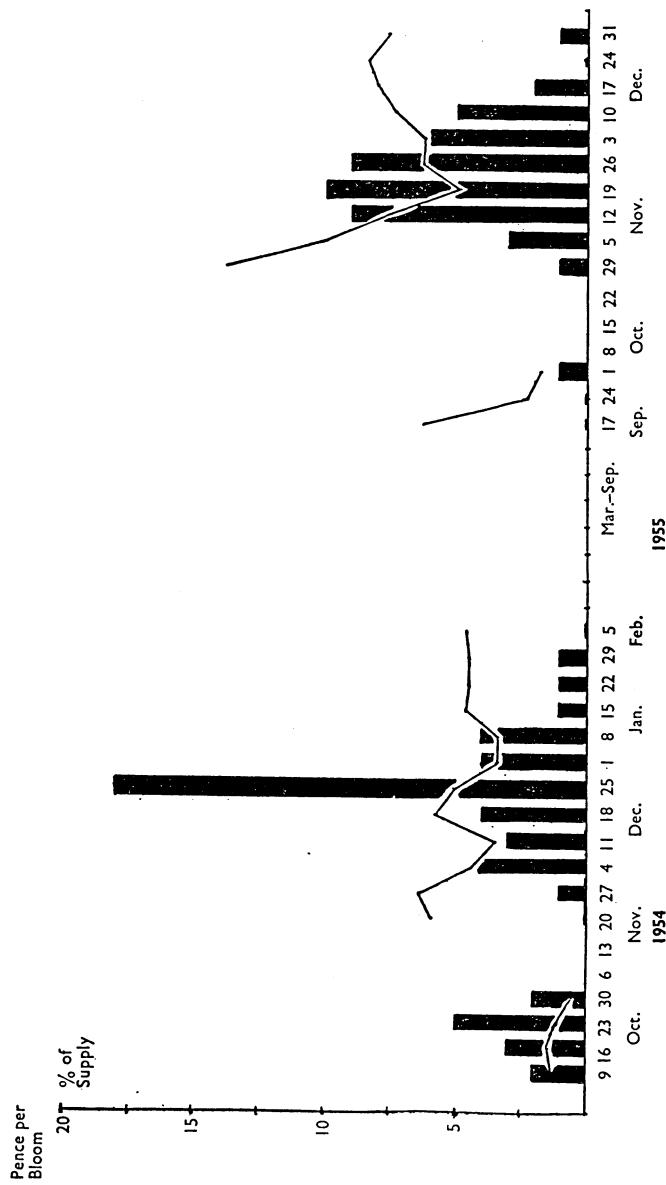


TABLE 98

Sales of Chrysanthemums

Method of Marketing	Trans- actions		Quantities		Gross Receipts		Gross Price per doz.	Deductions		
								Commission		
Growers' Co-operatives	No.	%	doz.	blooms	£	s.	d.	%	d.	£
	38	6		406½	37	1	6	4	21·9	2
Local Markets . . .	6	1		52½	4	6	6	—	19·7	15
Local Merchants . . .	91	15		150	—	—	—	—	—	9
Commission Salesmen: Birmingham . . .	460	78	2,718½	82	916	18	10	96	80·9	13
Total	595	100	3,328	100	958	6	10	100	—	16
Gross Sales	504	85	3,178	96	958	6	10	—	72·4	16
Net Sales	91	15	150	4	—	—	—	—	—	0
										9·9

TABLE 99

Sales of Tulips

Method of Marketing	Trans- actions		Quantities		Gross Receipts		Gross Price	Deductions		
								Commission		
Local Merchant . . .	No.	%	Blooms	%	£	s.	d.	%	d.	£
	23	40	2,154	4	—	—	—	—	—	—
Commission Salesmen: Birmingham . . .	35	60	46,788	96	723	19	6	100	3·7	72
Total	58	100	48,942	100	723	19	6	100	3·7	72
										10·0

TABLE 100

Sales of Statice

Method of Marketing	Trans- actions		Quantities		Gross Receipts		Gross Price	Deductions		
								Commission		
Growers' Co-operatives	No.	%	bunches	%	£	s.	d.	%	d.	£
Commission Salesmen: Birmingham . . .	37	23	1,356	5	—	—	—	—	—	—
Birmingham . . .	12	8	6,840	26	227	3	6	49	8·0	22
Liverpool . . .	36	23	1,068	4	—	—	—	—	—	9
Manchester . . .	27	17	8,220	31	147	15	4	32	4·3	9
Manchester . . .	35	22	5,448	21	83	18	10	18	3·7	16
Stratford-on-Avon . . .	4	2	3,564	13	—	—	—	—	—	11
			144	—	1	19	6	1	3·3	8
Total	159	100	26,640	100	460	17	2	100	—	17
Gross Sales	104	65	20,652	78	460	17	2	—	5·3	17
Net Sales	55	35	5,988	22	—	—	—	—	—	5
										9·5

Sales of Chrysanthemums

Deductions								Net Receipts			Net Price per doz.	
Hire of Empties		Handling Charges		Carriage		Total						
£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	d.
6	0	0·8	—	—	—	3	1	9	33	19	9	20·1
—	—	—	—	—	—	6	6	—	4	0	0	18·2
—	—	—	37	17	11	4·1	37	4	76	12	0	122·6
—	—	—	37	17	11	4·1	37	4	166	15	11	87
6	0	—	37	17	11	4·0	37	4	170	4	2	17·8
6	0	—	37	17	11	4·0	37	4	864	14	8	100
—	—	—	—	—	—	3·9	—	—	788	2	8	59·5
—	—	—	—	—	—	170	4	2	76	12	0	122·6
—	—	—	—	—	—	—	—	—	91	9	9	66·2

Sales of Tulips

Deductions								Net Receipts			Net Price	
Use of Empties		Handling Charges		Transport		Total						
£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	d.
1	12	0	0·2	14	11	6	2·1	12	5	8	1·7	100
1	12	0	0·2	14	11	6	2·1	12	5	8	1·7	17
—	—	—	—	—	—	—	—	—	100	17	0	14·0
—	—	—	—	—	—	—	—	—	623	2	6	95
—	—	—	—	—	—	—	—	—	659	9	0	100
—	—	—	—	—	—	—	—	—	—	—	—	3·2

Sales of Statice

Deductions				Total			Net Receipts			Net Price	
Handling Charges		Transport									
£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
15	3	2	6·7	14	1	4	6·2	51	14	3	22·8
25	4	3	17·0	7	6	11	5·0	45	7	11	30·7
—	—	—	—	14	8	10	17·2	22	16	9	27·2
—	1	0	2·5	—	2	0	5·1	—	—	6	15·2
40	8	5	8·8	35	19	1	7·8	120	4	11	26·1
40	8	5	8·8	35	19	1	7·8	120	—	—	26·1
—	—	—	—	—	—	—	—	—	340	12	3
—	—	—	—	—	—	—	—	—	127	15	6
—	—	—	—	—	—	—	—	—	73	27	—
—	—	—	—	—	—	—	—	—	—	—	4·0
—	—	—	—	—	—	—	—	—	—	—	5·1

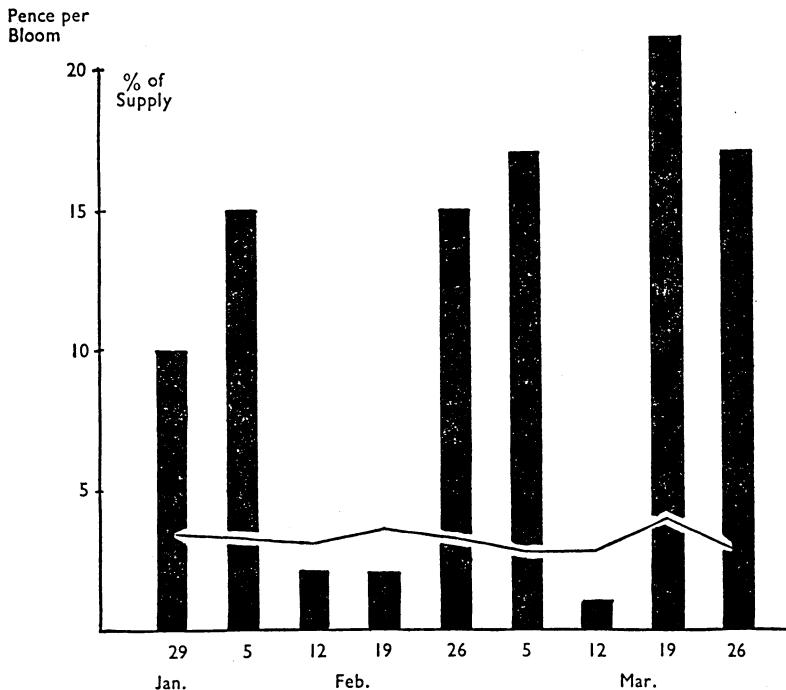
vegetables and fruit. Wallflowers, although not a permanent crop, take their place alongside statice. However, on the sample holdings their cultivation is so limited that they are not worth considering.

The year 1955 was quite a successful season for statice, returning £155 per acre. However, the returns are liable to great variations, and there were several years when the sample holdings had some difficulty in disposing of the crop.

The marketing pattern of statice is shown in Table 100 according to which 95 per cent of the crop was sold at distant markets, mainly in Birmingham, Manchester and Liverpool. On these sales market deductions worked out at 26 per cent of gross receipts. Although some considerable distances were involved in transporting the produce to the markets, deductions seemed to absorb too large a share of the grower's income from this particular crop.

DIAGRAM 59

Weekly Fluctuation of Supplies and Net Prices of Tulips

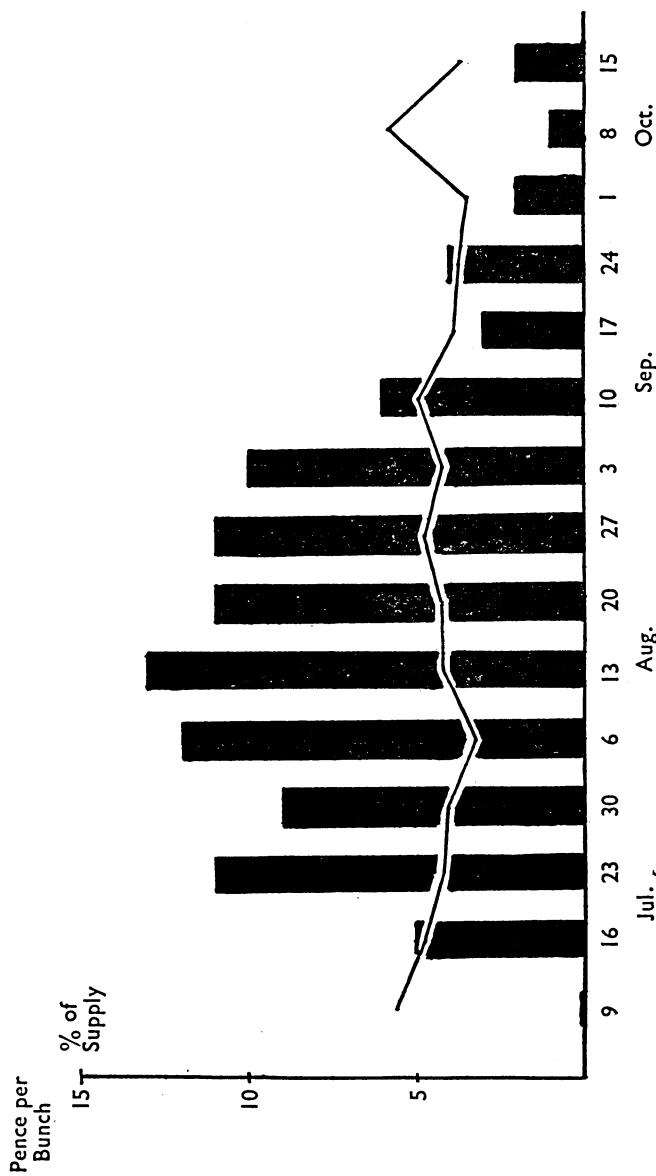


As already mentioned, statice has a fairly long marketing season. In 1955, it lasted from the beginning of July until the middle of October, covering a period of 15 weeks. During this long season the weekly supplies were fairly evenly distributed, so that even at the height of the season the weekly quantities fluctuated between 9 and 13 per cent of the total supply. Statice is one of those rare horticultural crops, which is not perishable and thus can be kept for a fairly long time; hence the convenient period for marketing the crop. Although the peak sales lasted over a month from the middle of July until the end of August, about 17 per cent of the crop still remained to be sold during the rest of the season. Prices, too, showed a rather steady trend, which only fluctuated between 3·2d. and 5·8d. per bunch. The weekly distribution of supplies and the fluctuation of net prices are given in Diagram 60.

Regional Distribution of the Sales of Produce

WHILST describing the returns of the individual crops, the aim has been to provide as much background information as possible to give a wider understanding of the average results. A part of this information was the data on marketing, which gave details of where and when the crops were sold; and the time and the place of the transactions were intended to furnish some explanation of the average price obtained for the produce during the cropping year 1955. However, in determining the annual return from a crop, the date of marketing the produce proved to be far more important than the place at which it was sold, since prices are governed by the supply and demand conditions prevailing all over the country. Despite the fact that marketing at distant markets may incur greater costs in the form of market deductions, for most of the crops there was only a negligible difference between the results of the local and distant sales. Thus, successful marketing did not depend on the employment of any particular agency, but rather on the grower's own skill of selling the crops at the time when they were in good demand. However, when the price of the produce fell to an unfavourable level, the risk of sending it to a distant market seemed to be greater, as the charges involved might easily have absorbed a substantial share of the receipts. From the various items of market expenses, such as sale commission, hire of empties, handling charges and transport, only the commission was flexible; the others had to be paid for no matter what price was received for the produce.

DIAGRAM 60
Weekly Fluctuation of Supplies and Net Prices of Statice



On the whole, the sample holdings marketed their crops on the big wholesale markets with the aid of commission salesmen, and locally through auction markets, co-operative marketing organisations and merchants. The number of transactions dealt with by these agencies on behalf of the 32 sample and 7 additional holdings was 12,860 with a net turnover of £137,462, thus giving, on average, as low a sum as £11 per transaction. According to the various agencies this net turnover was divided as follows:

Agencies	No. of		Net	
	No.	%	£	%
Co-operatives . . .	3,855	30	49,944	36
Local Markets . . .	1,364	11	11,102	8
Local Merchants . . .	1,833	14	24,309	18
Commission Salesmen .	5,808	45	52,107	38
Total	12,860	100	137,462	100

As can be seen from these figures, although the greater part of the sales were transacted locally, a fair amount of produce was sold through the services of the intermediary trade at markets all over the country. The practice of selling produce through the growers' own co-operatives, and employing the services of the commission salesmen, seemed to be almost equally popular among the growers.

Transactions were carried out both in gross and net terms, and while the former kind of sales included gross receipts and all the charges involved, the latter showed only the sum due to the grower after the deductions had been made, or in accordance with the previously agreed contract price. Sales can be divided according to these two forms of transactions as shown below.

Type of Sales	No. of		Net	
	No.	%	£	%
Gross Sales	8,066	63	80,827	60
Net Sales	4,794	37	56,635	40
Total	12,860	100	137,462	100

The above figures indicate that despite the fact that the sale notes of net transactions did not provide any facilities for checking the correctness of the deal, almost half of the sales were carried out in net terms.

Including the five local markets and co-operatives, there were twenty-nine markets to which holdings sent their produce. However, 55 per cent of the transactions were carried out through the local channels which provided 62 per cent of the net receipts. The other twenty-four markets were situated in the North, the Midlands, the South West and Wales and in East Anglia, including London. The distribution of the receipts according to these regions are as follows:

Regions	Net Receipts	
	£	%
North of England . . .	19,892	38
Midlands . . .	17,056	33
South West and Wales . . .	12,569	24
East Anglia . . .	2,590	5
Total . . .	52,107	100

With the exception of East Anglia, the distribution of receipts returned from the other three regions were rather similar. Nevertheless, the above figures readily suggest that the principal markets for the Vale lie in the North and in the Midlands. Actually, Birmingham took first place with £13,855 worth of produce, but Manchester, with £10,728, was a close second. In the South West, Bristol and Swindon took most of the produce both showing a trading figure of over £4,000. However, whilst a wide variety of produce was sold at Bristol, most of the Brussels sprouts, cabbage, beans and early potatoes were sent to Swindon. In Wales, the growers sent all their produce to Cardiff; the net returns received from this market amounted to £2,680. With regard to East Anglia, of course, almost the entire sales from this region were transacted in London. However, only a limited number of crops were involved in these transactions and most of the receipts referred to sales of asparagus, strawberries and blackberries.

In the gross transactions, the market sale notes gave a full account of all the charges which had to be deducted from the gross receipts. Although sale notes issued by the individual firms varied considerably from each other, it was possible to classify them under four main headings, namely commission, hire of empties, handling charges and transport. The total sum of these deductions amounted to £12,136 representing 13.1 per cent of the gross receipts which were £92,964. According to the various methods of marketing, the relative share of deductions were as follows:

<i>Method of Marketing</i>	<i>Gross Receipts</i> £	<i>Deductions</i> £	<i>%</i>	<i>Net Receipts</i> £
Growers' Co-operatives . . .	39,224	3,883	9.9	35,341
Local Markets . . .	12,388	1,286	10.4	11,102
Commission Salesmen . . .	41,352	6,967	16.8	34,385
Total . . .	92,964	12,136	13.1	80,828

On the whole, the 13.1 per cent cost of marketing may be regarded as moderate, thanks to the fairly successful year. No doubt, under less favourable marketing conditions deductions would have absorbed a far greater proportion of gross receipts. Sales transacted locally, both through co-operatives and private auction markets, showed a cost of about 10 per cent of gross receipts, but for sales on commission it amounted to 16.8 per cent. Although the latter method of marketing showed a higher rate of deduction, it does not necessarily mean that it was detrimental to the net price paid to the grower. However, the higher rate indicates that greater costs are involved in marketing the produce at distant markets. The produce should therefore be of the required standard so as to fetch a good gross price and allow for the various deductions which will absorb a substantial share of the gross receipts.

In the overall marketing data the various items of deductions showed the following proportions:

<i>Items</i>	<i>Deductions</i> £	<i>%</i>	<i>Per £100 Sale of Produce</i> £ s. d.
Commission	7,821	8.4	8 8 0
Use of Empties	1,167	1.2	1 4 0
Handling Charges	811	1.0	1 0 0
Transport (paid)	2,337	2.5	2 10 0
Total	12,136	13.1	13 2 0

On the sale notes, sales commission, which represented the greater part of the deductions, was based on gross receipts and computed according to current rates charged by the market or agent. This rate varied from $7\frac{1}{2}$ per cent to 10 per cent of gross receipts. With regard to firms which used a 10 per cent rate, the charge for commission very often included some other market expenses as well, but not for transport.

The charge for the use of empties referred, generally, to the fee the grower had to pay for hiring returnable containers.

The computation of this charge varied considerably from market to market. On most local markets it was calculated at the commission rate on the deposit value of the container, both returnable and non-returnable. At other markets, as far as the returnable containers are concerned, this cost item is incorporated in the "Handling Charges", or in any other item which covers market expenses, other than commission and transport. On these markets the cost of the non-returnable containers has to be borne by the growers themselves.

Handling charges may include a number of costs, according to the general practice of the firm. For instance, it may cover the use and transport of the empty containers, and the rate varies in accordance with the types of containers involved.

The cost of transport represents the actual cost of the carriage of the produce. It is either accounted for by the commission salesman, or paid direct by the growers in accordance with arrangements made with the transport authorities or haulage contractors. Actually, at local marketing agencies there was no carriage charged on the produce, as all consignments were taken to the markets by the growers' own transport. As most of the growers were either members of the co-operatives, or shareholders of other local markets, and were benefiting by the bonuses and dividends paid to them, the cost of transport in these transactions was regarded as being offset by these benefits.

On the whole, the returns from the 29 markets showed that the cost of marketing represented a share of 13.1 per cent of the gross receipts, or 8.1 per cent of the combined sum of both gross and net transactions, which amounted to £149,599. By taking the latter proportion into account, the share of marketing costs absorbed nearly £17 per acre of the £208 production result derived by the 32 sample holdings from vegetables, fruit and other crops. As this cost item forms a part of the cost structure of the holding, it will require further examination in connection with the overall pattern of the cost of production.

Total Costs of Production

TO MEASURE the total cost of production of the holdings all expenditure, both paid and unpaid, has been taken into account and adjusted in accordance with the changes which occurred in the opening and closing valuations of some of the items concerned.

The costs which had to be met by the holdings in order to ensure their production level consisted of the following items:

- (a) Purchased feeding stuffs for livestock.
- (b) Crop expenses, including the cost of seeds and fertilisers; also differences in the valuation of tillages and un-exhausted manurial residues.
- (c) Implement costs, including depreciation, repairs, renewals and fuel.
- (d) Labour costs consisting of (i) paid labour including bonuses, National Health Insurance contributions, and in a few cases the value of board allowed to employees; and (ii) the unpaid labour of the grower, his wife and family.
- (e) Rent, being the amount paid by the tenant to the landlord and, in the case of owner-occupier, it was based on the gross Schedule A of the holding. Expenditure on improvements (e.g. glasshouses, sheds, etc.), were capitalised and an interest of 5 per cent per annum charged.
- (f) Miscellaneous costs consisted of all other costs incurred on the holdings such as sprays, insurances, market expenses and contract work, etc.

Average Cost per Acre

THE total costs on 32 sample holdings averaged £175 per acre, providing a margin of £44 from the £219 of average production. According to the six different type-groups of holdings, average costs were as follows:

	<i>Type-Groups</i>	<i>Cost per Acre £</i>
I.	Holdings with Glasshouses	405
II.	Intensive Vegetable Holdings	195
III.	Extensive Vegetable Holdings	114
IV.	Small-Scale Vegetable and Fruit Holdings	130
V.	Large-Scale Vegetable and Fruit Holdings	127
VI.	Horticultural Farms	78
Average		<u>175</u>

As can be seen from these cost figures, it was, of course, the glasshouse holdings which had the highest cost structure, of

£405 per acre, while the horticultural farms had the lowest of only £78 per acre. However, the costs of the glasshouse holdings returned a margin of £174 per acre but those of the horticultural farms only £7. Another point of interest is that on both the small and the large-scale vegetable and fruit holdings the costs were almost identical, being £130 per acre for the former and £127 for the latter.

Table 101 gives details of the composition of average costs.

According to this table, each cost item of the glasshouse holding (Group I) was much higher than those of the other groups of holdings. In fact, these figures clearly indicate that the lower the intensity of cultivation the lower were the costs which catered for a lighter volume of production. Although the details of the six cost structures differ considerably from one another in value, there is a marked similarity between them in the proportional distribution of the various items of cost. This can be seen from Diagram 61.

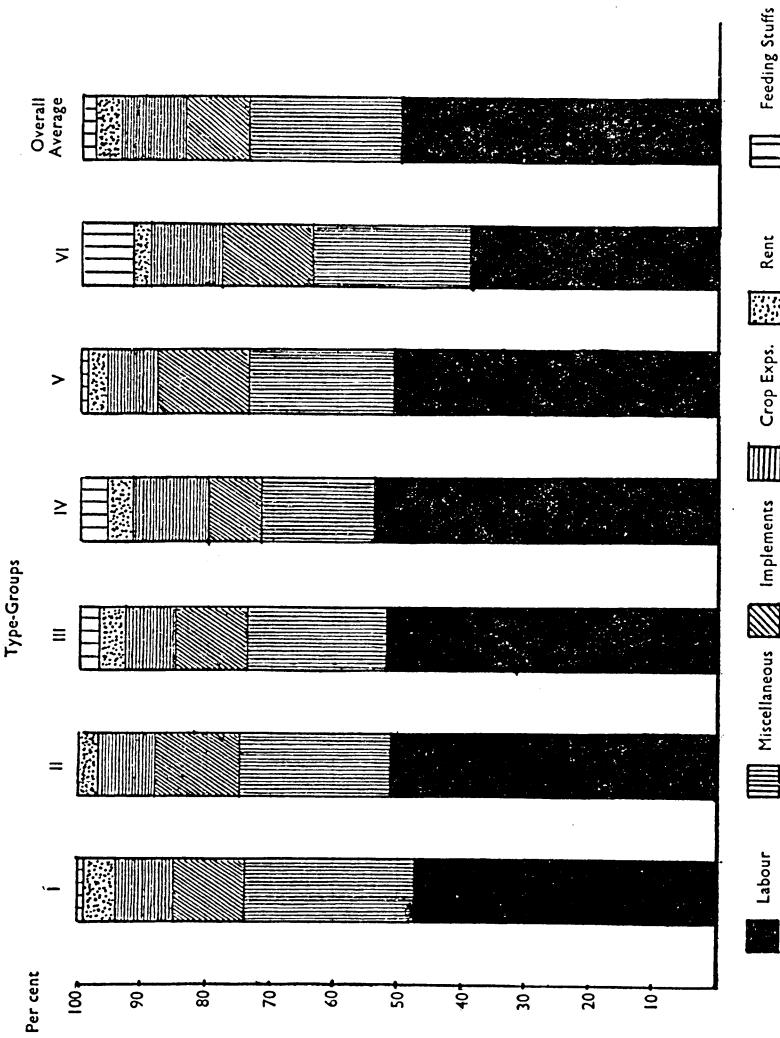
As can be observed from Diagram 61 the costs of different items showed only a moderate variation in the six different type-groups. There was not an item where the variation was wider than 15 per cent, which is rather surprising in view of the vast difference between the methods of cultivation of the type-groups. With regard to labour, this cost item varied between 39 and 54 per cent of total costs, which, considering the overwhelming importance of the labour cost, may be regarded as moderate. Actually, it was the horticultural farms (Group VI) where the labour cost was only 39 per cent, but in all the other groups it amounted to 47 to 54 per cent. Due to the relatively small amount of unpaid labour, the glasshouse holdings (Group I) averaged 47 per cent; on the other hand, the small-scale vegetable and fruit holdings (Group IV) showed a labour cost of 54 per cent. Miscellaneous costs varied between 18 and 27 per cent; it was on the small-scale vegetable and fruit holdings, where it was 18 per cent, but in the other groups it was 22 to 27 per cent of total costs. With the exception of the feeding stuff cost, the difference in the variation of all other cost items was not more than 4 per cent. The cost of feeding stuffs on the horticultural farms (Group VI) was 8 per cent of total costs, while in the other groups this cost item averaged between 1 and 4 per cent. Actually, it was only on the intensive vegetable holdings (Group II), where no livestock was kept.

With regard to annual changes in costs, the results of the 16 identical holdings showed that, over the last seven years,

TABLE 101
Average Cost per Acre

Items	Type-groups										Average		
	I		II		III		IV		V				
	£	%	£	%	£	%	£	%	£	%			
Feeding Stuffs	5	1	—	—	4	3	6	4	1	1	6	4	2
Crop Expenses	45	11	26	13	12	11	10	8	17	14	11	14	10
Rent	18	5	5	3	4	4	5	4	3	3	2	3	4
<i>Labour:</i>													
Paid	164	41	41	21	42	37	32	25	61	48	27	35	33
Unpaid	23	6	59	30	17	15	38	29	3	3	3	4	17
Miscellaneous	113	27	46	24	26	22	24	18	31	23	20	25	41
Implements	37	9	18	9	9	8	15	12	11	8	9	11	17
Total	405	100	195	100	114	100	130	100	127	100	78	100	175
													100

DIAGRAM 61 Distribution of Average Costs



total costs varied only slightly from £121 to £136 per acre. Bearing in mind that during the same period the per acre production averaged between £130 and £155, the variation in costs was indeed moderate. No doubt, this seven-year period witnessed some rises in wages, materials and services, and credit is due to the efforts of the growers that they managed to offset these rises by higher production.

Table 102 gives a picture of the comparison of costs on 16 identical holdings for the period 1949-1955.

In order to review the construction of costs, it is as well to examine each item in the sequence of importance in which it appeared in the proportional distribution. The cost items will thus be dealt with in the following order. (a) Labour Cost, (b) Miscellaneous Costs, (c) Crop Expenses, (d) Maintenance costs of machinery and implements and (e) Rent and feeding stuffs costs.

1. Labour

Labour being, perhaps, the most important factor in the course of production, it is only natural that it is the greatest of the cost items. In the present survey the wages bill, together with the estimated value of the unpaid manual labour of the grower, his wife and family, absorb 50 per cent of the total costs. In order to obtain more detailed information of this cost item, it is necessary to consider the size of the labour force and its actual cost.

(a) Labour Force

The substantial cost of labour, both paid and unpaid, of £87 per acre indicates that there was a considerable labour force operating on the 32 holdings. The composition of the regular labour force was as follows:

	<i>Paid</i>	<i>Unpaid</i>	<i>Total</i>
Men . . .	91	29	120
Women . . :	61	17	78
Youths, Girls . .	20	-	20
Total . . .	172	46	218

Thus, the total regular labour force of the 32 holdings amounted to 218 workers; an average of 7 were employed per holding, or, 14 per 100 acres. On 3 of the holdings, chiefly in the larger acreage groups, the grower himself was not engaged on manual work, as his managerial duties occupied

TABLE 102
Average Costs 1949-1955

Cost Items	1949			1950			1951			1952			1953			1954			1955			Average		
	£	%	£	£	%	£	£	%	£	£	%	£	£	%	£	£	%	£	£	%	£	£	%	
Feeding Stuffs	.	.	.	15	12	13	10	15	11	13	10	15	11	12	10	13	10	14	10	14	11	11	11	
Crop Expenses	.	.	.	3	3	4	3	4	3	4	3	4	3	4	3	4	3	4	3	4	3	4	3	
Rent	.	.	.	3	3	4	4	3	4	3	4	3	4	3	4	3	4	3	4	3	4	3	3	
<i>Labour:</i>																								
Paid	.	.	.	41	34	39	32	41	31	38	29	40	30	41	30	41	32	42	31	40	31	40	31	
Unpaid	.	.	.	28	23	29	23	32	24	32	24	31	23	29	22	29	22	30	22	30	22	30	23	
Miscellaneous	.	.	.	18	15	23	19	22	16	26	19	28	21	26	20	29	21	25	21	25	19	19	19	
Implements	.	.	.	15	12	15	12	17	13	17	13	14	10	14	11	14	11	15	11	15	11	11	11	
Total	.	.	.	121	100	124	100	133	100	132	100	134	100	128	100	136	100	130	100	136	100	130	100	

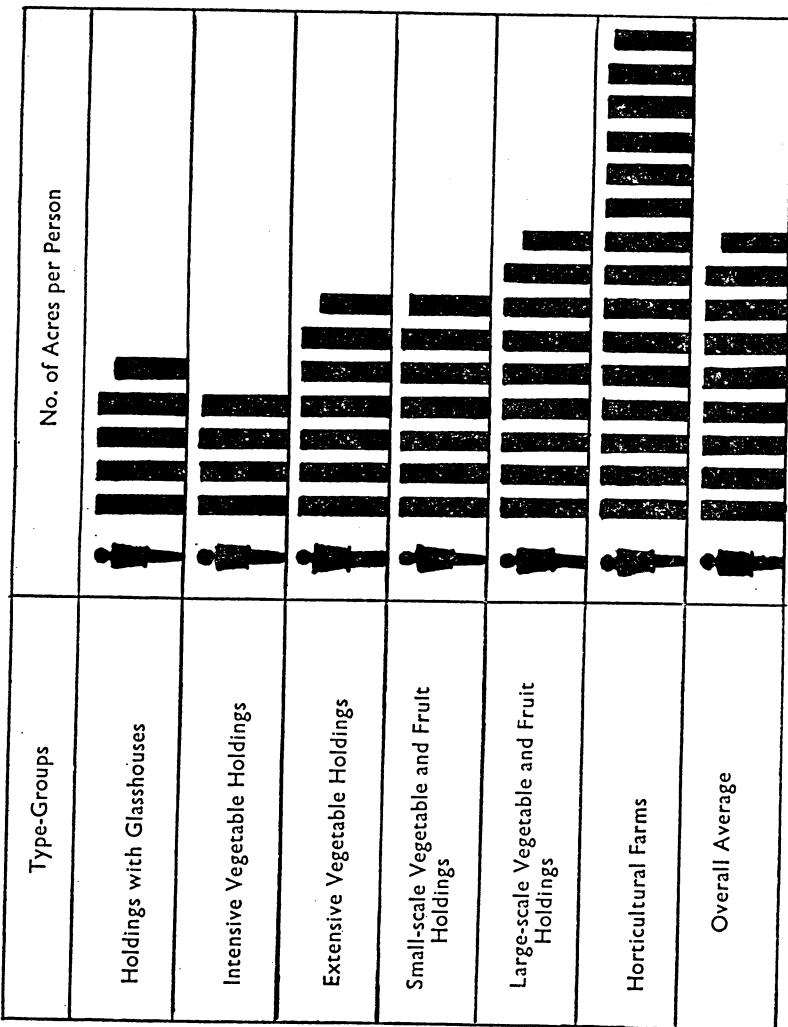
all his time. This accounts for the discrepancy which exists between the number of holdings and that of unpaid men. The number of employees fluctuated considerably during the year, so it was necessary to divide the total number of working weeks by 52 in order to express one "unit" of the fully-employed labour force which, according to the six type-groups of holdings, was as follows:

	<i>Labour Force</i>	
	<i>Total</i> units	<i>Average</i> <i>per Holding</i> units
Glasshouse Holdings	41.9	8.4
Intensive Vegetable Holdings	10.5	2.6
Extensive Vegetable Holdings	9.6	4.8
Small-scale Vegetable and Fruit Holdings	24.2	1.7
Large-scale Vegetable and Fruit Holdings	40.3	10.1
Horticultural Farms	46.8	15.6
<hr/> Total	<hr/> 173.3	<hr/> Average 5.4

The above figures indicate that the average fully-employed labour force per holding (comprised of both male and female workers of all ages) was 5.4 workers per acre, or 11.4 per 100 acres. Thus, on average, one person worked 8.8 acres of the total area of the holding. Diagram 62 shows, according to the various type-groups, the number of acres worked by each member of the regular labour force.

As can be seen from the data given in Diagram 62, the smaller the holding and the greater the intensity of cultivation, the more limited the size of the area worked by one member of the regular labour force. The reason for the rather large area shown per person for glasshouse holdings is that the average acreage of this type-group was nearly 41 acres. On a small glasshouse holding, say of under 5 acres, the average acreage per person worked out at just under 1 acre and was regarded as the responsibility of one person for the whole year. The acreage per person on the extensive vegetable growing holdings was almost the same as on the small-scale vegetable and fruit holdings. However, the average size of the former was nearly 33 acres, whereas that of the latter was only 12 acres. On the horticultural farms the acreage per person was nearly 15 acres, about 7 acres of which represented land under grass and farm crops.

DIAGRAM 62
Average Acreage Worked by Each Member of the Regular Labour Force



Over the last seven years, on the 16 identical holdings, the numbers of the fully-employed labour force tended to decline gradually as shown below:

Years	Total Labour	Labour per Holding	Labour per 100 Acres	Acreage per Labour Unit
1949	129.2	8.1	17.2	5.8
1950	111.5	7.0	14.6	6.9
1951	114.4	7.1	13.5	7.4
1952	110.6	6.3	13.4	7.5
1953	111.2	6.9	13.1	7.6
1954	114.0	7.1	10.2	9.8
1955	112.7	7.0	10.4	9.6
Average	114.8	7.2	12.9	7.8

According to these figures the labour force since 1949 fell by 13 per cent, or by one person per holding. There may have been a number of reasons for this decline in the labour force, such as the drift of the workers to urban industries, difficulty in replacing workers retiring, due to old age, the change-over to crops which required less labour and so on. The greatest fall in the labour force was in the year 1950 which, due to glut conditions, showed the poorest returns of only £6 per acre. Ever since then the number of members of the fully-employed labour force fluctuated between 111 and 114. In itself, this trend does not provide satisfactory evidence on the loss of labour, but its effect is more apparent when related to possible changes in the acreage of the holdings. Since 1949 the size of the 16 holdings has been increased from 749.6 to 1,083.1 acres, or by 31 per cent and this had to be catered for by a labour force which was 13 per cent lower than the 1949 level. Due to this increase in the acreage the relative loss of labour grew to nearly 7 persons per 100 acres, and consequently almost doubled the size of the acreage under one person's care.

It is true that instead of using regular labour some of the work can be done by casual workers. A very large amount of casual labour was employed on the 32 sample holdings but, unfortunately, no data were available of the actual number of casual workers, nor of the time for which they were employed. However, the extent to which they were used may be judged from the following amounts spent on casual labour.

	<i>Cost of Casual Labour per Acre</i>	<i>Per Cent of Total Labour Cost</i>
	£	%
Holdings with Glasshouses	20	11
Intensive Vegetable Holdings	25	25
Extensive Vegetable Holdings	1	2
Small-scale Vegetable and Fruit Holdings	19	27
Large-scale Vegetable and Fruit Holdings	17	27
Horticultural Farms	4	13
Average	18	21

As can be seen from the above figures, the intensive vegetable-growing holdings and the two mixed groups of holdings made the largest demand on casual labour. On the glasshouse holdings the cost of the casual labour was only 11 per cent, due most probably to the specialised and permanent nature of the work, which generally cannot be left to the care of casual workers. The extensive vegetable-growing holdings hardly employed any casual labour at all; they seemed to have sufficient regular labour to cope with the work.

The cost of casual labour was £18 per acre, or 21 per cent of the total labour cost of £87. However, in order to be able to convert the casual labour cost into units of fully employed labour throughout the year, it is necessary to examine the per acre cost of regular labour.

Of the total labour cost of £87 per acre the wages for regular labour, including own labour, amounted to £69. This represented wages paid per acre to employees for 10.8 weeks work on the land. As one person works 52 weeks during the year, the average rate of 10.8 weeks suggests that the £69 was the earnings of 0.21 persons, i.e. $\frac{10.8}{52}$. Thus, in the light of the per acre cost figure, each acre carried 0.21 persons instead of 0.114 persons, i.e. $\frac{173.3 \text{ persons}}{1,516.6 \text{ acres}}$. In this sense, the work per

acre was carried out by $\frac{0.21}{0.114} = 1.8$ times more workers than

shown by the total number of workers and the total acreage of the 32 holdings. According to this result, the more intensive use of labour reduces the average acreage per person from 8.8 to 4.8 acres, and consequently increases the labour force on the average holding from 5.4 to 9.9 persons. In this manner, on 47.4 acres, this being the average size of the 32 holdings, the cost of regular labour amounted to

$47.4 \times £69 = £3,271$. By taking into account that £69 was the earnings of $\frac{1}{4.8}$ persons, one person's earnings amounted to £331 over the year, or to £6.6 per week. Thus the regular labour force required on the average holding would be $\frac{£3,271}{£331} = 9.9$ persons, each of whom would carry out the work on 4.8 acres.

The foregoing results may be used, in a somewhat arbitrary manner, to establish an equivalent unit of labour to express the size of the casual labour force. This part of the total labour cost was £18 per acre. On the average holding of 47.4 acres, the total casual labour is estimated to be $47.4 \times £18 = £883$. Dividing this figure by the average annual earnings of one person in the regular labour force, that is by £331, the result shows that, in addition to the 9.9 regular workers, the average holding needed 2.6 more persons in order to comply with its full labour requirement. In this manner, the total cost of labour of £4,124 would suggest a labour force of 12.5 persons each of them working on 3.8 acres.

By employing the above method, the estimated required casual labour force on the six different type-groups of holdings, was as follows:

Type-Groups	No. of Regular Workers	No. of Casual Workers	Total No. of Workers
Holdings with Glasshouses	17.6	2.1	19.7
Intensive Vegetable Holdings	2.6	0.8	3.4
Extensive Vegetable Holdings	4.8	0.1	4.9
Small-scale Vegetable and Fruit Holdings	1.7	0.7	2.4
Large-scale Vegetable and Fruit Holdings	10.1	3.7	13.8
Horticultural Farms	15.6	2.6	18.2
Average	9.9	2.6	12.5

Although the foregoing figures may account for the size of the labour force employed on each of the six groups of holdings, yet, owing to the varying acreages of the groups, the results do not express the significance of casual workers on the holdings. The relative importance of the casual part of the labour force can be fairly satisfactorily appraised by relating its contribution in terms of acres to the average acreage of the various type-groups. The following results show how the casual labour force contributed to the work of maintaining the layout of the holdings.

Type-Groups		Average Size of Holding	Acreage Cared for by Casual Labour	Per cent of Average Acreage of Holding
Group	Acre	Acres	%	
I.	40.6	4.4	11	
II.	10.5	2.6	25	
III.	32.7	0.6	2	
IV.	11.9	3.1	26	
V.	85.2	22.9	27	
VI.	233.1	31.5	14	
Average	47.4	9.9	21	

According to the above figures the importance of casual labour was highest on the intensive vegetable-growing holdings and on both the small and large-scale vegetable and fruit-growing holdings. On the intensive types of vegetable holdings, the harvesting of sprouts, peas, onions and many other crops is done by seasonal workers, but on the two mixed groups of holdings, fruit picking provides the work for casual labour.

As mentioned before, the six-year results of the 16 identical holdings showed a declining trend in the number of regular workers employed on the holdings. Casual labour is an important part of the total labour force and it may be of interest to see how far the fluctuation in numbers of casual workers affected the employment of regular labour. On the average acreage of the 16 identical holdings, the annual fluctuation in the numbers of regular and casual workers and consequent changes in the average acreage per person are shown in Table 103.

TABLE 103
Changes in the Labour Force and the Average Acreage per Worker

Years	Average Size of Holding	Regular Labour Force		Casual Labour Force		Total Labour Force	Average Acreage per Worker
		Acres	No.	%	No.	%	
1949	46.8	11.8	84	2.2	16	14.0	3.3
1950	48.0	10.0	81	2.4	19	12.4	3.8
1951	52.9	10.2	77	3.1	23	13.3	4.0
1952	51.2	9.6	80	2.4	20	12.0	4.3
1953	52.9	9.8	79	2.6	21	12.4	4.3
1954	69.6	12.0	75	3.9	25	15.9	4.4
1955	68.0	11.1	82	2.5	18	13.6	5.0
Average	55.7	10.5	80	2.6	20	31.1	4.3

As can be seen from the details of Table 103 the average number of casual workers was about one-fifth of the total labour force over the seven-year period. Despite changes in the average acreage of the holdings, and the difference in the seasons of the seven subsequent years, there was only a slight fluctuation in the annual employment of casual labour, averaging between 16 and 25 per cent of the total labour force. The average acreage figures per person show that the inclusion of casual labour in the total labour force hardly affected the declining trend in the employment of labour. In fact, since 1949, the average area of land allotted to one person has steadily increased from 3.3 acres to 5 acres. This increase of 1.7 acres per person is about 50 per cent higher than the 1949 level, and indicates the extent to which the size of the labour force has gradually decreased on the 16 holdings over the seven-year period. In contrast to regular labour, the estimated use of casual labour seemed to be quite steady, and in terms of acres per person it was fairly consistent year after year. The variation in the area per person which was affected by the employment of casual labour is as follows:

Years	Acreage per Unit of Regular Labour Acres	Acreage per Unit of Total Labour Acres	Difference Acres
1949	4.0	3.3	0.7
1950	4.8	3.8	1.0
1951	5.1	4.0	1.1
1952	5.3	4.3	1.0
1953	5.4	4.3	1.1
1954	5.8	4.4	1.4
1955	6.1	5.5	0.6
Average	5.3	4.3	1.0

From the above results it can be seen that it was in the years 1949 and 1955 when the use of casual labour least affected the area worked by one unit of the regular labour force. However, over the years in question the affected area remained fairly consistent at around one acre. This rather steady trend suggests that on the 16 holdings the requirement of casual labour fluctuated at the same level. This particular trend in the employment of casual labour can also be confirmed by relating the area of land cared for by the casual labour force to the average acreage of the 16 holdings. The importance of the use of casual labour in this relationship shows the following picture:

Years	Average Size of Holding	Area Worked per Holding by Casual Labour	
		Acres	%
1949 . . .	46.8	7.3	16
1950 . . .	48.0	8.1	17
1951 . . .	52.9	12.4	23
1952 . . .	51.2	10.3	20
1953 . . .	52.9	11.2	21
1954 . . .	69.6	17.2	25
1955 . . .	68.0	12.5	18
Average . . .	55.7	11.2	20

The above figures indicate that although the size of the casual labour force may vary considerably in accordance with the success of the crops, the area worked by casual labour remained more or less proportionate with the increasing size of the layout of the holdings. It was approximately one-fifth of the total acreage which fell to the care of casual labour, and the results also showed that for each group of four regular workers one additional person was required.

(b) Wages

The labour force of the holdings consisted of hired workers plus the grower and his family, so that the costs involved refer partly to the actual wages paid to the workers in hard cash, and partly to the estimated value of the manual work of the grower, his wife and family. Thus, the total labour cost is comprised of both paid and unpaid labour. Since the labour force consists of men, women, youths and girls, whose earnings differ considerably according to current rates of agricultural wages, the cost of labour largely depends on the composition of the labour force employed on the holding. When adult male workers are predominant in the labour force, the cost of labour tends to be much higher than when there is a mixed labour force.

The composition of the average cost of labour per acre on the 32 holdings is given in Table 104.

The cost of unpaid labour was, generally speaking, half that of paid labour. However, the total cost per acre represented 13.7 working weeks, of which the grower only worked four weeks and his wife one week; for this they were credited with £25 and £4 respectively. The grower worked full time during

TABLE 104
Average Labour Cost per Acre

Type-groups	Paid Labour			Unpaid Labour			Total Cost of Labour			
	Men	Women	Youths Girls	Casual	Total	Men	Women	Youths Girls	Total	
Group	£	£	£	£	£	£	£	£	£	
I.	98	38	8	20	164	18	5	—	23	187
II.	10	6	—	25	41	50	9	—	59	100
III.	32	9	—	1	42	16	1	—	17	59
IV.	12	—	1	19	32	33	5	—	38	70
V.	37	4	3	17	61	2	1	—	3	64
VI.	17	5	1	4	27	2	1	—	3	30
Average	30	8	2	18	58	25	4	—	29	87

the year but his wife only worked half time, or 26 weeks. Thus, on the average holding of 47.4 acres, the grower by working on 3.8 acres, which is the average acreage worked per person, earned £25 \times 3.5 = £87.5 which on 3.8 acres amounted to £333; his wife, on the other hand, received per acre £4 \times 13.7 = £54.8, which on $\frac{3.8}{2} = 1.9$ acres worked out at £104.

In calculating the cost of labour for the entire layout of the average holding, the cost of £30 for hired men was for 3.8 weeks' work; the £8 for paid women was for two weeks' work, and the £2 for youths was for 0.2 weeks' work. According to these figures the weekly earnings were £8 for men, women and youths £4 each, and £6.4 for the grower. By relating these figures to the average holding at a rate of 13.7 weeks per acre and 3.8 acres per person, the composition of the labour force and its cost gives the following result:

<i>Workers</i>	<i>Labour Force</i>	<i>Acreage</i>	<i>Cost per Acre</i>	<i>Total Cost</i>
	No.	Acres	£	£
Men . . .	5.2	19.7	@ 109.6	2,159
Women . . .	2.5	9.5	@ 54.8	520
Youths . . .	0.7	2.6	@ 54.8	142
Grower . . .	1.0	3.8	@ 87.6	333
Wife . . .	0.5	1.9	@ 54.8	104
Casual . . .	2.6	9.9	@ 87.6	867
Total . . .	12.5	47.4	87.0	4,125

With regard to the various type-groups of holdings, a similar appraisal of the composition of the labour force and its cost is given in Table 105. According to these results, the layout of holdings with glasshouses required as large a labour force on 40.6 acres, as that of the horticultural farm on 233.1 acres. On the former type of layout the employment of female labour was rather predominant, but on all the other types of holding it was of secondary importance. As far as the cost of the unpaid labour of the grower and his wife is concerned, holdings in the smaller acreage groups clearly indicate the overwhelming importance attached to this part of the labour cost. In the layouts of both the intensive vegetable-growing holdings, and the small-scale vegetable and fruit-growing holdings, almost half of the total acreage was worked by the grower and his

TABLE 105
Composition of Labour Force and its Cost According to Type-Groups

Workers	Holdings with Glasshouses				Intensive Vegetable Holdings			
	Labour Force	Acreage	Cost per Acre	Total Cost	Labour Force	Acreage	Cost per Acre	Total Cost
Men . .	Units 6·0	Acres 12·3	£ 337	£ 4,145	Units 0·4	Acres 1·3	£ 112	£ 145
Women . .	8·9	18·3	111	2,031	0·4	1·3	55	71
Youths . .	1·2	2·4	99	238	1·0	3·3	151	499
Grower . .	1·0	2·1	174	365	0·6	1·5	43	65
Wife . .	0·5	1·1	95	105	0·8	3·1	87	270
Casual . .	2·1	4·4	161	708				
Total . .	19·7	40·6	187	7,592	3·2	10·5	100	1,050
Workers	Extensive Vegetable Holdings				Small-scale Vegetable and Fruit Holdings			
	Labour Force	Acreage	Cost per Acre	Total Cost	Labour Force	Acreage	Cost per Acre	Total Cost
Men . .	Units 2·4	Acres 13·3	£ 74	£ 985	Units 0·4	Acres 1·8	£ 95	£ 171
Women . .	1·4	7·7	41	316	—	—	—	—
Youths . .	0·5	2·8	37	104	0·1	0·4	60	24
Grower . .	1·0	5·5	76	418	1·0	4·4	88	388
Wife . .	0·5	2·8	31	87	0·5	2·2	50	110
Casual . .	0·1	0·6	32	19	0·7	3·1	45	140
Total . .	5·9	32·7	59	1,929	2·7	11·9	70	833
Workers	Large-scale Vegetables and Fruit Holdings				Horticultural Farms			
	Labour Force	Acreage	Cost per Acre	Total Cost	Labour Force	Acreage	Cost per Acre	Total Cost
Men . .	Units 6·0	Acres 36·9	£ 80	£ 2,952	Units 9·0	Acres 109·8	£ 39	£ 4,278
Women . .	3·5	21·7	42	909	3·6	43·9	21	946
Youths . .	0·1	0·6	34	21	2·0	24·4	14	342
Grower . .	0·5	3·1	71	220	1·0	12·2	34	415
Wife . .	3·7	22·9	59	1,351	1·0	11·1	17	188
Total . .	13·8	85·2	64	5,453	19·2	233·1	30	6,993

NOTE:—The fractions in the numbers of labour force are the result of converting workers who left their employment during the year, into labour units working 52 weeks.

wife, and consequently the cost of this work was more than half of the total labour cost.

In all six type-groups the workers earned good wages which were well above the minimum agricultural standard. Without taking into account deductions for P.A.Y.E., the National Health Insurance contribution, and charges for board and lodging, the annual earnings of the employees were as follows:

TABLE 106
Average Annual Earnings of Workers

Workers	Group I	Group II	Group III	Group IV	Group V	Group VI	Average
Men . . .	£ 691	£ 362	£ 411	£ 427	£ 492	£ 475	£ 415
Women . . .	228	178	226	—	260	263	206
Youths, Girls . . .	198	—	188	240	210	171	200
Grower . . .	365	499	418	388	440	415	333
Wife . . .	210	108	172	220	—	188	208
Casual . . .	337	338	190	200	392	317	330
Average . . .	385	328	333	309	395	364	335

As can be seen from the details of Table 106, the average earnings per worker did not vary much in the six type-groups, and the variation which did occur was due to the difference in the composition of the labour force rather than to better chances of earning more wages by working overtime, or obtaining bonus payments on higher output. Of the six groups the highest earnings were shown by the holdings with glass-houses, and the large-scale vegetable and fruit-growing holdings at £385 and £395 respectively. On both types of holding the wages included the salaries of the working managers and so account for the higher average earnings per worker shown by these particular type-groups of layout. This is reflected in the wages of the adult male workers who earned £691 and £492 respectively. With regard to the grower's own wages, the intensive vegetable growing group showed the highest rate of earning at £499. However, this rather high value was due to the fact that the work on nearly half of the total acreage of the holdings was carried out by the grower himself at an average cost of £100 per acre. On the other hand, the earnings shown for the grower's wife were low because she was only a half-time worker. The annual value of the wife's earnings was highest, at £220, on the small-scale vegetable and fruit-growing holdings where, owing to the comparatively lower output of the holding, the grower had to rely more on the unpaid assistance of his wife. As far as casual workers were concerned, their best earnings, at £392 per person, were achieved on the large-scale vegetable and fruit-growing holdings. This rather high rate was mainly the result of the considerable piece-rate work required for harvesting the crops.

On the whole, the holdings had to cater for fairly high wages, but in return the workers, too, had to work hard to ensure a high rate of output which actually made satisfactory earnings possible. In the various type-groups of holdings, the rate of output per person was as shown below:

Type-Groups	Annual Earnings per Worker	Annual Output per Worker
	£	£
Holding with Glasshouses	385	1,193
Intensive Vegetable Holding	328	900
Extensive Vegetable Holding	333	499
Small-scale Vegetable and Fruit Holding	309	626
Large-scale Vegetable and Fruit Holding	395	901
Horticultural Farm	364	1,032
Average	335	830

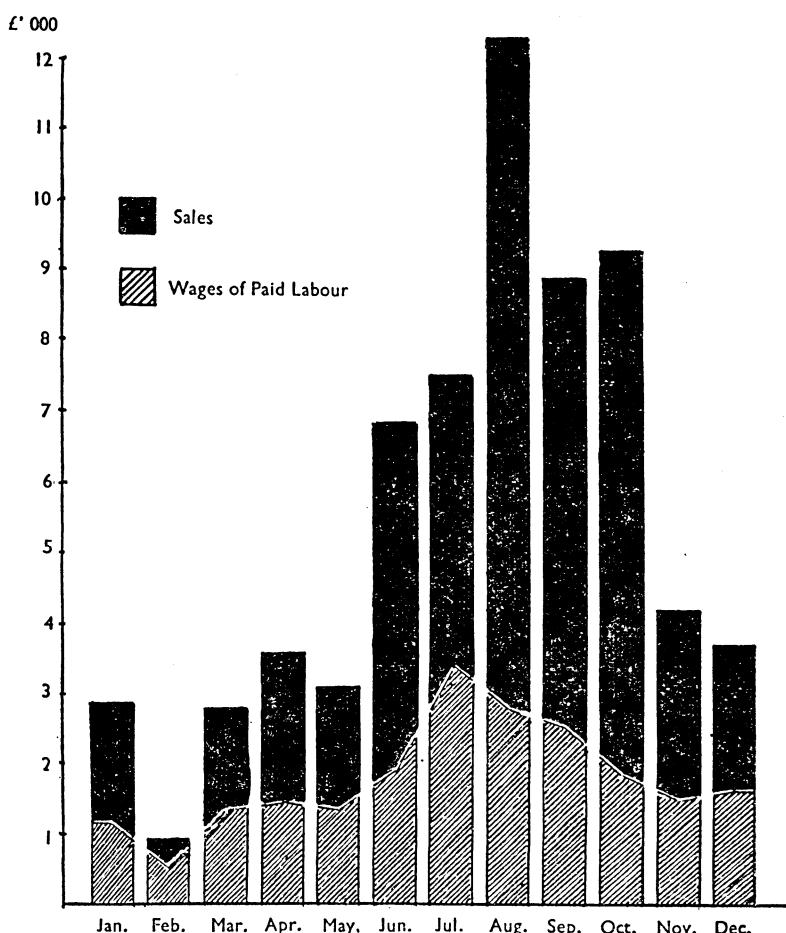
According to the above results the output per person was highest on the glasshouse holdings and the horticultural farms. On the former type of layout, wages per £100 produced an output of £310, but on the latter the output per person was only £283. The least productive labour was employed on the extensive vegetable-growing holding where it only returned £150 per £100 labour cost.

In order to meet the weekly wages bill of paid employees, the grower in his plan for cropping has to ensure sufficient income to cover this part of his costs, which, unlike the other liabilities, has to be paid promptly and mostly in cash. The grower's greatest concern is, perhaps, to arrange sales of the crops in such a manner, week by week, so that there will be a sufficient flow of income to safely maintain the payment of wages to workers. In view of the high labour requirement, and the consequent pressure of wages, there has to be produce for sale at all times, and indeed produce sent to the markets must include a great many nets of sprouts, pounds of onions, chips of tomatoes and so on. In order to see how successful the growers were in arranging their sales of crops over the entire year, a special study was made on 17 sample holdings to obtain information on the seasonal distribution of their cash receipts and their expenditure. Total sales from these holdings amounted to £67,400 of which £33,771 was paid out for wages to hired workers, both regular and casual. The monthly distribution of receipts and expenditure showed that, in the year 1955 receipts from crop production in each month were sufficient to cover wages. However, there were several months

when paid labour absorbed 40—58 per cent of the monthly receipts and the remainder proved to be insufficient to cover other liabilities incurred. These rather lean months were January, February, March, April, May and December. Of course, this period of low returns may vary from holding to holding according to the type of cultivation being carried out. For instance, on a purely fruit-growing holding the grower has to build up his reserves during the harvest months so as to cover his liabilities for the rest of the year. On the other hand, on a holding with intensive vegetable production, where crops are maturing almost continuously, there may be only one or two months when receipts are low. However, on the 17 holdings with their mixed vegetable and fruit production, the monthly distribution of paid wages, which over the whole year absorbed 50 per cent of cash receipts, is shown in Diagram 63.

Over the period of the last seven years the per acre cost of labour varied only slightly. On the 16 identical holdings the average cost fluctuated between £68 and £73 per acre. Although during the period in question there were several awards in the statutory rates of wages, the £5 increase in the cost per acre hardly seems to be consistent with the rising trend in the wages. Clearly, the very moderate increase in the per acre cost suggests that there were certain factors which helped the growers to offset the otherwise steadily rising wages. Of these factors, perhaps the most effective one was the general decline in the number of workers on the holdings, and possibly some re-arrangement in the composition of the labour force whereby the more expensive male labour had been substituted by female and juvenile labour. As already pointed out, it was the regular labour force which was mainly affected by the decrease of labour. On the other hand, the size of the casual labour force remained fairly constant, at any rate on the basis of its estimated fully employed units. However, in order to conceive a picture of the annual changes in the labour force, the size and distribution of labour has been assessed for each year in accordance with the average acreage of the holdings. The annual results are set out separately for the years of 1949—1955 and shown in Table 107. According to these details it was the numbers of hired male and female workers which appeared to be most affected by changes in the labour force. During the years in question, within these changes in the combination of labour, the numbers of male workers were decreasing and the numbers of female workers increasing. Although this process of reorganisation was a gradual one, and perhaps carried out

DIAGRAM 63
Monthly Distribution of Cash Receipts and Wages



quite unintentionally on most of the holdings, by 1955 it had created a substantial change in the composition of the labour force. These changes were, in fact, responsible for helping the growers to keep their labour cost per acre at a fairly static level over this long period of years. Thus, the margin of success on the 16 holdings was largely due to economies brought about by the reorganisation of the labour force. For instance, if in 1955 growers had employed labour at the 1949 level then

TABLE 107

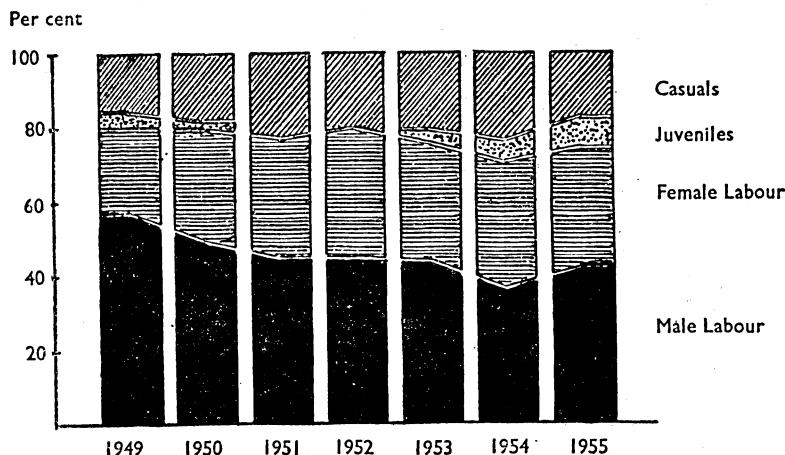
Annual Composition and Cost of the Labour Force
According to the Average Acreage

Workers	1949				1950			
	Labour Force	Acreage	Cost per Acre	Total Cost	Labour Force	Acreage	Cost per Acre	Total Cost
Men . . .	Units 7.0	Acres 23.6	£ 79	£ 1,853	Units 5.2	Acres 22.1	£ 80	£ 1,758
Women . . .	2.5	8.3	47	390	3.1	10.3	48	499
Youths . . .	0.6	2.0	49	98	0.1	0.4	68	17
Grower . . .	1.0	3.3	80	265	1.0	3.8	85	322
Wife . . .	0.7	2.3	52	120	0.6	2.3	45	103
Casual . . .	2.2	7.3	69	503	2.4	9.1	62	565
Total . . .	14.0	46.8	69	3,229	12.4	48.0	68	3,264
Workers	1951				1952			
	Labour Force	Acreage	Cost per Acre	Total Cost	Labour Force	Acreage	Cost per Acre	Total Cost
Men . . .	Units 5.0	Acres 20.0	£ 90	£ 1,795	Units 4.4	Acres 19.1	£ 84	£ 1,602
Women . . .	3.4	13.6	49	671	3.5	15.1	51	772
Youths . . .	—	—	—	—	—	—	—	—
Grower . . .	1.0	4.0	86	343	1.0	4.3	80	343
Wife . . .	0.8	2.9	47	136	0.7	3.0	53	160
Casual . . .	3.1	12.4	74	917	2.4	10.3	73	749
Total . . .	13.3	52.9	73	3,862	12.0	51.8	70	3,626
Workers	1953				1954			
	Labour Force	Acreage	Cost per Acre	Total Cost	Labour Force	Acreage	Cost per Acre	Total Cost
Men . . .	Units 4.4	Acres 18.9	£ 85	£ 1,602	Units 5.0	Acres 22.0	£ 85	£ 1,870
Women . . .	3.4	14.2	53	759	4.7	20.3	54	1,100
Youths . . .	0.4	1.7	61	104	0.7	3.1	59	182
Grower . . .	1.0	4.3	80	343	1.0	4.4	83	364
Wife . . .	0.6	2.6	53	137	0.6	2.6	53	137
Casual . . .	2.6	11.2	72	811	3.9	17.2	71	1,219
Total . . .	12.4	52.9	71	3,756	15.9	69.6	70	4,872
Workers	1955				Average			
	Labour Force	Acreage	Cost per Acre	Total Cost	Labour Force	Acreage	Cost per Acre	Total Cost
Men . . .	Units 4.9	Acres 24.5	£ 88	£ 2,154	Units 5.0	Acres 21.2	£ 83	£ 1,768
Women . . .	3.5	17.5	57	1,001	3.3	13.8	52	719
Youths . . .	1.0	5.0	57	286	0.6	2.6	57	148
Grower . . .	1.0	5.0	77	385	1.0	4.3	81	348
Wife . . .	0.7	3.5	46	160	0.6	2.6	50	131
Casual . . .	2.5	12.5	73	910	2.6	11.2	70	785
Total . . .	13.6	68.0	72	4,896	13.1	55.7	70	3,899

the cost of that combination of labour would have amounted to £5,974 instead of £4,896, on the average holding. The employment of the more expensive combination of labour would have increased the per acre cost by 18 per cent from £72 to £85, and ultimately reduced the margin of profit per acre achieved in 1955 from £19 to £6.

According to the annual patterns of labour force, the changes were made at the expense of male labour. For instance in 1949 this part of the labour force represented 57 per cent of the total number of workers; in 1954 it decreased to 37 per cent and in 1955 to 43 per cent. Female labour, on the other hand, increased from 23 per cent to 34 in 1954 and to 32 per cent in 1955. The employment of juvenile labour also showed an increasing trend. During the years 1951 and 1952 there were no youths and girls employed on the holdings, but in 1953 they represented 3 per cent, in 1954, 4 per cent, and in 1955 7 per cent of the total labour force. With regard to casual workers, the rate at which they were employed fluctuated between 16 per cent and 25 per cent. In 1955, however, when more male and juvenile labour was employed on the holdings, the rate of casual labour decreased to 18 per cent of the total labour force. The annual changes in the composition of labour is illustrated in Diagram 64.

DIAGRAM 64
Annual Variations in the Composition of the Labour Force



As can be seen from Diagram 64, growers managed to offset the rising trend in wages by the more sparing use of male labour. The extent to which gross wages, including perquisites, bonus and overtime payments, have risen during this seven-year period can be observed from the average annual earnings of workers as shown in Table 108.

TABLE 108
Average Annual Earnings of Workers

Workers	1949	1950	1951	1952	1953	1954	1955	Average
Men . . .	£ 265	£ 333	£ 359	£ 359	£ 364	£ 374	£ 442	£ 354
Women . . .	156	161	198	218	224	234	286	218
Youths . . .	161	172	—	—	260	260	286	244
Grower . . .	265	322	343	343	343	364	385	348
Wife . . .	172	172	171	229	229	229	229	218
Casual . . .	229	234	296	312	312	312	364	302
Average . . .	231	263	290	302	303	306	360	298

According to the foregoing table the average earnings of one unit of the labour force has risen from £231 to £360 per annum. The sharpest rise, however, occurred in 1955, when more male labour was employed on the holdings, resulting in higher average earnings per worker. On the whole, workers earned about 56 per cent more in 1955 than in 1949. However, this considerable rise in the earnings of the workers did not appear to be a liability to the growers, since the output of the workers also showed a substantial increase over the years in question. In fact, since 1949, the output of one unit of the labour force has risen by 63 per cent, which against the 56 per cent rise in earnings was ample to ensure a fair balance between the cost of labour and the returns. Over the seven-year period the increase in the cost and output per worker is shown in Table 109.

On the whole, despite considerable differences in the seasons, the relationship between costs and output of labour was consistent year after year, and the productivity of the workers seemed to keep pace with rising wages. Over the seven years, the average output per worker was £621 against the average cost of £298, the turnover being £208 for £100 earnings. This ratio between the cost and output of labour fluctuated

from £191 to £227. In the lean years, such as 1950 and 1952, it was £191 and £198, but in the good years, 1949, 1954 and 1955, it amounted to £206, £227 and £215 respectively.

TABLE 109
Cost and Output per Worker

Years	Per Worker			
	Cost	Output	Cost	Output
1949	£ 231	£ 475	% 100	% 100
1950	263	503	114	106
1951	290	600	126	126
1952	302	600	130	126
1953	303	636	132	134
1954	306	695	132	146
1955	360	775	156	163

(c) *Miscellaneous Costs*

The second largest item in the cost structure of the 32 holdings was miscellaneous costs, and these represented 24 per cent of total costs. In order to simplify the cost structure of the holdings, those items of expenditure which could not be classified under the main headings of costs such as labour, machinery, rent, seeds and fertilisers, and feeding stuffs, were treated as miscellaneous costs and these included a great variety of expenses such as repairs and renewals, excluding those to machinery, rates, water charges, contract work, including spraying, market expenses and sundry overhead costs. Details of miscellaneous costs are shown in Table 110.

The composition of this group of costs may vary considerably and this shows itself in the per acre costs of the various type-groups of holdings. Miscellaneous costs per acre were in fact highest on the glasshouse type of holdings and on the holdings with intensive vegetable production. However, on the other types of holdings this cost item was more moderate and varied between £20 and £31 per acre. Miscellaneous costs were by far the heaviest on glasshouse holdings, averaging £113 per acre, and on each of the items comprising this cost there was a good deal of difference from the costs of the other type-groups. The frequent painting of glasshouses, the replacement of broken cloches, and other maintenance work, made the

TABLE 110
Average Miscellaneous Costs per Acre

Type-groups	Repairs excluding Machinery	Rates, Water Charges	Contract Work	Market Expenses	Sundries including Produce Bought	Total
Holdings with Glasshouses	20	2	6	41	44	113
Intensive Vegetable Holdings . .	4	—	1	34	7	46
Extensive Vegetable Holdings . .	2	—	1	18	5	26
Small-scale Vegetable and Fruit Holdings	2	—	2	10	10	24
Large-scale Vegetable and Fruit Holdings . .	3	1	3	11	13	31
Horticultural Farms . .	3	—	1	10	6	20
Average	5	1	3	18	14	41

costs of repairs higher. As the greater part of the produce, especially tomatoes, flowers, lettuce and beans, was sold on commission, the market expenses, too, were higher than those of the other holdings. The considerable amount of sundry costs suggests more office expenses, a fair use of electricity in the glasshouses, levies on tomato and cucumber production and so on. However, on all the six type-groups of holdings the market expenses seemed to be the biggest item of the miscellaneous costs. Actually, these are the expenses incurred during the process of preparing and transporting produce from the grower's packing shed to the market. The item, market expenses, includes packing materials, hire and purchase of empties, transport (which has been paid to hauliers or railways), together with commission, handling charges and other fees (portage, telegrams, etc.) charged on the produce. The extent of this cost depends largely on the particular marketing system used by the grower and on whether he sells his produce through commission salesmen, co-operative organisations, or merchants. Agents and markets, as a rule, give an account of the charges incurred during the process of marketing, but merchants, on the other hand, only give a note of the net sum payable to the grower. Thus, the cost of marketing depends on the extent to which different forms of selling the produce are employed. Details of the costs of marketing are as follows:

Type-Groups	Empties and Packing Materials	Transport	Commission and Market Charges	Total
Group	£	£	£	£
I. . . .	12	7	22	41
II. . . .	8	5	21	34
III. . . .	7	5	6	18
IV. . . .	2	2	6	10
V. . . .	4	2	5	11
VI. . . .	3	2	5	10
Average . .	5	3	10	18

These figures show that in the mixed form of marketing of the 32 holdings surveyed, the market charges averaged £18 per acre which was 10 per cent of the total cost of £175. With regard to crop production, marketing costs amounted to 9 per cent of the receipts of £208 per acre. This relationship between crop receipts and market expenses is given below for the different types of holding.

Type-Groups	Crop Receipts per Acre	Market Expenses per Acre	Per Acre
Group	£	£	%
I. . . .	579	41	7
II. . . .	273	34	12
III. . . .	90	18	20
IV. . . .	142	10	7
V. . . .	146	11	8
VI. . . .	85	10	12

In relative terms, the least favourable balance between receipts and market expenses was on the extensive type of vegetable-growing holdings, where it absorbed 20 per cent of the receipts. This result readily indicates that on these holdings crops were sold late in the season at low prices; consequently fixed costs, such as transport and handling charges, claimed a higher share of the receipts. The lower costs shown for the small- and large-scale vegetable and fruit holdings seemed to be justified, as large quantities of fruit, especially egg plums, were sold on contract and thus no direct marketing cost was involved.

The second largest item of miscellaneous costs was the sundry overhead costs of £14, or one-third of the total miscellaneous costs. The composition of this cost item is so wide and varied

that no detailed consideration is possible beyond an enumeration of the component items which seem to be far too small to be expressed in terms of costs per acre. However, the most important sundry costs were those for produce bought on the ground, and for spraying materials. Although the practice of buying produce on the ground from larger holdings or farms is confined mainly to Brussels sprouts and cabbage, the transactions involved large sums of money. Of the total sundry costs of £14, the purchase of standing crops accounted for £3. With regard to sprays and dusts, the costs of all the plant protecting materials have been included in the sundry costs so as to conform with the Farm Management Survey Scheme. On the other hand, where the actual spraying operation was carried out by agricultural contractors, the cost was treated as contract work. Of the £14 spent on sundries, spraying materials amounted to nearly £2 or about 1 per cent of the total cost of production. Actually, the total amount spent by the 32 holdings on sprays and dusts was £1,904. In order to ascertain the kind of materials bought, £1,647 of the total expenditure has been analysed and dissected according to the types of materials. A great variety of materials were represented in the sum spent on sprays and dusts. The types and costs of materials are summarised as follows:

	£	%
Insecticides	624	38
Acaricides	29	2
Fungicides	354	21
Weed Killers	152	9
Slug Killers	38	2
Soil Sterilisers	428	26
Surface Active Agents	16	1
Hormones	6	1
Total	1,647	100

These figures show that the greater part of the expenditure referred to insecticides, fungicides and soil sterilisers. Soil sterilisers were used only on glasshouse holdings, but there seemed to be no specific distinction in the use of other materials on the holdings. The 1955 season was comparatively free from pests and diseases so that it was rather difficult to discern those types of holdings where the demand for plant protecting materials was heaviest. However, from available evidence it can be assumed that on the mainly fruit-growing holdings more fungicides than insecticides were used, and for the protection against red spider and other parasites these holdings were the main users of acaricides in the form of chlorobenzide.

With regard to insecticides and fungicides, the invoices of the 32 holdings disclosed a vast variety of preparations purchased under their proprietary trade names. However, many of these preparations consisted of similar or even identical chemical substances, and a subsequent classification showed that the spraying programme of the holdings was based on the materials of a group of 16 insecticides and 10 fungicides.

The main materials used for insecticides together with their costs were as follows:

		£	%
Aldrin	.	12	2
B.H.C.	.	90	14
D.D.T.	.	84	14
Derris	.	40	6
Dieldrin	.	21	3
D.N.C. Petroleum	.	102	16
Lead Arsenate	.	20	3
Mercurated Lead	.	22	4
Nicotine	.	28	4
Organic-Phosphorus	.	119	19
Parathion	.	36	6
Tar Oil	.	37	6
T.E.P.P. and H.E.T.P.	.	9	2
Petroleum Oil	.	4	1
Total	.	<hr/> 624	<hr/> 100

From these figures it can be seen that the cost of insecticides was fairly evenly spread over the constituent materials, which may well suggest that the purpose of the sprays was more for prevention of possible damage than protection against the existing plague of pests.

As in the case of insecticides, prevention against damage was the main object of the combination of the fungicide materials. The purchased materials consisted of the following items:

		£	%
Calomel	.	24	7
Captan	.	3	1
Copper	.	20	6
Lime Sulphur	.	80	23
Organic Mercury	.	99	28
Sulphur	.	45	13
Salicylanilides	.	11	3
Tetrachloronitrobenzene	.	5	1
Thiram	.	55	15
Ziram	.	12	3
Total	.	<hr/> 354	<hr/> 100

As mentioned before, some spraying was carried out on contract and the grower either provided the necessary materials, or paid for the entire operation. Because of the rather divided nature of this cost, it was almost impossible to ascertain the exact amount spent on spraying by the holdings. However, a rough estimate of this cost would be about £3 per acre of which £2 may be attributed to the purchase of materials and £1 for work carried out by contract.

By comparison, the other items of the miscellaneous costs, such as repairs, other than to machinery, rates, water charges and contract work, were of far less importance than the sundry overhead costs and market expenses. The relative importance of the various items of miscellaneous costs is as follows:

Items	Cost per Acre	Percentage of Miscellaneous Costs	Percentage of Total Costs
Repairs excluding those to Machinery	£ 5	% 12	% 3
Rates, Water Charges	1	3	1
Contract Work	3	7	2
Market Expenses	18	44	10
Sundry Overhead Costs	14	34	8
Total	41	100	24

The comparison of the 16 identical holdings showed that miscellaneous costs rose from £18 per acre in 1949 to £29 in 1955. The reason for this rise was due not only to the increased cost of materials and services, but also to the overall increase in production which demanded higher marketing and other overhead costs. The annual variations in the composition of the miscellaneous costs per acre are shown in Table 111.

As can be seen from these figures, the annual fluctuation in miscellaneous costs was mainly due to the charges for market expenses. The extent of these depended both on the success of the crops and on the amount of produce sold in gross terms, which included cost of commission, transport and handling charges. Over the seven-year period the component items of market expenses showed the following variations.

Years	Empties and Packing Materials	Transport	Commission and Market Charges	Total
1949 . . .	4	3	3	10
1950 . . .	4	4	5	13
1951 . . .	4	3	6	13
1952 . . .	6	3	6	15
1953 . . .	6	4	9	19
1954 . . .	5	3	7	15
1955 . . .	4	3	8	15
Average . . .	5	3	7	15

Of the three items comprising market expenses the greatest variation was shown by the cost of commission and market charges, while the other two cost items remained almost static. Although there were several rises in the rates of transport and costs of packing materials since 1949, a possible reason for this rather steady trend may be the gradual change in the system of marketing, whereby more and more produce was sold locally, especially through the services of merchants in the Vale. With regard to commission, most firms in the intermediary trade kept their rates of commission unaltered and they ranged, generally, from 7½ per cent to 10 per cent of gross receipts. Here it was mainly the volume of transactions which seemed to be responsible for fluctuations in annual costs, and perhaps to a lesser degree, the changes in the rates of handling charges.

TABLE 111
Annual Variations in the Composition of Miscellaneous
Costs per Acre

Years	Repairs excluding Machinery	Rates, Water Charges	Contract Work	Market Expenses	Sundries including Produce Bought	Total
1949 .	2	—	1	10	5	18
1950 .	3	—	1	13	6	23
1951 .	3	—	1	13	5	22
1952 .	2	—	2	15	7	26
1953 .	2	—	1	19	6	28
1954 .	1	1	1	15	8	26
1955 .	2	—	2	15	10	29
Average .	2	—	1	15	7	25

Over the seven-year period, market expenses as a proportion of crop production were as follows:

Years	Crop Receipts per Acre	Market Expenses per Acre	Per cent
1949 . . .	£ 137	£ 10	% 7
1950 . . .	123	13	11
1951 . . .	142	13	9
1952 . . .	129	15	12
1953 . . .	139	19	14
1954 . . .	144	15	10
1955 . . .	144	15	10
Average . . .	137	15	11

According to these figures, the difference between 1949 and 1955 was only 3 per cent, and the annual variation very slight. Although the miscellaneous costs are greatly exposed to changes, and are bound to show variations, the results of the 16 identical holdings showed that these variations can be kept within reasonable limits. This is confirmed by the relationship between miscellaneous costs per acre and production per acre. This relationship for the seven-year period was as follows:

Years	Production per Acre	Miscellaneous Costs per Acre	Per cent
1949 . . .	£ 142	£ 18	% 13
1950 . . .	130	23	18
1951 . . .	150	22	15
1952 . . .	139	26	19
1953 . . .	149	28	19
1954 . . .	153	26	17
1955 . . .	155	29	19
Average . . .	146	25	17

As can be seen from the foregoing figures, the ratio of miscellaneous costs remained quite consistent and only varied between 13 and 19 per cent of the production results of the holdings.

(d) *Crop Expenses*

Crop expenses held third place in order of importance in the cost structure and amounted to £19 per acre, or 10 per cent of total costs. They included the cost of seed, plants, trees, bushes, and fertilisers which had been decreased or increased by the

differences found in the opening and closing valuations of these commodities and of the cultivations. This is also a variable cost item, and it may easily change year by year according to crop rotation, physical conditions of the soil and so on. Expenditure, already adjusted by the changes in the valuations, is shown in Table 112.

TABLE 112
Average Crop Costs per Acre

Type-groups	Seeds, Plants, etc.	Fertilisers	Total
Holdings with Glasshouses . . .	21	24	45
Intensive Vegetable Holdings . . .	8	18	26
Extensive Vegetable Holdings . . .	4	8	12
Small-scale Vegetable and Fruit Holdings	3	7	10
Large-scale Vegetable and Fruit Holdings	6	11	17
Horticultural Farms . . .	3	8	11
Average	7	12	19

According to these figures the total crop costs on the 32 holdings averaged £19 per acre, i.e. £7 on seeds, plants, bushes and young trees, and £12 on fertilisers. On the glasshouse holdings the seed bill almost equalled the sum spent on fertilisers, but on all other types of holdings the ratio between seeds and fertilisers was about one to two. Crop expenses were highest on the glasshouse holdings with an average of £45 per acre; in other type-groups, however, the expenditure showed a decreasing trend in accordance with the lower intensity of cultivation.

With regard to purchases of seeds and plants, expenditure was almost evenly divided between seeds, including seed potatoes, and plants covering strawberry runners and soft fruit cuttings. On 17 holdings the analysis of the seed bill showed the following details.

	£	%
Seeds	2,081	32
Seed Potatoes	1,114	17
Plants	2,783	43
Soft Fruit	521	8
Total	6,499	100

The most striking feature of the above analysis is perhaps the large sum spent on plants. Almost the entire quantity of

purchased plants was of vegetable plants, in particular sprouts, cabbage, cauliflower and tomatoes. This indicated that most of the holdings grew these crops from bought seedlings rather than from home-produced plants.

The composition of the fertiliser bill is far more complex than that of seeds and plants. Purchases covered a very wide range of individual fertilisers, and by arranging them in their respective groups they gave the following picture.

Type of Fertiliser	Quantities		Expenditure		Cost per Ton
	tons	%	£	%	
Straight Organics . .	64.7	5	1,354	10	20.9
Straight Inorganics . .	212.9	17	4,143	29	19.5
Granular Compounds . .	140.8	11	3,788	27	26.9
Powder Compounds . .	85.9	7	2,641	19	30.7
Glasshouse Fertilisers . .	7.8	1	520	4	66.7
Farmyard Manure . .	419.0	33	588	4	1.4
Soot . . .	9.3	1	69	—	74.2
Lime . . .	260.9	21	630	5	2.4
Compost Materials . .	48.3	4	332	2	6.9
Trace Elements . .	1.7	—	33	—	19.4
Total . . .	1,251.3	100	14,098	100	11.3
Less Subsidies and Discounts . .	—	—	2,191	16	1.8
Net Expenditure . .	1,251.3	100	11,907	—	10.5

As can be seen from these figures, the application of fertilisers on a limited sample of 17 holdings amounted to 1.1 tons to the acre the cost of which was £10.5 per ton. Of the fertilisers applied, the cost of the straight inorganics and granular compounds represented more than half of the total costs. As far as the straight inorganic fertilisers are concerned the bulk of these artificials were nitrogenous fertilisers the composition of which was as follows:

Fertiliser	Quantities		Expenditure		Cost per ton
	tons	%	£	%	
Sulphate of Ammonia . .	52.0	41	1,071	36	20.6
Nitro-chalk . .	33.0	26	596	20	18.1
Calcium Cyanamide . .	9.5	8	316	11	33.3
Potash Nitrate . .	29.4	23	906	30	30.8
Nitrate of Soda . .	2.9	2	81	3	28.0
Total . . .	126.8	100	2,970	100	23.4

In broad terms, these were the main features of the application of fertilisers on the 32 holdings. Although the costs may be liable to variations, the holdings seemed to pursue the same practice year after year; at least, this was the picture to be drawn from the annual results of the 16 identical holdings. Over the seven-year period, the extent of crop expenses varied on these holdings as shown in Table 113.

TABLE 113
Annual Variations of Crop Expenses per Acre

Years	Seeds, Plants, etc.	Fertilisers	Total
1949 . . .	5	10	15
1950 . . .	4	9	13
1951 . . .	4	11	15
1952 . . .	4	9	13
1953 . . .	4	11	15
1954 . . .	3	9	12
1955 . . .	4	9	13
Average . . .	4	10	14

As can be seen from the details of the foregoing table, there was hardly any variation between the annual amounts spent per acre on seeds and fertilisers. It is undoubtedly true, that there were some changes in the costs of materials, but the growers seemed to manage to cover their requirements of seeds and fertilisers at very much the same cost year after year. Whether this stability in expenditure had been achieved by purchasing smaller quantities of fertilisers, or cheaper ingredients for the annual dressing, or by producing more home-grown seeds and plants, could not be ascertained due to lack of physical data. In any case, the fact that growers managed to keep their fertiliser costs at a fairly static level, and achieved high production results, shows that, to a very large extent, credit was due to the National Agricultural Advisory Service with its expert advisers and ramified scientific facilities which are of constant assistance to growers and help them make the best possible use of modern techniques.

(e) *Maintenance Costs of Machinery and Implements*

On the 32 holdings the maintenance cost of machinery and implements, which consists of repairs, fuel and depreciation, amounted to £17 per acre, or 10 per cent of total costs.

As mentioned earlier in this report, most of the holdings were highly mechanised, and there were only two small holdings where no machinery was kept, all the cultivating being done entirely by contractors. However, on all the other 30 holdings, there were in use many different kinds of tractors, rotary cultivators, planters, sprayers, irrigation plants, cold storage equipment, motor cars, lorries and so on. It is obvious that this vast amount of mechanical equipment required a good deal of attention as regards repairs, consumed large quantities of fuel and the unavoidable wear and tear represented one of the heaviest items of maintenance costs.

The extent of the maintenance cost depended on the type, age, and rate of exploitation of available machinery. On holdings where a greater amount of capital machinery was kept, the maintenance cost was obviously heavier than where it was more limited. On holdings where machinery was reasonably new, due to frequent renewals and additions, the repair and fuel bills appeared to be lighter, but the cost of depreciation was far heavier than on holdings with ageing equipment. On some holdings, owing to the prevailing type of cultivation, the use of the machinery had to be more intensively exploited, so this, too, had a considerable bearing on maintenance costs. Briefly, these were the main factors which together ultimately determined the extent of the maintenance costs on the sample holdings. The following Table 114 gives an account of the details of this particular cost item.

TABLE 114
Average Cost of Machinery and Implements per Acre

Type-groups	Repairs	Fuel	Depreciation	Total
Holdings with Glasshouses .	5	10	22	37
Intensive Vegetable Holdings .	4	5	9	18
Extensive Vegetable Holdings .	1	4	4	9
Small-scale Vegetable and Fruit Holdings .	4	4	7	15
Large-scale Vegetable and Fruit Holdings .	3	3	5	11
Horticultural Farms	2	3	4	9
Average	4	5	8	17

As can be seen from the foregoing table, it was on the glasshouse type of holdings where maintenance costs appeared to be heaviest. Although on these highly mechanised holdings,

the repair bill, due perhaps to frequent renewals, was fairly comparable with that of other type-groups, the cost of fuel and depreciation was much heavier. This difference in costs readily suggests the specialised type of machinery as far as consumption of fuel is concerned, and the greater value of equipment as far as depreciation is concerned. The difference in the fuel cost, however, can be partly accounted for by the fact that this item also included the cost of glasshouse fuel, both oil and coke, but the depreciation cost referred entirely to the wear and tear of mechanical gear without any consideration of the depreciation on the glasshouse itself. Actually, the cost of glasshouse depreciation has been treated separately by allowing an interest charge of 5 per cent on the cost of the building. In the cost structure, however, this charge formed a part of the cost of rent on the holdings. In the other type-groups of holdings, the maintenance cost of machinery and implements was much lower, averaging £9 to £18 per acre; nevertheless it seemed to be heavier on holdings with smaller acreages than on the larger holdings. The maintenance cost of £18 per acre on the intensive vegetable-growing holdings, with an average acreage of 10.5 acres might well be justified by the net income of £78 per acre, but on small-scale vegetable and fruit holdings, with an average acreage of 11.9 acres, the cost of £15 per acre seemed to be rather a heavy burden considering that the net income of this group of holdings was only £12 per acre.

Although the various type-groups of holdings showed a considerable difference in the extent of maintenance costs, the distribution of the component items was, in relative terms, rather similar. The share of repairs, fuel and depreciation in the total cost of machinery maintenance can be seen from the following figures.

Machinery Maintenance

Type-groups	Repairs	Fuel	Depreciation
Group	%	%	%
I.	14	27	59
II.	22	28	50
III.	12	44	44
IV.	21	22	47
V.	27	27	46
VI.	22	33	45
Average	23	30	47

With regard to repairs, it was the glasshouse and the extensive vegetable holdings where this cost item appeared to be lightest, representing 14 per cent and 12 per cent respectively of the total maintenance costs. In all the other type-groups the cost of repairs was very much the same, varying between 21 per cent and 27 per cent.

The relative share of the fuel cost also showed only a slight variation between the various type-groups of holdings. Comparatively speaking, it was on the extensive vegetable-growing holdings and the horticultural farms, where most fuel was consumed. On the extensive vegetable holdings the high fuel cost was probably due to the need of repairs, but on the horticultural farms it was due to the larger acreage of cultivations and to the greater use of own transport. However, on the other types of holdings this cost item averaged between 22 per cent and 28 per cent of the total maintenance costs.

Of the three cost items the least variation was shown by depreciation, which on average was between 44 per cent and 59 per cent of the total maintenance costs on the six type-groups of holdings. From these figures it can be assumed that the most mechanised group was holdings with glasshouses, and the extensive vegetable-growing holdings seemed to have the least amount of equipment.

Although the cost of depreciation, shown either "per acre" or expressed in relative terms, may give some indication of the mechanical equipment on the holdings, a better and more reliable picture can be obtained from the figures of the actual valuations together with the incidental purchases and sales of machinery. The machinery valuations of the sample holdings, together with the purchases and sales of equipment computed per acre, is summarised in Table 115.

As can be seen from these figures, there was an appreciation of £7 per acre in the machinery valuations of the holdings which almost equalled the cost of depreciation. In fact, with the exception of the extensive vegetable holdings, all type-groups showed some appreciation in the closing valuations. The difference in the level of mechanisation on the various type-groups of holdings, together with changes in their valuations, are illustrated in Diagram 65.

Relatively speaking, it was on holdings with glasshouses where the standard of mechanisation was highest; they did not, however, have to invest more heavily in the purchase of new machinery. Thanks to their high level of mechanisation, the need for renewals on these holdings was comparatively

TABLE 115
Changes in Valuations of Machinery and Implements per Acre

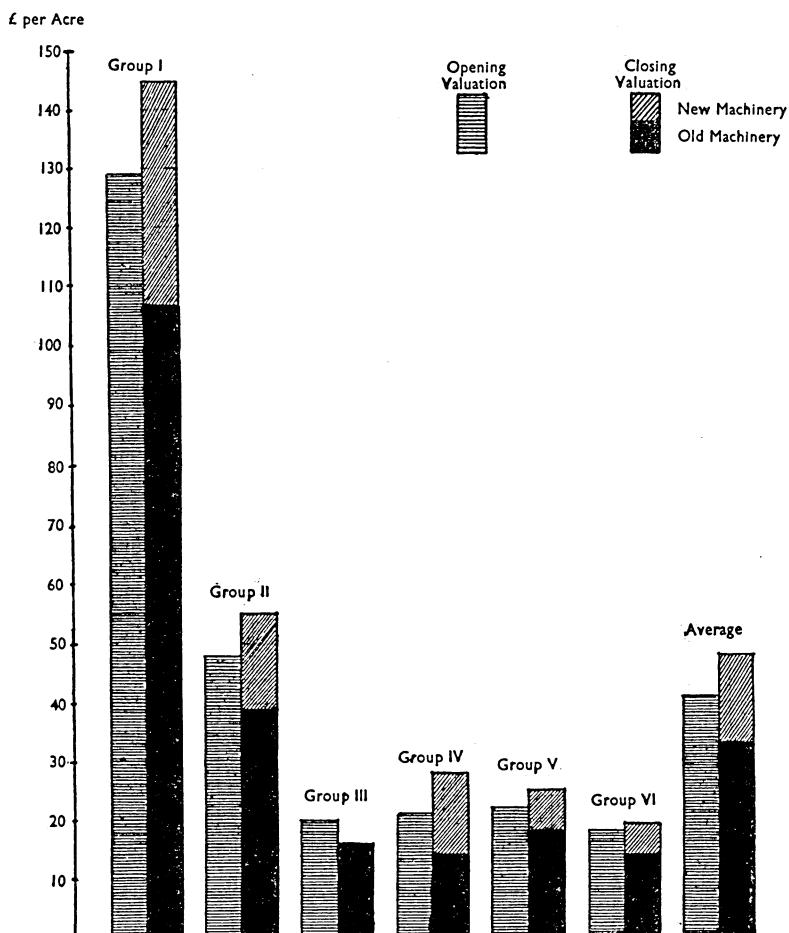
Type-groups	Opening Valuation	Purchases of New Machinery	Sales of Old Machinery	Closing Valuation less Depreciation
Holdings with Glasshouses . . .	£ 129	£ 56	£ 18	£ 145
Intensive Vegetable Holdings . . .	48	20	4	55
Extensive Vegetable Holdings . . .	20	—	—	16
Small-scale Vegetable and Fruit Holdings . . .	21	16	2	28
Large-scale Vegetable and Fruit Holdings . . .	22	13	6	25
Horticultural Farms . . .	18	7	2	19
Average	41	20	5	48

less pressing than on some of the other type-groups of holdings. However, in the light of the opening valuations of the machinery, the rate of investment in new equipment, less the sale of the old, gave the following results.

Type-groups	Opening Valuation	Purchase of New Machinery	Per cent of Opening Valuation
Group	£	£	%
I.	129	38	30
II.	48	16	33
III.	20	—	—
IV.	21	14	67
V.	22	7	32
VI.	18	5	28
Average	41	15	37

As shown by these figures, the sample holdings invested 37 per cent of the value of their old equipment in new machinery. This was, undoubtedly, a considerable rate of investment and was most probably encouraged by the successful cropping year 1955. Actually, on the survey holdings the £15 per acre capitalisation of machinery represented as much as 34 per cent of the £44 net income achieved per acre. From among the six type-groups, it was on the small-scale vegetable-and fruit-growing holdings that the purchase of new machinery

DIAGRAM 65
Standards and Changes in the Level of Mechanisation



appeared to be heaviest and amounted to 67 per cent of the value shown in the opening valuation. This seemed to be quite a considerable investment for these small holdings. However, taking into consideration that production on the intensive vegetable-growing holdings was £273 per acre, using equipment valued at £55 per acre in the closing valuation, then, with a production result of £142 per acre, the increase of machinery to £28 per acre on the small-scale fruit and vegetable holdings

was quite comparable. On both types of holdings where the average acreage was small, production was around £500 per £100 capital invested in machinery. Thus, according to these figures, investment made by small-scale vegetable and fruit holdings in new machinery was not too high but rather brought the standard of mechanisation up to date. On the other hand, there was no purchase of new machinery at all on the extensive vegetable-growing holdings. The decreasing value of equipment on these holdings kept the cost of depreciation down to the same level as the large holdings, but the relatively high fuel consumption made the overall cost of maintenance rather expensive, especially in relation to production. The relationship between production and maintenance cost of machinery per acre is as follows:

Type-Groups	Production	Maintenance Cost	Maintenance Cost as Percentage of Production
Group		£	£
I. . . .	579	37	6
II. . . .	273	18	7
III. . . .	90	9	10
IV. . . .	142	15	11
V. . . .	146	11	7
VI. . . .	85	9	10
Average	219	17	8

As can be seen from these figures, the relative cost of maintenance of machinery on the extensive vegetable-growing holdings amounted to 10 per cent of production and was as high as that for the horticultural farms, and almost as high as that for the small vegetable and fruit holdings after a year of heavy capitalisation.

Over the seven-year period, the trend in the cost of machinery maintenance on the 16 identical holdings was similar to that of the other cost items, namely, that there was only a very slight fluctuation in annual costs. Details of the annual maintenance costs are given in Table 116.

As shown by the following figures, the growers managed to keep the maintenance costs of their equipment at a fairly static level despite the fact that, since 1949, there were some increases in the costs of repairs and fuel. This most probably was achieved by frequent renewals, and especially by the

TABLE 116
Annual Variations in the Cost of Machinery
and Implements per Acre

Years	Repairs	Fuel	Depreciation	Total
1949 . . .	4	3	8	15
1950 . . .	4	3	8	15
1951 . . .	6	4	7	17
1952 . . .	4	6	7	17
1953 . . .	3	5	6	14
1954 . . .	3	5	6	14
1955 . . .	3	5	7	15
Average . . .	3	5	7	15

replacement of ageing equipment by more efficient and economic machines. This seems to be strongly supported by the almost even and unchanging depreciation figures. These depreciation costs suggest that there was some renewal in the existing stock of machinery every year which resulted in some saving in the repair and fuel bills, and also helped to maintain the value and standard of mechanisation on the holdings. Annual investments in new machinery and implements and the effect on the existing value of stock is shown in Table 117.

TABLE 117
Annual Changes in the Valuation of Machinery and Implements

Years	Opening Valuation	Purchase of New Machinery	Sale of Old Machinery	Closing Valuation less Depreciation
1949 . . .	£ 29	£ 16	£ 1	£ 36
1950 . . .	36	6	1	34
1951 . . .	34	6	—	33
1952 . . .	33	6	1	31
1953 . . .	31	9	2	31
1954 . . .	31	2	—	27
1955 . . .	27	14	2	32
Average . . .	31	9	1	32

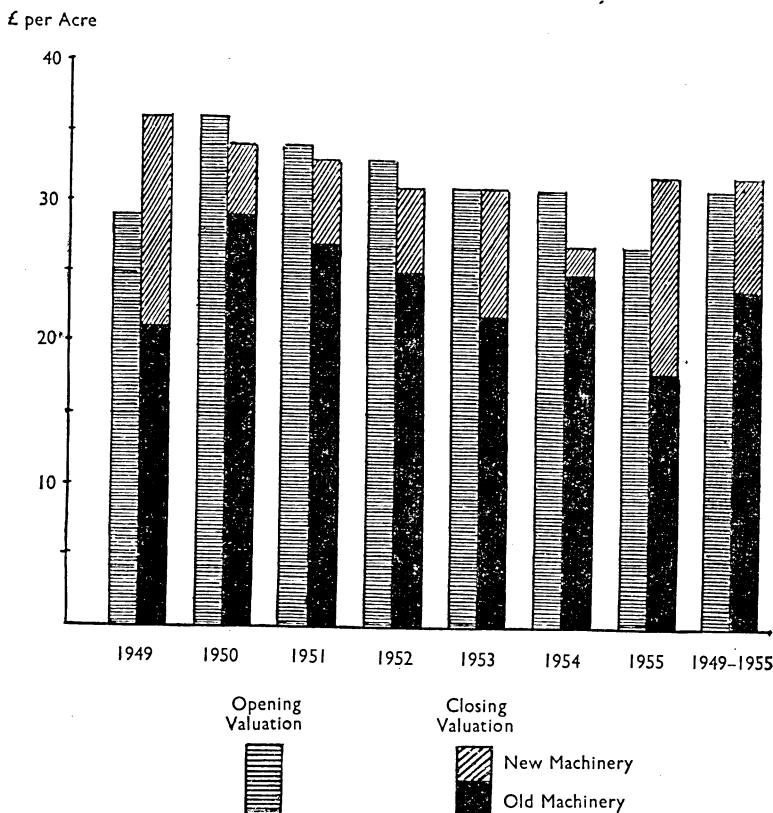
On average, by an annual investment of £8 per acre, the growers managed to maintain the value of their equipment over a period of seven years. This rate of investment showed

that for every £100 worth of old equipment, £26 had been replaced annually by new purchases. According to this figure, the replacement cycle was about four years. During this time, all the machinery on the holdings was replenished either by brand new equipment, or serviceable second-hand equipment of an up-to-date nature. Thus, during the seven-year period on the 16 holdings, growers managed to renew their stock of machinery nearly twice. However, there was no consistency in this process of renewal from year to year, except that during the lean years growers were more cautious about their purchases than in the good ones. In actual fact, the annual purchases of machinery showed a considerable variation. Due to the moderate amounts spent on new stock, the investment in machinery showed a slowly depreciating tendency until 1954 when this trend appeared to be not only checked but reversed by a keen and enterprising interest in buying new equipment. In this manner, the stock of machinery, which by 1954 had depreciated from £36 to £27 per acre, once again appreciated to £32 per acre. The trend in the valuations of machinery, implements, and renewals is illustrated in Diagram 66.

Over the seven-year period, it was the years 1949 and 1955 when the purchase of new equipment was greatest, averaging £15 per acre in 1949 and £12 in 1955. In both years the accounts of the holdings showed considerable success which, to a large extent, promoted interest in the capitalisation of new machinery. However, the net incomes for the years in question suggest that the trend in capitalisation was governed not only by the success or failure of a particular year, but rather by the results of preceding years. This link between the years can be seen from the following comparison of annual net incomes and purchases.

Years	Net Income per Acre	Purchases per Acre
1949 . . .	£ 21	15
1950 . . .	6	5
1951 . . .	17	6
1952 . . .	7	5
1953 . . .	15	7
1954 . . .	25	2
1955 . . .	19	12
Average . . .	16	8

DIAGRAM 66
Trend in the Valuation of Machinery and Implements



According to these figures, the effect of the successful year 1949 on purchases in 1950 seemed to be quite evident, when, judging from the low net income, growers could have hardly afforded to acquire new machinery. The trend was also rather similar in 1952, when the reasonably successful year 1951 encouraged growers to replace some of their equipment. During the following years 1953 and 1954, however, despite the good returns, there was some caution in purchasing new machinery. Nevertheless, in 1955 the success of this and the previous two years seemed to renew the growers' interest to invest in new machinery. It was only by this considerable investment of £12 per acre, or 47 per cent of the opening

inventory of machinery that it was possible to restore the favourable balance between the opening and closing valuations and thus to raise the otherwise falling pace of mechanisation on the holdings. Although the standard of mechanisation since 1949 has dropped from £36 to £32 per acre, this negligible difference can hardly be regarded as having any bearing on the efficiency of the available machinery, especially when it is considered that, in the light of the seven years' production result of £146 per acre, the £32 per acre capital investment in machinery worked out at a turnover rate of almost 1 in 5.

As mentioned before, the cost of maintaining machinery and implements averaged £15 per acre over the last seven years, which was 10 per cent of the average production of £146 per acre. Although in both maintenance costs and production results there was a certain amount of annual variation, the relationship between the cost item and production per acre remained steady and consistent. This can be seen from the following comparison.

Years	Production	Maintenance Cost of Machinery	Maintenance Cost as Percentage of Production
1949 . . .	£ 142	£ 15	11
1950 . . .	140	15	11
1951 . . .	170	17	10
1952 . . .	139	17	12
1953 . . .	149	14	9
1954 . . .	153	14	9
1955 . . .	155	15	10
Average . .	146	15	10

The foregoing figures give a fairly conclusive picture of the relationship between the cost of maintenance and production. In almost every year under review, this cost item represented 10 per cent of the production achieved, and even in 1952, when production fell to its lowest level of £139 per acre and the maintenance cost rose to £18 per acre the increase in cost was not more than 3 per cent.

(f) Rent and Feeding Stuffs Costs

In the cost structure the last items are rent, and the cost of the purchased feeding stuffs. These costs are quite insignificant; in the light of the total costs the two together do not amount to more than 6 per cent.

On the 32 holdings, the average rent-charge worked out at £7 per acre. This was the actual rent-charge, or in the case of owner-occupiers its equivalent value together with the 5 per cent interest charge on capital improvements. On the whole, rent is a constant and invariable item of the cost structure; the only fluctuation which might arise would be due to a charge for interest on improvements, such as glasshouses, frames, and sheds, etc. Amongst the many types of improvements, the erection or expansion of glasshouses are the most costly investments, so that it is only natural that the rent charge is highest on the glasshouse type of holding. On the other types of holdings the rent-charge was very much the same, but, on average, the small holdings had a higher rent than the large ones. The cost of rent per acre for the six type-groups of holdings showed the following comparison.

Type-groups	Cost of Rent per Acre £	Percentage of Total Cost %
Holdings with Glasshouses . . .	18	5
Intensive Vegetable Holdings . . .	5	3
Extensive Vegetable Holdings . . .	4	6
Small-scale Vegetable and Fruit Holdings . . .	5	4
Large-scale Vegetable and Fruit Holdings . . .	3	3
Horticultural Farms	2	3
Average	7	4

These figures show that the rent of the glasshouse holdings was £18 per acre, whereas on other type-groups it worked out between £2 and £5 per acre. Apart from depreciation on glasshouses and other improvements, the rent-charge may depend on a number of other factors, such as the location and size of the holding, the quality of the soil, the amount of orcharding included in the layout and so on. However, despite these variable factors, the per acre rent-charge of individual holdings showed little variation. The main reason for this is, perhaps, due to the fact that most of the sample holdings were rented on a long term basis under the famous Evesham Custom. According to this local arrangement of tenure, the tenant-grower enjoys a sort of co-ownership with his landlord, whereby only the land itself, and perhaps some buildings, belong to the landlord. All improvements including orchard trees, cultivations, and fixtures of any kind are the

tenant-grower's property which he can dispose of freely to new in-going tenants who have been approved by the landlord. The effect of this arrangement on the rent is quite significant. For instance, on holdings which have been tenanted under the Evesham Custom the rent varied between £2 and £5 per acre, whilst on some other holdings rented on a short term basis outside the Custom, it amounted to as much as £30 per acre for good orcharding, and to about £20 for open land. However, there were only two holdings included in the sample, where the grower was a tenant in the strictest sense of the word.

On the whole, there was no appreciable change in rent over the seven-year period whether the landlord was the famous Christ Church College of Oxford, the Commissioners of Crown Land, or just private individuals. At least, this was the picture shown by the cost results of the 16 identical holdings. There were, however, some capital improvements carried out on these holdings, but the effect on the rent was rather limited, due to their fairly large average acreage. A comparison of the annual rent-charge is given below.

Years	Cost of Rent	Per Cent of Total Cost	
		£	%
1949	3		2
1950	4		3
1951	4		3
1952	4		3
1953	4		3
1954	4		3
1955	4		3
Average	4		3

According to these figures, the rent-charge showed hardly any change and remained at £4 per acre, or 3 per cent of the total cost for almost the whole period under review.

The feeding stuffs cost on the 32 holdings averaged £4 per acre, or 2 per cent of the total cost. Generally speaking, livestock production on the sample holdings was only practised on a very limited scale, and only on the horticultural farms did the returns for livestock appear to justify the amount spent on purchased feeding stuffs. On the other type-groups of holdings the enterprise showed no financial gain at all, the only benefits

derived from it being some farmyard manure and some supplies for own consumption. The majority of the sample holdings was unsuitable for livestock husbandry. The scattered location of the land with unfenced fields, and the grower's house being detached from the holding were factors which prevented any reasonable scale of livestock production. There were, however, 7 holdings and 3 horticultural farms, which included one or two livestock enterprises in their business. The very limited scope of livestock production can readily be observed from the following net results which show the difference between livestock production and the cost of feeding stuffs per acre.

Type-groups	Livestock Production	Cost of Feeding Stuffs	Difference + or -
Holdings with Glasshouses .	7	5	+2
Intensive Vegetable Holdings .	1	—	+1
Extensive Vegetable Holdings .	3	4	-1
Small-scale Vegetable and Fruit Holdings .	3	6	-3
Large-scale Vegetable and Fruit Holdings .	1	1	—
Horticultural Farms : : : .	13	6	+7
Average	4	4	—

From these figures it can be seen that the only benefit which the average holding had gained from its livestock enterprise was the farmyard manure, some eggs, poultry, and perhaps a pig consumed by the grower's household. Even this rather small advantage soon disappears if the cost of labour, home-grown feeding stuffs and overheads are taken into consideration. Of the six type-groups it was only on the horticultural farms that the difference between livestock production and the cost of purchased feeding stuffs seemed to be high enough to assume that the enterprise was a profitable one. In all the other type-groups, the results tended to prove the prevailing limitations of the holdings in developing a livestock husbandry compatible with horticultural production on small-acreage holdings.

In comparing the cost of purchased feeding stuffs on the 16 identical holdings for the seven-year period, the result showed that since 1949 it had increased from £1 to £3 per acre. These figures and those for livestock production suggest that there was an increasing tendency to develop livestock enterprises on these holdings. However, the difference between the cost of the feeding stuffs per acre and production results per acre show that the endeavour was not successful. A comparison is given below.

Years	Production of Livestock	Cost of Feeding Stuffs	Difference + or -
1949	£ 1	£ 1	—
1950	1	1	—
1951	2	2	—
1952	3	2	+1
1953	2	2	—
1954	3	2	+1
1955	4	3	+1
Average	2	2	—

According to the above figures, it was in 1955 that livestock production on these holdings reached its highest level at £4 per acre. Of the different types of livestock, the gradual expansion over the seven years mainly affected the numbers of the poultry and pig population, but on the horticultural farms the increase was due to a rise in the production of fat cattle. Despite the small significance of the expansion in livestock production, the cost of the purchased feeding stuffs, too, remained very small indeed and only in 1954 and 1955 was it 2 per cent of the total cost; in the other years it was only 1 per cent.

Relationship between Costs and Production

THE net income of the holding, which represented the margin between production and costs, showed considerable variation

both on the different types of holdings and in the different seasons. From details of individual accounts, it seems that the main reason for these variations lay in the combination of crops grown on the holdings. The result of this pattern of cropping manifested itself in a certain standard of production backed up and maintained by a certain level of costs. In the various type-groups of holdings, the effect which different systems of cropping had on production and costs clearly distinguished the holdings from each other, but the annual achievements of the identical holdings showed considerably less difference. This was chiefly due to the consistent pattern of cropping which prevailed during the years in question. According to the financial results of the different type-groups, the factor which actually determined the level of production and costs was the degree of intensity in the method of cultivation; fluctuation in the annual results was due to some external factors only, such as weather, disease, or glut, etc., and not to changes in the system and pattern of cropping. However, the level of production itself whether high, medium or low, had very little bearing on the size of the net income. A high production result was easily absorbed by excessive costs, and a moderate standard of production became profitable by keeping costs sufficiently low. The size of the net income thus depended on the relationship existing between production and costs. Wherever this relationship proved to be flexible and ensured that costs closely followed the seasonal trend of the production, success was apparent; but on those holdings where costs lost touch with the flow of income the result was failure.

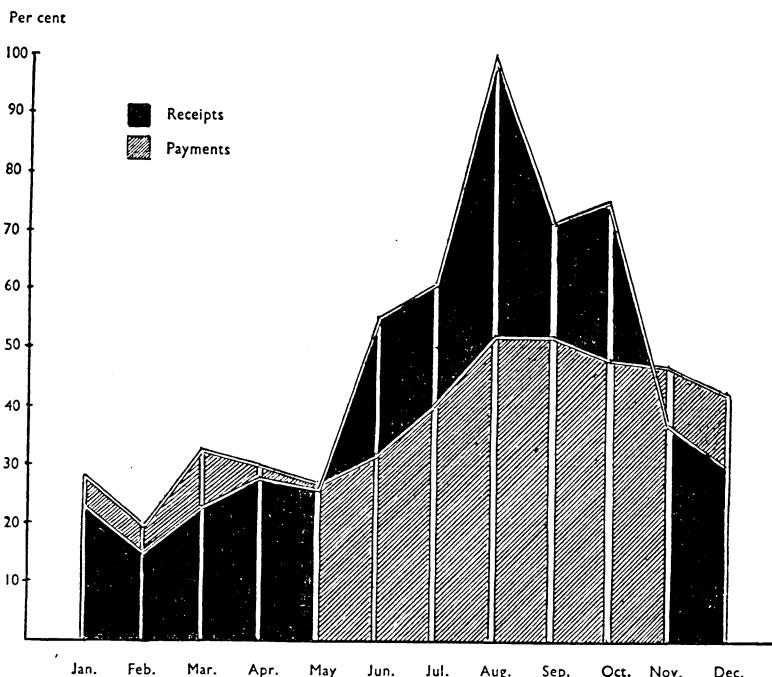
Of course, on these holdings, the flow of income differed considerably during the financial year according to the particular system of cultivation. On glasshouse holdings, for instance, the time during which no income, or only a small income, was forthcoming from the sale of crops was not more than two months at the most, but on mixed vegetable- and fruit-growing holdings it was at least six months. Unfortunately, it was not possible to measure the ratio between costs and production on the various type-groups of holdings. However, cash payments and receipts for a special sample of 17 holdings showed that, on average, it took 7 to 8 months to recover, by receipts obtained from the sale of crops, the cash spent on labour, materials and services. In this sample, with the exception of horticultural farms, all the type-groups were represented. The monthly distribution of the receipts and payments was as follows:

Months	Receipts	Payments	Difference
January	£ 2,941	£ 3,422	— 481
February	1,887	2,532	— 645
March	2,866	4,025	— 1,159
April	3,603	3,679	— 76
May	3,154	3,332	— 178
June	6,846	4,048	+ 2,798
July	7,519	4,903	+ 2,616
August	12,378	6,582	+ 5,796
September	8,926	6,619	+ 2,307
October	9,318	5,933	+ 3,385
November	4,256	5,789	— 1,533
December	3,706	5,303	— 1,597
Total	67,400	56,167	+ 11,233

From the foregoing figures, a fair picture can be given of the monthly results of trading carried out by the 17 holdings. According to these figures, there were not less than seven months in the year when the holdings showed a deficit. In fact, January until June were months of continuous liabilities, also November and December. The five months in which surpluses occurred were June to October. It can therefore be said that on the holdings there was a continuous cycle of seven months when liabilities consistently exceeded assets. Of those months showing a deficit, perhaps the most startling results are those returned for the four succeeding months November—February which is the main season for Brussels sprouts, the most important winter crop of the district. However, in view of the fact that, especially in November and December, the crop was rather badly affected by glut, the deficits were merely the reflection of prevailing poor conditions. In March, when a good many cultivations have to be carried out, and seeds, plants and fertilisers purchased, the excess of expenditure over revenue seemed to be quite natural, but in April and May, when an increasing number of crops were leaving the ground for the markets, somewhat better results could have been expected. On the other hand during the period of surplus it was in August when the balance between revenue and expenditure was most favourable, and this was undoubtedly due to the considerable income received for the plum crop, chiefly the processing varieties. In June, July, September and October the amounts of surplus were very similar, but only represented about one-half of that achieved in August. The

surplus obtained in June was fully absorbed by the accumulated deficits of the preceding months, and the amount gained in October had to cover the losses suffered during November and December. In 1955, therefore, there were only three months left for growers on the 17 holdings to turn the deficit into a surplus and to gather sufficient reserves to cover the non-cash expenses, such as depreciation, own unpaid labour, rental value of the holding, and a reward for risk and toil. The monthly distribution of the receipts and payments expressed in percentages is illustrated in Diagram 67.

DIAGRAM 67
Monthly Distribution of Receipts and Payments on 17 Holdings



Despite the rather brief profit-making period, the 17 holdings managed to ensure a net income of £51 per acre, which was £7 higher than the overall average achieved by the entire sample of 32 holdings. Production worked out at £251 per acre and costs at £200 per acre in contrast to £219 for production and £175 for costs on the main sample. This

difference, however, was by no means due to the more selective nature of the special sample, but rather to the fact that all the horticultural farms were omitted. The omission of the remaining 12 holdings had no effect on the average results, as they were more or less comparable with the 17 holdings in question. Due to the omission of the farms, there was a considerable difference in the composition of the special and the overall sample, but, nevertheless, the relationship between production and costs remained exactly the same. In both cases, the net income worked out at 20 per cent of production, or 25 per cent of total costs. This relationship of the various type-groups of holdings can be seen from the following figures.

Type-groups	Production per Acre	Costs per Acre	Net Income per Acre	Cost as Percentage of Production
Holdings with Glasshouses .	£ 579	£ 405	£ +174	% 70
Intensive Vegetable Holdings .	273	195	+ 78	71
Extensive Vegetable Holdings .	90	114	- 24	127
Small-scale Vegetable and Fruit Holdings .	142	130	+ 12	92
Large-scale Vegetable and Fruit Holdings .	146	127	+ 19	87
Horticultural Farms .	85	78	+ 7	92
Average	219	175	+ 44	80

From this summary it appears that the first two groups of holdings with intensive methods of cultivation achieved a relatively higher level of production at a lower rate of cost than either the two mixed vegetable- and fruit-growing types of holdings or the horticultural farms. In the group of extensive vegetable-growing holdings costs exceeded production by 27 per cent, so that the result could hardly be called a net income.

With regard to the productivity of labour, the relationship between production and cost of labour showed the following trend.

Type-groups	Production per Acre	Cost of Labour per Acre	Production per £100 Labour
Holdings with Glasshouses	£ 579	£ 187	£ 310
Intensive Vegetable Holdings	273	100	273
Extensive Vegetable Holdings	90	59	153
Small-scale Vegetable and Fruit Holdings	142	70	203
Large-scale Vegetable and Fruit Holdings	146	64	228
Horticultural Farms	85	30	283
Average	219	87	252

The foregoing table shows that the standard of labour productivity was the highest on the glasshouse holdings; on the intensive vegetable-growing holdings and the horticultural farms it also showed a comparable level. This standard of labour productivity was much lower on the two mixed groups of vegetable- and fruit-growing holdings which, by comparison with the two former groups, indicated that they were somewhat over-staffed. The very low standard shown by the extensive vegetable-growing holdings was due to the unsatisfactory level of production.

In comparing results achieved by the 16 identical holdings for the seven-year period, the relationship between production and costs was as follows:

Year	Production per Acre	Costs per Acre	Net Income per Acre	Cost as Percentage of Production
1949	£ 142	£ 121	£ +21	% 85
1950	130	124	+ 6	95
1951	150	133	+17	87
1952	139	132	+ 7	95
1953	149	134	+15	90
1954	153	128	+25	84
1955	155	136	+19	88
Average	146	130	+16	89

From the above figures it can be seen that since 1949, in the light of the annual production results, costs fluctuated between 81—95 per cent. This fluctuation may be regarded as fairly moderate, since the trend in costs seemed to follow the trend in production. During the entire period, there were only two

years, namely 1950 and 1952, when costs proved too inflexible to adapt themselves to the fall in production; hence the very low net income shown for these years. Apart from these two years, when for each £100 cost growers received only £105 turnover, the turnover per £100 cost averaged between £113 and £120. For the entire seven-year period this result worked out at £112, so that the grower's net income was 11 per cent of his returns and 12 per cent of his costs.

The productivity of labour for these seven years may be illustrated by the figures given below.

Year	Production per Acre	Cost of Labour per Acre	Production per £100 Labour
1949	142	69	206
1950	130	68	191
1951	150	73	205
1952	139	70	199
1953	149	71	210
1954	153	70	219
1955	155	72	215
Average	146	70	209

From the foregoing table, it appears that the relationship between labour and production was quite consistent over the seven years. There was only a moderate variation in the annual returns per £100 labour; even in 1950 and 1952, when the relationship between production and labour appeared to be the least flexible, labour productivity only fell below the highest level achieved in 1954, by 15 per cent and 10 per cent respectively.

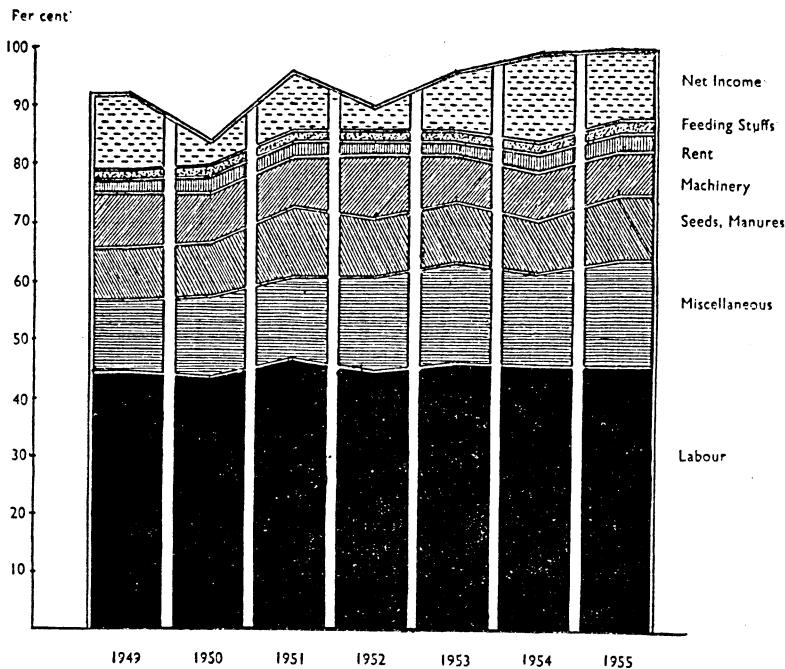
Individual cost items for the seven-year period showed the following rates of production.

Cost Items	1949	1950	1951	1952	1953	1954	1955
Feeding Stuffs .	% 1	% 2	% 1	% 1	% 1	% 1	% 2
Crop Expenses .	10	10	9	10	9	8	8
Rent . . .	2	3	3	3	3	3	3
Labour . . .	49	52	48	50	48	46	46
Miscellaneous Costs .	13	17	15	18	19	17	19
Machinery Costs .	10	11	11	13	10	9	10
Total Costs . .	85	95	87	95	90	84	88
Net Income . .	15	5	13	5	10	16	12
Total Production .	100	100	100	100	100	100	100

In the foregoing table the costs per £100 showed only moderate variations over the seven years. In fact, the variations between the annual results, even in the poorest years, 1950 and 1952, did not exceed 10 per cent; apart from these two seasons, the costs fluctuated between 84 per cent and 90 per cent of the production results. This stability in the cost structure was supported by each component cost item, the variation of which was very limited over the years in question. The widest variation in labour and miscellaneous costs was only 6 per cent; that of machinery maintenance costs only 4 per cent, and crop costs 2 per cent. Diagram 68 illustrates the rates of production which the individual cost items represented during the seven years.

DIAGRAM 68

Proportional Distribution of Costs and Net Income in Production



Over the seven years, the 16 identical holdings averaged a cost of 89 per cent of their production; of this 48 per cent was absorbed by labour, 17 per cent by miscellaneous costs, 10

per cent by seeds and manures; 10 per cent by the maintenance of machinery, 3 per cent by the rent and 1 per cent by feeding stuffs.

Conclusions

THE aim of the present report has been to give a detailed picture of the functional layout of mixed horticultural holdings in the Vale of Evesham, and also to give an account of the financial achievements resulting therefrom. Whilst inquiring into the functional layout of the holdings, the various technical aspects became more and more overshadowed by possible financial consequences of the practices involved. Indeed, the technical and financial aspects were indivisible in presenting the complete picture of the layout and the result of its function. Although the holdings provided a clear insight into the method of land utilisation and into the never ending pattern of crop rotation, the real value of the information lay in the fact that it formed the actual framework to the financial results. On the other hand, without this background material, the financial results, however detailed, might have been somewhat blurred due to lack of evidence on the use of the land, which is the most important basic factor of all.

Although the inquiry covered only 32 holdings, the composition of this sample corresponded fairly favourably with the overall statistical pattern of the area, and therefore it may be assumed that the findings obtained were reliable enough to give a representative account of most of the economic factors which govern the complex nature of commercial horticultural production. It may be thought that the size of the sample was rather limited but, thanks to the interest and co-operation of the growers, the material obtained from them proved to be more than sufficient to gather a wealth of knowledge which covered almost the entire process of growing vegetables, fruit, flowers and herbs under many different methods of cultivation. The results of the inquiry have not only made it possible to ascertain the most common methods of cultivation and the financial achievements of the year 1955, but also the results of a special sample of 16 identical holdings which provided information on the fortunes with which the average holding had been confronted during a period of seven years. The seasons in these years differed considerably from one another bringing success and failure alike, but the overall results for

this fairly long period may be regarded as sufficiently representative to yield an unbiased account of the degree of profitability prevailing in the industry.

In summing up the results of this inquiry some of the most important facts are as follows.

1. As far as the physical conditions of a holding are concerned, the most important factor is that the environment should be suitable for horticultural production. For the sample holdings, the greatest asset of all was, perhaps, that their location fell in an area which lay on the doorstep of some of the most important industrial districts of the country. Due to the Vale's natural affinity to horticulture, and the common interest of the growers, there have gradually developed a ramified and efficient network of services which all contribute to the achievements of the individual holding. In districts where such facilities are not available, the task of the grower must be rendered much more difficult by having to solve alone the problems connected with transport, markets, water and so on.
2. The chief attribute in successful horticultural production, lies in making the best use of the land, knowing which crops to grow and to what extent they should be cultivated. For small holdings the crops chosen should obviously be of a more valuable type than those grown on the larger holdings, where the greater acreage provides a satisfactory turnover. On a large holding it may be quite feasible to rotate crops with cereals for instance, but on a small holding such a practice would probably result in forfeiting some income which is indispensable to the economy of the holding. Thus, in order to ensure a reasonable chance of success a budget-like appraisal of the potential resources of the holding is of paramount importance. On a fair number of sample holdings, there was a definite pattern of land utilisation designed and carried into effect by economic considerations. For instance the type of cultivation had been decided upon by the available capital and labour, and the pattern of crop production had been chosen to match a turnover required by the ambition and personal circumstances of the grower. The results of individual holdings proved beyond any doubt that wherever planning and foresight had guided management, a satisfactory degree of success had been achieved. On the other hand, especially on small holdings, where too many crops were grown, or no consistency prevailed in the rotational system, the results were rather

disappointing and did not even satisfy a moderate standard.

3. The increase in intensity of cultivation proved more successful than the attempt made to add more land to the holding and thus, in many cases, increasing its already scattered nature. The addition of land tended to divide the grower's attention even further, while the installation of irrigation or the establishment of cultivation under glass and other improvements of a similar nature helped to concentrate his efforts.
4. Of the various sectors of crop production, it was the plum orchards which seemed to be in need of attention. Although a fair number of orchards were kept in excellent condition, a good many of them required rejuvenation by planting more up-to-date and better-yielding varieties. In the past, it was the low plum prices and the cost of grubbing which prevented growers from making the desired improvements. It is hoped, however, that the future will bring better prices, and so improve the declining trend in the production of this particular crop for which the area has always been so traditionally famed.
5. Growers marketed their produce through all the possible channels open to them both locally and in the towns and cities. However, due to the facilities available locally, most of the crops found local buyers either in the form of local merchants, co-operatives, or agents representing wholesale firms from all over the country. Whether produce was sold locally or through the services of the intermediary trade, the net results of transactions proved to be very much the same. Successful marketing by no means depended on the efficiency of any of the employed agencies, but rather on the grower's skill in producing the right crop at the right time. There were several growers in the sample who pursued a definite marketing policy often based on the long and dearly earned experience of the past. In formulating a policy for marketing the simple traditional motto of the area, "follow the bad market", in many ways proved to be justified.
6. Over the seven-year period, costs on the sample holdings appeared to be fairly consistent with the trend of production; the most noteworthy was the stability of the labour cost. Owing to the rising trend in wages, this major item of the cost structure might easily have increased above an economic level but for the sound and careful planning, in many cases, of the required labour force. On a good many holdings

constant consideration had to be given to the composition of the labour force in order to keep the cost of labour down to a reasonable level. An adequate measure for achieving economies in the cost of labour was, for instance, to avoid wastage which might be incurred by employing too much costly male labour instead of female and juvenile labour.

7. From 1949 till 1954 on the sample holdings there was a declining tendency in the capitalisation of machinery and implements. In 1955, however, thanks to the improved overall returns, this trend seemed to change for the better. In fact, the slowly depreciating value of the machinery stock was fully restored so that the period in which equipment was completely replenished was, on average, about 3 to 4 years.

Finally, the area concerned is a highly specialised district for the production of most horticultural crops, and the methods pursued there include many local techniques and long-standing traditions which probably differ greatly from the practices of other districts in the country. The findings of this inquiry, then, are primarily applicable to the holdings in the Vale of Evesham.

