WYE COLLEGE
(UNIVERSITY OF LONDON)

THE BRITISH ISLES TOMATO SURVEY

SECOND REPORT: 1967 CROP

J. A. H. Nicholson

SCHOOL OF RURAL ECONOMICS AND RELATED STUDIES

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THE BRITISH ISLES TOMATO SURVEY

Second Report : 1967 Crop

The information collected in the second year of a national enterprise study is analysed by location and season of production. The report includes a discussion on some aspects of selling. Detailed tables present data which may be used as standards for Sales Analysis.

1st April, 1970.

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FOREWORD

The affairs of the glasshouse tomato industry in Western Europe have long been a topic of interest to the horticultural economists at Wye College. In 1966 Mr. Nicholson launched a major enquiry into the economic aspects of tomato growing in various parts of Britain and the Channel Islands. The present report is the second in a series which will be devoted to this work. As in the first report, most of the contents are tables of data, relating in this case to the 1967 crop.

This continuing survey is a joint exercise in which Mr. Nicholson co-ordinates the efforts of economists in six other universities, together with the States of Guernsey Advisory Service, while undertaking much of the survey work himself. The data collected in 1967 were coded and processed at Wye, the calculations being undertaken on the IBM 7090 computer at Imperial College, London. An original program in FORTRAN IV was written for this investigation by Dr. J.P. McInerney, formerly a member of the College staff and now a Senior Lecturer at Manchester University. Mr. J.P.G. Webster rendered invaluable assistance with the computations.

We extend our warmest thanks to each of the growers who has allowed his results to be used in this research.

Ian G. Reid,
Director, Centre for Management Studies.

CONTENTS

PART I

A National Study of Tomato Growing

Intensively-grown early tomato crops are one of the most important glasshouse enterprises in Western Europe. Particular efforts have been made by research and extension workers in recent years to improve knowledge about early tomato production. The British Isles Tomato Survey is concerned only with such early crops. The objectives in the survey are twofold; to clarify the effects of locational factors, and of managerial factors, on profitability. A wide range of tomato growing districts in the Channel Islands and mainland Britain is covered by the survey, which was begun in 1966.(1) A further comprehensive study was undertaken in 1968, and smaller-scale investigations will be continued in future years.

As up to date information about the economic aspects of tomato production is not easily found in alternative sources, the survey findings may well be put to wider uses than those for which they were intended. Accordingly it must be pointed out that the available data were not representative of growers' results in each area. The samples necessarily were rather small, and each was biased deliberately towards the more successful holdings (although it is doubtful if this end was achieved in the Lee Valley.) This bias was required in the belief that the survey objectives could best be pursued by working with the most successful growers. Their generous co-operation has made this possible.

In the interpretation of effects of location and management, it is necessary to assume that the highest management skills in each region are equal.

SOURCES AND METHOD

An interesting addition to the coverage of the survey was made possible in 1967 by the contribution of twelve records from the West of Scotland. There were a few sample changes in some of the other districts, each of which had been covered in the 1966 survey, but the constitution of the samples generally was much the same as before. Only in Jersey could changes in the average levels of performance be attributed to the changes in the sample. As in 1966, it was believed that a very high proportion of the earliest nurseries in the south coastal districts of England was included in the investigation.

In all, some 93 records were collected in 1967. 28 related to earliest crops of all, marketed first in March; 42 of the crops were "second-earlies," marketed first in April; and 23 crops were marketed first in May or early June. Ten separate regions have been distinguished. With sample numbers of this order, it will be appreciated that some possible categories of earliness were ill-represented or absent in certain districts. As limited data are better than none, some tables of average data will be found to be based on very limited observations. The numbers of holdings are shown where appropriate. Average data are weighted to the total output or total area of the group to which they relate.

The following definitions and terminology should be noted before the information in this report is used for any comparative purposes. It should be emphasized that the method of analysis does not determine profit or net income.

Gross Output is the value of sales net of commission, market handling charges, carriage, the hire of returnable containers or the cost of non-

returnable containers. Where significant, costs incurred by the use of the growers' own transport have been deducted. The costs of freight by sea or air have been deducted in order to calculate the output of Jersey crops. Guernsey data are net of levies imposed by the Tomato Marketing Board, but they have not been adjusted to allow for the modest repayment of excess levy at the end of the season. As far as possible, labour costs for grading have not been included in the deductions from gross revenue. This measure understandably may not be convenient for immediate comparative use. It has proved necessary in order to be able to express the results of all crops in the same way.

Net Output is total gross output less the costs of seeds, rootstock seeds and purchased plants. This measure is not of great significance in the management of tomato crops, but it is found useful by advisers and economists in their work, and hence is included for completeness.

Average Net Realised Prices have been calculated by dividing gross output by the number of 12 lb. units marketed in the appropriate period. All price data are shown in decimals, e.g. £1.15 is equivalent to twenty-three shillings, and £0.65 is equivalent to thirteen shillings.

Margin Over Heating Costs (sometimes abbreviated to "margin" in this report) is net output less the costs of fuel used for heating (not steam sterilisation;) the costs of propane or dry-ice (sources of carbon dioxide;) and the costs of electricity consumed in boiler operation, circulating pumps, bench warming and supplementary illumination. Each of these costs had to be estimated on many nurseries, and only substantial differences in their levels can be described as significant in the following tables.

THE WEATHER AND PRICES IN 1967

For many early growers, 1967 was a year characterised by helpful weather and modest early season prices. In Guernsey, for instance, 1967 was among the most naturally early seasons with temperatures in the winter months above normal, and 20% more sunshine than average in February and March. (2) In consequence, exports from the island reached record levels in April and May. Subsequently, however, sunshine and temperatures were below the average for the island.

Similarly, growers in south coastal areas enjoyed above average winter sunshine and temperatures. The later spring weather was dull, but this was followed by very bright weather in June and July. Similar weather was recorded in the Lee Valley. Further north, in Lancashire, there was a mild spring. Sunshine was above average in March and June, but below average in the important months of April and May. In Scotland, it was reported in the trade press that local grown supplies were reaching the market two or three weeks earlier than usual.

It is a perverse feature of tomato growing that the more difficult years, in the husbandry sense, are often those in which the higher prices are realised. Although it was a relatively easy year for early tomato production, 1967 prices proved a disappointment for many growers. Marketing commenced under rather unfavourable conditions, with cold spells of weather in the spring and competition from Dutch and Canary Island tomatoes which the Guernsey Tomato Marketing Board reported as keener than usual. The quality of Canary tomatoes has been improved in recent years, and demand for them was sustained while they were available. Doubtless, the heavy volume of Guernsey supplies was an additional factor in the rather restrained early demand which many growers reported in the survey.

FINANCIAL RESULTS IN 1967

Table 1.1 shows the aggregated results of all nurseries which participated in the 1967 survey. The table summarises the principal items of information which were collected, both of the three categories of earliness and for the total sample. Output information is given both to the end of July and to the end of September. Every crop was marketed at least up to July 31st, but some growers started to clear their crops for successional purposes in August. Growers were not asked to contribute output records after the end of September. A few records after this date did come to hand, and generally these showed that insignificant quantities of tomatoes were sold after September 30th. This pattern of marketing was less marked in the Lancashire and Clyde Valley areas, where very early crops were not recorded and many growers did not start picking before May.

The overall results in 1967 followed the predictable pattern, in that the earliest crops of all obtained the highest average margin over heating costs, and the later crops achieved the lowest average margin. The earliest crops were characterised by the heaviest yields, fractionally higher prices, and the greatest expenditure. These relationships between "first-early", "second-early" and the remaining crops usually were repeated in the results of the crops grown in each region, although there were certain exceptions. Similarly, it did not necessarily happen that the best individual results were obtained by the earliest growers in each district.

It may be inferred that the crops with the highest margins were the most successful. Three factors would qualify this principle. In the first place, profitability of the tomato crop is not the only issue on many nurseries, and some growers with lower margins nonetheless

TABLE 1.1 AGGREGATE AVERAGES FOR THE 1967 CROP

	Crops First Marketed			ALL CROPS
	In March	In April	In May	
Number of Records	28	42	23	93
Tons per Acre				
To July 31st	48.6	37.8	30.9	40.1
To September 30th	59.4	49.5	43.3	51.7
Average Net Realised Prices per 12 lb.	£	£	£	£
To July 31st	1.07	1.04	0.86	1.02
To September 30th	0.96	0.94	0.82	0.93
Per Acre				
Gross Output				
To July 31st	9,682	7,353	4,991	7,676
To September 30th	10,602	8,696	6,639	8,933
Costs of Seeds and Plants	36	23	43	32
Net Output	10,566	8,673	6,596	8,901
Costs of Heating Fuel, CO_2 and Electricity	2,285	1,510	1,422	1,768
Margin over Heating Costs	8,281	7,163	5,174	7,133

may have achieved the most profitable combination or succession of crops. Secondly, profitability is affected not only by the level of margin but also the extent to which fixed costs are incurred: variations in the regular work force and in depreciation may be considerable between two nurseries with identical margins. Thirdly, it should be appreciated that some of the lower margins nonetheless reflected fine achievements by the growers concerned, in view of the quality of the resources at their disposal. Not all growers believe that their surplus funds are most wisely expended by modernising their nurseries, in spite of considerable publicity to this effect.

SOME COMPARISONS WITH 1966

In Table 1.2, the average net realised prices and the yields obtained by all growers in the survey in 1967 have been compared with those recorded by all growers in 1966. In this table, period 1 is March and each subsequent period is the next half-month, so that period 9 is the latter half of July, and period 13 the latter half of September. It is unlikely that the inclusion of data from the Clyde Valley in the 1967 data only has contributed any bias to these weighted averages.

The table illustrates the relationship between supplies and the prices obtained for tomatoes. Average prices and yields over the whole season were similar in each year, but their incidence period by period was quite different. In the first half of 1967, prices generally were lower and yields higher than in 1966. In the latter half, prices tended to be higher and yields were lighter than in the previous year.

TABLE 1.2 AGGREGATE AVERAGE PRICES AND YIELDS 1966 and 1967

Period	Average Net Realised Prices £ per 12 lb		Yields Tons per Acre	
	1966	1967	1966	1967
1	2.52	2.28	0.12	0.42
2	1.49	1.70	0.76	1.39
3	1.69	1.30	1.83	2.53
4	1.81	1.24	2.90	3.92
5	1.43	1.05	5.15	5.84
6	1.21	0.97	7.43	7.78
7	1.02	1.00	7.31	6.40
8	0.83	0.88	7.39	6.39
9	0.67	0.72	5.59	5.48
10	0.55	0.75	4.05	3.81
11	0.47	0.55	4.62	3.78
12	0.46	0.41	2.20	2.20
13	0.54	0.51	1.91	1.77
WHOLE SEASON	0.97	0.93	51.26	51.71

TABLE 1.3 AGGREGATE AVERAGE MARGINS IN 1966 and 1967

	Financial Results of All Crops £ per acre	
	1966	1967
Gross Output	9,308	8,933
Costs of Seeds, Plants, Heating Fuel, CO_2 and Electricity	1,523	1,800
Margin over Heating Costs	7,785	7,133

Comparing the aggregate financial results for the two years, the combination of yields and prices experienced in 1966 proved rather the more attractive for growers. And while revenue was lower in 1967, expenditure was rather higher. As is shown in Table 1.3, the average margin for all crops in 1967 was some £652 lower than in 1966.

PART II

Regional Results of Tomato Production in 1967

JERSEY (Nine Crops)

The area of glasshouses on this island has continued to expand as rapidly as in any part of the British Isles.

Marketing

Jersey growers consigned mainly to the English market. Only one grower had a significant outlet on the island. Two growers supported the Jersey Growers' Marketing Association, and the distribution of their produce was not known. The growers who chose to be independent showed a marked preference for northern and midland markets early in the season. Once local supplies were available in these markets, however, most of the Jersey produce was consigned to London or towns in the south. Tomatoes were normally transported by sea, but one grower supplied Glasgow, Belfast and Cardiff by air.

Glasshouses

Traditionally, Jersey growers have built glasshouses of the Guernsey type. Such single standing wooden vineries continue to be built, and three of the growers were using quite new houses of this kind. Two others had modern steel and alloy houses, of intermediate span. The smallest area in the survey was 14,110 sq. ft. and the largest was 62,900 sq. ft. Only two records related to more than one acre of glass.

Equipment

Each nursery had some form of oil-fired heating installation. Four of the nine growers were using supplementary carbon dioxide.

Varieties

Seven of the crops were of the variety Eurocross BB. Two of the later growers had retained Superlative.

Range in Performance

Table 2.1 shows the average results which have been calculated for Jersey crops. The highest margin over heating costs in this sample was £11,012 per acre, and the lowest margin was £4,480.

TABLE 2.1 TOMATO CROPS IN JERSEY IN 1967

	Crops First Marketed		ALL CROPS
	In March	In April	
Number of records	5	4	9
Results to July 31st			
Average net realised price per 12 lb.	£ 1.11	£ 0.88	£ 1.04
Tons per acre	57.2	50.6	54.9
Gross Output per acre	£11,875	£ 8,277	£10,621
Results to September 30th			
Average net realised price per 12 lb.	£ 0.97	£ 0.79	£ 0.92
Tons per acre	71.5	60.1	67.5
	£	£	£
Gross Output per acre	12,985	8,879	11,554
Cost of seeds and plants	86	22	64
Net Output	12,899	8,857	11,490
Cost of heating fuel, CO_2 and electricity	2,594	2,128	2,431
Margin over heating costs	10,305	6,729	9,059

GUERNSEY (Twelve Crops)

The most significant trend in Guernsey is towards earlier growing. All of the export crop is handled by the Guernsey Tomato Marketing Board, and the Board has reported that the total exports in March and April 1967 were the highest in the history of the Board to that time. The total crop was also the heaviest one which the Board had ever handled, although the 1966 crop was of greater value.

Glasshouses

The smallest area of glass in the survey was 12,600 sq.ft. and the largest was 470,000 sq.ft. Only three records related to more than one acre of glass, although two of these exceeded nine acres. Modern steel houses were used by two of the growers, the remaining records relating to traditional Guernsey vineries.

Equipment

Each of the twelve crops was heated by oil. With the exception of one of the later crops, each received some supplementary carbon dioxide. Five growers purchased plants from specialist propagators.

Varieties

Eurocross BB was the predominant variety on each nursery in the survey.

Range in Performance

Average results for the Guernsey crops are shown in Table 2.2. The highest margin over heating costs in this group was £13,259 and the lowest was £5,936 per acre. The average results for the crops first marketed in March, and the average results of all crops in Guernsey, have been weighted down by the performance of the two especially large nurseries in the sample.

TABLE 2.2 TOMATO CROPS IN GUERNSEY IN 1967

	Crops First Marketed		ALL CROPS
	In March	In April	
Number of records	10	2	12
Results to July 31st			
Average net realised price per 12 lb.	£ 1.03	£ 0.88	£ 1.03
Tons per acre	49.8	57.4	50.0
Gross Output per acre	£ 9,606	£ 9,463	£ 9,602
Results to September 30th			
Average net realised price per 12 lb.	£ 0.93	£ 0.82	£ 0.93
Tons per acre	59.1	68.1	59.4
Gross Output per acre	£ 10,316	£ 10,463	£ 10,320
Cost of seeds and plants	33	308	42
Net Output	10,283	10,155	10,278
Cost of heating fuel, CO_2 and electricity	2,307	2,221	2,303
Margin over heating costs	7,976	7,934	7,975

CENTRAL SOUTH (Thirteen Crops)

This group included holdings in Hampshire, Isle of Wight, Dorset and Devon. Early tomato growing continued to increase in importance in this area in 1967.

Marketing

Five of the crops in this region were handled by New Forest Growers, a vigorous marketing co-operative with a membership of particularly progressive growers. This produce was distributed to commission salesmen in the principal towns in the area. Another five growers supplied salesmen independently, while three had established channels for direct sales. Some of the tomatoes grown on the Isle of Wight were sent to Southampton.

Glasshouses

This region contains a major concentration of modern alloy glasshouses, some of which have been built by firms which have migrated from the Lee Valley. Relatively little of this glass was allocated to early tomatoes in 1967, and blocks of traditional English vineries were used on most nurseries. Four of the crops in the sample were grown entirely in modern glass. 9,000 sq. ft. was the smallest area recorded. The two largest nurseries each had one acre of glass.

Equipment

Each nursery was fired by oil heating. Ten of the crops had the benefit of carbon dioxide enrichment.

Varieties

A wide range of modern varieties was recorded. Eurocross BB, however, was predominant on ten nurseries.

Range in Performance

Table 2.3 presents average results for holdings in the Central South. The highest margin over heating costs was £11,766 per acre, and the lowest was £6,602.

TABLE 2.3 TOMATO CROPS IN THE CENTRAL SOUTH IN 1967

	Crops First Marketed		ALL CROPS
	In March	In April	
Number of records	3	10	13
Results to July 31st			
Average net realised price per 12 lb.	£ 1.16	£ 1.08	£ 1.10
Tons per acre	44.0	45.3	45.0
Gross Output per acre	£ 9,494	£ 9,147	£ 9,224
Results to September 30th			
Average net realised price per 12 lb.	£ 1.02	£ 0.99	£ 0.99
Tons per acre	55.3	55.9	55.8
Gross Output per acre	£ 10,480	£ 10,291	£ 10,333
Cost of seeds and plants	23	45	40
Net Output	10,457	10,246	10,293
Cost of heating fuel, CO_2 and electricity	1,929	1,793	1,823
Margin over heating costs	8,528	8,453	8,470

SOUTH EAST (Thirteen Crops)

This group included a few nurseries in Kent and Surrey. The majority were located in Sussex.

Marketing

Two of the growers in this group belonged to a marketing co-operative. The produce of most of the remainder was distributed through commission salesmen in Sussex towns and London.

Glasshouses

A large proportion of the modern glasshouses in Britain are located in this region. In 1967 very little modern glass was used for early tomato production. Nine of the growers in this sample used only traditional houses for their tomatoes. The smallest area of glass recorded in the survey was 8,960 sq. ft. Five of the crops were greater than an acre in extent, the largest being 99,000 sq. ft.

Equipment

On two nurseries solid fuel heating systems were in use. The remainder were heated with oil. All but three of the growers used carbon dioxide.

Varieties

Eurocross BB was the principal variety on five nurseries. Seven of the crops comprised various of the hybrids raised at the Glasshouse Crops Research Institute.

Range in Performance

Table 2.4 shows the average results obtained in the South East in 1967. The highest margin per acre was £13,898, and the lowest was £3,353.

TABLE 2.4 TOMATO CROPS IN THE SOUTH EAST IN 1967

	Crops First Marketed		ALL CROPS
	In March	In April	
Number of records	6	7	13
Results to July 31st			
Average net realised price per 12 lb.	£ 1.06	£ 1.05	£ 1.06
Tons per acre	50.8	45.2	48.7
Gross Output per acre	£10,058	£ 8,875	£ 9,621
Results to September 30th			
Average net realised price per 12 lb.	£ 0.94	£ 0.98	£ 0.95
Tons per acre	66.0	52.3	60.9
Gross Output per acre	£ 11,543	£ 9,616	£ 10,831
Cost of seeds and plants	32	17	26
Net Output	11,511	9,599	10,805
Cost of heating fuel, CO_2 and electricity	2,504	1,757	2,228
Margin over heating costs	9,007	7,842	8,577

LEE VALLEY (Nine Crops)

The results and information recorded in this area have confirmed the impression given in earlier surveys that this region is in decline.

Marketing

Only one grower in the Lee Valley depended on the local co-operative marketing organisation. The usual practice was to supply commission salesmen in the London markets, but some tomatoes were sent to Manchester and Leicester markets.

Glasshouses

When interpreting the results of this group, the large acreages of glass recorded should be borne in mind. Two of the nurseries exceeded twelve acres, and only two of the records related to less than half an acre. Modern glass did not feature in the survey.

Equipment

Eight of the nurseries were heated by oil fuels and one by coal. Only two crops, including the earliest one, were given supplementary carbon dioxide.

Varieties

Old fashioned types such as Growers' Pride and Baby Lea continued to be grown in very large areas of glass. Eurocross BB or some of the G.C.R.I. varieties were recorded on six of the nurseries.

Range in Performance

Table 2.5 shows the average results of the Lee Valley sample. The range in margins per acre extended from £7,469 to £2,696.

TABLE 2.5 TOMATO CROPS IN THE LEE VALLEY IN 1967

	Crops First Marketed			ALL CROPS
	In March	In April	In May	
Number of records	1	3	5	9
Results to July 31st				
Average net realised price per 12 lb.	£ 1.23	£ 0.95	£ 0.80	£ 0.87
Tons per acre	38.7	21.5	34.5	28.5
Gross Output per acre	£ 8,913	£ 3,795	£ 5,140	£ 4,609
Results to September 30th				
Average net realised price per 12 lb.	£ 1.13	£ 0.82	£ 0.75	£ 0.79
Tons per acre	46.9	30.4	47.5	39.4
Gross Output per acre	£ 9,900	£ 4,664	£ 6,676	£ 5,815
Cost of seeds and plants	13	15	22	18
Net Output	9,887	4,649	6,654	5,797
Cost of heating fuel, CO_2 and electricity	2,418	1,068	1,343	1,243
Margin over heating costs	7,469	3,581	5,311	4,554

EAST ANGLIA (Seven Crops)

As in 1966, nurseries in this small group performed at a much higher level than those in the Lee Valley.

Marketing

There was no clearly defined pattern of distribution. A wide range of wholesale markets was supplied. One grower in this group supported the co-operative in the Lee Valley.

Glasshouses

The smallest recorded area in this group was 9,000 sq. ft. and the largest exceeded fifteen acres. Glasshouses of traditional designs were used on most of these nurseries.

Equipment

One of these growers continued to use coal, the remainder of the nurseries being heated with oil fuels. Only four of the crops received carbon dioxide enrichment.

Varieties

Ware Cross was recorded on two nurseries, and Eurocross BB on four.

Range in Performance

The average results for this group are shown in Table 2.6. The range between the highest and lowest margin over heating costs was from £10,483 to £7,222 per acre.

TABLE 2.6 TOMATO CROPS IN EAST ANGLIA IN 1967

	Crops First Marketed		ALL CROPS
	In March	In April	
Number of records	1	6	7
Results to July 31st			
Average net realised price per 12 lb.	£ 1.17	£ 1.06	£ 1.07
Tons per acre	47.3	47.1	47.1
Gross Output per acre	£10,348	£ 9,325	£ 9,383
Results to September 30th			
Average net realised price per 12 lb.	£ 1.05	£ 0.96	£ 0.97
Tons per acre	57.9	62.5	62.3
Gross Output per acre	£ 11,305	£ 11,215	£ 11,220
Cost of seeds and plants	38	9	11
Net Output	11,267	11,206	11,209
Cost of heating fuel, CO_2 and electricity	1,848	1,567	1,583
Margin over heating costs	9,419	9,639	9,626

LANCASHIRE (Thirteen Crops)

This county contains an important concentration of glasshouse nurseries. Most are small in scale, under the management of working growers. Successional cropping with lettuce is a regular practice which has some influence on the management of tomatoes in this area.

Marketing

Two of the crops were handled by a marketing co-operative. Most of the Lancashire tomatoes were sent to commission salesmen in various northern markets. Some growers made use of country merchants, but only one dealt entirely with retailers.

Glasshouses

Very little new glass featured in the survey. Where new glass had been built, the growers had chosen wooden materials, either in the traditional aeroplane house or in modern Dutch Light structures. The smallest area recorded was 3,300 sq. ft. Only one crop exceeded half an acre in extent.

Equipment

Ten of the Lancashire growers, including the grower of the crop which achieved the highest margin, did not use carbon dioxide treatments. Oil-fired boilers were used to heat ten nurseries. Coal singles were burned on two holdings and coke was used on one other nursery. Supplementary illumination with mercury vapour lamps, a particular feature of Lancashire practice, was used by eight of the growers.

Varieties

A considerable number of varieties was recorded. Super Cross and Eurocross BB were the most widely grown.

Range in Performance

Table 2.7 shows the Lancashire results from the 1967 survey. The highest recorded margin was £10,544 and the lowest was £3,923.

TABLE 2.7 TOMATO CROPS IN LANCASHIRE IN 1967

	Crops First Marketed		ALL CROPS
	In April	In May	
Number of records	7	6	13
Results to July 31st			
Average net realised price per 12 lb.	£ 1.30	£ 1.06	£ 1.21
Tons per acre	30.1	35.8	32.0
Gross Output per acre	£ 7,306	£ 7,078	£ 7,228
Results to September 30th			
Average net realised price per 12 lb.	£ 1.14	£ 0.98	£ 1.08
Tons per acre	43.3	46.4	44.3
Gross Output per acre	£ 9,213	£ 8,451	£ 8,950
Cost of seeds and plants	48	186	95
Net Output	9,165	8,265	8,855
Cost of heating fuel, CO_2 and electricity	1,944	1,231	1,698
Margin over heating costs	7,221	7,034	7,157

CLYDE VALLEY (Twelve Crops)

The results of nurseries in the West of Scotland were included in the British Isles Tomato Survey for the first time in 1967. Growers in this area are handicapped for early tomato production by the poor light intensities which occur early in the year. This factor is compensated, however, by relatively low summer day temperatures which facilitate the production of good quality tomatoes. Scottish growers enjoy a certain natural protection by their distance from both Holland and the Channel Islands, which may well enhance the premium prices obtainable for local grown tomatoes.

Marketing

Each grower was marketing independently, usually by selling a proportion of his crop to local shops and by sending the remainder to the wholesale market. Each grower supplied commission salesmen in Glasgow, and very few sent away produce to other markets.

Glasshouses

No modern glass was recorded in this region. Most of the growers had houses of traditional design with 15' - 16' spans. The smallest unit in the survey was 4,160 sq. ft. Only one nursery had more than an acre of tomatoes.

Equipment

Coal was the principal fuel used on four nurseries, and oil was used on the remainder. Only one nursery, on which the earliest crop was raised, recorded the use of carbon dioxide.

Varieties

A number of varieties were recorded, among which Moneymaker appeared to be the most popular.

Range in Performance

The results of the Clyde nurseries are summarised in Table 2.8. The one crop marketed in April achieved the highest margin of all in this sample and also in the entire 1967 survey. The lowest margin of all was £2,644 per acre, which was the lowest in the entire survey. However on this particular nursery, and nine others, marketing continued for another month, and the survey procedure has created a slight bias against the Clyde crops.

TABLE 2.8 TOMATO CROPS IN THE CLYDE VALLEY IN 1967

	Crops First Marketed		ALL CROPS
	In April	In May	
Number of records	1	11	12
Results to July 31st			
Average net realised price per 12 lb.	£ 1.38	£ 1.12	£ 1.17
Tons per acre	48.7	19.8	22.4
Gross Output per acre	£12,591	£ 4,151	£ 4,901
Results to September 30th			
Average net realised price per 12 lb.	£ 1.26	£ 1.08	£ 1.11
Tons per acre	72.5	31.1	34.8
Gross Output per acre	£ 17,052	£ 6,248	£ 7,209
Cost of seeds and plants	30	76	72
Net Output	17,022	6,172	7,137
Cost of heating fuel, CO_2 and electricity	2,695	1,778	1,859
Margin over heating costs	14,327	4,394	5,278

OTHER DISTRICTS

Data were obtained from four growers in the South West and from one in the East Riding of Yorkshire. These results are summarised in Tables 2.9 and 2.10.

South West

The four growers in this region sold their produce by commission in various west country markets with some sales to local shops. The smallest recorded area was 10,350 sq. ft., and only one holding had more than an acre of early tomatoes. Each nursery was heated with oil and the two earliest crops received supplementary carbon dioxide. The crop with the highest margin(£10,802) was grown in a modern alloy glasshouse. Eurocross BB was grown on the two largest nurseries.

East Riding

The only record obtained in this area related to a crop grown in a modern Venlo type glasshouse, heated by oil. Carbon dioxide was applied and the variety was Maas Cross. The area of the crop was about one half acre. The tomatoes were handled by the local marketing co-operative.

TABLE 2.9 TOMATO CROPS IN THE SOUTH WEST IN 1967

	Crops First Marketed		ALL CROPS
	In March	In April	
Number of records	2	2	4
Results to July 31st			
Average net realised price per 12 lb.	£ 1.19	£ 1.24	£ 1.20
Tons per acre	32.6	42.2	33.7
Gross Output per acre	£ 7,220	£ 9,784	£ 7,528
Results to September 30th			
Average net realised price per 12 lb.	£ 1.04	£ 1.13	£ 1.06
Tons per acre	42.3	51.3	43.4
Gross Output per acre	£ 8,245	£ 10,851	£ 8,558
Cost of seeds and plants	16	16	16
Net Output	8,229	10,835	8,542
Cost of heating fuel, CO_2 and electricity	1,673	1,693	1,676
Margin over heating costs	6,556	9,142	6,866

TABLE 2.10 A TOMATO CROP IN THE EAST RIDING IN 1967

	Crop First Marketed In May
Number of records	1
Results to July 31st	
Average net realised price per 12 lb.	£ 0.87
Tons per acre	26.3
Gross Output per acre	£ 4,276
Results to September 30th	
Average net realised price per 12 lb.	£ 0.81
Tons per acre	35.3
Gross Output per acre	£ 5,332
Cost of seeds and plants	24
Net Output	5,308
Cost of heating fuel, CO_2 and electricity	605
Margin over heating costs	4,703

LOCATION AND PERFORMANCE IN 1967

At this second stage in the enquiry, it would be premature to reach conclusions on the respective merits of each district. However, some brief comments are passed below on the ranking of the different regions in 1967. In the following tables, average results for each group and the results of the best-known crop in each region are ranked in order of margin over heating costs per acre. Both types of information are instructive in assessing the relationships between location and profitability.

Crops First Marketed in March

"First-early" crops were recorded in seven regions, compared with four in 1966, but only one record was obtained in two districts. The most substantial number of observations was obtained in Guernsey, and it is likely that the average margin for that island was weighted down by the presence in the sample of some large areas of glass which generated rather low margins.

Table 2.11 shows the average results of these earliest crops. The range in average net prices in this table is very narrow, and yields appeared to be the key factor. Where the heaviest yields were obtained, high expenditure did not appear to be a handicap.

Crops First Marketed in April

Table 2.12 shows how growers fared with "second-early" crops in nine regions. The greatest number of records in this category came from the Central South. The East Anglian nurseries' achievement was of particular interest, in view of the low average recorded in the Lee Valley. In the latter case, all the crops in the sample had low margins but the average again has been biased down by the very modest performance of one

TABLE 2.11

CROPS FIRST MARKETED IN MARCH

	Jersey	South East	Central South	Guernsey	South West	East Anglia	Lee Valley
Order	1	2	3	4	5	6	7
Number of records	5	6	3	10	2	1	1
Tons per acre	71.5	66.0	55.3	59.1	42.3	57.9	46.9
Average net realised price per 12 lb.	£ 0.97	£ 0.94	£ 1.02	£ 0.93	£ 1.04	£ 1.05	£ 1.13
Gross Output per acre	12,985	11,543	10,480	10,316	8,245	11,305	9,900
Costs of seeds, heating fuel, CO_2 and electricity	2,680	2,536	1,952	2,340	1,689	1,886	2,431
Margin over heating costs per acre	10,305	9,007	8,528	7,976	6,556	9,419	7,469

large nursery. However it is equally true that one of the East Anglian nurseries was over fifteen acres in extent: with average results of 63.8 tons per acre and a margin of £9,887 per acre, this firm's performance was above average.

The price range in Table 2.12 is considerably wider than the range among "first-early" crops. Marketing with this later start, Channel Island growers were handicapped by their heavy expenditure, in spite of the high yield which they obtained. The high prices recorded by growers in Lancashire and the Clyde Valley were above the range of prices obtained by the "first-early" growers in Table 2.11.

Crops First Marketed in May

The high prices obtained in Scotland are a striking feature of Table 2.13, although the inability of most Clyde Growers to produce a heavy crop meant that they were not able to benefit from this comparative advantage. Lancashire growers also obtained good prices which were appreciably higher than those obtained by "second-early" crops in some other regions. By virtue of their heavy crops, this group enjoyed a substantial lead in this league. In fairness to the Clyde growers, the majority still had significant quantities of fruit to be marketed after the close of the survey on September 30th. Few nurseries in other groups were in the same position.

TABLE 2.12

CROPS FIRST MARKETED IN APRIL

	East Anglia	South West	Central South	Guernsey	South East	Lancashire	Jersey	Lee Valley	Clyde Valley
Order	1	2	3	4	5	6	7	8	9
Number of records	6	2	10	2	7	7	4	3	1
Tons per acre	62.5	51.3	55.9	68.1	52.3	43.3	60.1	30.4	72.5
	£	£	£	£	£	£	£	£	£
Average net realised price per 12 lb.	0.96	1.13	0.99	0.82	0.98	1.14	0.79	0.82	1.26
Gross Output per acre	11,215	10,851	10,291	10,463	9,616	9,213	8,879	4,664	17,052
Costs of seeds, heating fuel, CO_2 and electricity	1,576	1,709	1,838	2,529	1,774	1,992	2,150	1,083	2,725
Margin over heating costs per acre	9,639	9,142	8,453	7,934	7,842	7,221	6,729	3,581	14,327

TABLE 2.13 CROPS FIRST MARKETED IN MAY

	Lancashire	Lee Valley	Clyde Valley	East Riding
Order	1	2	3	4
Number of records	6	5	11	1
Tons per acre	46.4	47.5	31.1	35.3
	£	£	£	£
Average net realised price per 12 lb.	0.98	0.75	1.08	0.81
Gross Output per acre	8,451	6,676	6,248	5,332
Costs of seeds, heating fuel, CO_2 and electricity	1,417	1,365	1,854	629
Margin over heating costs per acre	7,034	5,311	4,394	4,703

TABLE 2.14

CROPS WITH HIGHEST MARGINS IN EACH REGION

	Clyde Valley	South East	Guernsey	Central South	Jersey	South West	Lancashire	East Anglia	Lee Valley	East Riding
Order	1	2	3	4	5	6	7	8	9	10
Tons per acre	72.5	90.3	83.2	64.0	76.9	57.2	61.0	70.0	46.9	35.3
	£	£	£	£	£	£	£	£	£	£
Average net realised price per 12 lb.	1.26	0.99	1.06	1.22	0.90	1.17	1.13	0.92	1.13	0.81
Gross Output per acre	17,052	16,768	16,381	14,588	12,923	12,490	12,872	12,042	9,900	5,332
Costs of seeds, heating fuel, CO_2 and electricity	2,725	2,870	3,122	2,822	1,911	1,688	2,328	1,559	2,431	629
Margin over heating costs per acre	14,327	13,898	13,259	11,766	11,012	10,802	10,544	10,483	7,469	4,703

The Results of Successful Nurseries

The results of the nurseries with the highest margins in each area perhaps give a clearer indication of the potential of the various districts. Generally, the similarity between their results is more impressive than the differences. Given new glass, adequate soil and a site on high ground, there seems no reason why a nursery in the Lee Valley area could not achieve a margin over £10,000 per acre as well.

It should be pointed out that several of the records quoted in Table 2.14, which shows the results of these best crops, related to very small areas of glass. Usually these small areas were recorded on holdings where the growers' management records allowed the earliest of several plantings to be identified. It doubtless happened that the best blocks of glass achieved as much on many other holdings, although the growers had no means of knowing this for certain.

It is self-evident in Tables 2.11 - 2.14 that some of the relationships between different localities must reflect the very small sample numbers which were involved. It should also be pointed out that the ranges between the highest and lowest margins per acre within most regions were comparable in magnitude to many of the inter-regional differences which have been discussed in this section.

SOME COMPARISONS WITH 1966

Table 2.15 summarises differences between 1967 and 1966, in terms of the average margins of all the crops in each region and also the crops with the highest margins. Best crops in 1967 were not necessarily the best in 1966, and the comparison is not based on common samples for each year. However, there were relatively few sample changes in 1967, and only the improved average results in Jersey could be attributed to this factor.

TABLE 2.15 DIFFERENCES IN MARGINS OVER HEATING COSTS

	1967 Results Compared with 1966	
	Average of All Crops	Best Known Crop
	£ per acre	
Jersey	(+) 365	(-) 2,077
Guernsey	(-) 1,955	(-) 1,674
Central South	(-) 1,527	(-) 2,087
South East	(-) 309	(+) 74
Lee Valley	(-) 387	(+) 117
East Anglia	(+) 856	(-) 3,520
Lancashire	(-) 947	(-) 83
Clyde Valley	-	-
South West	(-) 786	(+) 1,199
East Riding	-	(+) 86

In most cases, margins were lower in 1967. The substantial improvement shown by the best nursery in the South West occurred with the second tomato crop produced in a block of glass which had been new in 1966, when planting was delayed by building operations.

PART III

Selling the Early Tomato Crop

It is well known that tomato growers have a variety of selling practices and the opportunity was taken in 1967 to ask growers some simple questions about their marketing, and their attitudes towards commission sales. The growers in Guernsey could not usefully be approached on these matters, since all exports from the island are controlled by the Tomato Marketing Board, and the growers there are not free to use the export outlets of their own choice. Replies were obtained from the remaining eighty-one growers in the survey.

It should again be emphasised that data were collected from samples of growers biased deliberately towards those most successful in each area. And, although the prices realised by early tomatoes have caused growing discontent in recent years, culminating with the 1967 crop, there has been very much greater concern about the marketing of some other crops. If any fact is certain about marketing, it is that the growers of any crop will have had conflicting experiences with the various channels of sale. Those growers whose practices or opinions are in the minority may have been quite rational in the light of their own individual experience, and criticism of their views is not implied in the following discussion.

DISTRIBUTION THROUGH COMMISSION SALESMEN

Some version of the wholesale trade was chosen by each of the eighty-one growers who provided information about marketing. Retailing to the public for cash sales generally was insignificant. Table 3.1 shows the extent to which these growers were dependent on commission

TABLE 3.1 GROWERS' DEPENDENCE ON COMMISSION SALESMEN

Numbers of Growers

Proportion of Crop Sold on Commission	Main Alternative Outlets Used				TOTALS
	Co-operative Packhouse	Distributing Wholesalers	Direct to Retailers	None	
All Sales	-	-	-	32	32
81-100%	-	-	13	-	13
61-80%	-	2	3	-	5
41-60%	-	2	4	-	6
21-40%	-	-	3	-	3
1-20%	1	-	3	-	4
None	12	1	5	-	18
TOTALS	13	5	31	32	81

salesmen. Most of these salesmen were trading in town markets in the conventional manner. A small number of them, however, were traders of the type sometimes called country merchants, i.e. they collected produce from nurseries, sold it to their customers, and paid the revenue obtained to the growers after deduction of their charges (usually 10%.) These traders were thus distinguished from the small number of distributing wholesalers noted in the table, who bought tomatoes from growers at prices agreed before re-sale. Only those commission transactions undertaken by the growers who marketed independently are specified in the table. Much of the output of the co-operative packhouses was believed also to be destined to commission salesmen.

It was more common for growers to send all of their crops to commission salesmen than to sell it in any other way. More than one half of the growers were using commission outlets to dispose of 81% or more of their crop. On the other hand, about one quarter of the growers were sending to packhouses or using the other alternative outlets entirely.

Attitudes Towards Commission Salesmen

Growers were asked to reply to the following question, which was worded in a manner which, it was hoped, would not attract prejudiced comments :

'What are your views on commission selling, and are you generally satisfied with this method?'

Most of the respondents gave very thoughtful replies, which could be classified into four categories: 'good', 'tolerant', 'critical', 'no opinion'. The last category included some interesting comments about alternative channels of trade which were not strictly relevant to the question. A few growers gave no reply at all to the question, but as it so happened that each appeared to be largely dependent on commission sales, their views were considered to be 'tolerant'. Table 3.2 shows the results of this classification.

In view of the substantial dependence of early tomato growers on commission sales, the balance of opinion is not surprising. Even so, it is interesting to note that 'good' opinions were the most numerous of any. Together with 'tolerant' attitudes they comprised a substantial majority. Even among the eighteen growers who did not use commission outlets, only four ventured adverse opinions about them.

In an effort to cast further light on growers' attitudes to commission selling, their views in this respect have been assessed in relation to the available facts about their progressiveness in cultural

TABLE 3.2 GROWERS' ATTITUDES TOWARDS COMMISSION SALESMEN

Numbers of Growers

Proportion of Crop Sold on Commission	Recorded Opinions about Salesmen				TOTALS
	Good	Tolerant	Critical	No Opinion	
All Sales	20	10	2	-	32
81-100%	5	5	3	-	13
61-80%	3	1	1	-	5
41-60%	2	4	-	-	6
21-40%	-	-	3	-	3
1-20%	-	4	-	-	4
None	1	3	4	10	18
TOTALS	31	27	13	10	81

techniques. From each questionnaire, it was possible to determine whether a grower appeared to be progressive or not with regard to :

Heating; level of expenditure and type of fuel,
CO_2 enrichment; level of expenditure,
Choice of sowing date in relation to locality,
Choice of modern varieties,
Use of some new glasshouses.

Table 3.3. shows the results of this rather subjective analysis. It cannot be said that it is conclusive. Certainly it would seem that a very high proportion of the most progressive growers, who had adopted three or more of the cultural practices, expressed 'good' or 'tolerant' opinions of commission trading. However, it was equally true that a high

TABLE 3.3 ATTITUDES TO SALESMEN IN RELATION TO PROGRESSIVE MANAGEMENT

Numbers of Growers

Adoption of Progressive Cultural techniques	Recorded Opinions about Salesmen Good	Tolerant	Critical	No Opinion	TOTALS
Each of Five	3	4	1	-	8
Four only	7	5	1	4	17
Three only	4	7	3	1	15
Two only	11	3	5	5	24
One only	5	4	3	-	12
None	1	4	-	-	5
TOTALS	31	27	13	10	81
Total Adoption of Progressive Practices	82	71	31	29	213
Average per grower	2.6	2.6	2.4	2.9	2.6

proportion of the less progressive growers shared these views. The average rate of adoption of progressive cultural methods was lowest among the 'critical' growers, but not significantly, and this small group included some highly progressive individuals.

The inconclusive pattern in Table 3.3 is not surprising, for growers' attitudes are shaped both by their varied experiences and by the personal satisfaction and stimulus which many of them derive through active participation in marketing. It might be unrealistic to expect all growers' choices of market outlet to be based on economic criteria alone.

The two quotations which follow have been reproduced verbatim from questionnaires completed by growers, and they show how widely the strength of feeling can differ in growers' attitudes towards their salesmen. The first is that of a very experienced, rather conservative grower who has built up a sound and successful business over many years: the second is that of a younger grower who is outstandingly progressive in his management :-

'Thoroughly satisfied, salesman's charges not excessive.'

'To be eradicated at the first opportunity .....'

Some Comments on Wholesale Market Practices

Some of the replies to the question about commission trading included some reference to ways in which the working of the wholesale markets might be improved. A few growers indicated a preference for 'firm sales.' It is appropriate to draw their attention to a recent publication in which this proposition has been examined at some length by the writers' colleagues, P.G. Ellis and Professor J.H. Kirk(3). They concluded that growers would have to accept lower prices for virtually the same pattern of deliveries under conditions of firm sale.

Much of the adverse publicity which is given to the wholesale trade derives from allegations that commission salesmen's charges are excessively high and that their accounting practices are corrupt. The survey provided growers with a ready opportunity to express any such opinions to a disinterested interviewer. Indeed, one grower was disposed to criticise salesmen in both these respects :-

'Commission selling is farcical. Lends itself to dishonest practices. Unsatisfactory in every way. Slight improvement might be effected if all commission agents sent all growers a copy invoice of every sale.

Commission rates are also too high when compared with any other form of wholesale trade. Especially when you consider that the commission agent is not involved in capitalising his stock or delivery to his clients.'

It should be emphasised that such comments are entirely unrepresentative of the majority view. It seems highly significant that only three growers questioned the honesty of commission salesmen and that there were as few recorded opinions that their charges were too high.

Further criticisms of commission trading were oblique. Clearly some growers were able to realise high and more stable net prices by selling to various buyers direct. Other growers, while not criticising the market salesmen's practices, disliked the interplay of demand and supply over which they could exercise no control.

GROWERS' TACTICS IN COMMISSION TRADING

The survey has enabled one aspect of growers' tactics with commission salesmen to be quantified. Table 3.4 shows the numbers of salesmen supplied by growers of varying dependence on commission trade. It should be explained that some of the growers using a high number of salesmen did not use them all at the same time. Several of the Jersey growers, for instance, supplied a range of markets in the early part of the season and then concentrated their efforts on one or two southerly markets for the remainder of their crop. In some other cases, growers supplied several outlets managed by one large firm which traded in various markets.

The table to some extent refutes the argument that growers would be well-advised to co-operate in order to cut out their time-consuming dealings with salesmen. The majority of growers who were dependent on commission trade were not using excessive numbers of salesmen at any one time.

TABLE 3.4 GROWERS' TACTICS WITH COMMISSION SALESMEN

Numbers of Growers

Proportion of Crop Sold on Commission	Number of Commission Salesmen Supplied						TOTALS
	Five & Over	Four	Three	Two	One	None	
All Sales	4	1	5	11	11	-	32
81-100%	1	1	3	3	5	-	13
61-80%	-	1	1	-	3	-	5
41-60%	-	-	2	2	2	-	6
21-40%	-	1	-	1	1	-	3
1-20%	-	-	-	-	4	-	4
None	-	-	-	-	-	18	18
TOTALS	5	4	11	17	26	18	81

In a further analysis, summarised in Table 3.5, the numbers of salesmen used by growers have been related to the volume of trade involved in any one period. This has been measured in terms of the maximum quantity of 12 lb. units to be marketed in any one fortnight up to the end of May and over the whole season. No very clear relationship is apparent in the table. A high proportion of the growers who chose to supply three or more salesmen were not marketing any great volume, and their arrangements did appear questionable. Most of those who did have heavy supplies to place were able to do so with three or fewer salesmen. The number of salesmen used would thus seem to be as much a matter of personal choice as of necessity.

TABLE 3.5 GROWERS' TACTICS IN RELATION TO SCALE OF ENTERPRISES

Numbers of Growers with 61 - 100% of Crop Sold on Commission

Maximum Number of 12 lb. Units Sold per Fortnight	Number of Commission Salesmen Supplied					TOTALS
	Five & Over	Four	Three	Two	One	
To End of May						
Under 500	-	1	6	2	13	22
501-1000	4	1	-	6	2	13
1001-2000	-	1	-	6	3	10
Over 2000	1	-	3	-	1	5
	5	3	9	14	19	50
Whole Season						
Under 500	-	-	2	1	6	9
501-1000	3	2	4	4	5	18
1001-2000	1	1	-	7	7	16
Over 2000	1	-	3	2	1	7
TOTALS	5	3	9	14	19	50

Table 3.5 has been based on the records of all the growers who used the commission trade to sell more than 60% of their crop. A further analysis, confined to the growers who only used commission outlets, has proved no more conclusive and the data are not reproduced here.

Getting the Best Results from Commission Sales

Approval of the institution of commission trading often was qualified by constructive comments on the contribution which the grower himself must make to get the best out of this system. It has been the writer's experience that progressive and successful growers and salesmen generally would agree that the following policy would promote their mutual interests.

1. Growers should not chase markets.
2. Produce should be graded according to salesmen's advice, which will be based on knowledge of the demand characteristics of their particular markets.
3. Whatever grades are used, and however they are labelled, their contents should be consistent throughout the season.
4. Corrupt practices in grading should never be allowed.
5. Daily communication with salesmen is needed, particularly for the purpose of notifying them of expected deliveries.
6. Where possible, growers should visit markets regularly if only to check the condition of their produce on arrival.
7. Salesmen should visit nurseries to gain an understanding of the growers' problems and methods.
8. Where alternative outlets are open to a grower for part of his crop, he should ensure that his salesmen continue to receive regular supplies which give them a worthwhile volume of business.
9. Mutual trust and respect is necessary, and growers and salesmen should seek out opportunities for trade with individuals with whom this is possible.

Most of the more orthodox tactics are sufficiently selfexplanatory to need no further comment. The second may since have been negated to some extent by the intoduction of statutory grades. The relevance of these grades to the efficient marketing of tomatoes is not obvious. Very few growers chose to comment on the grades, which were not compulsory at the time of the survey, but there was no approval for this innovation.

PART IV

Tables of Standard Data for Sales Analysis

Sales Analysis is a very simple technique for assessing the output of tomato crops in order to identify possible opportunities for improvement. Cultural and economic factors are brought together in the appraisal. The procedure has been described in the first report in this series[1], and more recently in an article in the trade press[4]. It is a comparative technique, in which the performance of a particular crop is judged against a local standard on a simple worksheet. Yields and realised prices over each month or fortnight of the marketing season must be taken into account. The greater detail of the latter is to be preferred, for the point of the exercise is to trace when crop performance is defective, should this be so.

Tables 4.1 - 4.11 present information extracted from the 1967 Survey as reference data for application in sales analysis. The following abbreviations are used :-

Gross Output to September 30th is per 1,000 sq. ft. of glasshouse.

Price is average net realised price per 12 lb.

Yield is the number of 12 lb. units marketed per 1,000 sq. ft.

These measures have been calculated as described on pp. 3-4. Output and yield data have been rounded off.

The term period is used to indicate the phase of the marketing season :-

Period I is March,

Period 2 is April 1st - 15th,

Each subsequent period is the subsequent half-month.

Thus Period 13 is the last half of September.

Best Crop in Group in the tables is the individual crop which generated the highest margin over heating costs in its respective group. Where only one crop of a particular category has been recorded, this is shown as the best crop.

Although the following tables are based on the 1,000 sq. ft. measure of unit area, it is sometimes convenient to handle 'per acre' figures. One acre comprises 43,560 sq. ft. and gross output data can be converted to an acreage basis by multiplying by 43.56. Similarly, yield data can be converted to tons per acre by multiplying '12 lb. per 1,000 sq. ft.' by 43.56, and then dividing the product by 186.7.

TABLE 4.1 JERSEY : STANDARD DATA FOR 1967

	Crops First Marketed in March				Crops First Marketed in April			
	Average Results of Five Crops		Best Crop in Group		Average Results of Four Crops		Best Crop in Group	
Gross Output to September 30th	£ 298		£ 297		£ 204		£ 259	
Period	Price £	Yield 12 lb.	Price £	Yield 12 lb.	Price £	Yield 12 lb.	Price £	Yield 12 lb.
1	2.38	13	2.42	18	-	-	-	-
2	1.69	24	1.67	28	1.53	2	1.50	1
3	1.19	37	1.12	40	1.17	11	1.14	12
4	1.12	40	1.08	39	1.14	28	1.15	28
5	1.04	34	0.98	30	0.97	41	0.99	55
6	0.90	31	0.83	22	0.82	44	0.79	58
7	0.94	19	0.89	16	0.86	36	0.88	42
8	0.75	22	0.60	20	0.71	34	0.71	47
9	0.60	26	0.53	28	0.54	21	0.56	29
To July 31st	1.11	246	1.10	241	0.88	217	0.86	272
10	0.56	19	0.52	23	0.48	12	0.48	20
11	0.41	23	0.35	33	0.32	16	0.35	23
12	0.24	11	0.14	19	0.19	7	0.19	17
13	0.32	7	0.30	13	0.28	6	0.26	18
To September 30th	0.97	306	0.90	329	0.79	258	0.74	350

TABLE 4.2 GUERNSEY : STANDARD DATA FOR 1967

	Crops First Marketed in March				Crops First Marketed in April			
	Average Results of Ten Crops		Best Crop in Group		Average Results of Two Crops		Best Crop in Group	
Gross Output to September 30th	£ 237		£ 376		£ 240		£ 291	
Period	Price £	Yield 12 lb.	Price £	Yield 12 lb.	Price £	Yield 12 lb.	Price £	Yield 12 lb.
1	2.24	6	2.36	28	-	-	-	-
2	1.71	18	2.24	32	1.68	4	1.73	4
3	1.23	27	1.61	27	1.24	19	1.30	24
4	1.16	31	1.16	41	1.15	25	1.23	30
5	0.97	36	1.02	39	0.97	52	1.02	54
6	0.90	35	0.86	31	0.80	43	0.85	45
7	0.82	19	0.87	23	0.85	47	0.94	44
8	0.66	23	0.58	28	0.61	34	0.70	40
9	0.56	18	0.53	31	0.55	21	0.59	24
To July 31st	1.03	213	1.25	280	0.88	245	0.95	265
10	0.51	13	0.57	23	0.87	14	0.87	12
11	0.39	14	0.29	26	0.37	20	0.40	26
12	0.26	8	0.18	20	0.28	8	0.26	16
13	0.41	5	0.32	7	0.39	4	0.43	8
To September 30th	0.93	253	1.06	356	0.82	291	0.89	327

TABLE 4.3 CENTRAL SOUTH : STANDARD DATA FOR 1967

	Crops First Marketed in March				Crops First Marketed in April			
	Average Results of Three Crops		Best Crop in Group		Average Results of Ten Crops		Best Crop in Group	
Gross Output to September 30th	£ 241		£ 307		£ 236		£ 335	
Period	Price £	Yield 12.1b	Price £	Yield 12 1b	Price £	Yield 12 1b	Price £	Yield 12 1b
1	2.37	2	2.50	1	-	-	-	-
2	1.88	14	1.99	22	1.81	3	-	-
3	1.43	20	1.43	29	1.44	13	2.30	3
4	1.30	31	1.30	49	1.33	28	1.70	13
5	1.13	34	1.12	36	1.20	32	1.50	34
6	0.96	38	0.94	37	1.05	38	1.45	54
7	0.97	21	0.96	23	0.97	31	1.30	35
8	0.88	19	0.86	30	0.91	26	1.30	33
9	0.64	10	0.62	14	0.69	22	0.90	34
To July 31st	1.16	189	1.17	241	1.08	193	1.35	206
10	0.60	11	0.58	19	0.69	13	0.95	17
11	0.55	12	0.49	18	0.59	17	0.85	23
12	0.33	14	0.30	9	0.42	8	0.69	11
13	0.42	11	0.41	7	0.52	7	0.84	19
To September 30th	1.02	237	1.05	294	0.99	238	1.22	276

TABLE 4.4 SOUTH EAST : STANDARD DATA FOR 1967

	Crops First Marketed in March				Crops First Marketed in April			
	Average Results of Six Crops		Best Crop in Group		Average Results of Seven Crops		Best Crop in Group	
Gross Output to September 30th	£ 265		£ 385		£ 221		£ 282	
Period	Price £	Yield 12 lb	Price £	Yield 12 lb	Price £	Yield 12 lb	Price £	Yield 12 lb
1	1.99	1	2.68	1	-	-	-	-
2	1.60	11	1.81	15	1.10	4	1.07	30
3	1.51	18	1.55	30	1.24	12	1.07	30
4	1.14	33	1.27	38	1.36	25	1.40	28
5	1.13	34	1.14	47	1.17	35	1.40	28
6	1.00	38	0.91	46	1.01	43	0.96	44
7	1.00	34	1.09	44	0.95	31	0.96	44
8	0.77	24	0.85	33	0.88	24	0.96	22
9	0.74	24	0.97	34	0.77	19	0.96	22
To July 31st	1.06	217	1.14	288	1.05	193	1.09	248
10	0.64	19	0.82	26	0.67	9	0.57	5
11	0.54	21	0.47	36	0.53	11	0.57	5
12	0.41	13	0.58	19	0.47	4	0.42	7
13	0.45	12	0.49	20	0.51	6	0.42	7
To September 30th	0.94	282	0.99	389	0.98	223	1.03	272

TABLE 4.5 LEE VALLEY : STANDARD DATA FOR 1967

	Crops First Marketed in March		Crops First Marketed in April			
	Best Crop in Group		Average Results of Three Crops		Best Crop in Group	
Gross Output to September 30th	£ 227		£ 107		£ 190	
Period	Price £	Yield 12 lb	Price £	Yield 12 lb	Price £	Yield 12 lb
1	3.00	1	-	-	-	-
2	1.94	5	1.58	1	1.58	8
3	1.46	25	1.52	2	1.58	8
4	1.40	28	1.34	4	1.34	22
5	1.31	28	1.23	9	1.34	22
6	1.13	27	1.01	18	1.19	19
7	1.06	22	1.00	20	1.19	19
8	0.99	17	0.76	22	0.85	20
9	0.81	14	0.72	16	0.85	20
To July 31st	1.23	167	0.95	92	1.19	138
10	0.73	13	0.60	12	1.10	10
11	0.67	14	0.59	10	1.10	10
12	0.44	6	0.41	9	0.62	4
13	0.65	2	0.44	7	0.62	4
To September 30th	1.13	202	0.82	130	1.14	166

TABLE 4.6 LEE VALLEY : STANDARD DATA FOR 1967

	Crops First Marketed in May			
	Average Results of Five Crops		Best Crop in Group	
Gross Output to September 30th	£ 153		£ 158	
Period	Price £	Yield 12 lb	Price £	Yield 12 lb
4	1.28	1	1.28	12
5	0.45	22	1.28	12
6	0.77	39	1.07	29
7	1.00	31	1.07	29
8	0.96	29	0.96	17
9	0.69	26	0.96	17
To July 31st	0.80	148	1.08	116
10	0.97	19	0.72	17
11	0.38	20	0.72	17
12	0.63	8	0.51	8
13	0.45	9	0.51	8
To September 30th	0.75	204	0.95	166

TABLE 4.7 EAST ANGLIA : STANDARD DATA FOR 1967

	Crops First Marketed in March		Crops First Marketed in April			
	Best Crop in Group		Average Results of Six Crops		Best Crop in Group	
Gross Output to September 30th	£ 260		£ 257		£ 276	
Period	Price £	Yield 12 lb	Price £	Yield 12 lb	Price £	Yield 12 lb
1	2.60	1	-	-	-	-
2	1.76	7	1.71	1	1.38	4
3	1.76	7	1.38	3	1.43	18
4	1.40	28	1.41	12	1.33	25
5	1.40	28	1.30	24	1.23	35
6	1.17	34	1.09	41	1.04	50
7	1.17	34	1.07	43	1.02	36
8	0.87	33	1.03	43	0.82	30
9	0.87	33	0.76	36	0.60	26
To July 31st	1.17	205	1.06	201	1.05	224
10	0.57	16	0.79	23	0.62	22
11	0.57	16	0.72	20	0.61	25
12	0.28	6	0.38	14	0.35	16
13	0.28	6	0.58	8	0.50	13
To September 30th	1.05	249	0.96	266	0.92	300

TABLE 4.8 LANCASHIRE : STANDARD DATA FOR 1967

	Crops First Marketed in April				Crops First Marketed in May			
	Average Results of Seven Crops		Best Crop in Group		Average Results of Six Crops		Best Crop in Group	
Gross Output to September 30th	£ 211		£ 294		£ 194		£ 295	
Period	Price £	Yield 12 lb	Price £	Yield 12 lb	Price £	Yield 12 lb	Price £	Yield 12 lb
2	2.40	1	2.67	1	-	-	-	-
3	1:91	3	1.83	5	-	-	-	-
4	1.70	12	1.84	19	0.69	3	-	-
5	1.57	19	1.39	28	1.28	8	1.53	23
6	1.42	24	1.41	23	1.24	27	1.50	45
7	1.24	21	1.22	25	1.21	34	1.40	38
8	1.17	23	1.09	27	1.03	43	1.10	57
9	0.92	27	1.01	28	0.82	39	0.89	33
To July 31st	1.30	130	1.32	156	1.06	154	1.27	196
10	0.91	16	0.89	23	0.78	21	0.92	19
11	0.66	24	0.64	53	0.57	14	0.74	18
12	0.84	9	1.02	10	0.59	4	0.53	10
13	0.78	9	0.87	17	0.77	6	0.60	19
To September 30th	1.14	188	1.14	259	0.98	199	1.13	262

TABLE 4.9 CLYDE VALLEY : STANDARD DATA FOR 1967

	Crops First Marketed in April		Crops First Marketed in May			
	Best Crop in Group		Average Results of Eleven Crops		Best Crop in Group	
Gross Output to September 30th	£ 391		£ 143		£ 237	
Period	Price £	Yield 12 lb	Price £	Yield 12 lb	Price £	Yield 12 lb
3	2.26	1	-	-	-	-
4	1.90	18	1.82	1	1.79	2
5	1.78	35	1.66	3	1.35	8
6	1.51	38	1.34	11	1.42	19
7	1.18	45	1.08	21	1.29	26
8	1.16	23	1.05	24	1.13	28
9	1.08	49	1.06	26	1.15	33
To July 31st	1.38	209	1.12	86	1.25	116
10	1.18	25	1.11	19	1.15	31
11	1.05	27	1.02	14	1.12	21
12	0.77	20	0.76	8	0.84	17
13	0.97	30	0.93	7	0.93	20
To September 30th	1.26	311	1.08	134	1.15	205

TABLE 4.10 SOUTH WEST : STANDARD DATA FOR 1967

	Crops First Marketed in March				Crops First Marketed in April			
	Average Results of Two Crops		Best Crop in Group		Average Results of Two Crops		Best Crop in Group	
Gross Output to September 30th	£ 189		£ 287		£ 249		£ 258	
Period	Price £	Yield 12 lb	Price £	Yield 12 lb	Price £	Yield 12 lb	Price £	Yield 12 lb
1	3.09	1	3.20	2	-	-	-	-
2	2.09	4	2.11	17	2.24	1	2.17	3
3	1.52	12	1.67	30	1.83	11	1.79	8
4	1.37	19	1.59	25	1.62	17	1.60	14
5	1.28	24	1.40	34	1.38	37	1.46	27
6	1.08	36	1.13	29	1.10	44	1.14	45
7	1.04	18	1.09	23	1.20	26	1.16	26
8	0.99	16	1.04	10	1.09	23	1.12	28
9	0.74	10	0.69	20	0.80	21	0.82	29
To July 31st	1.19	140	1.37	190	1.24	180	1.22	180
10	0.77	9	0.74	11	0.69	16	0.76	16
11	0.80	13	0.37	29	0.63	15	0.67	26
12	0.16	12	0.36	9	0.43	4	0.43	10
13	0.52	8	0.54	6	0.60	3	0.60	8
To September 30th	1.04	182	1.17	245	1.13	218	1.08	240

TABLE 4.11 EAST RIDING : STANDARD DATA FOR 1967

	Crops First Marketed in May	
	Best Crop in Group	
Gross Output to September 30th	£ 122	
Period	Price £	Yield 12 lb
5	1.40	6
6	1.04	21
7	0.86	18
8	0.82	33
9	0.73	35
To July 31st	0.87	113
10	0.70	16
11	0.63	19
12	0.31	4
To September 30th	0.81	152

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