



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
<http://ageconsearch.umn.edu>
aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

Apples

GIANNI FOUNDATION OF
LONDON ECONOMICS
LIBRARY

WITHDRAWN
MAR 17 1972

WYE COLLEGE
(UNIVERSITY OF LONDON)

DESSERT APPLES AND PEARS

FINANCIAL RESULTS OF THE 1969 CROP

R. R. W. Folley

Price: 25p (5 shillings)

Rural
SCHOOL OF ECONOMICS AND RELATED STUDIES

FEBRUARY 1971

DESSERT APPLES AND PEARS
Financial Results of the 1969 Crop

CONTENTS

	<u>Page</u>
Peculiarity of the 1969 season	1
The Size and Features of the Sample	3
Aggregate Sample Results	7
National Estimates for England and Wales	9
Regional Results	11
Results for Different Size-groups	13
Observations on Marketing	15
Observations on Cost of Production	17
Observations on Fixed Costs and Profitability	19
Figure 1. Some Frequency Distributions	21
Notes on Interpretation	22

Copies of this report may be obtained, post free, from:

Publications,
School of Rural Economics and Related Studies,
WYE COLLEGE,
Ashford, Kent.

Price : 25p

SBN 90185990 7.

Peculiarity of the 1969 season

In the recent history of English apple- and pear-growing the year 1969 marked a return towards normality. The four preceding harvests had been light, and both growers and consumers had become accustomed to certain levels of supply and price. The crops in these years were much below the capacity of the orchards of bearing age. Not since 1945 had there been so long a period when yields were so much held down by inclement spring weather.

During the four lean years - 1965 to 1968, inclusive - the opportunity gradually to introduce increasing supplies of English apples and pears to consumers was lost. Consequently, when a more normal-sized crop occurred in 1969 the fruit trade was relatively unprepared for the volume of fruit marketed early in the season. In fact, the 1969 crop turned out to be half as large again as the average of the 1967 and 1968 crops, and it took some time for markets to settle down.

There was some excuse for this unpreparedness, in the manner of the crop's development. Right up to the time of harvesting the portents (and the forecasts) were for a fifth lean year in succession. Then, by a quirk of weather, the fruits on the trees were able to continue growing until well into October and their added size significantly increased the number of bushels picked - at a very late stage in the season. The Ministry's estimate of the dessert apple crop as at July 31st, 1969 was 244,000 tons: this estimate was lifted by 23,000 tons at mid-October and subsequently raised by a further 14,000 tons.

Although the 1969 crop was nearer normal in volume, it was not normally distributed between farms: that is to say, the growers who set a good crop harvested a very good crop but there were numbers of growers who set hardly any crop at all. It is to be expected, therefore, that profits and losses on the 1969 crops were abnormally distributed.

The financial results obtained from a random sample of 71 growers show a disposition towards high profits and high losses. Without a previous knowledge of a normal distribution of profits, it is not possible to say how abnormal the 1969 results were, or whether the same farms would consistently figure in the high-profit or the high-loss category, over a number of years.

A further circumstance affecting English fruitgrowers' financial results in 1969 was the relatively low crop in Kent. Relative to Kent, yields of dessert apples were unusually high both in Essex and East Anglia and in the west country. Again, without a knowledge of long-run average yields in different parts of the country the normal situation cannot be presented with certainty.

Acknowledgements

The participants in this study are thanked for their contribution of data and for their interest in the study.

The Apple and Pear Development Council gave most valuable help at the outset of this enquiry: their contribution is gratefully acknowledged.

Although published by Wye College, this report is more truly a joint effort with staff of the Universities of Bristol and Cambridge.

The Size and Features of the Sample

The estimates in this report of the value of the 1969 crop of English apples and pears at its various stages are based on a sample of 71 growers, randomly selected from a list of commercial producers.

The original records obtained covered:

3,836 statute acres of dessert apple and pear orchards, including 273 acres of associated culinary apple orchards;

1,025,887 marketed bushels (20,000 metric tons, in round figures) of fruit, including two growers' crops sold on the tree;

£1,297,000 of expenditure by the growers concerned.

The average yield per acre of bearing and non-bearing trees was 267 bushels.

The average market value of fruit sold was 138p. a bushel.

The average size of enterprise was 54 acres (21.6 ha.)

The average book investment in land, orchards, buildings and fruit-growing facilities was £719 an acre.

The results may be fairly held to apply to the body of about 1,500 producers having a substantial investment in dessert apples and pears who produce the bulk of the English crop. With the help of the data submitted by growers to the Apple and Pear Development Council it was possible to confine the study to truly commercial growers. For instance, enterprises of less than 10 acres of apples and pears jointly were excluded, as were enterprises having an inordinate proportion of young trees, and holdings having an unacceptably large proportion of culinary varieties in their total apple and pear acreage.

The sample of growers contributing records is 4.4 per cent of the whole number, but as the enterprises in the sample are rather larger than average, in terms of acreage and production the sample is a full 5 per cent. In England and Wales, some 4,000 acres or 6 per cent of dessert apples and pears are grown in orchards of less than 10 acres, out of a total acreage of 63,000. So that 94 per cent of dessert apple- and pear-growing is covered by the list from which the sample was taken. Where estimates for 'the industry' are given, these are the sample figures raised to 100 per cent of acreage, not to 94 per cent.

Results are presented -

- first, for the sample of growers as a whole,
- second, for the industry (as defined above),
- third, for three distinct geographical regions,
- fourth, for holdings of different size groups.

The separate results for three regions are those for the sub-samples of enterprises recorded by Bristol and Cambridge Universities and Wye College respectively. The counties from which records were drawn are:

<u>Bristol Province</u>	<u>Cambridge Province</u>	<u>Wye Province</u>
Hereford	Cambridge (with Ely)	Hampshire
Somerset	Essex	Kent
Warwickshire	Norfolk	Sussex, E.
Worcestershire	Suffolk	Sussex, W.

The concern in this enquiry has been to subordinate detail, and to report totals of revenue and cost - costs being first classified as fixed or variable and then itemised into major constituents. By avoiding detail the coverage of the survey was extended to include marketing. Following customary usage, 'marketing' was considered to precede distribution and involve getting the fruit off the farm and to its first buyer. When fruit is sold on commission, its value at first sale is noted on the salesman's account. Gross and net values can be determined from the same document. When fruit is marketed through a central packhouse - and possibly a second organisation, too - there is usually no sample record of the gross and net sale values. One grower in three was marketing predominantly or wholly through a central packhouse; and within this one-third the record of the chain of values from the market to the farm was not available and sale values had to be estimated. This was done in light of other growers' experiences.

As regards the marketing costs, it should be noted that when a crop is handled entirely on the farm on which it is grown, the work put into it is charged at cost. When it passes into non-producers' hands it incurs charges which are not precisely costs, because in setting the charges an element of profit has been included. For the

most part, this profit is retained within the industry: but the practice does tend to push up off-farm marketing costs - at least, on paper. In this report, known rebates to producers have been deducted from charges, so as to get nearer to actual costs, but the services of marketing organisations cannot, in the nature of things, be entered at cost. Their overall profit on handling the 1969 crop is thought to be low, so the estimates of the cost of marketing the 1969 crop are considered reasonably accurate and reliable.

For the year in question, the economic highlights are:

- 1/. costs exceeded revenue on 35 per cent of enterprises;
- 2/. individual financial results tended towards extremes, many being either very good or very bad;
- 3/. yields were relatively light in south-east England, and also very variable from farm to farm generally;
- 4/. in contrasts to yields, unit costs of production tended towards an average value.

Financial Results

Different presentations of the results follow on pages 6 to 13, with a short explanation and guide to each table.

Notes on interpretation will be found on pages 22 and 23.

Table 1. Results for the Sample of 71 Enterprises

	Total £	Mean value		Proportion of sale value %
		per acre (3836) £	per bushel [✓] (1,025,887) £	
Sale value of crop	1,424,450	371	1.38	100
Producers' marketing costs	575,690	150	0.56	40.5
Crop net output	848,760	221	0.82	59.5
Producers' variable costs	228,610	60	0.22	16.1
Margin on crop	620,150	161	0.60	43.4
Producers' fixed costs *	492,400	128	0.48	34.4
Producers' net income	127,750	33	0.12	9.0

* includes value of manual labour of a sole proprietor.

✓ equivalent to 267 bushels an acre.

Estimated book value of fixed assets used:

basic land and buildings	£921,000
specifically fruit-growing	£1,837,000
Total	£2,758,000

$$\frac{\text{Net income} \times 100}{\text{Fixed fruit-growing capital on the farm}} = \underline{\underline{7.8}} \text{ per cent}$$

Proportion of enterprises with a surplus -

before charging interest	65 per cent
after charging interest	48 per cent

Aggregate Sample Results

Table 1 gives the gist of the financial results for the 1969 crop on the holdings concerned.

Recorded sales of dessert apples and pears amounted to £371 an acre or £1.38 (27s. 7½d.) a bushel at the time of sale to the first buyer.

After paying marketing costs, whether directly on the farm, or by deduction for services rendered off the farm, producers were left with £221 an acre or £0.82 (16s. 5d.) a bushel. That is, marketing costs absorbed 40 per cent of the sale value of the fruit: or, to put it another way, marketing constituted an on-cost of 67 per cent.

Variable costs (being mainly expenses incurred in the orchards, other than for regular labour) amounted to £60 an acre or £0.22 (4s. 5d.) a bushel. Producers were thus left with a margin on the crop of £161 an acre or £0.60 (12s. 0d.) a bushel; which was 43.4 per cent of the sale value of the crop.

Fixed costs totalled £128 an acre, £0.48 (9s. 7d.) a bushel.

And the end result was a net income of £33 an acre, or £0.12 (2s. 5d.) a bushel.

The estimated* book value of the producers' fixed assets used in these apple and pear enterprises was £719 an acre, or £2.76m. in total. Excluding the value of land and buildings, and also the capital value of marketing facilities located off the farm, the value of fixed fruitgrowing assets on the farm was £1.64m. (£428 an acre). Taking this as the measure of investment in fruitgrowing, the net income quoted constitutes a return on capital of 7.8 per cent. If producers were thought to qualify for a managerial salary to be paid out of net income, the rate of return would fall to 2.1 per cent.

Disregarding interest on fruit-growing capital, 65 per cent of enterprises showed a book surplus: after charging interest at 8½ per cent, this proportion fell to 48 per cent.

* 10 per cent of participants did not give the value of their fixed assets.

Table 2. Estimated Results for the Whole Crop of Dessert Apples and Pears

	Total Value	95 per cent Probability Limits*		
	£m	£m		£m
Sale value of crop	29.7	27.6	to	31.8
Producers' marketing costs	12.0	11.2	„	12.9
Crop net output	17.7	16.4	„	18.9
Producers' variable costs	4.8	4.4	„	5.1
Margin on crop	12.9	12.0	„	13.8
Producers' fixed costs	10.2	9.5	„	11.0
Producers' net income	2.7	2.5	„	2.8

Estimated value of fixed capital employed: £57.4m, of which £34.1m. is specifically fruit-growing investment on the farms.

Estimated cost of labour: £6.9m, or 46 per cent of all non-marketing costs.

* i.e. there is only a one-in-twenty probability that the correct figure is outside this range.

National Estimates for England and Wales

The aggregate figures in Table 2 have been prepared with the aim of showing the magnitude of the sums of money involved in producing the English crop of dessert apples and pears, together with a statistical assessment of the reliability of the figures.

The present book value (i.e. depreciated original value, where appropriate) of producers' fixed assets is estimated to lie between £53.9m. and £60.9m. A middle value of £57.4m. would be distributed as follows:

	£M
in land and buildings (at original purchase price)	19.1
in additions on the farm (at written-down value)	34.1
in marketing investments off the farm (as estimated)	4.2

The cost of non-marketing labour was assessed at between £7.3m. and £6.5m. At £6.9m. overall, the total is made up of £4.9m. for regular labour and £2.0m. for casual labour. Equivalent rates per acre are:

Regular labour - £61	(48 per cent of fixed costs)
Casual labour - £25.4	(making <u>all</u> labour 46 per cent of non-marketing costs).

Starting with an original revenue of some £30m., after paying the normal marketing and production costs producers were left with a sum of £2.7m., here called net income. This is the amount to meet interest charges and to provide growers with a reward for their management, anything left thereafter being a pure surplus, or, in economists' parlance, profit.

The question of profitability is discussed on p.19. For the present, it can be deduced from Table 2 that there was no overall profit on the 1969 crop. Aggregate net income was about £2.7m. and interest charges, whether paid or not, can be reckoned at £2.8m. - leaving nothing for management or for profit. In making this calculation of interest, only the £34.1m. specifically fruit-growing investment has been considered to qualify, because the investment in original land and buildings has been serviced by a rental charge averaging £11 an acre, which is included in the quoted amount of fixed costs, whilst the interest on the off-farm investment in marketing facilities is considered to be allowed for in the charges made to growers.

As regards the size of the 1969 crop, the estimate derived from the sample is 8 per cent higher than the official Ministry estimate - the figures being 378,500 tons (\pm 26,500 tons) and 350,000 tons respectively.

Table 3. Average Results for Enterprises in Three Regions of England and Wales.

Province	Bristol		Cambridge		Wye	
	11		24		36	
Number of holdings	per acre £	per bushel £	per acre £	per bushel £	per acre £	per bushel £
Sale value of crop	376	1.37	430	1.47	333	1.35
Producers' marketing costs	167	0.61	164	0.56	135	0.57
Crop net output	209	0.76	266	0.91	198	0.78
Producers' variable costs	52	0.19	68	0.24	58	0.22
Margin on crop	157	0.57	198	0.67	140	0.56
Producers' fixed costs	84	0.30	146	0.50	128	0.51
Producers' net income	73	0.27	52	0.17	12	0.05
<u>Net income x 100</u> Fixed fruit growing capital	21.4 per cent		12.0 per cent		3.0 per cent	
Proportion, profitable enterprises:	82 per cent		75 per cent		52 per cent	
without interest	70 " "		55 " "		39 " "	
with interest						
Average yield per acre (bushels)	274		293		249	

Regional Results

Judging by this one year's results, apple- and pear-growing in the Bristol region (including the West Midlands) can be as profitable as in the more widely-planted areas of southern England.

The eleven enterprises in the Bristol province showed an average net income per acre of £73, which gave a 21.4 return upon fixed fruit-growing capital on the farm. Frequency of success was also highest in this province.

If 1969 was to be reckoned a particularly good year in the west country, the advantages of a westerly situation were not dramatic. Yields, prices, marketing costs and variable costs were about the same as elsewhere, the significant item being a saving on fixed costs. Fixed costs per acre of orchard were relatively light here because of the greater frequency of occurrence of mixed farms in the regional sample. Mixed farms are less intensive than fruit farms, and operate more cheaply. The share of overheads attributable to the apple and pear orchards on each farm was decided by the grower - usually by a simple allocation on a basis of acreage. Growers in other regions might well think another £20 an acre justifiable.

The Cambridge province, with its greater frequency of specialised enterprises; and, on the whole, newer enterprises, had considerably higher yields and output per acre than elsewhere and a middle position in terms of success - i.e. £52 an acre net income; 12.0 per cent return.

Pulled down by almost 10 per cent outright failure in cropping, the Wye sample showed the worst results, only 28 per cent of enterprises earning the going rate of interest on fixed capital. Net income averaged £12 an acre and the average rate of return on capital was 3.0 per cent.

The distribution of yield per acre in the Wye sample contrasts with that of the other two samples. Note, in Figure 1 (p.21), the infrequency of an 'average' yield in the south-east in 1969.

Average size of enterprise in each region was between 44 and 58 acres.

Table 4. Average Results for Four Size-groups of Enterprise

Acreage limits of size group No. of enterprises	10-19.9		20-49.9		50-99.9		100 and over	
	20		27		15		9	
	per acre £	per bushel £	per acre £	per bushel £	per acre £	per bushel £	per acre £	per bushel £
Sale value of crop	331	1.18	376	1.34	366	1.40	377	1.44
Producers' marketing costs	121	0.43	171	0.61	135	0.52	151	0.58
Crop net output	210	0.75	205	0.73	231	0.88	226	0.86
Producers' variable costs	58	0.21	64	0.23	57	0.21	59	0.22
Margin on crop	152	0.54	141	0.50	174	0.67	167	0.64
Producers' fixed costs	113	0.40	126	0.45	112	0.43	141	0.54
Producers' net income	39	0.14	15	0.05	62	0.24	26	0.10
<u>Net income x 100</u> Fixed fruit growing capital	8.1 per cent		3.6 per cent		16.0 per cent		6.2 per cent	
Proportion, profitable enterprises:								
without interest	55 per cent		59 per cent		80 per cent		78 per cent	
with interest	42 " "		31 " "		70 " "		55 " "	
Average yield per acre (bushels)	280		281		261		262	

1
2
1

Results for Different Size-groups of Enterprise

Perhaps because the acreage of a holding is a feature that is easily measured and readily available, economists tend to pay attention to size-distinctions and their associated effects in farming.

Size alone is not so decisive in fruit growing, and individual growers are happy with small acreages as well as large. Twenty acres of bearing orchard intensively farmed can be as profitable as 60 acres managed less intensively.

In Table 4 the results of enterprises within the acreage limits quoted have been aggregated. There are few significant differences that can be traced to size alone - this is the rather negative conclusion from Table 4. These aggregate figures may well show the effects of:

- a/. a majority of smaller enterprises being in Kent, where yields were thought to be lower than normal,
- b/. a majority of smaller acreages being enterprises on mixed farms, rather than specialised units, and
- c/. larger acreages including a higher proportion of non-bearing acreage.

At the time of writing, these side effects have not been evaluated.

However, it may be safely inferred from Table 4 that:

- i/. variable costs are little affected by size of enterprise - the inference being that orchard practices are now well standardised;
- ii/. growers with smaller acreages take a lower average price than the larger growers - the inference being that the fruit is of lower intrinsic value on the smaller enterprise, more of the crop being marketed, by a comparatively weak bargainer. Smaller growers are shown to save something on marketing, but not enough to compensate them for the lower price.

The disposition of average yields and average prices within Tables 3 and 4 implies that there were several areas in the southern half of England where, in 1969, an average accomplishment was realised. It may well be true that the macro-climate of southern England makes it a marginal area for apple- and pear-growing: but it is evident that within that area are many sites having an equivalent meso-climate. Now that the situation in 1969 has been established, interest will centre on the frequency with which growers away from the south-east can show results as good (or better) than those in the south-east.

Preliminary Further Analyses of Aggregate Results

Further consideration is now given to three matters affecting all growers. Following the same sequence as previously, these are:

observations on marketing

,, ,, production costs

,, ,, fixed costs and profitability

These observations are preliminary: they may be either confirmed or qualified during closer study of the data.

Some metric equivalents

1 bushel of apples = 18.4 Kg.

1 bushel of pears = 21.8 Kg.

267 bushels an acre of apples and pears = 13,000 Kg. per ha.

£428 an acre (investment) = \$2,560 per ha.

£0.805 a bushel (average cost of production at the orchard gate) = 10 cents U.S. per Kg.

Observations on Marketing

This survey of the 1969 crop was not designed to reveal the different efficiencies and costs of different marketing procedures. It has shown, however, that, in one way or another, marketing cost is a particularly heavy item for growers - even with yields averaging 267 bushels an acre: at yields of 400-500 bushels an acre, marketing would certainly be the growers' largest type of expense.

All the known practices have their adherents among the growers in the sample. There are too many variations for each to be mentioned separately, but a broad distinction is feasible between growers exclusively marketing through a co-operative and those using other means, which would not exclude occasional use of a co-operative. The regional samples are comparable in this respect, except that selling on the tree was confined to the Wye sample. The results of growers selling on the tree have been excluded from this comparative analysis.

Numerically, co-operators were in a minority. Two-thirds of growers were doing their own marketing. Co-operation was most marked in the Bristol group, and of least importance in the Cambridge group. In the aggregate, the comparative figures of average sale price and average marketing cost for (a) growers using a co-operative exclusively and (b) all other growers not selling on the tree, were:

Type of practice	Number of growers	Bushels marketed	Average sale price (£ a bushel)	Average cost of marketing (£ a bushel)	Producers' net return (£ a bushel)
Exclusively co-operative	24	349242	1.42	0.69	0.73
Not exclusively co-operative	45	671304	1.38	0.52	0.86

According to this analysis the overall average net return of 16s. 5d. a bushel was made up of a rather lower-than-average return from co-operative marketing and a rather higher-than-average return from other methods. The difference shown of £0.13 (2s. 7½d.) a bushel is likely to be an over-estimate, because growers marketing from the farm have possibly not charged to marketing the proper share of business-type overheads such as 'general office expenses'. It is most unlikely, however, that this omission could account for the observed difference of £0.17 (3s. 5d.) a bushel in cost. The abiding inference is that growers who managed their own marketing did not attain to the co-operatives' price, but were able to save in cost rather more than they lost in revenue in the particular conditions of 1969/70.

The three regions had varied experience of the market. Sale price was highest in the Cambridge province for co-operators and non-co-operators alike: growers here were apparently least disposed to co-operate, but showed the best results from it. The difference between the co-operators' and the others' price was highest in the Bristol sample, lowest in the Wye sample. Regional averages are set out below:

Region	Average sale price (£ a bushel)		Average cost of marketing (£ a bushel)		Producers' net return (£ a bushel)	
	co-op:	others	co-op:	others	co-op:	others
Bristol	1.37 (5)	1.28 (6)	0.84	0.38	0.63	0.90
Cambridge	1.59 (6)	1.44(18)	0.70	0.53	0.89	0.91
Wye	1.36(13)	1.32(21)	0.64	0.48	0.72	0.84

(Figures in parentheses are the number of enterprises concerned.)

The observed differences in average price, whether between regions or between the two categories of grower, may or may not be common experience in the industry as a whole - the differences are not statistically significant. As regards marketing cost, it is more likely that the observed differences are not due to sampling error; but if non-co-operators' costs were to be increased by £0.08 (1s. 8d.) a bushel (to allow for omission of some overhead charges), the observed differences are brought within the area of doubt.

Average price would tend to be higher where Cox's Orange Pippin was a larger part of the crop marketed, or was more largely stored. The Cambridge figures were examined with this factor in view but the results are inconclusive. In terms of acreage, Cox was proportioned within each regional sample as follows:

Bristol	54 per cent
Cambridge	51 " "
Wye	46 " "

Cox as a proportion of sales, however, was not recorded, and no reliable estimates were obtained of the proportion of each grower's Cox sold after long-term storage.

Observations on Cost of Production

The frequency distribution of estimated cost per bushel delivered to the first buyer for the 1969 crop is shown in Figure 1. The recorded costs have here been increased by an interest-on-capital charge of 10p. a bushel (representing 7 per cent return on fruit-growing investment). According to the data obtained, these unit costs of production may be applied cumulatively to the sample crop as follows:

a/. for the entire sample crop

Delivered cost per bushel not exceeding	Proportion of enterprises (per cent)	Proportion of sample crop (per cent)
90p.	6	5
110p.	18	14
130p.	47	40
150p.	75	75
170p.	95	95

b/. for the sample crop in three constituent regions

Delivered cost per bushel not exceeding	percentage of crop in each region -		
	Bristol	Cambridge	Wye
90p.	25	-	3
110p.	44	8	11
130p.	50	31	44
150p.	92	81	66
170p.	100	97	93

Unit costs in the Cambridge sample appear to be high in relation to average yield, and relatively low in the Wye sample in relation to average yield.

The more conventional cost at the orchard gate, with the interest charge added, averaged £0.805 (16s. 2d.) a bushel.

Orchard practices are much the same throughout England: the so-called variable costs are uniform, and were made up in 1969 as under:

	£ an acre	
Spray materials and herbicides	23.0	
Inorganic fertilizers and organic manures	7.9	
Casual labour - growing	6.7	
picking	18.7	25.4
Other materials and sundries		3.7
		<u>60.0</u>

So the operative level of variable costs must be accepted, together with the fact that these costs will be associated with varying productivity according to climate.

It is inevitable that where yields of apples and pears are low in relation to a given level of expenditure per acre, costs per unit at the orchard gate will be high: but this principle is not all-important in international trade. It is certainly true of the crop on the tree, and can also be extended to include harvesting. However, as may be construed from Table 1, at the harvesting stage less than half the ultimate cost of the consumers' (i.e. market) product has been incurred. Moreover, the remainder of the work on the crop - grading, packing, storing, transport and distribution - is semi-industrial in nature and therefore involves higher costs than equivalent work of an agricultural nature.

The typical English apple and pear crop of today is produced on specialised enterprises at relatively high average cost per bushel on the tree, compared with similar enterprises in France and Italy. In English practice orchard variable costs are only 16 per cent of the cost per unit at the point of entry into the distribution system. Once past the orchard gate any natural advantage ceases, and apples and pears of any origin will normally have to go through the same marketing processes and incur equivalent costs per box.

When the higher natural productivity of a warm climate entails higher costs in marketing, there is a band of perhaps 50-60 per cent of delivered cost within which a producer in a low natural productivity area could hope to reduce his initial handicap. For example, 2 $\frac{1}{2}$ p. a bushel saved in marketing equates with 60 bushels an acre lower yield. This is relevant to trade within a country.

And when an area having low natural productivity confers advantages in distribution as well as in marketing, the low productivity may not be an absolute handicap. This is relevant also to trade between countries, and is one explanation of the continuance in business of apparently disadvantaged producers.

Observations on Fixed Costs and Profitability

The economists' way of looking at, and estimating, profit has already been referred to. Briefly, it consists of the notion that all the necessary inputs into a production process - and by usage this comes to be accepted as the customary level of inputs - have their cost, and not until all costs have been met can any prospect of profit arise.

This philosophy is now applied to the results of the 1969 dessert apple and pear crop, in order to bring home to producers the high level of net returns required to cover all costs and make a profit in the economic sense. However, time has proved that many fruit growers are apparently content to continue, and even to expand production without reference to economic profit. In these circumstances the focus of interest is the extent of the sacrifices producers, wittingly or unwittingly, make.

The fixed costs common to all enterprises amounted to £128 an acre, and it has been noted that in this sum an allowance had been made for a sole proprietor's manual work on the apple and pear enterprises, but not for his associated managerial work or for interest on his capital. The sums of money to be ascribed to an acre of the enterprise under the two headings can be calculated as follows:

	<u>Interest on capital</u>	<u>Management</u> *
	£	£
Land: 5% of £240	12.0	4% of Gross Output (£221) 8.8
Fruit growing: 8½% of £428	36.5	20% of wage bill (£64) 12.8
	48.5	7% of Net Income (£33) 2.3
less amount paid as rent	11.0	
	37.5	23.9

So an additional £61.4 an acre (£37.5 + 23.9) may be merited, and the 1969-crop level of net income is then shown to be inadequate by some £28.4 an acre. That is to say, the presentation of the 1969-crop accounts (as in Table 1) would be finished off in this way -

	<u>£ per acre</u>
margin on crop	161
all fixed costs	189.4
	28.4

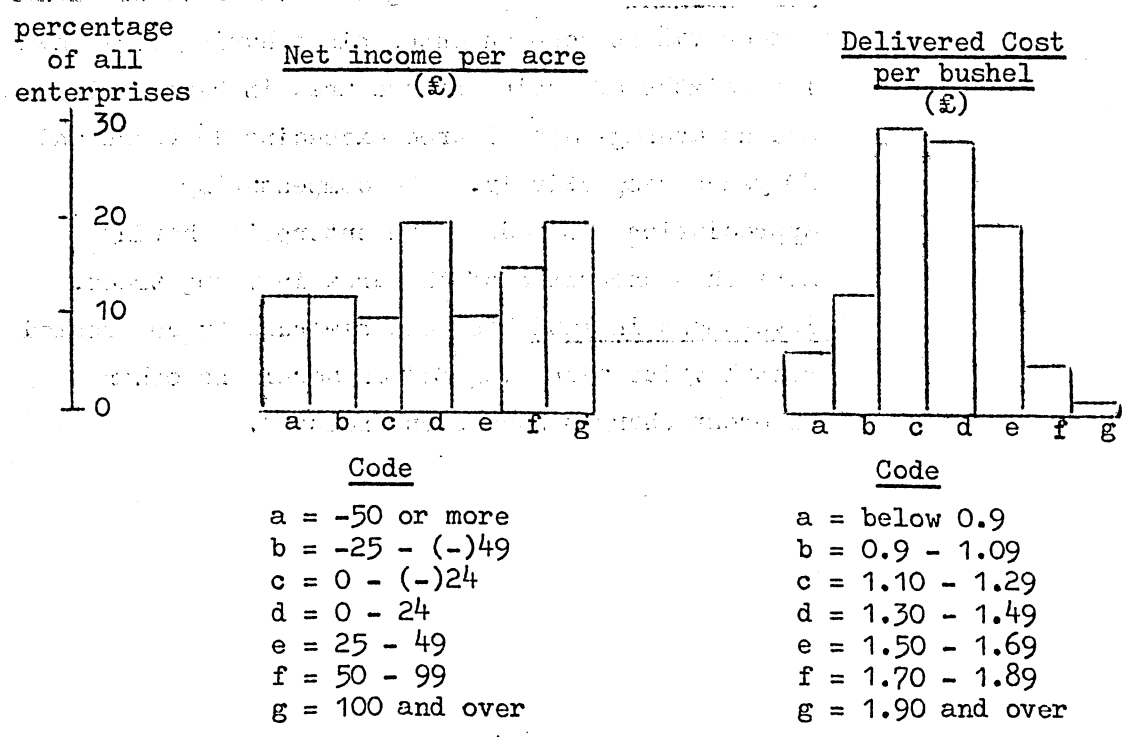
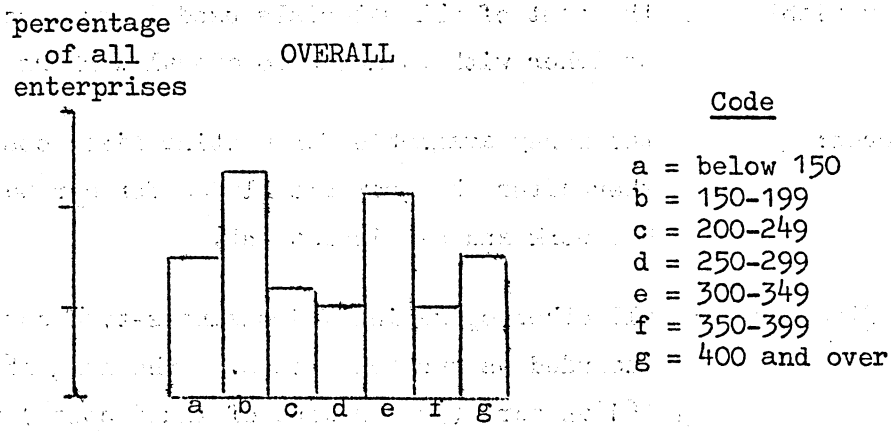
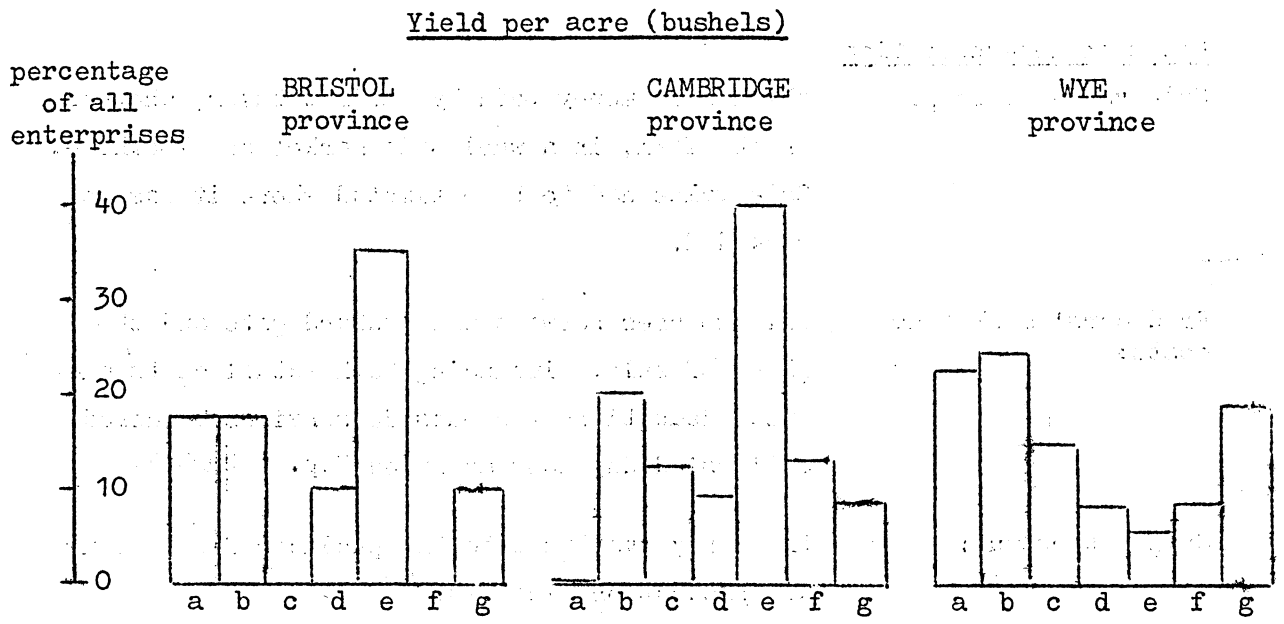
* according to the criteria suggested by Professor D.K. Britton in his paper to the Agricultural Economics Society, April 1970.

Dessert-apple and pear growers know only too well, however, that if the price of their fruit were high enough to cover fixed costs of almost £190 an acre on the average enterprise, many growers with above-average yields would be induced to plant more trees and increase their production. The situation would be unstable, and the price of apples and pears would shortly fall as more came on the market.

In each long-standing trade or profession there is a certain conjuncture of prices and rewards which is known, by experience, to be consistent with long-term viability of reasonably efficient firms. Sometimes (as with insurance) newcomers think the normal margins high and enter an industry confident of working with lower margins. Given time, such new firms either give up, or are taken over, or raise their charges. The traditionalists and their idea of the normal margin of safety have been justified.

English dessert-apple and pear growing, at its present scale, is still too new, for a sense of this 'normal' reward, including material and non-material satisfactions, and margin of safety for marginal producers to have emerged. Numbers of newer growers may not have counted the full cost when deciding to plant up. Numbers of older growers may have tended to over-estimate the long-term level of fruit prices when committing their capital. In the long run, price must equate with costs on marginal farms. So long as marginal producers are prepared to sacrifice some of their due rewards in order to continue in business (and there may be no good alternative), the level of prices and rewards will disappoint the high-cost and the under-estimating producers respectively. There will be a slow movement towards greater stability, but if the industry is left to itself a 'normal' reward will be long-delayed.

FIGURE 1. SOME FREQUENCY DISTRIBUTIONS WITHIN THE SAMPLE



Notes on Interpretation

- Sale value of crop:** the sum of money paid by a first buyer, whether on the farm, in a wholesale market or elsewhere. Sale value had to be estimated where it was not recorded.
- Producers' marketing costs:** all expenses between the orchard gate and the place of sale; including both actual costs and (net) deductions for outside services rendered. Sellers' deductions averaged 21p. a bushel.
- Crop net output:** the money available to the producer for meeting all production expenses.
- Producers' variable costs:** the cost of all materials used in the orchards, together with payments to casual workers.
- Margin on crop:** the money available for meeting fixed costs and thereafter the grower's claims for a reward for his work and his investment.
- Producers' fixed costs:** all other operating and business-type costs not included as variable costs. The largest item, £61 an acre (32 per cent of fixed costs) is the cost of regular labour: this includes the unpaid manual work of one proprietor.
- Depreciation has been charged at the rate of either £28 or £16 an acre on enterprises having more than five-sixths of their orchard area in bearing trees and an average age of tree exceeding 16 years and 20 years respectively. No compensating appreciation was made to an enterprise having more than one-sixth of the area in young trees.
- Investment in land has been rewarded by an assumed rental value averaging £11 an acre: no other interest charges have been included.

Capital employed:

the book value of (a) land and buildings, (b) additions like water tanks, roads, packing sheds and gas stores, and (c) mechanical and non-mechanical equipment used in fruit-growing, as presented in the latest available Balance Sheet. Where the apples and pears were one enterprise on a farm, a suitable apportionment of non-specialised assets was made. Growers' share in the capital of co-operative marketing concerns was estimated to be the same as their share of normal throughput. The average investment arrived at in this way was $67\frac{1}{2}$ p. a bushel. Orchards with less than 300 trees an acre have been valued at £240 an acre at age 10, reducing by £16 an acre to 'nil' value at age 25 years: with 300 or more trees an acre, maximum value was £420 at age 8 years, reducing by £28 an acre to nil value at age 23 years.

RRWF/HKE
12.2.71