Apples

Agricultural Enterprise Studies
in England and Wales
Report No. 27

WYE COLLEGE
(University of London)

DESSERT APPLES AND PEARS IN 1972-1973

Financial Results for a Sample of Growers

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FARM BUSINESS UNIT
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Financial Results of a Sample of Growers

University departments of Agricultural Economics in England and Wales have for many years undertaken economic studies of crop and livestock enterprises. In this work the departments receive financial and technical support from the Ministry of Agriculture, Fisheries and Food. A recent development is that departments in different regions of the country are now conducting joint studies into those enterprises in which they have a particular interest. This community of interest is being recognised by issuing enterprise reports in a common series entitled "Agricultural Enterprise Studies in England and Wales", although the publications will continue to be prepared and published by individual departments. Titles of recent publications in this series and the addresses of the University departments are given at the end of this report.

Further copies of this report are obtainable from:

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John S. Nix

Head, Farm Business Unit

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FOREWORD

This is only the second country-wide enquiry of its sort into the profitability of English apple- and pear-growing. A previous study was conducted on similar lines by the same University staff in 1959 in order to gain experience for the current study which is to cover the 1972 and 1973 crops.

The value of these reports lies in replacing opinion with fact. Hardly anyone in the country knows the whole of English fruit growing. Technical aspects are widely discussed, and there is little doubt, for example, about the selectivity of herbicides. On the subject of marketing, plenty of advice is offered about ways of helping growers, distributors or consumers, sometimes on inadequate knowledge. The desires and aims of growers as a whole (and those imputed to them) are diverse: and not until the whole can be seen - regrettably, only in figures - can the contrasts in purpose and in variety of practice be realised.

So mixed an industry may well be a sign of immaturity. There is no lack of comment upon the way events are making life more difficult for growers; but whether the eventual outcome will be at all like that most frequently prophesied remains to be seen.

Whereas the 1969 harvest gave a good crop of high-quality fruit, the 1972 crop was exceptionally low and will soon be forgotten in all but one respect - its profitability. Were this year, prior to the start of the transition period into the EEC regulations, to have seen the end of English fruit growing it would have gone out in a blaze of glory.

So, while the results presented here are mainly of historic interest, something of the extraordinary demand-and-supply situation in the year in question has been revealed, as well as something of the cost-flexibility within an industry usually thought of as subject to high fixed costs. The latter suggests English fruitgrowing to be more durable under stress than is commonly conceived.

While stressing the virtues of a 'cross section' coverage of fruit-growing, mention of its dangers cannot be omitted. The 'random sample' method of selecting participants' reports upon the human condition rather than the output or supply condition: that is to say, each grower is considered equal, and decisions are examined for their frequency, not for their importance. It is possible that, say, 20 per cent of growers sold their fruit locally: if they were all small growers, the effect upon the marketing of the national crop might not be noticeable. Awareness of the actual number of growers involved in local trade, however, could be valuable in another context.

A further hazard in trying to present a fair overall view of apple- and pear-growing is the lack of accuracy inevitable when a variety of practices has to be encompassed and these are recorded with varying degrees of attention to detail on each farm. This remark applies particularly to Kent, an area which seems rich in forms of fruitgrowing practice. Nevertheless, the following results would not have been published unless those concerned with the data were satisfied they are 'right' in each case, if not absolutely precise. The most contentious figures will be those for the fruit's due share of overhead costs when grown on mixed farms. There is no completely satisfactory way of deciding this figure: but a decision cannot be avoided when, as in this instance (a) the majority of participants have entire fruit holdings and the results for single enterprises have to be made to conform, and (b) the aim of the enquiry is profitability. The Gross Margin is an inappropriate indication of profitability here: it has a well-known function in management-type financial analysis, but management analysis has made minimal headway in fruitgrowing and a Gross Margin on a fruit crop leaves some £250-400 an acre to be split between fixed costs and profit and leaves the profitability issue wide open.

There is no good alternative, therefore, to trying to estimate profitability, which in any case deserves attention at this time, to serve in the future as a past record of performance before Britain becomes embodied into the EEC.

The Size and Features of the Enquiry

The area of the 43 participants' apple and pear orchards totalled 2,172 statute acres: this is a sample of less than 3 per cent of all growers in the area covered, and is probably inadequate as a reliable guide to actual events in 1972 - it may be, but it cannot be proved to be.

The distribution of results between regions in relation to expected numbers of participants is as follows:

	no. expected	no. realised
Bristol region	8	5
Cambridge region	17	15
Wye region	30	23
	55	43

Individual results have not been closely analysed. In each case the orchard enterprise has been treated as a whole, with no distinction between apples and pears, or even between dessert apples and a small representation of culinary apples, actual acres costed being as follows:

Dessert apples	1766	statute	acres
Pears	241	"	"
Culinary apples	165	"	"
Total	2172	"	"

The orchards themselves seem normal enough, as revealed by the following statistics:

	Mean value	Most frequent value
Number of trees an acre	157	120-150
Age of trees (years)	19	21-25
Apples and pears as a proportion of output of the farm (%)	76	75-100

The financial side can be summarized as follows:

385,712 bushels of apples and pears were marketed from 2,159 acres.

The average marketed yield of 179 bushels an acre (8.55 tonnes per ha) realized £894,391 from 2,085 acres, equivalent to £429 an acre, for producers either at the packhouse or on the farm - i.e. before marketing costs were deducted.

After paying marketing charges or costs the amount available to meet orchard-based expenses was £743,000, or £342 an acre.

After paying the so-called production expenses, producers were left with a Management and Investment Income of £201,309, or £93 an acre.

Assuming (on the basis of the 1969 enquiry) an investment in fixed assets of £720 an acre, the Income represents a return of 13 per cent, which also includes any reward for management that proprietors could justifiably claim.

Results per bushel marketed are as under:

		£ per bushel
Sale value in market	(226,082 bu:)	2.85
Value to producers	(366,312 bu:)	2.40
Value after marketing	(385,712 bu:)	1.91
Residual value	(385,712 bu:)	0.52

The higher level of prices in 1972 had the effect of reducing to one-third the proportion of sale price absorbed by marketing. In the 1969 enquiry the figure was two-fifths (40 per cent).

Or, to put it another way, the cost of marketing was half the cost of growing the same crop (including profit). On a cost basis growers spent about £0.94 per bushel on marketing and about £1.39 a bushel on growing this light crop.

Some further features of the results from this sample of growers are expressed in the distributions on p. 27. Here the phenomenon is clearly the predominance of a small-to-modest business, for revenue on more than 60 per cent of enterprises fell within the range of £2,000-10,000 (top right-hand diagram). This result could be realised by growers using cooperative packhouses having 25-30% more acreage than growers marketing independently; for the latter receive all the (net) revenue from sale of their fruit whereas the cooperative receives perhaps 70-80 per cent, the remainder being kept by the packhouse for services rendered.

The distribution of yield (top left-hand diagram) shows the now familiar bi-modal form: that is to say, only a minority of growers had an average yield - the average is actually the (arithmetical) result of most growers having below-average or above-average yields.

The lower diagrams on page 27 show (on the left) an approximately 'normal' distribution of profit per acre and (on the right) a skewed distribution giving the welcome message that a low unit cost of production was a most frequent occurrence.

The major inter-regional physical differences are (a) the relative importance of the apple and pear enterprise on the holding, and (b) in the intensity of production.* Here are the details:

	Bristol	Cambridge	Wye
Mean tree nos. per acre	136	151	164
Mean age of tree (yrs.)	20	21	18
Resources in enterprise (%)	61	74	80
Intensity of production	116	150	134

* defined here as the combined cost per acre of variable-type costs and regular labour.

Differences between holdings are brought out in a later section. As regards the table above we have the picture of the Bristol province farms having the largest trees and also the least important fruit enterprises and the most economical (or efficient?) way of managing them. This is to be expected where apples and pears constitute a big enterprise on a large mixed farm. Enterprises in Essex, Suffolk and Lincolnshire are distinguished by high orchard inputs (possibly connected with the higher average prices realized) - evidence of a desire to do the crop well. As regards Kent and Sussex, the figures for the Wye sample indicate the regeneration of fruit-growing: by comparison this region has the most closely-planted trees, the youngest trees and the highest degree of specialization.

These mean sample figures, being liable to be swayed by, say, one extreme case in each instance, are in truth partly accidental. None of the quantities is significantly different from the others in the statistical senses. However, it is clear that three out of every four participants were either specialized growers or horticultural producers with apples and pears as a main interest (i.e. at least 70 per cent of total farm revenue from dessert apples and pears), which should mean that the results have particular significance for the growers concerned.

Participants will know that the enquiry was intended to be comprehensive, and to collate information upon the extent and type or irrigation installations in use, and whether adaptable for frost protection. It was also thought a knowledge of the rate of release of fruit from store would be useful, and a record of variety prices helpful to growers who were not members of a cooperative.

These extra intentions proved too ambitious in practice, and would probably be best realized through a specific enquiry. For the record -

63 per cent of growers had stores on the farm,
23 per cent had irrigation,
19 per cent had specific frost-prevention equipment
(either sprinklers or candles).

About 10-11 per cent are revealed as the fully-equipped, intensive farm of a type which had publicity some years ago. No startling results were realised on irrigated orchards, however. The mean yield on the farms in question was 166 bushels an acre - fractionally higher than the mean for non-irrigated orchards of 154 bushels an acre. This extra 12 bushels an acre would have added about £23 to the producer's net return per acre.

As regards the variety prices and net returns per acre, thirty-five usable records were received. Regrettably, the average prices fell mainly into one of two classes - either 'ex-market' or 'ex-packhouse' - which are not easy to reconcile, and, moreover, once outside the pure case of total reliance on one packhouse, marketing practice was mixed and thus rendered results likely to mis-interpretation. Some purely factual results are given in a later section.

Finally, the number of participants from whom results were not obtained was higher than usual, and higher than Universities would like: this was mainly due to accounts not being ready by the closing date; and in addition to normal 'wastage' on account of retirement from the industry and so on, there was occasional objection to the disclosure possibly misleading figures.

Analysis of Financial Results

This section consists of a four-part analysis of the overall results previously summarized, and with one small difference from the summary.

Separate presentations are made of the following:

a. aggregate results on the enterprises individually;

b. regional results;

c. results by size of enterprise;

d. results on specialized and mixed holdings.

The small difference referred to above is that in this section the basis of analysis is a mean value per farm. In the previous summary there were given average values for the whole crop. The average figures serve when data about the whole sample is required, but from the management and policy aspects it is more useful to know the situation on individual farms. There can be big differences between the two. In this case, because yields per acre were notably lower on the small enterprises in the sample than on the large enterprises, to divide the aggregate output by the orchard acreage used gives a yield of 179 bushels an acre: when the yield per acre on individual farms is averaged the figure is 157 bushels an acre.

The Financial Pattern in 1972-73 : An Overall View
Results per statute acre of orchard area

	Range within the sample	Most frequent value
Bushels marketed	43-386	100-150
Sale Price per bushel (£)	1.64-3.33	2.76-3.00
Money received from the buyer (£)	101-883	300-350
	£	£
Sharing of Proceeds		
1. to the wholesaler or intermediary in selling the crop	18-111	31-40
2. to the producer for marketing his own crop	16-218	31-60
3. left to the producer to pay for production costs and for profit (= Gross Output)	81-705	151-200 and over 400
4. to the producer for variable-type cost	29-186	50-70
of which : sprays and herbicides	8-51	30-35
manures	2-19	6-13
casual labour	0-129	11-20
5. left to the producer as Gross Margin	44-623	151-200
6. to the producer for fixed-type costs	50-429	100-150
of which : regular and own labour	29-196	40-60
all other	46-293	50-70
7. residual amount left to the producer (= Management and Investment Income)	(-)93-265	51-100
8. item (7) above, but including value of own labour (= Net income or Profit)	(-)93-265	100-150
9. Management and Investment Income as percentage of sale proceeds	-	23

The Financial Pattern in 1972/73

Set out on the opposite page is a series of figures showing what has been called the 'financial pattern' of producing the 1972 crops. Frequent reference is made in this report to the big variation recorded in apparently similar quantities. What most readers learn from this sort of survey - and it is not always welcome knowledge - is that there are numerous ways of producing and marketing an apple and pear crop.

To condense highly-variable quantities into 'an average figure' can be misleading. So while the information opposite is not so convincing or as neat as the customary array of arithmetically correct averages, it is thought to reveal more of the actual receipt and manner of disbursement of the revenue producers had from the sale of their crops.

Values are expressed on the 'per (statute) acre' only, not 'per bushel'. For the crop in question, costs per bushel are further from normality than costs per acre. 'Normality' is expressed in the column of figures nearest the right-hand margin, and it only serves to stress the extent of departure from normality on individual enterprises in this admittedly exceptional season.

Table 1. Average Results by Region

	BRISTOL province	CAMBRIDGE province	WYE province
No. of enterprises	5	15	23
Mean acreage	66	48	61
Yield per statute acre of orchard (Marketed bushels)	127	146	171
Net return to producer (£ per bushel)	1.83	2.27	1.66
Net return per acre or GROSS OUTPUT (£)	233	331	284
Variable-type costs (£)	68	68	66
GROSS MARGIN (£)	165 (4)	263	218
Regular labour cost (£)	35 (4)	93 (13)	68
MARGIN OVER LABOUR (£)	130 (4)	170 (13)	150
Other fixed costs per acre (£)	67 (4)	98	85
MANAGEMENT AND INVESTMENT INCOME per acre (£)	63 (4)	72	65
Proprietor's labour per acre (£)	17 (3)	-	27 (14)
NET INCOME per acre (£)	80 (3)	72	75 (14)

Note: Figures in parenthesis denote the number of enterprises concerned.

Regional results

The constitution of each regional sample conforms with what is known about each region. Middle-sized enterprises of intermediate intensity predominate in the Bristol group. Cambridge covers an area in which relatively modern enterprises, normally specialized, are managed more intensively; but there are also notable instances of production on farms in the province. Wye deals with a longer-established area in which the variety of enterprises is probably greater than elsewhere.

As regards comparative yields, mean values increased towards the south-east of the country. The pre-eminence of Kent and Sussex is partly accidental, because in such small samples one exceptional result can influence all results. By another criterion, that of the percentage of enterprises having a yield of between 100 and 200 bushels an acre, regional results are as follows:

Bristol	- 60 per cent
Cambridge	- 40 per cent
Wye	- 50 per cent

- which suggests that (a) weather effects were experienced nationally in 1972, and (b) no particular part of the country can be relied upon to produce normal quantities of fruit under adverse conditions (as would seem to be desirable if English growers wish to retain their present share of the market).

The higher mean net home price realised in Cambridge province was largely due to (a) advantageous sales to wholesale markets and (b) little variation between growers - the range in Cambridge province was £1.74-2.69, against £1.35-2.50 for Wye province. Should this situation recur with the normal sized crop of 1973 it will be examined more closely, particularly (if possible) whether Essex-grown fruit moves to particular markets.

The greater intensity of production in Essex and Suffolk shows in the cost structure, but mean financial results were very similar in all three regions.

Table 2. Average Results by Size of Enterprise

Size Group (stat: acres)	10-20	21-50	51 and over
No. of enterprises	13	13	17
Yield per statute acre of orchard (Marketed bushels)	135 (12)	174	159
Net return to producer (£ per bushel)	1.92 (12)	1.99	1.94
Net return per acre or GROSS OUTPUT (£)	230	346	311
Variable-type costs (£)	63	73	67
GROSS MARGIN (£)	167	273	244
Regular labour cost (£)	74	64	70 (16)
MARGIN OVER LABOUR (£)	93	209	181 (16)
Other fixed costs per acre (£)	86	89	90 (16)
MANAGEMENT AND INVESTMENT INCOME per acre (£)	7	120	91 (16)
Proprietor's labour per acre (£)	37 (7)	19 (5)	7 (2)
NET INCOME per acre (£)	42 (7)	116 (5)	114 (2)

Note: Figures in parentheses denote the number of enterprises concerned.