Tomatoes — Cost of production

THE WEST OF SCOTLAND AGRICULTURAL COLLEGE

TOMATO COSTINGS, 1962, 1963 and 1964 CROPS

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Glasgow, C.2.

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FOREWORD

This report deals with the results of an investigation into the economics of the tomato crop in the Clyde Valley District of Scotland. Small samples of tomato costings (10 records for 1962 crop, 12 records for 1963 and 14 records for 1964) were obtained and a summary of the results was given in the annual statements (1) produced by this department. The aim in this report is to draw together the results of the three years investigation and to examine some of the factors which affected the profitability of the crop.

The results of this investigation have shown that while a few growers were making consistently good profits many others were making, just as consistently, less than a horticultural worker's wage. This, in turn, would appear to be closely related to the differences in the level of yield obtained since costs did not rise in proportion with increasing yield. The effect on profits of earliness and quality of fruit are also dealt with in the report.

On the expenditure side, the figures showed the relatively high cost of producing tomatoes in this sample, with labour and fuel the most important items. Over the three years, considerable improvements were made to the heating systems on many of the holdings taking part in this study. This resulted in substantial economies being made in the cost of fuel in individual cases. While it might also have been expected that the improvements carried out would have had a favourable effect on crop yields there was little evidence of this in the cases studied. It would appear that although an efficient production unit is of utmost importance there is still no substitute for good husbandry.

Grateful acknowledgement is due to the growers who supplied the information required for this report and to the College Advisory Officers of Lanarkshire and Ayrshire for their help.

A. S. Horsburgh.

(1) Statements, 63, 82 and 101 - Some Comparative figures from the Tomato Cost Investigation - 1962-64 Crops.

PRELIMINARY DEFINITION OF SOME TERMS

The costings were done by the "enterprise cost" method with actual expenditures used where possible and, lacking these, estimates inserted. In the main, accurate information of the direct costs of production were obtained while estimates were used to cover the share of glasshouse and equipment charges, of general holding expenses and the charges made for the manual work of the grower and his family.

Presentation of Results

In most cases the total area of tomatoes grown on the nursery was costed. The results have been presented per 100 linear feet of glass, this being equivalent to a standard house 100 feet long and 16 feet wide. The results are also given per 12 lb. of tomatoes produced.

Retail Sales

Where tomatoes were sold retail the costs and returns were different from those sold in the wholesale markets. As this study was not intended to compare these different outlets all retail sales have been converted to a wholesale basis.

Yield is the total quantity of tomatoes produced, given in cwt. per 100 feet of glass.

Gross Revenue is the total return from the sale of tomatoes at wholesale prices. The gross revenue per basket (x 12 lb.) is therefore equivalent to the wholesale market price.

Direct Costs may be defined as those costs which are necessarily incurred in growing a tomato crop. These are the items very easily allocated against specific enterprises. Examples are fuel, plants, manures, packaging and sundry materials.

Gross Margin is the amount left when only the 'direct costs' have been deducted from the revenue.

Fixed Costs are those costs to which the grower may be committed no matter whether tomatoes are grown or not. The items included under this heading are labour (including estimates for the grower and his family) glasshouse and equipment charges and a share of general expenses on the holding.

Surplus is the amount left when total expenditure has been deducted from the revenue, (or fixed costs deducted from gross margin) with expenditure including an estimated share of general expenses on the holding.

DETAILS ABOUT THE SAMPLE

Over the three year period covered by this investigation information was collected from a total of 18 holdings of which 16 were in Lanarkshire and 2 in Ayrshire.

The method of grouping was to divide the sample between the 'specialist' tomato growers (with little or no successional cropping) and the 'non-specialist' tomato growers (with successional cropping important). In practically every case, the entire glasshouse area was devoted to tomatoes (with or without successional cropping) and the grower's income depended to a large extent on the success or failure of the tomato crop.

The area of tomatoes grown on the 18 holdings was equivalent to 30,000 linear feet of glass (16 feet wide) which represents about 8% of the tomato crop grown in the College area. No claim can be made, however, that the results of the small samples costed are representative of tomato crops generally in this area.

Details about the samples in each of the three years of the investigation are given in Table I below:-

TABLE I

THE COSTED SAMPLES - 1962 to 1964

	1962	1963	1964
Number of Costings - Specialists	5	7	7
Non-Specialists	5	5	7
Total	10	12	14
Total Area Costed (linear feet)	18,000	23,000	23,000
Average Area Costed per holding (linear feet)	1,800	1,850	1,650
Distribution by Areas Costed:-			
Under 1000 feet	1	2	4
1000-1500 feet	3	4	6
1500-2000 feet	3	3	2
2000-2500 feet	2	2	1
2500-3000 feet	1	-	-
Over 3000 feet	-	1	1
Total	10	12	14

Nine of the crops were identical in the samples of 1962 and 1963, nine other crops were identical in the 1963 and 1964 samples and six of the crops were costed throughout the three year period.

SUMMARY OF RESULTS

The main results for the three years under review are given in the table below with separate figures for the specialist and non-specialist groups. Since a different basis was used in charging certain items of fixed cost in the 1962 costing these are not strictly comparable with those given in the 1963 and 1964 samples. This applies particularly to the method of charging overheads, (= share of holding general expenses), depreciation on glasshouses and the wage rates used for the manual work of the grower and his family. The effect was to give higher charges for these items in the costings of 1963 and 1964.

TABLE 2

COSTS, RETURNS AND SURPLUS - 1962-1964

	ALL COSTINGS			SPECIALISTS			NON-SPECIALISTS		
	1962	1963	1964	1962	1963	1964	1962	1963	1964
Number of costings	10	12	14	5	7	7	5	5	7
Yield - cwt./100 feet	27	26	30	30	28	32	25	23	28
Gross Price per 12 lb.	19/11	23/11	22/6	19/9	23/1	22/1	20/1	25/1	23/1
Per 100 Feet	£'s	£'s	£'s	£'s	£'s	£'s	£'s	£'s	£'s
NET REVENUE	228.2	264.8	285.4	251.2	284.3	300.6	205.3	237.5	270.3
Less Direct Costs	105.3	109.7	104.6	104.2	110.8	107.3	106.5	108.1	102.0
GROSS MARGIN	122.9	155.1	180.8	147.0	173.5	193.3	98.8	129.4	168.3
Less Fixed Costs	92.0	124.8	121.7	88.6	129.5	128.8	95.4	118.2	114.4
SURPLUS	30.9	30.3	59.1	58.4	44.0	64.5	3.4	11.2	53.9
Fuel cost - heating	64.2	64.1	58.4	61.4	66.4	58.7	66.9	61.0	57.9
Margin over fuel cost*	164.0	200.7	227.0	189.8	217.9	241.8	138.4	176.5	212.4

* = Net Revenue less fuel cost for heating.

The cold winter of 1962 was followed by the colder and more prolonged winter of 1963. The fact that heating costs, on average, were no higher in the latter year may be attributed to the new heating equipment which was installed on many of the holdings in that year. The extreme weather conditions in 1963 may have had an adverse effect on yields which were down compared with the 1962 crop but this was more than compensated for by the much higher prices which were obtained

throughout most of that season. The net effect was to give a higher revenue and gross margin than for the 1962 crop. The fact that the surplus was roughly similar in both years was due to the difference in the estimated fixed costs.

The milder weather experienced in 1964, which resulted in a drop in average heating costs, may also have contributed to the higher average yield which was obtained in that year. Despite a slight falling off in price the effect was to give the highest revenue and to make this the most profitable year for the average grower in the sample.

In each year the holdings grouped as 'specialists' fared better than those grouped as 'non-specialists'. The effect of successional cropping in the 'non-specialist' group was to give a lower yield of tomatoes although this was offset to some extent by a higher price. The lower yield can be explained by the shorter season of production while the higher price may have been due to the incidence of successional cropping at the end of the tomato season which avoided the very low prices obtained at that time. These low prices must be attributed to the deterioration in the quality of fruit produced at the end of the season since in each year there was a general recovery in wholesale prices at this time. Since costs of production were fairly similar for both groups the higher net revenue achieved by the 'specialist' group resulted also in a higher surplus per 100 feet.

I. THE DIRECT COSTS

The items included in 'direct costs' are those which are used specifically for the tomato crop and for which accurate information could be obtained. These are the items of cost which are generally considered to vary directly with changes in the scale of production and are often referred to as the 'variable costs'.

The average amounts spent on these items with separate figures for each group are given in Table 3.

TABLE 3

DETAIL OF DIRECT COSTS - PER 100 FEET - 1962 to 1964

Figures in £'s and decimals

	ALL COSTINGS			SPECIALISTS			NON-SPECIALISTS		
	1962	1963	1964	1962	1963	1964	1962	1963	1964
	£'s	£'s	£'s	£'s	£'s	£'s	£'s	£'s	£'s
Plants	8.4	8.3	9.2	8.1	8.6	8.6	8.7	8.0	9.8
Manures	5.7	6.9	8.1	6.4	6.5	7.8	5.0	7.3	8.4
Fuel - for heating	64.2	64.1	58.4	61.4	66.4	58.8	66.9	61.0	57.9
Fuel - for sterilising	7.6	8.7	9.1	7.5	9.3	9.9	7.8	7.7	8.3
Contract work - sterilising	3.6	2.4	4.0	4.4	2.3	6.0	2.7	2.5	2.0
Insecticides, etc.	1.0	1.6	1.2	1.0	1.9	1.5	0.9	1.1	0.9
Twine, etc.	1.2	1.4	1.1	1.1	1.3	1.0	1.4	1.6	1.3
Baskets, etc.	11.3	13.5	11.3	12.0	11.9	11.9	10.6	15.8	10.8
Pots, etc.	-	0.7	0.6	-	0.6	0.4	-	0.9	0.8
Sundries, water, etc.	2.3	2.1	1.6	2.3	2.0	1.4	2.4	2.2	1.8
TOTAL	105.3	109.7	104.6	104.2	110.8	107.3	106.4	108.1	102.0
Direct Cost per 12 lb.	8/11	9/10	7/10	8/4	9/5	7/8	9/7	10/5	8/2

There was little variation in these items of cost from year to year nor was there much difference in the level of costs as between the 'specialist' and 'non-specialist' groups. The variation in individual costs was considerable, however, ranging from £91 to £115 per 100 feet in the 1962 sample, from £98 to £139 in 1963 and from £90 to £130 in 1964.

The most important item in the direct costs was for heating and again there was a wide range in individual costs. In 1962 fuel costs in the sample ranged from £55 to £76 per 100 feet, in 1963 the range was from £37 to £89 and in 1964 from £36 to £81. High costs were often associated with the older - and presumably less efficient - heating systems. There was also some evidence of a relationship between cost of fuel and the level of yield obtained (see appendix Table I). The figures of margin over fuel costs in appendix Table I would suggest that the higher costs incurred in obtaining high yields were fully justified. This relationship was complicated by differences in seasonality of production; in the type of fuel used (and the ability to adjust fuel consumption to the varying heat requirements); and in the situation of the holdings.

The effect on fuel costs and yields of the improvements which were made to

the heating systems on five holdings during the period of this investigation are shown in Table 4. It must be emphasised that these results would also be affected by the varying weather conditions which were experienced over this period and should not be read as a wholly accurate statement of the effect of installing a new heating system.

TABLE 4

	BEFORE IMPROVEMENT		AFTER IMPROVEMENT	
Sequence No.	Fuel Cost	Yield	Fuel Cost	Yield
	£'s	cwt.	£'s	cwt.
1	76.4	27	41.0	27
2	70.0	26	62.4	25
3	63.4	20	37.1	20
4	60.1	30	52.5	31
5	58.5	22	52.6	23
Average	65.7	25	49.1	25

On each of these five holdings the alterations involved a change from solid fuel to an oil-fired heating system. The average saving in fuel cost was about £16 per 100 feet over the season as a whole (or a reduction of about 25% of the cost before improvement). Substantially higher savings were made in individual cases. There was, however, no evidence of any increase in crop yields as a result of these improvements.

II THE FIXED COSTS

This section provides information about those other items of expenditure (to which the grower may be committed no matter that changes are made in the area of tomatoes grown) and which cannot be charged solely to the tomato crop. In many cases it was necessary to make a sharing of these items between the costed crop and the other crops grown on the holding. The sharing of glass-house charges was made on the basis of the area and time occupied by the different crops grown under glass. An estimated charge was also made to cover the share of general expenses (or overheads) on the holding which was based on information from a small sample of horticultural accounts. The labour charge includes an estimate for the work done by the grower and his family based on the average wage rates paid to horticultural workers.

Table 5 shows the estimated charges made for these items in each year of the investigation.

TABLE 5

DETAIL OF FIXED COSTS - PER 100 FEET - 1962 to 1964

Figures in £'s and decimals

	ALL COSTINGS			SPECIALISTS			NON-SPECIALISTS		
	1962	1963	1964	1962	1963	1964	1962	1963	1964
	£'s	£'s	£'s	£'s	£'s	£'s	£'s	£'s	£'s
Labour									
Hired Workers	22.5	29.7	30.8	23.6	33.7	32.5	21.3	24.1	29.0
Family Labour	6.3	8.8	5.3	12.6	12.7	8.0	-	3.2	2.7
Grower and Wife	38.8	42.9	42.5	31.8	40.3	43.4	45.9	46.7	41.5
Total	67.6	81.4	78.6	68.0	86.7	83.9	67.2	74.0	73.2
Tractor & Rotovator Work	neg.	0.1	0.3	neg.	0.1	0.3	neg.	0.1	0.3
Glasshse & Equip. Charges									
Depreciation	5.9	12.5	11.9	4.1	13.0	14.1	7.6	11.8	9.6
Repairs & Maintenance	3.5	2.9	4.2	2.5	1.7	4.0	4.4	4.6	4.5
Major Repairs	3.9	3.6	3.7	4.3	3.3	4.0	3.6	4.1	3.5
Insurance	-	1.1	1.4	-	1.0	1.4	-	1.1	1.4
Total	13.3	20.1	21.2	10.9	19.0	23.4	15.6	21.6	18.9
Share of General Expenses	11.1	23.2	21.6	9.7	23.7	21.2	12.6	22.4	22.0
TOTAL FIXED COSTS	92.0	124.8	121.7	88.6	129.5	128.8	95.4	118.1	114.4
Fixed Costs per 12 lb.	7/9½	11/-½	8/11½	7/2	10/8	8/11½	8/1½	11/7	9/-

As previously stated, the figures for 1962 are not strictly comparable with those given for the other two years since different methods were used in calculating some of these items (e.g. depreciation and share of general expenses). There was, however, little difference in these costs in 1963 and 1964. In each year the costs were only slightly higher for the 'specialist' group compared with the 'non-specialist'.

The labour charge, was by far, the most important item of fixed costs accounting for about two-thirds of the total. Dependance on grower and family labour was high on these holdings and in each year accounted for about two-thirds of the total labour cost. These charges, would, in fact, be available as part of - and in some cases considerably enhance - the income from these holdings.

On the individual holdings total labour costs ranged from £50 to £89 per 100 feet in the 1962 sample, from £61 to £114 in the 1963 sample and from £60 to £105 in the 1964 sample.

The average labour requirement worked out at roughly the equivalent of one full-time male worker for every 750 feet of glass.

III FACTORS AFFECTING PROFIT

The results given so far have shown that reasonable - although by no means high - levels of profit were obtained by the 'average' grower in the samples. Little attention has been given, however, to the wide variations in the results which was a recurring feature of these costings.

The ranges in surplus (or deficit) per 100 feet are given in the table below.

TABLE 6

RANGE IN SURPLUS - PER 100 FEET - 1962 to 1964

Surplus:-	1962	1963	1964
Over £150	1	2	1
£100-£150	1	1	4
£ 50-£100	1	2	2
Under £50	2	2	3
Deficits	5	5	4
	10	12	14

This table shows the considerable range in surplus (or deficit) which was obtained with these small samples. While the tomato crop was clearly a highly profitable business for a few growers - to many others the tomato crop alone would scarcely have provided more than a bare living.

A detailed analysis of the 1964 sample throws some light on the factors which affected the level of profits obtained in that year. Separate figures in the table are given for the holdings grouped as in Table 6.

TABLE 7

AVERAGE RESULTS FOR VARIOUS SURPLUS GROUPS - 1964 CROP

SURPLUS (OR DEFICIT) PER 100 FEET	SURPLUSES				DEFICITS
	Over £150	£100-£150	£50-£100	Under £50	
Number of Records	1	4	2	3	4
Yield - cwt. per 100 feet	51	34	29	27	23
Gross Price - per 12 lb.	23/4	23/8	25/-	20/3½	21/10
% Sales by weight to 30th June	33%	33%	44%	23%	30%
PER 100 FEET:-	£'s	£'s	£'s	£'s	£'s
NET REVENUE	500	339	304	226	214
Less Total Cost	299	213	220	209	238
SURPLUS ((-) DEFICIT)	201	126	84	17	(-) 24

Yield

This analysis shows up yield as being the predominant factor which affected the level of surplus. By comparison, earliness, although it had a noticeable effect on price, would appear to have been of lesser importance (but see next section). Naturally the higher average yields were reflected in the higher levels of net revenue obtained but it is significant that there were no marked variations in total production costs in the different groups.

Earliness

Since monthly figures were not available from every holding, no attempt was made to group the records according to seasonality of production. It is possible, however, to give some examples which illustrate the effect of this on the results obtained. In the following table these are given for six crops in the 1964 sample grouped as 'early', 'mid season' and 'late'. In each group the highest and lowest yielding crops were selected.

TABLE 8

EXAMPLES OF EARLY, MIDSEASON AND LATE CROPS - 1964 CROP

	EARLY CROPS		MIDSEASON CROPS		LATE CROPS	
	Highest Yield	Lowest Yield	Highest Yield	Lowest Yield	Highest Yield	Lowest Yield
Yield per 100 feet:-	(cwt.)	(cwt.)	(cwt.)	(cwt.)	(cwt.)	(cwt.)
April	0.2	neg.	-	-	-	-
May	6.1	2.6	2.1	1.2	-	-
June	10.6	9.1	10.9	10.4	1.1	3.2
July	12.0	6.5	13.7	6.4	8.4	9.9
August	10.2	4.4	5.9	2.5	10.2	5.5
September	7.0	1.8	5.1	0.6	6.3	3.4
October	4.7	0.5	3.3	0.7	0.9	1.2
November	-	-	-	0.9	-	0.1
Total Yield	50.8	24.9	41.0	22.7	26.9	23.3
Gross Price Per 12 lb.	23/4	24/-½	22/6	24/4	19/8½	20/11
PER 100 FEET	£	£	£	£	£	£
NET REVENUE	500	249	387	229	221	202
Less Fuel Cost	70	62	69	59	41	81
MARGIN OVER FUEL COST	430	187	318	170	180	121

The effect of earliness on monthly yields, prices and fuel costs are illustrated in this table. It also shows that there was a considerable range in yield within each group.

As might be expected a major disadvantage of the 'late' crops (where picking did not start until June) was the lower average prices obtained.

It might also be suggested that a further disadvantage of the 'late' crops was that the shorter season of production precluded the possibility of obtaining a very high yield. While both the 'early' and 'mid-season' crops tended to give considerably higher revenues this still depended to a large extent on the level of yield obtained. A major factor causing the lower yields would appear to have been the failure to maintain the crop yield towards the latter part of the season.

With the exception of one holding (using an older heating system), fuel costs were higher for the earlier crops but the higher returns obtained in

most cases more than compensated for the extra costs incurred although there was little to choose between the lower yielding crops in each group.

Quantity or Quality

It is often contended that high yields are inconsistent with the production of high quality fruit and that difficulty would be experienced in selling such fruit at reasonable prices. To some extent this attitude may be based on the results of using certain hormone sprays and varieties of crop - but neither of these would seem to have been widely used by growers in this area.

In Table 9 the total records obtained over the three years are distributed according to yield per 100 feet and also according to the average price per 12 lb.

TABLE 9

DISTRIBUTION OF RECORDS ACCORDING TO YIELD AND PRICE - 1962-1964

Yield Per 100 Feet	Under 20 cwt.	20 cwt.- 25 cwt.	25 cwt.- 30 cwt.	30 cwt.- 35 cwt.	Over 35 cwt.	TOTAL
Price per 12 lb.:-						
Under 20/-	1	5	3	1	-	10
20/- to 21/-	-	3	1	-	-	4
21/- to 22/-	1	1	-	1	-	3
22/- to 23/-	-	-	-	-	2	2
23/- to 24/-	-	2	-	1	1	4
24/- to 25/-	-	2	1	2	1	6
Over 25/-	-	2	3	1	1	7
TOTAL	2	15	8	6	5	36

This table shows that there was a considerable range in prices obtained within each yield group - but more important it shows that none of the higher yielding crops suffered because of poorer prices.

Since it has been shown that high yields are often associated with earliness of cropping, which may account for the high average prices obtained by these crops, a comparison of the monthly prices obtained for the highest and lowest yielding crops in the 1964 sample are given in the table below. The average figures from 12 costings which were available in that year are also shown.

TABLE 10

MONTHLY PRICES AND GRADING RESULTS - 1964 CROP

	AVERAGE	HIGHEST YIELD	LOWEST YIELD
Number of Records	12	1	1
Yield - cwt. per 100 feet	30	51	23
Monthly Prices per 12 lb.	s. d.	s. d.	s. d.
April	53 9	57 7	- -
May	42 3	44 3	40 10
June	24 6	24 5	23 1
July	17 5	16 4	19 7
August	15 11	16 4	14 2
September	15 5	17 9	15 7
October	15 1	12 5	20 4
November	8 8	- -	18 10
Total	20 1	21 1	21 7
Grading Results	%	%	%
A's	68	72	72
B's	20	10	9
Others	12	18	19
Total	100	100	100

There was little to compare in the average prices obtained each month either between the highest and lowest yielding crops or as between these and the average of the sample. The grading results were also very similar. Since it must be assumed that tomatoes which are sold on an entirely free market in this country will reflect differences in the quality of fruit these would appear to counter any argument that high yields are necessarily inconsistent with the production of quality fruit.

Other Factors

The results of this investigation have emphasised the need for high yields. Although the importance of maintaining a high standard of cultural management throughout the season has already been mentioned it has not been possible to examine the many technical details involved and nothing has been said about the various conditions under which the crops were grown. Certainly in some cases the condition of the glasshouses, the efficiency of the heating system and the situation of the glasshouses particularly with regard to light conditions left much to be desired. But while every effort must be made to improve the conditions under which the crop is grown the over-riding consideration is still the skill of the individual grower.

COSTING METHODS AND CHARGES

The following describes the method of costing and defines the costing terms used in the tomato cost investigation.

The costings were done by the "enterprise cost" method, with actual expenditures used if possible and, lacking these, estimates inserted.

The items of cost in tomato production fall into two categories. There are, in the first instance, those items termed "direct costs" i.e. items used exclusively for the production of tomatoes. Next come other items of expenditure which cannot be charged solely to the tomato crop and to which the grower may be committed no matter what crops are grown. In many cases this has meant a sharing of these between the costed crop and the other crops grown on the nursery. The sharing of glasshouse charges was made on the basis of the area and time occupied by the different crops grown under glass. An estimated charge was also made to cover the share of general expenses on the holdings.

Retail Sales. Where tomatoes were sold retail the costs and returns were different from those sold in the wholesale markets. As this study was not intended to compare these different outlets all retail sales have been converted to a wholesale basis.

Area Costed. In all cases the total area of tomatoes grown on the nursery was costed. The results have been presented per 100 linear feet of glass (x 16 feet) and per 12 lb.

Yield. Is the total quantity of tomatoes produced given in cwt. per 100 feet of glass.

Direct Costs (defined above). In order to standardise presentation only materials and other "out of pocket" expenses have been treated as direct costs. All other expenditure has been treated as "fixed costs". Labour is shown separately and it must be stressed that in individual cases some of the labour cost may be a "direct cost".

Plants. Purchased Plants were charged at cost; home-reared at estimated cost.

Manures. Covers the full cost of all fertilisers, organic and inorganic, solid and liquid, used on the tomato crop, with no allowance made for residual values in this or earlier crop years.

Contract Work - Sterilising is the cost of hire of boiler with or without attendants.

Insecticides, etc. Includes the cost of all sprays, dusts, fumigants, smokes, fungicides, sterilising fluids, etc. used.

Baskets. Includes all packing materials, lids, paper, etc. A charge was inserted to allow for tomatoes sold retail or sold to shops.

Hired Labour. Both regular and casual labour employed on the tomato crop was charged at actual wage rates, with National Insurance, perquisites, etc. allowed for and with an additional 7% to allow for holiday and sick leave. No labour charge has been made for time spent retailing.

Grower and Family Labour. is an estimated cost of the work done by the grower and his family. This was charged at the average wage rates for horticultural workers or in consultation with the grower.

Tractors, Rotovators etc. Covers the estimated costs of all machinery (tractors, rotovators, etc.) used for tomatoes. A standard rate of 4/3d. per hour was charged for all tractor and rotovator work to cover the full cost including depreciation and repairs.

Glasshouses and Equipment Expenses. Being the costs (or share) for glasshouses, fixed heating equipment, etc. are shown under the following headings:-

Repairs and Maintenance. Includes the costs of all "normal" repairs and maintenance carried out. It excludes items of capital expenditure or major repairs.

Major Repairs. Is an estimated average annual share of repairs and overhauls which were substantially larger than routine and yet did not represent true capital expenditure.

Depreciation(1) On glasshouses and fixed heating equipment was charged on the basis of current replacement value written down by the number of years that have elapsed since actual erection or substantial rebuilding. Only current replacements, therefore, were charged at actual cost. A depreciation rate of 5% of the written down value was used.

A depreciation rate of 15% was charged on the actual costs of all other equipment including: grading and sorting machinery, sprayers, irrigating equipment, etc.

Insurance. Covers only special insurances on glasshouses, boilers, etc.

Share of General Expenses (= overheads). Is a share of the general costs of running the business, a part of which must be charged to the tomato crop. In the absence of full financial figures for the individual holdings, it was

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(1) For the 1962 costing a 20 year life as the "write down" period on the original cost of the glasshouses and fixed heating equipment - on the equal annual instalment method - was used. In some cases this resulted in no charge being made.

necessary to make an estimated charge for the items included under this heading. Based on information from a small sample of horticultural accounts, a charge of 6/- per £ of labour cost was used in most cases for the 1963 and 1964 costings.

This charge includes shares of:-

1. Land rental - actual or estimated.
2. Rates, general insurance.
3. Lorry, van, and car expenses.
4. General carriage expenses.
5. Depreciation on general equipment, packing sheds, etc.
6. Repairs to general equipment, roads, buildings, etc.
7. Small tool replacements.
8. General business expenses, telephone, accountancy fees and sundry small expenses.

In the 1962 costing an attempt was made to obtain these figures from the financial accounts on the holding.

Gross Revenue. Is the total return from tomatoes at wholesale prices. All retail or semi-wholesale sales were re-priced to wholesale rates based on the D.A.F.S. Market Report weekly prices at Glasgow market.

Net Revenue. Is the "gross revenue" less the market expenses for carriage, commission and handling by the broker and crate hire (if any). In the case of retail sales a charge of 10% of the gross revenue was made to cover normal wholesale marketing expenses.

Gross Margin. Is the difference betweem "gross revenue" and "direct costs" as defined above.

Surplus (or Deficit). Is the difference between "gross revenue" and total expenditure, with expenditure including an estimated charge for any work done by the grower and his family, and an estimated share of holding overheads.

APPENDIX TABLES

TABLE I

Margin over Fuel Costs - per 100 feet. Net Revenue less Fuel Costs for heating. Crops arranged in sequence by this Margin.

1962 - Specialists

Sequence Number	Margin over fuel costs per 100 feet £'s	Fuel Cost per 100 feet £'s	Type of Fuel used	Yield tomatoes per 100 feet cwt.
1	402	65	oil and coal	50
2	229	60	coal	30
3	108	70	coal	26
4	100	59	coal	22
5	99	63	coal	20

1962 - Non-Specialists

1	195	62	oil	35
2	155	66	oil	22
3	146	76	coal	27
4	117	72	coal	23
5	78	59	coal	18

1963 - Specialists

1	450	82	oil and coal	51
2	352	89	oil	41
3	247	57	oil	27
4	153	37	oil	20
5	140	53	oil	23
6	139	62	oil	25
7	44	85	coal	15

1963 - Non-Specialists

1	245	48	oil	26
2	220	48	oil	25
3	164	62	oil	25
4	160	65	oil	20
5	134	84	coal	22

TABLE I (Continued)

1964 - Specialists

Sequence Number	Margin over fuel costs per 100 feet £'s	Fuel Cost per 100 feet £'s	Type of Fuel used	Yield tomatoes per 100 feet cwt.
1	430	70	oil	51
2	318	69	oil	41
3	277	53	oil	31
4	192	50	oil	28
5	189	41	oil	27
6	187	62	coal and oil	25
7	107	68	oil	23

1964 - Non-Specialists

1	285	54	oil	33
2	264	60	oil	31
3	263	36	oil	33
4	244	41	oil	27
5	170	59	oil	23
6	140	74	coal	25
7	121	81	coal	23

TABLE II

AVERAGE COST OF PRODUCTION - PER 100 FEET - 1962-1964

Figures in £'s and decimals

	ALL COSTINGS			SPECIALISTS			NON-SPECIALISTS		
	1962 £'s	1963 £'s	1964 £'s	1962 £'s	1963 £'s	1964 £'s	1962 £'s	1963 £'s	1964 £'s
Direct Costs	105.3	109.7	104.6	104.2	110.8	107.3	106.5	108.1	102.0
Labour									
Hired Workers	22.5	29.7	30.8	23.6	33.7	32.5	21.3	24.1	29.0
Family Labour	6.3	8.8	5.3	12.6	12.7	8.0	-	3.2	2.7
Grower and Wife	38.8	42.9	42.5	31.8	40.3	43.4	45.9	46.7	41.5
Total	67.6	81.4	78.6	68.0	86.7	83.9	67.2	74.0	73.2
Tractor & Rotovator Work	neg.	0.1	0.3	neg.	0.1	0.3	neg.	0.1	0.3
Glasshse & Equip. Charges									
Depreciation	5.9	12.5	11.9	4.1	13.0	14.1	7.6	11.8	9.6
Repairs & Maintenance	3.5	2.9	4.2	2.5	1.7	4.0	4.4	4.6	4.5
Major Repairs	3.9	3.6	3.7	4.3	3.3	4.0	3.6	4.1	3.5
Insurance	-	1.1	1.4	-	1.0	1.4	-	1.1	1.4
Total	13.3	20.1	21.2	10.9	19.0	23.4	15.6	21.6	18.9
Share of General Expenses	11.1	23.2	21.6	9.7	23.7	21.2	12.6	22.4	22.0
TOTAL FIXED COSTS	92.0	124.8	121.7	88.6	129.5	128.8	95.4	118.1	114.4
TOTAL COST	197.3	234.5	226.3	192.8	240.3	236.1	201.9	226.2	216.4
Total Cost per 12 lb.	16/9	20/10½	16/10	15/6	20/1	16/7	17/8	22/-	17/1½

TABLE III

COSTS, RETURNS AND SURPLUS - PER 100 FEET - 1962-1964

	ALL COSTINGS			SPECIALISTS			NON-SPECIALISTS		
	1962	1963	1964	1962	1963	1964	1962	1963	1964
	£'s	£'s	£'s	£'s	£'s	£'s	£'s	£'s	£'s
GROSS REVENUE	256.4	293.8	317.4	280.6	315.7	333.8	232.2	263.1	301.0
Less Commission, etc.	23.8	25.7	27.7	25.0	28.0	28.8	22.6	22.6	26.5
Carriage	4.4	3.3	4.3	4.4	3.4	4.4	4.3	3.0	4.2
NET REVENUE	228.2	264.8	285.4	251.2	284.3	300.6	205.3	237.5	270.3
Less Direct Costs	105.3	109.7	104.6	104.2	110.8	107.3	106.5	108.1	102.0
GROSS MARGIN	122.9	155.1	180.8	147.0	173.5	193.3	98.8	129.4	168.3
Less Fixed Costs:-									
Labour & Rotovator Work, etc.	67.6	81.5	78.9	68.0	86.8	84.2	67.2	74.2	73.5
Glasshse & Equip. Charges	13.3	20.1	21.2	10.9	18.9	23.4	15.6	21.6	18.9
Share of General Expenses	11.1	23.2	21.5	9.7	23.8	21.2	12.6	22.4	22.0
SURPLUS	30.9	30.3	59.1	58.4	44.0	64.5	3.4	11.2	53.9

TABLE IV

DETAIL OF GLASSHOUSE AND EQUIPMENT CHARGES - PER 100 FEET - 1964

Figures in £'s and decimals

	ALL COSTINGS	SPECIALIST	NON-SPECIALIST
	£'s	£'s	£'s
Glasshouse:-			
Depreciation	8.6	10.0	7.4
Repairs and Maintenance	2.8	2.6	3.0
Major Repairs	2.2	2.3	2.0
Insurance	0.7	0.6	0.8
Total	14.3	15.5	13.2
Equipment:-			
Depreciation	3.2	4.0	2.3
Repairs and Maintenance	1.4	1.4	1.5
Major Repairs	1.6	1.7	1.4
Insurance	0.7	0.8	0.5
Total	6.9	7.9	5.7
Total Glasshouse and Equipment Charges	21.2	23.4	18.9

TABLE IV

DETAIL OF GLASSHOUSE AND EQUIPMENT CHARGES - PER 100 FEET - 1964

Figures in £'s and decimals

	ALL COSTINGS	SPECIALIST	NON-SPECIALIST
	£'s	£'s	£'s
Glasshouse:-			
Depreciation	8.6	10.0	7.4
Repairs and Maintenance	2.8	2.6	3.0
Major Repairs	2.2	2.3	2.0
Insurance	0.7	0.6	0.8
Total	14.3	15.5	13.2
Equipment:-			
Depreciation	3.2	4.0	2.3
Repairs and Maintenance	1.4	1.4	1.5
Major Repairs	1.6	1.7	1.4
Insurance	0.7	0.8	0.5
Total	6.9	7.9	5.7
Total Glasshouse and Equipment Charges	21.2	23.4	18.9

TABLE V

MONTHLY NET REVENUE - PER 100 FEET - 1962-1964

Figures in £'s and decimals

	ALL COSTINGS			SPECIALISTS			NON-SPECIALISTS		
	1962	1963	1964	1962	1963	1964	1962	1963	1964
Number of Records	8	9	12	4	5	6	4	4	6
	£'s	£'s	£'s	£'s	£'s	£'s	£'s	£'s	£'s
April	-	1.2	0.5	-	1.3	1.1	-	1.1	-
May	16.5	27.5	33.9	25.2	34.7	38.2	7.7	18.6	29.6
June	77.9	79.1	86.0	89.0	74.5	78.8	66.9	84.7	93.2
July	75.4	87.3	75.8	84.1	87.4	72.6	66.7	87.2	78.9
August	39.1	40.1	45.3	46.2	43.5	54.7	32.1	35.9	36.0
September	15.7	17.8	24.4	17.9	23.5	32.8	13.6	10.6	16.0
October	6.2	5.3	5.7	7.0	7.6	7.6	5.3	2.5	3.8
November	-	0.1	0.9	-	0.2	0.4	-	0.1	1.4
Total	230.8	258.4	272.5	269.4	272.7	286.2	192.3	240.7	258.9