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Potatoes - Cost of production

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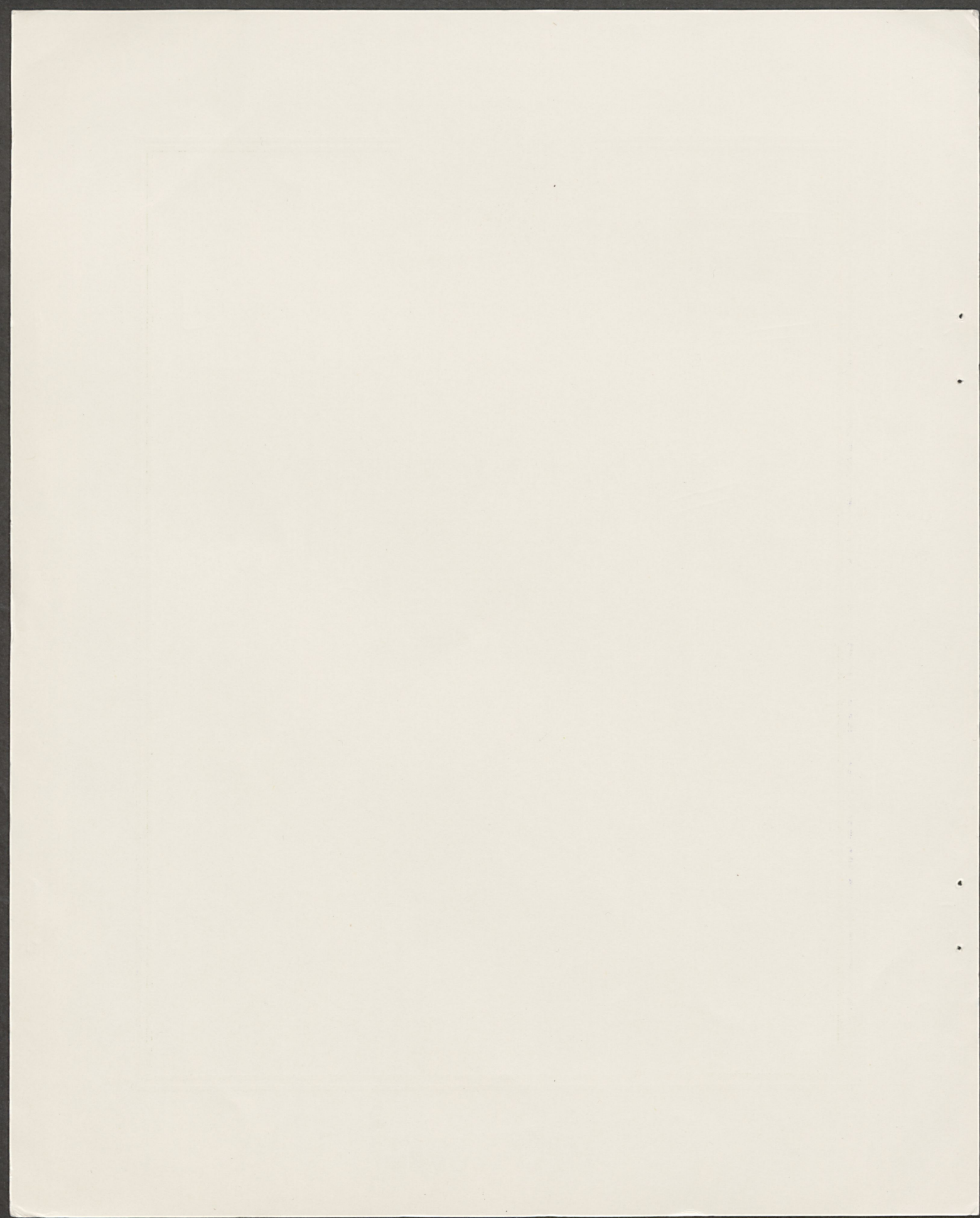
FEB 29 1968

**MAINCROP POTATO PRODUCTION  
IN LANCASHIRE  
AND SHROPSHIRE, 1965**

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BULLETIN No. 119/EC63

Price: FOUR SHILLINGS



UNIVERSITY OF MANCHESTER

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MAINCROP POTATOES IN LANCASHIRE AND SHROPSHIRE, 1965

by

K. L. Mathias

November, 1967



## MAINCROP POTATOES IN LANCASHIRE AND SHROPSHIRE, 1965

### INTRODUCTION

"The average yield of early and maincrop potatoes in Great Britain . . . in 1965 . . . was 10.2 tons per acre, or 1.1 tons per acre above the previous record of 9.1 tons achieved in 1962 and 1964."

Taken at its face value this statement in the 1966 Report of the Potato Marketing Board would appear to offer good reason for self congratulation by the farmers concerned. Unfortunately, as they themselves know only too well from the experiences of past years, with planted acreages running at the present level and the inelasticity of demand for potatoes, high yields inevitably bring marketing problems in their train. The 1965 crop proved to be no exception to the rule. Total production from a planted acreage of 680,000 acres amounted to 6.95 million tons; some three-quarters of a million tons more than the estimated current demand for ware potatoes of 6.1 to 6.2 million tons.

It was evident early in the season that the crop was going to be a heavy one, and this knowledge coupled with the heavy pressure to sell, kept down prices to producers. The start of the maincrop lifting, for example, found Majestics selling at £8 to £10 and King Edwards at £11 to £14 per ton, compared with £10 to £14 and £14 to £19 respectively in the previous year. In order to steady the market the Potato Marketing Board took advantage of the greater flexibility of the new market support arrangements

and operated, in all, three buying programmes, as shown below.

<u>Buying programme</u>		<u>Tons</u>
<u>First</u>	1st September to 31st October	204,121
<u>Second</u>	1st December to 15th January	476,089
<u>Third</u>	1st March to 11th March	<u>102,430</u>
Total		782,640

In addition, riddle sizes were prescribed as follows:-

## Riddle Sizes

Date	Minimum riddle		Maximum riddle
	Reds	Whites	All varieties
1st August	1½"	1½"	-
30th August	1½"	1¾"	-
15th November	1½"	1¾"	3⅛"
26th April	1½"	1½"	-

The effective result of the interplay of market forces and Board intervention was an average market price for the 1965 crop of £14-4s.-0d. per ton, one shilling less than the guarantee price of £14-5s.-0d. per ton. Given an average yield of 10.2 tons per acre, average returns would amount, therefore, on this reckoning, to approximately £145 per acre. Comparable figures for the previous five years would be:-

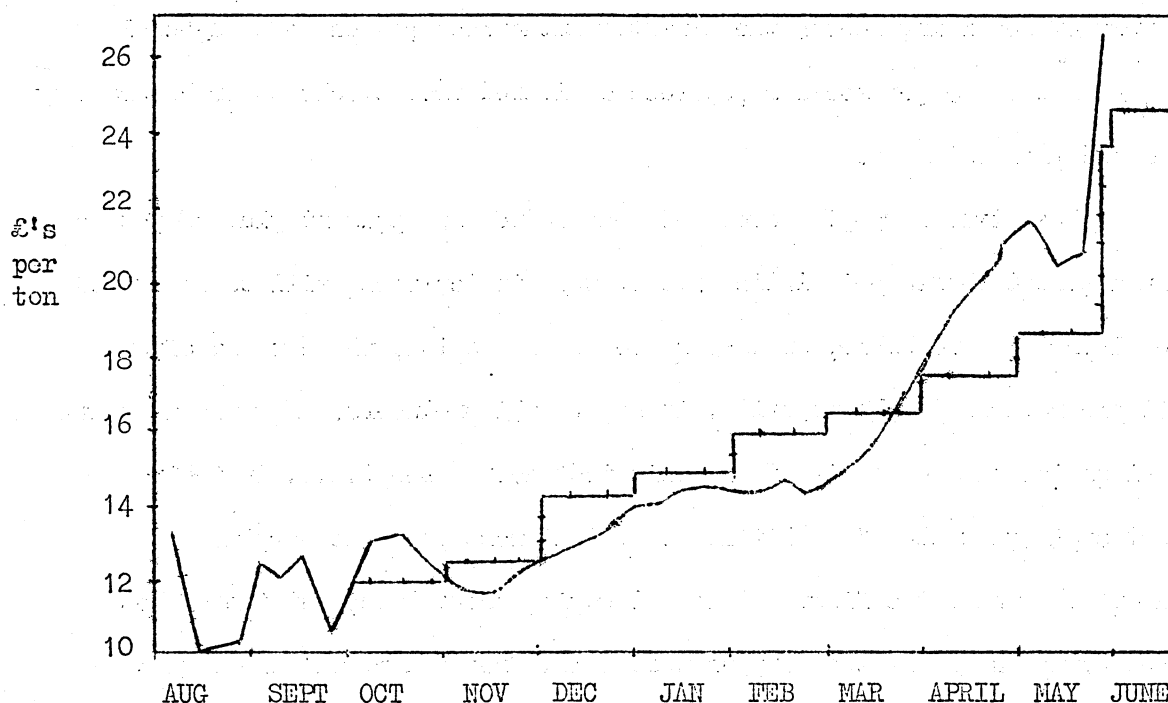
	1960	1961	1962	1963	1964	1965
Yield (tons per acre)	8.7	9.0	9.1	8.6	9.1	10.2
U. K. average market price per ton	£11.75	£18.05	£18.05	£15.0	£14.05	£14.2
Average return per acre	£102.2	£164.3	£164.3	£129.0	£127.9	£144.9
Total Gt. Britain acreage	742	628	660	687	706	680
(All growers, '000 acres)						

received by producers in relation to the Potato Marketing Board prices.

buying programme, and the practice of manufacturers, of buying potatoes

Average weekly producers' prices for ware potatoes

- Great Britain - 1965 Crop.



Average weekly price .....

P.M.B. price

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Source: P.M.B. Annual Report 1966.



at that time to store, were probably contributory causes of the temporary rise in October. The consequent drop in November was followed by a gradual rise until the middle of January. The cessation of the Board's second buying programme on 15th January coincided with a period during which, especially since the development of cheap convenient indoor storage, many producers prefer to riddle out their potatoes. The resulting pressure of supplies and, according to the P.M.B., the belief among the trade and producers that a surplus still existed, kept prices level until early March, when, after a third short buying programme they began to rise rapidly. An unusually high rate of deterioration in store due to weather conditions and poor keeping quality accelerated the rise. In order to encourage delivery of remaining stocks the Ministry authorised payment of a special dressing fee of £5 per ton for potatoes delivered from stocks under contract to the Board from 28th May.

This transformation over the season from an apparent glut of potatoes to an apparent shortage is indicative of the difficulties still to be overcome in evolving some workable, orderly system of marketing, which would offer equitable returns to the majority, if not to all producers. How was it that the situation changed as it did in this instance? The P.M.B. in their Report state that they "had little doubt that more than the surplus had been offered under the first and second buying programmes; but the market was behaving as though the surplus were still free and it was clear that there was little confidence amongst producers that the position had been rectified." The third short buying programme apparently re-assured producers,

pressure to sell eased and prices began to rise steadily: The unexpectedly high rate of deterioration in May, mentioned earlier, accelerated this price rise. One of the main factors here appears to be the reluctance of the trade and the producers to believe that the surplus had been removed. Presumably this reluctance arose from inadequate market information or lack of confidence in that which was available.

The United Kingdom average market price per ton was £14.2; the average market price per ton realised by the survey farmers was £13.3, a difference of 18 shillings per ton, or, on a 10 ton per acre crop, £9 per acre. This is no mean amount to forfeit, especially when the bulk of the work and expense has been already incurred in getting the crop to the marketable state.

Examination of the prices received by the survey farmers revealed the distribution shown in Table I<sup>(1)</sup>. The average monthly prices received by producers in Great Britain are shown in Table II. Both tables illustrate the large range in the prices received by the producers which obtained for the 1965 crop. When one considers that average farm yields of ware potatoes varied from 6.6 to 19.7 tons per acre, and that such factors as weight loss and deterioration in store and maximum and minimum riddle sizes can also have a considerable effect on the weight of potatoes sold, one can sympathise with the producer in his task of estimating possible returns. The problem is further complicated by the often unforeseeable circumstances in which the individual producer may find himself after harvest. Financial pressures may require him to sell. His farm organisation may be such as to preclude work on the potatoes at certain periods during the selling season. It may be that because of weather conditions, disease, or other reason the keeping quality of the crop is suspect. Contracts or agreements with merchants or other outlets may require to be honoured. There

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(1) Tables are collected together at the end of the report (Appendix I).

may be uncertainty of future market prices. These are but a few of the factors to be taken into account in the decision as to when or at what price to dispose of the crop. And, of course, one of the main problems facing the P.M.B. must be the forecasting of the results of such decisions nationally.

Such then is the background against which the results of the following survey must be considered.

MAINCROP POTATO PRODUCTION ON 48 FARMS IN SHROPSHIRE AND S.W. LANCASHIRE  
IN 1965

Sample

The survey was concerned with the production of maincrop potatoes on twenty-three farms in S.W. Lancashire and twenty-five farms in Shropshire.

The farms ranged in size from 60 to 1,000 acres and the acreages of maincrop potatoes from 6 to 114 acres. On average, the crop occupied 12 per cent. of the total farm acreage on the Lancashire farms and 8 per cent on the Shropshire farms. The distributions of the individual farm total potato acreages (including earlies) and the maincrop acreages are shown in Table III.

In Table IV are given the cropping details for what might be termed, for the purposes of the Survey only, "average farms" for the two counties. The Shropshire farms generally were much the larger farms but there was little difference in the proportion of the arable acreage devoted to the crop - 17 per cent. in Shropshire and 18 per cent. in S.W. Lancashire.

Weather

Weather conditions in the early part of the year were reasonably good, though cold, and the crop in general was planted in good order in April and early May. The weather continued cold into early summer and emergence was delayed. Better growing conditions followed and the crop bulked rapidly. Heavy rain in late September and early October made harvesting difficult but from mid

October conditions improved and enabled the majority of farmers to complete their potato harvest satisfactorily.

#### Average Costs and Returns

Summaries of average costs and returns for the two counties, separately and together, are given in Tables V and VI. This information is limited in its usefulness in that it does not represent one particular method or set of practices for potato production but a composite of many methods and practices. This point is stressed particularly with regard to the "Gross Margins" figures which are averages of results achieved under different conditions and cannot be used for advisory purposes.

The extent to which total costs and net margins per acre varied on the survey farms can be seen in Table VII, which gives the distribution of these figures in relation to each other. The relationship between yield and net margin is also clearly illustrated.

Such a range of costs merits investigation of certain individual items. For ease of reference in this report, items such as seed, fertilisers, sprays, will be called material inputs; labour and machinery and similar costs will be called operational inputs.

#### Material Inputs

##### (a) Seed

The main varieties and the grades of seed used on the farms in the survey are shown in Table VIII. Under the heading "other varieties" are included no fewer than 12 varieties, many of which, such as Pentland Crown and Pentland Dell, are comparatively new and as yet expensive. Certified seed of the named varieties varied in price from £19 to £35 per ton, the average being £25.6. The variety Record was an exception in that on the survey farms it was grown

solely on contract for crisping and the seed cost £28 per ton. Up to £53 per ton was paid for Pentland Crown and £49 per ton for Pentland Dell by farmers whose main intention was to retain a good proportion of the crop as once grown seed for the following year.

A much bigger proportion of certified seed was planted in S.W. Lancashire than Shropshire. This may be due partly to the practice, widely adopted in S.W. Lancashire, of cutting the seed. On many farms this was done by casual labour, mostly women, at an average cost of £3-2s.-0d. per ton. Cutting the seed resulted in an average seed-rate of 14 cwt. per acre, compared with 19.2 cwt. on farms planting whole seed; a saving of 5.2 cwt. per acre, which, at an average price of £26 per ton, reduced the cost per acre of such seed by £4-12s.-0d.

Forty-three per cent. of the total acreage was planted with chitted seed. This acreage was mainly confined to the larger growers. On one farm only was a glasshouse used for this purpose. On the remainder chitting was done in a variety of adapted buildings with fluorescent lighting and usually some form of electrical heating and ventilation. The average cost of chitting amounted to £3-16s.-0d. per ton, made up as follows: annual share of cost of building adaptation and fittings, thirteen shillings; annual cost of chitting-box replacement, twenty-five shillings; fuel thirteen shillings; labour twenty-five shillings.

(b) Artificial Fertilisers.

Because of the variety of compound fertilisers now available, the rates of application are better expressed in units of nitrogen, phosphate and potash, (N, P, and K). The average application per acre for the whole sample was 125 units of N, 118 units of P and 193 units of K, an approximate ratio of 1:1:1½, which is the ratio usually recommended for average conditions of soil

fertility. Compound fertilisers of this ratio of constituents were used by over three-quarters of the farmers. On the remainder of the farms the N to K ratio was maintained but the P content was decreased. Over two-thirds of the farmers applied between 170 and 220 units of K per acre.

Placement drilling of artificial fertilisers has been advocated for some years as a means of reducing cost. Placement drilling at the time of planting, using a fertiliser attachment on the planter, was practised on nine farms. On four farms the fertiliser attachment was on the ridger and the fertiliser was applied in the ridge prior to planting. On the remaining thirty-five farms the fertiliser was put on with either a broadcaster or a plate drill during the seed-bed cultivations. The thirteen farmers who did practise fertiliser placement did not in fact economise to any appreciable extent in the use of fertilisers. The average application on these farms was 125 units of N, 108 units of P and 182 units of K, which is very little different from the sample averages stated previously. It was not possible from the survey results to justify or decry placement drilling at this rate as yields from the farms concerned varied from under 7 tons to over 19 tons of ware per acre.

#### (c) Farm Yard Manure

The evaluation of the worth of or the necessity for F.Y.M. for potato-growing is a contentious question which will be avoided in this report because of lack of evidence. Details of the accounting method used are given in the costing data in Appendix III.

F.Y.M. was applied for the potato crop on thirty-seven of the forty-eight farms, at rates ranging from six tons to twenty tons per acre. On five Lancashire farms it was purchased at 22/6d per ton delivered and on the other thirty-two it was produced on the farm.

Experimental work on the potato crop has shown that an application of 10 tons per acre of F.Y.M. may be accompanied by a reduction in compound fertiliser use of three cwts. per acre without affecting yield. The average dressing on the farms in the survey was  $13\frac{1}{2}$  tons per acre and the compound fertiliser used on these farms was less by the equivalent of two cwts. per acre of a 12.12.18 fertiliser than on the "no - F.Y.M." farms.

Average yields of ware on the "F.Y.M." and "no - F.Y.M." farms were 10.5 tons and 10.3 tons per acre respectively.

#### (d) Sprays

For the purposes of the survey the term 'sprays' covers insecticides, herbicides, fungicides and chemical haulm destruction.

##### (i) Insecticides

A total of 116 acres on six farms were dressed against wireworm. Costs ranged from 30 shillings to 60 shillings per acre.

Systemic insecticides were used on 66 acres, on three farms, mainly for protection against aphid attack, at an average cost of £2-18s.-0d. per acre.

##### (ii) Herbicides

There is now considerable interest in the use of herbicides to reduce or eliminate cultivations after planting. It is believed that the elimination of mechanical damage to the plants, and the reduction in moisture losses from the soil can result in a better growth of potatoes and hence in improved yields.



Eight farmers in the survey used herbicides, on a total of 237 acres, at an average cost of £2-5s.-0d. per acre. Three of the eight farmers used a residual type herbicide and the other five a contact type. In the event only two of the eight farmers were able to dispense completely with inter-row cultivations.

Varying amounts of mechanical and hand work were performed on the other six farms. It may be that this was due rather to the failure of the farmers concerned to master a new technique than to the inefficiency of the herbicide.

(iii) Fungicides

Ministry warnings of the danger of blight were given in late July and by early August two-thirds of the potato crop in the survey had been sprayed at least once with a fungicide. The incidence of spraying is given in Table IX. The average cost of materials only was 18 shillings per acre for each application. On two-thirds of the sprayed acreage on the Lancashire farms the spraying was done on contract by either a fixed wing or a helicopter aircraft. Normal charges for this work were £3, £5 and £7-10s.-0d. per acre for one, two and three applications respectively, this charge including the cost of the materials. For this report these charges have been split up between spray materials and contract work.

(iv) Chemical haulm destruction

Chemical haulm destruction was carried out on 27 farms by the farm staff at an average cost for materials of £2-6s.-0d. per acre. On four farms the work was done by a contractor at a charge of £3-10s.-0d. per acre, including materials. On the majority of the remaining farms the haulm was killed mechanically with a pulveriser or similar implement.

### Operational Inputs

Material inputs can, by their nature, be discussed individually.

Operational inputs, by which is meant in this context the use of labour and machinery, cannot be divided for discussion with the same freedom. The operations performed in growing and harvesting a crop of potatoes, for example, are accomplished by a combination of labour and machinery and there is little point in comparing, say, the crop manual labour requirements on the farms in the survey without reference to the type and capacity of the equipment in use.

Operational inputs fall naturally into four seasonal groups.

- (a) Preparation of seed.
  - (b) Pre-harvest operations.
  - (c) Harvesting.
  - (d) Post-harvest operations.
- (a) Preparation of seed.

Chitted seed was used on 43 per cent. of the survey acreage. The necessary operations of boxing the seed and storing the boxes in the chitting house usually took somewhere between two and four manhours per ton, depending upon the care taken in boxing and the accessibility of the chitting house. Attention to the seed afterwards occupied from very little to as much as four manhours per ton where the seed was 'paved' or desprouted. Cutting the seed, practised solely on the Lancashire farms and done usually by casual labour, took from eight to twenty manhours per ton, depending mainly on the size of the seed.

Automatic planters were used on five farms and on four of these farms the seed was riddled and graded so that the planters would work more efficiently. This usually took about two manhours per ton.

(b) Pre-harvest operations

This group includes all operations, except the spreading of F.Y.M., from the initial ploughing up to, but not including, haulm destruction prior to harvest. Individual farm requirements for manual and tractor labour ranged from as low as 10 manhours and 7 tractor hours to as high as 42 manhours and 24 tractor hours per acre. A simple average of the results would be 23 manhours and 14 tractor hours per acre. There are many circumstances which may be held to account, either wholly or in part, for this large variation in labour use from farm to farm. The type of soil, the cleanliness of the fields, weather conditions, the timeliness of the cultivations, are but a few of the more obvious ones which have a direct bearing on the amount of work to be done. Of equal and possibly greater importance, however, was the effect of farm size. The lower labour requirements were found mainly on the larger farms, and vice versa. The advantage of size in this connection, as instanced by the survey, arose in various ways. Individual fields were larger and the proportion of 'waste time' on headlands etc. decreased. The potato acreages were large enough to warrant the purchase of specialised labour-saving equipment such as automatic planters and combined scarifiers and moulders. And possibly the most important advantage was the ability of the larger farms to justify the running of the more powerful tractors and high-capacity equipment now available with the consequent saving in time spent on the crop.

(c) Harvesting

Complete harvesters were used on 35 farms in the survey and 70 per cent. of the crop was harvested in this way. On the remaining 15 farms the potatoes were picked by hand, the pallet-box system of handling the harvested potatoes being used on three of the farms.

The labour and tractor requirements of the three harvesting methods are given in Table X. On four of the farms on which harvesters were used the potatoes were sold off the field with a consequent saving in labour in not having to haul and store the potatoes. These farms have been put into a separate group so as not to invalidate the comparisons between the other groups.

The table reveals that on average the requirement for casual labour was some thirty hours less when a complete harvester was used than when the potatoes were picked by hand. At the then prevailing rate of four shillings per hour this represents a direct cash saving of £6 per acre, against which has to be set the additional annual depreciation and repair costs of the harvester. Whether the purchase of a harvester is financially attractive or not depends upon the degree of use to which it is put. Obviously the larger the acreage worked by the harvester, the lower will be the annual cost per acre. Financial consideration at this point may not however be the main factor. On the one hand farmers in some areas where casual labour is scarce have had to mechanise the harvest if they wished to continue to grow potatoes, although their acreages would not otherwise warrant it. On the other hand some of the larger growers prefer to harvest their crops by hand because of the faster rate of work. With a well-organised system, using one elevator-digger, it is possible to harvest up to three acres per day compared with the one and a half acres per day averaged with the one-row harvesters in the survey, and with the larger acreages time may be crucial. On heavy land, too, in adverse weather conditions, ~~hand-picking~~ can often go on when the use of a harvester would be difficult if not impossible. The recent introduction of improved two-row machines may be an answer to the first criticism although the second may still remain valid.

With the intention of retaining the flexibility of hand-picking and yet reducing the amount of regular labour subsequently involved in handling the crop, the now-familiar pallet-box system was evolved. Although only three farmers in the survey used this system their labour and tractor requirements per acre were sufficiently consistent to justify their inclusion in Table X, if only for the sake of interest. The reduction in the regular labour requirement was to be expected, for that after all was the point of the exercise. That the casual labour requirement should be less by as much as twelve hours per acre might not have been so readily anticipated. One can hardly draw general conclusions, however, from a sample of three farms.

(d) Post-harvest handling

Over three-quarters of the farmers in the survey put the bulk of their potatoes into store for disposal later in the season. Some form of indoor storage, provided usually by the adaptation of existing buildings at little capital cost, was used on all but three farms on which the crop was stored in clamps in the field. The time spent riddling-out for sale varied somewhat between farms and on the same farm at different times. The size of the gang, the condition of the crop, the capacity of the riddle, the sizes of riddle in use, the layout of the store, were some of the factors which affected the rate of output. An average labour requirement for riddling and loading would be five manhours per ton.

Yields and Returns

Mention was made in the introduction of the large variation in the prices received by the producers in the survey. Potatoes were sold for as little as £9 per ton early in the season and as much as £25 per ton towards the end.

Financial return is a function of price per ton and yield per acre. When one considers therefore, in addition to the variation in price, the range of individual average yields per acre on the survey farms in Table XI, it is hardly surprising to find that the financial returns ranged from £85 to £250 per acre. The distribution is shown in Table XII.

One point that should perhaps be made here is that each individual farm 'return per acre' figure is in itself an average of a number of such figures. Every alteration in the price received per ton, every difference in yield per whatever unit of area is chosen, whether it be acre, field or variety, creates a new rate of financial return. The farmer's problem is to ensure that the overall average return per acre is the maximum possible within the limits of the circumstances in which he has to operate. The nature of these circumstances, as instanced in the introduction, may be such as to preclude the opportunity of maximising his profit margin on potatoes. Nevertheless it would appear that the rewards for skilful marketing can be considerable and fully justify a little thought. The recent rapid growth in potato marketing groups is evidence of the importance attached by the industry to this aspect of potato production.

### CONCLUSIONS.

For the purposes of the survey the sample was weighted deliberately in favour of farms on which complete harvesters would be used to harvest the crop, and does not claim to be representative in the statistical sense of the word. However, this criticism does not affect the obvious general conclusion to be drawn from the report that potato production is a high-cost enterprise in terms of both material and operational costs. A simple average of the total variable costs gives a result of £47 per acre, while the average labour and tractor requirements were 104 manhours and 30 tractor hours respectively. Comparable figures for similar studies of winter wheat and sugar-beet would be - wheat £10 variable costs per acre, 12 manhours, 8 tractor hours; sugar-beet £28 variable costs per acre, 74 manhours, 22 tractor hours.

On the other hand the existence of the Potato Marketing Board does afford a measure of stability in the disposal of the crop. At the same time the chance element of a possibly larger-than-average financial return is greater for potatoes than for, say, cereals or sugar-beet, although the risk of loss is also correspondingly greater - as witness the three crops for which the net margin was over £30 per acre as against the three on which a loss was made.

As often happens in this kind of survey, yield per acre appears to be one of the main factors which influenced the net margin result. Unfortunately attempts to find some correlation between inputs and yield were unsuccessful, presumably because of a variety of factors which could not be assessed in this context, such as soil type, local weather conditions, the standard of husbandry, the impact of disease, and varietal differences.



Certain practices, such as the chitting of the seed and the use of herbicides to reduce inter-row cultivations, have undoubted advantages, but again it was impossible to isolate the effects of such practices in this survey.

Good husbandry is essential to achieve good yields, but skill in marketing is equally essential to achieve the highest financial returns. To this end it is felt that the development and dissemination of accurate market information would be of great value both to the producer and to the Potato Marketing Board, many of whose decisions must surely depend upon such information.

Appendix I

Table I Percentage Distribution of Ware Potato Sales by Weight according to prices realised per ton.: 48 Potato Survey Farms 1965

Price per ton in £	under 10.0	10.0 to 10.9	11.0 to 11.9	12.0 to 12.9	13.0 to 13.9	14.0 to 14.9	15.0 to 15.9	16.0 to 16.9	17.0 and over
Percentage of crop	3.5	5.7	17.3	18.0	15.2	28.7	5.0	5.2	1.4

Table II Average Monthly Producers' Prices for Ware Potatoes.  
Great Britain: 1965 Crop

	Price per ton £		Price per ton £
August	11.1	January	14.2
September	11.9	February	14.5
October	12.5	March	16.4
November	12.0	April	19.8
December	13.3	May	22.2

Source: Potato Marketing Board

Table III Distribution of 48 Survey Farms by Total Potato and Maincrop Potato Acreages, 1965

County	Total Potato Acreage					All Survey Farms
	0 to 25	25 to 50	50 to 75	75 to 100	Over 100	
Lancashire	10	7	5	1	-	23
Shropshire	9	8	5	2	1	25
	Maincrop Potato Acreage					All Survey Farms
	0 to 15	15 to 30	30 to 45	45 to 60	Over 60	
Lancashire	8	7	4	1	3	23
Shropshire	6	9	6	2	2	25

Table IV Average use of land: 48 Survey Farms 1965

Crop	23 Lancashire Farms	25 Shropshire Farms
	acres	acres
Cereals	128	155
Potatoes	35	42
Sugar Beet	7	31
Other arable	21	15
Grass inclu. leys	33	160
Total	224	403

Table V Average Variable and Fixed Costs per acre: 48 Survey Farms 1965

	Shropshire 25 farms	S.W. Lancashire 23 farms	All farms 48 farms	Range
<u>Variable Costs</u>	£	£	£	£
Seed	20.8	18.5	19.7	11.9 to 34.7
Fertilisers	10.8	11.0	10.9	6.2 to 16.0
Sprays	4.2	3.1	3.7	nil to 10.3
Sundries	3.5	3.4	3.4	3.0 to 5.4
Casual Labour	9.6	5.0	7.3	nil to 21.5
Contract Work	1.3	1.9	1.6	nil to 5.0
(A) Total Variable Costs (excluding F.Y.M.)	50.2	42.9	46.6	
<u>Fixed Costs</u>				
Regular Labour	19.3	26.6	23.3	6.8 to 35.9
Tractor Costs	6.2	7.4	6.8	3.0 to 12.1
Machinery & Power Costs	11.7	14.8	13.0	4.4 to 30.5
Rent	5.5	5.8	5.6	3.0 to 9.0
General Farm Expenses	11.0	11.0	11.0	
Total Fixed Costs (excluding F.Y.M.)	53.7	65.6	59.7	
F.Y.M.	12.9	9.3	11.2	
Adjustment for Residual Manurial Value	-7.6	-5.9	-7.0	
(B) Total Adjusted Costs	109.2	111.9	110.5	

Table VI Average Outputs, Gross Margins and Net Margins per acre

48 Survey Farms 1965

	Shropshire 25 farms		S. W. Lancs 23 farms		All farms 48 farms		Range
<u>Output</u>	Tons	£	Tons	£	Tons	£	£
Ware	10.5	136.3	10.4	141.4	10.4	138.7	84.7 to 250.4
Seed	0.3	5.2	0.4	5.7	0.4	5.4	nil to 53.8
Other	1.0	2.6	1.0	2.1	1.0	2.4	nil to 8.3
Total Output	11.8	144.1	11.8	149.2	11.8	146.5	
(A)* Variable Costs		50.2		42.9		46.6	
Gross Margins		93.9		106.3		99.9	
(B)* Total adjusted Costs		109.2		111.9		110.5	
Net Margins		34.9		37.3		36.0	

\* See Table V

Table VII Distribution of 48 Survey Farms by Net Margins per acre and Total  
Costs per acre, 1965

Total Costs per acre £'s	Net Margins per acre £'s						All Farms	Average yields per acre; tons.
	-20 to 0	0 to 19	20 to 39	40 to 59	60 to 79	80 and over		
Under 90	-	-	2	5	1	-	8	9.7
90 to 109	-	6	3	3	-	1	13	9.3
110 to 129	1	4	6	4	3	1	19	11.3
130 and over	2	1	2	2	-	1	8	11.3
Total	3	11	13	14	4	3	48	10.4
Average Yields per acre; Tons.	8.1	8.8	10.0	11.0	12.3	16.2	10.4	

Table VIII

Use of varieties and grades of seed expressed as a percentage of total Potato Survey acreage: 1965

Variety	Lancashire	Shropshire
	per cent.	per cent.
Majestic	18	48
Dr. McIntosh	27	8
Record	7	10
King Edward	20	24
Redskin	18	-
Other Varieties	10	10
	100	100
<u>Grade</u>		
Certified	86	53
Purchased once-grown	-	5
Own once-grown	14	42
	100	100



Table IX Incidence of blight-spraying expressed in acres:  
48 Potato Survey Farms 1965

County	Number of times sprayed					
	Nil	1	2	3	4	5
Lancashire	181	14	290	77	41	-
Shropshire	238	53	206	181	47	54
Total	419	67	496	258	88	54

Table X Average Manual and Tractor Labour Hours per acre  
for Different Methods of Harvesting: 48 Potato Survey  
Farms 1965.

Method of harvesting	Manual Labour Hours			Tractor hours	No. of farms	Total potato acreage
	Regular	Casual	Total			
Complete harvester, potatoes sold off field	30	13	43	13	4	191
Complete harvester, with trailers	29	20	49	18	29	763
Hand-picked, with trailers	27	50	77	17	12	343
Hand-picked, with pallet boxes	18	38	56	16	3	85

Table XI     Distribution of 48 Potato Survey Farms by Yields of Ware Potatoes per acre,  
1965

Yield of ware potatoes; Tons per acre	6 to 7.9	8 to 9.9	10 to 11.9	12 to 13.9	14 to 15.9	16 & over
Number of farms	5	17	19	4	1	2

Table XII     Distribution of 48 Potato Survey Farms by Financial Returns per acre,  
1965

Return per acre in £	75 to 99	100 to 124	125 to 149	150 to 174	175 to 200	Over 200
Number of farms	2	9	17	12	5	3

APPENDIX II

MAINCROP POTATOES - 1965 CROP

The figures in this Appendix are based on 48 records, for 1382.5 acres on 48 farms

TABLE 1

Summary of Average Costs per acre

		£
Regular Labour	69.3 hours	21.3
Casual Labour	33.0 hours (women)	7.2
Power: Tractor	27.9 hours	6.4
Machinery depreciation and repairs allowance		12.3
Contract Services		1.2
Materials		
Seed		20.4
Fertilisers and manures applied		20.6
Sundries		3.9
Rent		5.6
Levy		<u>3.0</u>
Total Direct Costs		101.9
Add Share of General Farm Expenses		10.2
Less Adjustment for Manurial Residues		<u>6.2</u>
Net Costs		105.9

Table 2      Summary of Average Yields and Receipts per acre

	Tons	Receipts £
Sold for ware	10.3	134.3
Retained for Seed	0.4	5.9
Chats and Waste sold or used on farm	0.9	2.2
Total	11.6	142.4

Table 3      Summary of Average Quantities of Materials per acre

Material	Area applied only		Overall average
	Acres	Cwts/Acre	per acre cwts
<u>Seed</u>			
Homegrown	407.0	19.2	) 17.7
Purchased	975.5	17.1	
<u>Fertilisers and Manures</u>			
F.Y.M.	844.5	271.3	165.7
Artificial N	-	-	-
P	-	-	-
K	-	-	-
Compounds	1382.5	10.1	10.1

Appendix III

Costing Methods used in the Survey.

Manual Labour. The hourly rates were based on the actual wages paid on the farms, due allowance being made for holidays, national insurance and pension contributions and overtime working. Work done by the farmer or family was charged at the appropriate rate.

Contract Services. The charges include the hire of the machines and the cost of the operators accompanying the machines. Where spraying was done by contract the cost of the materials was charged under 'sprays'.

Tractor Labour. Tractor labour was charged at standard rates as under.

Wheeled Tractors 4s. 6d. per hour.

Crawler Tractors 10s. 0d. per hour.

Machinery Depreciation and Repairs.

(a) Specialised Machinery and Equipment. An annual charge for depreciation and repairs was made by taking a percentage of the original capital cost.

The rates used for the various types of machinery and equipment are shown below.

Chitting-houses, indoor potato stores and  
associated equipment.

10%

Complete harvesters.

20%

Spinners, elevator-diggers, special potato  
elevators and similar machinery.

15%

Other potato crop equipment.

12½%

(b) General Machinery. A standard charge for depreciation and repairs was made of 6s. 0d. per tractor hour.

Fuel and Power. This cost refers to fuel and power other than that used by tractors.

Seed. Seed was charged at cost if purchased and at estimated sale value if home-grown.

Fertilisers and Manures. Artificial fertilisers were charged at cost net of subsidy; farm-yard manure at £1 per ton plus cost of spreading, if made on the farm; otherwise at cost.

Rent. The actual rent paid by tenant farmers or a rental value for owner-occupied farms.

General Farm Expenses. General farm expenses were calculated as below.

(a) Fifteen per cent of the cost of manual labour plus

(b) Six per cent of the total direct costs (including (a)).

Sundries. Sundries includes the potato acreage levy, sacks, string and other miscellaneous items.

Note: 'Averages'

The information given in the tables on pages 19 to 26 (Appendix I) is derived from averages of farm 'per acre' figures (simple averages).

The information given in the tables in Appendix II is derived by adding the total costs and returns for all farms in the survey and dividing by the total acreage (weighted average).

