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Potatoes -
Cost of
production

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POTATO GROWING IN KESTEVEN. SOME COSTS AND RETURNS IN 1950.

Department of Agricultural Economics,
University of Nottingham School of
Agriculture,
Sutton Bonington, Loughborough.

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INTRODUCTION.

The object of this investigation was to obtain information on the costs of growing potatoes in 1950, the gross returns and profits realised and the most important factors determining profitableness.

Potatoes occupy more land than any other root crop in England and Wales. In 1935 they occupied a quarter of the total acreage under root crops but, although from 1939 there was a rapid expansion in the area devoted to other roots, the expansion of the potato acreage was so spectacular that by 1948 it was $2\frac{1}{2}$ times as great as that of pre-war and represented very nearly half the total root acreage.

The situation was much the same in the East Midlands except that the "other roots" did not expand proportionately to the same extent as in England and Wales as a whole so that by 1948 considerably more than half the total root acreage was devoted to potatoes.

From 1947 the "other root" acreage has been more or less stabilised at a level slightly above that of 1937 to 1939 but from the peak year of 1948 the potato acreage has shown a rapid and continuous downward trend. Even so in 1950 the potato acreage in the East Midlands was more than double that of 1935 and in England and Wales it was just less than double.

In Kesteven, potatoes hold an even more important place. In 1950, of a total root acreage of 74,000 acres potatoes occupied 41,000. In 1935 only about 15,000 acres of potatoes were grown in this area. The expansion for this rapid growth in the importance of potatoes is, of course, that government subsidies and fixed prices favoured their cultivation.

The following figures show the Price Review prices from 1949 to 1952:-

Average Seasonal Prices

	Maincrop - (King Edward and Majestic)	Acreage payment
	per ton.	per acre
	s. d.	s. d.
1949	175. 0.	240. 0. (first 10 acres) 160. 0. (area in excess of 10 acres)
1950	185. 0.	200. 0.
1951 - Prices announced after 1950 Review	224. 0.	nil
1951 - Prices adjusted for Special Price Review	228. 6.	nil
1952	232. 0.	nil

THE SAMPLE

The 22 farms from which records were collected grew potatoes on from 20 to 40 per cent of the total farm acreage and they ranged in size from 54½ acres to 880 acres. Six farms were under 100 acres and eight were between 100 and 200 acres. Although these farms were situated within the 20 miles from Sleaford to just south of Bourne, a district in Lincolnshire on the edge of the fens, the soil varied from black fen to medium loam and light gravel. In all, 36 fields totalling 562 acres were costed.

RESULTS

Main crop potatoes were by far the most important in this investigation, but there were 62 acres of "earlies" lifted in June and July and sold straight off the fields. The average costs and returns shown in Table 1 are overall averages including both earlies and ware.

Most farmers used Scotch or Irish seed, the former being more popular because of lower transport charges. Several varieties of potatoes were used: "Majestic" occupied more than half the acreage investigated but "Home Guard", "Gladstone", "Arran Pilot", "King Edward" and "Doon Star" were also popular. Very small acreages were planted with such varieties as "Ballydoon", "Ulster Chieftain", "Arran Peak" and "Dr. McIntoshes".

AVERAGE COSTS, RETURNS AND MARGINS PER ACRE.
KESTEVEN POTATO INVESTIGATION 1950.

TABLE 1

No. of records	36
Area (acres)	562
Cost of work:	£. s. d.
Manual labour	19.12. 2.
Horse labour	10. 5.
Tractor labour	2.18.10.
Contract machines labour ⁽¹⁾	1. 6. 9.
Total operational cost.	24. 8. 2.
Other costs:	
Rent	2. 8. 6.
Seed	15.19.11.
Fertilisers (net) ⁽²⁾	9. 1. 5.
Miscellaneous (straw for clamping, etc.)	14. 6.
Machinery depreciation and repairs	2. 3. 4.
Overheads	5.14. 3.
Total other costs	36. 1.11.
Total costs	60.10. 1.
Total returns ⁽³⁾	83.12. 1.
Margin	23. 2. 0.
Cost per ton	6. 9. 5.
Return per ton	8.18.10.
Rate of seeding	22 cwts.
Quantity of artificial fertilisers applied	15.87 cwts.
Yield	9.35 tons.

- (1) Cost of spraying. The cost may seem low but is accounted for by the fact that not all the crops were sprayed. This figure is such cost averaged over the total acreage.
- (2) Includes artificials and farm yard manure. A deduction of £4. 2s. 1d. has been made for manurial residues.
- (3) This item does not include the acreage subsidy payment of £10 per acre payable on potatoes in 1950.

The potato crop is obviously expensive to cultivate - in 1950 it cost about £60 to grow an acre of potatoes. This is very high by comparison with the cost of some other crops investigated recently by this Department. In 1950 barley cost only £13 per acre and in 1949 sugar beet cost £46 and wheat £15.10s. 0d. In the growing of potatoes there are three items namely seed, fertilisers and labour which are very expensive and which between them account for four fifths of the total costs. The two first mentioned together represent two fifths and labour, also, represents two fifths of the total costs. This high outlay was justified in 1950, for it showed a reasonable return. Ignoring the subsidy of £10 per acre to which growers were entitled, a margin of £23. 2s. 0d. represents, on an outlay of £60.10s. 1d. a return of 38.2 per cent.

Averages such as those given in Table 1 are not particularly informative for they do not indicate the range of costs and returns within which growers operated. Although the average surplus was more than £23 per acre one field showed a loss of £32.10s. 6d., while another showed a surplus of £51. 5s. 10d. per acre. Within this range the margins of all the fields were distributed as follows:-

RANGE OF MARGINS PER ACRE

TABLE 2

	Number of fields
Deficits	3
Surplus of up to £10	4
" " £10 - £20	7
" " £20 - £30	8
" " £30 - £40	10
" " £40 and over	4
Total	36

It is clear from this table that well over half the fields realised surpluses exceeding £20 an acre and but for the fields which showed deficits (two belonged to the same farmer and must, therefore, be regarded as unusual) the average surplus would have been quite a lot higher; it would, in fact, have been £25.17s. 8d. per acre.

If the costs of the 62 acres of "earlies" are separated from those of the main crop potatoes the results are as follows:-

A COMPARISON OF COSTS AND RETURNS FOR EARLY AND WARE POTATOES 1950.

TABLE 3

	Early	Ware
No. of records	5	31
Acres costed	62	500
Cost of work:	£. s. d.	£. s. d.
Manual labour	16. 9. 6.	21.10. 3.
Horse labour	10. 1.	10. 6.
Tractor labour	16. 6.	3. 4. 3.
Total operational cost	17.16. 1.	25. 5. 0.
Other costs:		
Rent	2.14. 6.	2. 7. 9.
Seed	15.14.10.	16. 0. 6.
Fertiliser (net)	11. 5. 8.	8.15.10.
Miscellaneous costs	-	16. 3.
Machinery depreciation and repairs	1. 7. 3.	2. 5. 4.
Overheads	4.11. 1.	5.17. 2.
Total other costs	35.13. 4.	36. 2.10.
Total costs	53. 9. 5.	61. 7.10.
Total returns	81.12. 2.	83.17. 0.
Margin	28. 2. 9.	22. 9. 2.

Before any conclusions are drawn from this table notice should be taken of the smallness of the sample constituting the "earlies". A sample of only five fields is too small to be representative and therefore any conclusions can be only tentative.

Even so, a comparison of the two sets of results does indicate where some important differences lie. The most obvious is the lower "total cost" of the "earlies". This is very largely due to the lower manual labour costs which can, of course, be traced to the fact that with the early crop, clamping and subsequent riddling is unnecessary. There will also be small savings in such direct costs as straw for clamping.

Another significant point is the similarity in the two figures for "returns". The yields of early potatoes are inevitably lower than those of the main crop but the higher price they realised compensated by bringing their total figure almost to that of the ware. As a result and because of lower costs the margin on the "earlies" was higher than on the ware potatoes by over £5 per acre.

Two minor items in the costs also need explaining. The machinery depreciation and repairs item is smaller on the "earlies" fields than on the others but this is probably only co-incidental. Secondly, the overheads are also lower, due entirely to the method of computation.

VARIATIONS IN COSTS, RETURNS AND MARGINS AND REASONS FOR THE VARIATIONS.

The above figures show how widely the costs, returns and margins varied from farm to farm in this investigation. They do not, however, give an indication of the range of costs which a "normal" grower might incur nor of the returns which he might hope to obtain. For this reason Table 4 has been constructed. The extremely low and the extremely high costs and returns have been omitted and the given figures represent the limits within which 50 per cent of the growers operated - the 50 per cent who had "medium" costs and returns. The fields which showed costs or returns outside these limits have been regarded as unusual for the purposes of this table.

What are some of the reasons for these variations? Costs, naturally, will be influenced by the type and quantity of seed used and the amounts of artificial fertilisers and farm yard manure applied but a much wider field for variations exists in the preferences of individual farmers for deep or shallow ploughing, for the number of cultivations considered to be essential, the necessity or otherwise of hocking to keep the crop clean, their practices in connection with such matters as spraying and whether the planting and lifting were done by hand or by machine. Many of these operations will, of course, be influenced by the soil type and the weather conditions. Then, also, there are costs which are affected by the yield and the method of disposal of the crop. A high yielding crop may entail higher lifting and riddling costs than one with a lower yield and costs will be very much lower when the potatoes are sold straight off the field than when they are clamped.

RANGE OF VARIATIONS OF COSTS AND RETURNS OF SOME OPERATIONS

TABLE 4

Operation	No. of records	Average costs	Limits within which the middle half of records lie	
			From	To
		£. s. d.	£. s. d.	£. s. d.
Ploughing	36	1.16. 4.	1. 5. 0.	2.10. 0.
Pre-planting cultivating	6	8. 9.	5. 9.	15. 8.
Pre-planting harrowing	32	18. 5.	12. 8.	1. 2. 2.
Pre-planting rolling	12	3. 0.	2. 1.	4.10.
Drilling artificials	29	6. 9.	4.10.	7. 2.
Carting and spreading F.Y.M.	20	1. 4. 3.	4. 5.	1. 9.11.
Ridging	27	4.10.	4.10.	6. 4.
Planting potatoes	36	1.11. 8.	1. 4. 2.	1.16. 5.
Splitting ridges	24	6. 1.	5. 0.	7.11.
Post plant harrowing	35	19. 0.	15.11.	1. 3. 9.
Hand hoeing	27	1. 0. 5.	15. 6.	1. 8. 2.
Spraying and dusting	12	4. 1. 3.	3. 0. 0.	3. 5. 2.
Lifting	36	8. 5. 9.	7. 5. 3.	9.10. 0.
Building clamp	30	1. 5. 9.	12. 7.	1.19. 0.
Riddling, weighing and sacking	26	4.12.10.	3. 6. 1.	5.10. 2.
Seed	36	15.19.11.	13.12. 1.	17.15. 5.
Artificials	36	9. 2. 8.	8. 0.11.	10. 7. 0.
F.Y.M.	17	6.17. 5.	5. 5. 0.	10. 0. 0.
Total costs	36	60.10. 1.	52. 3. 5.	67. 6. 4.
Total returns	36	83.12. 1.	70.16. 6.	95.13. 4.
Margin	36	23. 2. 0.	14. 7. 0.	32.13.11.

Returns, for their part, depend upon the yield and the price that can be obtained, the latter being determined, under present market conditions, by the variety of potato, the type of soil in which they are grown and by the month of sale.

As an illustration of how costs can vary for a single operation, merely because of different methods used, a comparison has been made of 127 acres planted by machine with 89 acres planted by hand. The average results per acre are as follows:-

	<u>Planting by Machine</u>	<u>Planting by Hand</u>
	£. s. d.	£. s. d.
Manual labour	1. 3. 4.	1. 5. 11.
Horse labour	-	1. 3.
Tractor labour	7. 10.	-
Machinery depreciation	4. 6.	-
	<u>1. 15. 8.</u>	<u>1. 7. 2.</u>

The charge for machinery depreciation will vary, of course, according to the type of machine used but it has been assumed here that the planter cost £160 in the previous year and that it plants about 80 acres per year.

Another illustration is given below to show to what extent returns may be increased, in this case, by selling when the price is advantageous. The price for Grade B (classes one and two) potatoes in December 1950 was 170s. Od. per ton. A grower by leaving his potatoes in the clamp and selling in April 1951 could then obtain 205s. Od. per ton, or by selling between 18th June and 8th July, 1951 could obtain 240s. Od. per ton. This means that even if wastage due to clamping amounted to 17 per cent by April or to 30 per cent by June he could still realise the same returns as he would have done in December 1950. But, as in fact, his wastage was likely to be far less than the figures given he could have increased his returns by anything up to 70s. Od. per ton simply by waiting six or seven months before selling. It is realised of course that other factors may enter into the situation; for example, the farmer may have to unclamp and riddle his potatoes when he has the labour available, and that may not be the most advantageous time from the point of view of price, or he may be under an obligation to supply a proportion of his crop

to the Ministry of Food at specified dates. Such aspects, however, do not nullify the argument that by choosing, whenever possible, the month of sale quite a considerable advantage can be obtained.

Costs and returns, by themselves, do not tell us very much, however, since high costs can be associated with high or low returns as can be seen from the following table:-

COSTS AND RETURNS PER ACRE. POTATO INVESTIGATION 1950.

TABLE 5

C O S T S	R E T U R N S							Total
	Under £50	£50- £60	£60- £70	£70- £80	£80- £90	£90- £100	Over £100	
£45 - £50	-	1	1	1	1	-	-	4
£50 - £55	2	-	2	-	3	1	1	9
£55 - £60	-	-	1	3	1	1	1	7
£60 - £65	-	-	-	-	-	1	-	1
£65 - £70	1	-	-	3	2	4	2	12
£70 - £75	-	-	-	-	-	-	3	3
Total	3	1	4	7	7	7	7	36

High returns were associated with both high costs and some of the lower costs, but very few of the high cost fields gave low returns. In fact the four records with the highest costs in the investigation were among the half dozen fields showing the highest returns.

To the individual farmer, however, the matter of greatest importance is the extent of the difference between his costs and returns, i.e. the "margin", since it is of little use to have high returns if costs almost equal them. In order to discover the factors which contributed most to the success or failure of this crop a comparison is made below between the six fields of main crop potatoes showing the highest margins and the six showing the lowest margins. The average figures for the two groups are as follows:-

AVERAGE COSTS AND RETURNS PER ACRE OF THE SIX FIELDS OF
MAIN CROP POTATOES WITH THE HIGHEST MARGINS AND OF THE SIX
WITH THE LOWEST MARGINS.

TABLE 6

	Highest (A)	Lowest (B)
Acres	107 $\frac{1}{2}$	72
	£. s. d.	£. s. d.
Operational costs	25. 9. 6.	24. 0. 0.
Rent	2.10. 3.	2. 7. 0.
Seed	18.19. 0.	14.18. 1.
Artificial	8. 8.11.	7. 5. 1.
F.Y.M.	1. 8. 7.	5.15. 0.
Miscellaneous	3. 6.	10. 9.
Total other costs	31.10. 3.	30.15.11.
Net manurial residues	- 3. 4. 0.	- 4. 2.11.
Machinery depreciation and repairs and overheads	7.17.11.	8. 6. 4.
Total net costs	61.13. 8.	58.19. 4.
Total returns	105.18. 8.	52.11. 1.
Margins	44. 5. 0.	- 6. 8. 3.
Yields	11tons 17 cwts	6tons 2 cwts.
Seeding rate	23 cwts.	23 $\frac{1}{4}$ cwts

The most obvious differences between the two groups can be seen in the items "returns" and "yields". In the "A" group the high returns were due to two factors - large yields and fairly high prices (an average of £9. 0s. 0d. per ton as against £8.13s. 0d. in the "B" group). Two crops were able to command only moderate prices but their very high yields gave them high returns per acre.

The low yields in the "B" group seemed to be due, to some extent, to weather conditions. In one field the plants were cut right back to the ground by frost and never really recovered: in two others a severe frost in mid June followed by hot dry weather was the reason given by the farmer for the seed going rotten in the ground. In another a large proportion of the potatoes rotted in the clamp and thus caused a very much reduced yield.

In the only field in this group which gave an average yield an unusually large part of the crop was made up of "seconds" and, therefore, commanded only a low price. In addition, this farmer's returns were reduced because the remainder of the crop was sold at a below average price.

Turning to the costs, it can be seen from the table that on the average the total net costs were higher in the "A" group than in the "B" group. Net costs of manures (i.e. after manurial residues were allowed for) were slightly higher in the "B" group because more fields in the latter happened to have applications of farmyard manure, but the greatest difference in costs occurred in the cost of seed. This was not due to a higher rate of seeding because, as can be seen, these were much the same in both groups, but was due to the fact that "A" farmers bought much more expensive seed than the "B" group of farmers. A far greater proportion of home grown seed was used in the "B" group than in the "A" group.

The average figures given above hide an important difference in costs, however. Operational costs were higher in the "A" group partly because of higher harvesting costs due to greater yields and partly because two of the records with very high operational costs made the average higher than it would have been otherwise. But the important point is this: three of the fields in the "A" group had very low operational costs because the potatoes were sold off immediately they were lifted, thus eliminating clamping costs. Such savings made important contributions to their large surpluses, but this does not mean that their surpluses could not have been even higher had they clamped their potatoes and held them until market prices were most advantageous.

There was no connection between variety of potato and high or low surpluses in the fields studied in these two groups.

LABOUR REQUIREMENTS

The following table has been constructed from the records in this investigation to show the per acre labour requirements for various operations:-

PER ACRE LABOUR REQUIREMENTS FOR VARIOUS OPERATIONS. ⁽¹⁾

TABLE 7

Operation	No. of records	Man Hours	Horse Hours	Tractor Hours
Ploughing after cereals	8	2.5	-	2.5
" " seeds	4	1.9	-	1.9
" " mixed crops	3	1.9	-	1.9
Pre-planting cultivating	5	0.9	-	0.9
" " harrowing	27	0.8	-	0.8
" " rolling	5	0.6	-	0.6
" " discing	4	0.7	-	0.7
Drilling artificials	10	1.3	-	0.9
" "	15	1.7	1.6	-
Carting and spreading F.Y.M.	5	7.8	7.1	-
Ridging before planting	24	0.9	-	0.9
Planting by hand	9	10.7	0.9	-
" " machine	4	9.3	-	1.8
Splitting ridges	16	0.8	-	0.8
" "	3	2.4	3.1	-
Hand hoeing	15	10.0	-	-
Ridging up	21	0.9	-	0.8
Spinning (excluding lifting)	10	6.3	-	6.3
Spinning and lifting	5	54.2	-	5.6
Clamping and soiling	7	11.2	-	-
Riddling and sacking	9	39.6	-	-
Cleaning up clamp site	5	0.6	-	-

(1) These figures are averages of the fields indicated in the column "No. of records".

Also, from similar material the following schedule has been constructed showing the typical operations undertaken in cultivating an acre of potatoes, together with the manual, horse and tractor hours required:-

SET OF OPERATIONS OF A "TYPICAL" GROWER.
POTATO INVESTIGATION 1950.

TABLE 8

Operation	Man Hours	Horse Hours	Tractor Hours
Ploughing	2½	-	2½
Preparing seed bed	5	-	5
Ridging	1	-	1
Sowing artificials	1½	-	¾
Carting and spreading F.Y.M.	8	8	-
Carting seeds	3	2	-
Planting by hand	11	1	-
Covering in	1	-	1
Cultivating after covering	4	-	4
Ridging up	1	-	1
Hoeing	10	-	-
Spraying (usually contract)	-	-	-
Lifting and picking	55	-	6
Carting to clamp	2½	-	1½
Clamping and soiling (including carting straw)	11½	-	½
Riddling	40	-	-
Cleaning up clamp site	½	-	-
Total	157½	11	25½

It has been assumed that the potato crop of this "typical" grower followed a cereal crop and that the soil was of the black fen type.

This table shows what a labour consuming crop the potato crop is, when it is realised that, according to estimates made by this department, an acre of corn requires about 30 man hours and 10 tractor hours and sugar beet about 115 man hours, 7 tractor hours and 20 horse hours.

SUMMARY

The potato crop is expensive to grow; the seed is costly, heavy manuring is essential and a great amount of labour must be devoted not only to keeping the crop clean but also to such operations as lifting and riddling.

An expenditure of between £50 and £70 an acre is a high capital outlay and the failure of the crop can be much more serious than the loss of a cereal crop. In the 1950 season, however, the fields investigated in Kesteven showed reasonable surpluses; on an average about £23 per acre exclusive of the £10 an acre subsidy payment. This represents a return on capital of about 38 per cent. While this is a lower percentage return than that to be obtained from wheat, barley or oats (about 70 per cent, 115 per cent and 50 per cent respectively) it is doubtful if the farmer thinks in terms of percentage return on capital outlay. What is probably of more importance to him is the actual monetary sum, over and above his costs, derived per acre of land and from this point of view the potato crop is attractive. An acre of land devoted to wheat or barley meant an average profit to the farmer of about £11 per acre on wheat in 1949 and £15 per acre on barley in 1950 but this investigation shows that for every acre of land he devoted to potatoes the Lincolnshire farmer could anticipate a profit of about £23 per acre - and apparently anything up to £50 per acre - without taking into consideration the £10 per acre subsidy which was available in 1950. Well over half the fields in the sample showed surpluses of more than £20 per acre and only a very small proportion of the fields showed deficits or completely inadequate surpluses. Of those within the latter category three belonged to the same farmer, which probably means that over this area as a whole the general proportion of losses would be smaller than the proportion shown in this investigation.

Of the factors which contributed most to high profits the yield and the price received per ton were the most important, a high yield very often compensating for only a medium price and vice versa. "Earlies" are an admirable example of this, for although their yields were generally lower than those of the main crop the prices received for them were high enough to bring their total returns per acre to almost equal the returns from the ware. While the system of fixed graduated prices is in force it pays the farmer to keep his potatoes in the clamp. If it is impossible to dispose of them direct from the field clamping

and riddling costs will cost about 19s. 0d. per ton. The farmer's aim then should be to keep his potatoes in the clamp at least until the price offered has risen by more than the cost of clamping and lifting.

Nevertheless, yields are decisive in influencing the margins. With only one or two exceptions the relationship between yields and margins was impressive for as yields increased so, generally, did the surpluses. There were seven fields with yields of less than eight tons to the acre, three of them made losses and one made a very small surplus of only £6. 9s. 0d. per acre. Of the 14 fields with yields of between eight and 10 tons to the acre 12 showed surpluses of anything from £10 to £40 per acre. Ten had yields of between 10 and 12 tons to the acre and of these nine had surpluses exceeding £20 per acre, but it was in the group having yields of over 12 tons to the acre where the really high profits were made. Of the five in this group four earned surpluses of over £40 to the acre.

Another important fact which was brought out by this investigation was that "earlies", because of low costs and high prices, were more profitable than the main crop by an average of over £5 per acre, but, of course, they are not suitable for all districts because of the risks of loss through frost or unduly wet weather.

It was very significant, too, that in a comparison of those fields which had the highest surpluses with those at the other end of the scale the greatest difference in the two groups occurred in the cost of seed. The most successful growers paid, on average, much more for their seed than the least successful growers; a far greater proportion of unsuccessful growers planted their own once grown seed.

A point which could benefit by further investigation was brought out by a study of the costs of planting by hand and of planting by machine. Many farmers insist that they prefer hand planting because it is more satisfactory and the figures in this report seem to show that it is certainly cheaper but a much larger number of fields would need to be studied before definite conclusions could be drawn.

Finally, how will the very sharp increase in the price of fertilisers which took place on 1st July, 1951 affect the profitability of the potato crop?

In 1950 the Price Review average price for main-crop King Edward and Majestic potatoes was 185s. 0d. per ton and at this price the return from a nine ton crop would have been £93. 5s. 0d. (including the £10 per acre subsidy). The corresponding 1952 price has been fixed at 232s. 0d. without any subsidy. A nine ton crop will therefore realise £104. 8s. 0d. - a difference of £11. 3s. 0d. per acre.

An average dressing of National No. 1 artificial compound seems to be about 14.5 cwts. per acre which at 1950 prices averaged £8.16s.11d. At the new prices this will cost £13. 4s. 4d., an increase of £4. 7s. 5d. per acre.

At the time of writing (September 1951) the Agricultural Wages Board has supported a claim by the agricultural workers for an increase in minimum wage rates of 8s. 0d. per week and an extra week's paid holiday. This will mean a rise in labour costs of just over 2d. per hour and since the potato crop absorbs about 160 manual labour hours the increase in the labour bill will amount to about £1.10s. 0d. per acre.

Labour and artificial fertiliser costs together will therefore rise by about £6 per acre but as the returns are likely to increase by about £11. 0s. 0d. there will be a residue of £5. 0s. 0d. to cover possible increases in the other costs, which in 1950 represented 50 per cent of the total. This seems an adequate amount and indicates that as far as potatoes are concerned farmers should maintain their fertiliser programmes, in spite of the sharp rise in the price of artificials, since they will be able to realise at least the same profit on the crop in 1952 as in 1950.

STANDARD CHARGES USED IN THIS INVESTIGATION

LABOUR

The charges for labour were as follows, unless the farmer paid more than the standard rate when the full amount was charged:-

<u>Per Hour</u>	<u>To. 11.11.50.</u>	<u>From 12.11.50.</u>
	s. d.	s. d.
Men	2. 4.	2. 6.
Youths	1. 7.	1. 8.
Women	1.11.	2. 0.
Wheel tractor	s. d.	
	4. 0.	
Tracklaying tractor	5. 6.	
Lorry	4. 6.	
Horse labour	1. 2.	

Contract work was taken at cost.

SEED

Purchased seed was taken at cost and home grown seed at a value estimated by the farmer.

MANURES

Artificially were taken at cost and F.Y.M. was charged at £1 per ton.

RENT

The average farm rent per acre was charged. If drainage rates were paid these were added to rent before calculating rent per acre.

MANURIAL RESIDUES

The residual debit or credit was reached by deducting any residues chargeable from previous crops from the sum of residues to be credited to the present crop. The residual value of F.Y.M. was taken to be one half of the cost of the manure after one growing season, one quarter after two growing seasons and one eighth after three growing seasons.

The residual value of artificials was calculated according to the Scott Watson tables for Residual Manurial Values of Fertilisers published in "Agriculture", the Journal of the Ministry of Agriculture, July 1946, Vol. LIII No. 4 pp. 163-170.

MACHINERY DEPRECIATION

A charge of 2s. 6d. per hour of tractor work was made in order to cover depreciation of and repairs to machinery.

OVERHEADS

A charge of 5s. 6d. per £1 of direct manual labour was made to cover overheads. Overheads were taken to include hedging and ditching, building and road repairs and all other farm expenses which cannot be allocated to a particular enterprise.

YIELDS

Yields included all the potatoes harvested, including "seconds" and pig potatoes. Yield per acre was arrived at by dividing the total yield by the number of acres covered by the whole field, not by the acreage planted with potatoes.

RETURNS

The actual return for potatoes sold was taken. Other potatoes retained on the farm were valued at this price with the exception of pig potatoes, the value of which was estimated.

A.F.H.