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Potatoes

Agricultural Enterprise Studies  
in England and Wales  
Economic Report No. 48



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POTATOES IN SCARCITY

by

LYNN HINTON

A STUDY OF POTATOES  
IN BRITAIN AND THE COMMON MARKET

*Issued by the*  
AGRICULTURAL ECONOMICS UNIT  
DEPARTMENT OF LAND ECONOMY  
CAMBRIDGE UNIVERSITY

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## FOREWORD TO AGRICULTURAL ENTERPRISE STUDIES SERIES

University departments of Agricultural Economics in England and Wales have for many years undertaken economic studies of crop and livestock enterprises. In this work the departments receive financial and technical support from the Ministry of Agriculture, Fisheries and Food.

During the past decade departments in different regions of the country have conducted joint studies into those enterprises in which they have a particular interest. This community of interest is recognised by issuing enterprise reports in a common series entitled "Agricultural Enterprise Studies in England and Wales", although the publications continue to be prepared and published by individual departments.

Titles of recent publications in this series and the addresses of the University departments are given at the end of this report.

### FOREWORD TO THIS REPORT

Scarcity of potato supplies in the last two years has brought an awareness to the crop and to official policy for this staple food as great as was known in the siege economy of the last War. This report deals with policy for avoiding scarcity, which has hit all countries of the Common Market in the last two years. The 1975 drought reduced production in West Germany by 12 per cent and in the Netherlands by 8 per cent. Production in Denmark fell by a fifth but in Britain production fell most, by over a quarter. Similar conditions in Britain in 1976 also reduced the crop by a quarter and potato prices for the second season running added to the prevailing inflationary pressure on food prices in the country.

There was one cause of the shortage, two years of unusually severe drought. There was no fall in acreage grown in Britain outside the trend for lower acreages which is associated with declining consumption in the longer term. An assessment of Government policy in the potato sector concludes that British policy for potatoes is most successful in making sure, through the acreage quota and the guarantee price, that there is a regular supply of potatoes at a reasonable price with fair remuneration for the producer, and in this respect we have been more successful than other member Governments of the Common Market. While no Government can control the weather, the British policy does ensure adequate production by its policy measures.

Britain has the highest consumption of potatoes in the EEC apart from the Irish Republic and Belgium, but now a quarter of the potatoes purchased are in the processed form. We are highly self-sufficient for potatoes but the small amount of imports are important to secure an all the year round supply and to meet normal deficiencies in our own supply which arise in some seasons. The Netherlands actually grows a quarter more potatoes than she needs and she has an important export trade particularly with West Germany and Britain. Yields in Belgium and the Netherlands are forty per cent greater than those for the EEC as a whole, while those in West Germany and in Britain are also higher than the average.

Italy and West Germany are the least self-sufficient in potatoes and West Germany relies on the Netherlands for most of her imports. All the smaller countries are self-sufficient. Concern for ensuring potato supplies has been the tradition in all Common Market countries for a number of years now. At the present time the common organisation of the potato market is under discussion in Brussels and the policy proposed would regulate the market in potatoes in a similar way to other agricultural commodities. It is curious, however, if not obscure, that the proposal would outlaw the acreage quota and ignore the policy in Britain which has been practiced with more success here over several decades than the policies of other member Governments. Of some curiosity too, is the proposal to build marketing policy on producer groups which only control 10 per cent of the production now. Points on the Common Market policy for potatoes are taken up in the report and the case is made for a re-examination of the proposed potato marketing policy in the interests of achieving stability of supplies and avoiding high prices. Why not get potato marketing planned for now on an efficient basis rather than create another scandal in the Common Market scene? Several years have gone by since the difficult problem of potato marketing was first discussed. Let us get potatoes right where other commodity policies have proved to be wrong.

The writer is grateful for the co-operation of economists at Manchester and Nottingham Universities in the collection of the survey sample and for the help of colleagues in Ministry of Agriculture Departments in London, Belfast, and Edinburgh and to John Anderson of the East of Scotland College of Agriculture and John Taylor of the Potato Marketing Board.

At Cambridge assistance in the analysis was given by Walter Housden and Rebecca Powell. The computer analysis was carried out by Michael Murphy and the manuscript typed by Peggotty Wallace. Finally, thanks are due to the many farmers who co-operated in the survey and the other people connected with the potato industry who helped the writer in his study.

Cambridge 18th July 1977

Lynn Hinton  
Assistant Director of Research

## POTATOES IN SCARCITY

### A Study of Potatoes in Britain and the Common Market

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## Chapter 1

### PRODUCTION IN BRITAIN AND EUROPE

The potato, or rather its scarcity in Ireland over a hundred years ago, through famine and disease, caused the death of a million people and gave rise to the emigration of one and a half million.<sup>a</sup> In Britain potatoes have been relatively scarce in the last two years because of low harvested yields. Shortage of potatoes, most fortunately, has not led to the dramatic consequences which followed the Irish Potato famine, but it has nevertheless presented problems for society in Britain in the recent inflationary period.

Around 400 years ago, the potato was imported into Europe from South America and it gained importance in Germany about 1770, leading to the development of planned potato breeding around 1840. This breeding programme was decisively influenced by the appearance of blight in 1842 in America and in 1844 and 1845 in Ireland. The promising work of German potato breeders in this connection has become world famous, and other countries in Europe developed their own potato industry.

The potato is a high-value food plant and gives a big yield per acre. In the world food supply, alongside cereals, prime importance attaches to the potato with a world cultivation area of around twentytwo million hectares and a world crop of some 300 million tonnes. Its superior yield per acre (2½ times that of grain) and its all round high food value (starch, albumen, vitamins and minerals) give considerable incentive to make even greater use than hitherto of this high-yielding crop plant which can be cultivated under very different conditions, even on the lightest soils and at high altitudes, in efforts to ensure feeding the world.

The share of Europe (excluding USSR) in the last few years is barely 30 per cent of the area of cultivation and over 40 per cent of the crop of potatoes in the world. To Europe there falls therefore a constantly important, and indeed decisive, task of acting as a leader in potato cultivation. In Europe, Poland grows the most potatoes, 46500 thousand tonnes on 2584 thousand ha., next comes East Germany with 13404 thousand tonnes and 636 thousand ha. (1975). West Germany with 411 thousand ha. and 10771 thousand tonnes (1975) is the largest producer in the EEC. EEC production is given on Table 1.

Table 1. EEC POTATO PRODUCTION 1973-5 Average of 3 years

	Planted Area '000 ha	Yield per hectare tonnes	Production million tonnes
West Germany	453	28.6	13.0
France	318	23.5	7.5
United Kingdom	215	27.9	6.0
Italy	173	16.2	2.8
Netherlands	155	35.1	5.4
Ireland	43	28.7	1.2
Belgium-Luxembourg	43	35.3	1.5
Denmark	33	24.3	0.8
EEC	1433	26.7	38.2

Source: International Fruit World No. 3 1976

Britain comes third after France in potato area and in production. With the exception of the Netherlands, the smaller countries have a smaller acreage and production of potatoes. Italy stands out as a larger country with a small production. The climate in Italy gives her more production alternatives than any other country, but overall, potatoes are important in all countries of the Community.

Yield per acre is outstandingly high in the low countries, the Netherlands and Belgium-Luxembourg. In the Netherlands, they are also grown on a larger scale than in other countries. At least 60 per cent of the potatoes come from farms with more than 10 hectares, which indicates the high degree of specialisation and leads to the attainment of good yields. This explains among other things the superiority of Holland in the world export trade, but at the same time it accounts for the sharply adverse foreign trade balance for potatoes in West Germany. Specialisation in West Germany and in Britain is much less advanced. In West Germany, for instance, the size of the enterprise is very small and actually decreased from 1960 to 1971 from 0.8 ha. to 0.7 ha. In fact, 60 per cent of the West German acreage is grown on farms of 20 ha. (44 acres) or less in size, in which the area under potatoes amounts to only half a hectare. In Britain, though the average size of enterprise has increased greatly since 1960, particularly in England, it is still little more than 4 ha.

The drought in Western Europe in 1975 reduced yields in West Germany by 12 per cent, in the Netherlands by 8 per cent, in Denmark by a fifth and in Britain by no less than a quarter. Other EEC

<sup>a</sup> W. G. Burton. The Potato. Veeman and Zouen. 1966.

countries had a yield at least as high as that in 1974. Thus Britain, whose policy is self-sufficiency in potato production, suffered most in 1975.

What may be thought of as the normal situation (before the drought) for consumption and supplies of potatoes in the EEC is illustrated in Table 2 for 1972-3 to 1974-5.

Table 2. CONSUMPTION AND SUPPLIES OF POTATOES IN EEC (average of 1972-3 to 1974-5)

	Consumption lbs per head	Production '000 tons	Imports '000 tons	Exports '000 tons	Self-Sufficiency per cent
Belgium-Luxembourg	240	1532	197	201	101
Denmark	149	696	20	47	104
France	209	7287	220	386	102
Italy	84	2838	423	201	93
Ireland	264	1152	7	42	103
Netherlands	184	5829	89	1366	128
United Kingdom	220	6378	315	198	98
West Germany	204	13059	843	109	94
EEC	182	38771	511	696	101

Source: EEC Agricultural and Food Statistics 1972-75

This shows that consumption per head is highest in Ireland and lowest in Italy. Other countries with high consumption are Belgium-Luxembourg, Britain, France and West Germany, with more than 200 lbs per head.

Consumption in the Netherlands is about average for the EEC as a whole, and like that of carrots, onions and tomatoes, produce exported in great quantities by the Netherlands, consumption of these vegetables in the Netherlands is comparatively low. Apart from this, the consumption of potatoes chiefly reflects the advantage which an individual country has in their production and the preference for potatoes in that country. The richer countries eat fewer potatoes, but in all countries in Western Europe consumption is declining as they become more affluent and the people can afford more expensive alternatives.

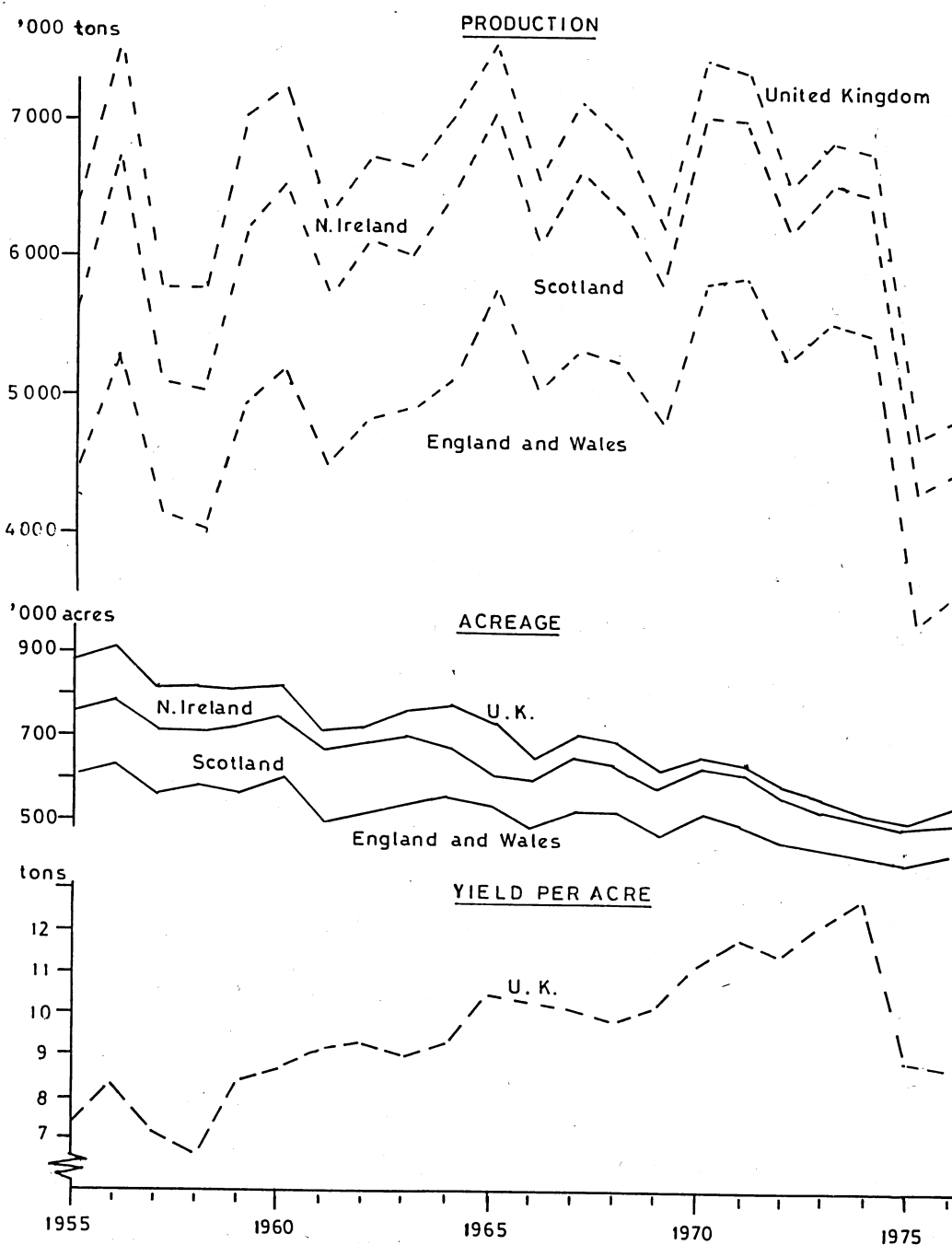
Most countries of the EEC aim at self-sufficiency in potatoes, but Italy and West Germany are the least self-sufficient. The Netherlands stands out as the major exporter, which is remarkable considering her size, and West Germany is most dependent on imports. Potatoes, bulky and relatively low in value, are in fact important in trade in Europe and this is important to certain countries, despite the small amount traded, only one million tonnes of a total production of about 39 million tonnes. Some of the trade is with adjacent countries, Belgium-Luxembourg and West Germany, for instance, while that of Britain and Ireland essentially involves shipment. Imports are necessary to supplement home supplies which cannot be assured with certainty because of seasonal variations in yield, but both the Netherlands, and to a lesser extent France, have a policy of developing exports in their own right.

## Chapter 2

### POTATOES IN BRITAIN

In Britain we now grow 500 thousand acres of potatoes or less than two thirds of the acreage grown in 1960, and in the last twenty years England and Wales have increased their acreage at the expense of Scotland and Northern Ireland. Today, eighty per cent of the potatoes are grown in England and Wales, fifteen per cent in Scotland, and only five per cent in Northern Ireland. In 1955, when the acreage was 870 thousand, England and Wales grew only seventy per cent, Scotland grew eighteen per cent and Northern Ireland thirteen per cent. The Northern Ireland acreage has dropped considerably and the distribution of potatoes in England is now more similar to that in the pre-war period. The changes since 1955 when the effects of the seige economy came to an end are shown in Figure 1.

Fig. 1. Acreage and Production of Potatoes, 1955 - 76



Source: PMB Handbook and The Statistical Review for Northern Ireland.

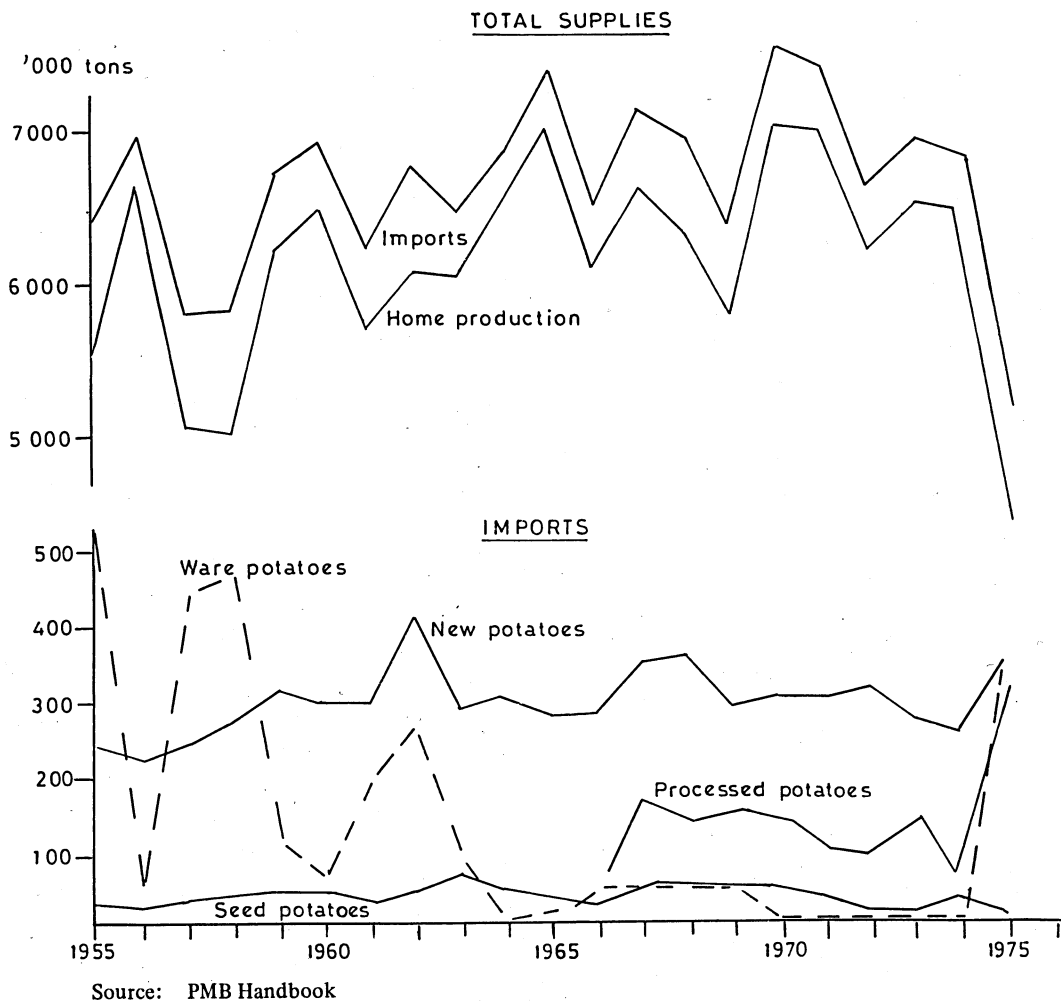


For a number of years Government policy has aimed at producing enough potatoes to meet consumption, but with a modest reserve for contingencies. The other aim has been to provide satisfactory returns for potato growers. With this in mind, a basic acreage has been set each year by the Government in collaboration with the Potato Marketing Board in advance of the planting season. Since 1955 yields of potatoes have been increasing substantially. In 1955 for example 6.3 million tons was obtained from 900 thousand acres but the same production came from an acreage of only 600 thousand in 1974. The real problem of the potato supply is the variation in yield from one season to another as illustrated in Figure 1.

Britain is almost self-sufficient for potatoes, especially for maincrop varieties, and our self-sufficiency, as shown in Figure 2, has increased considerably over the last twenty years.

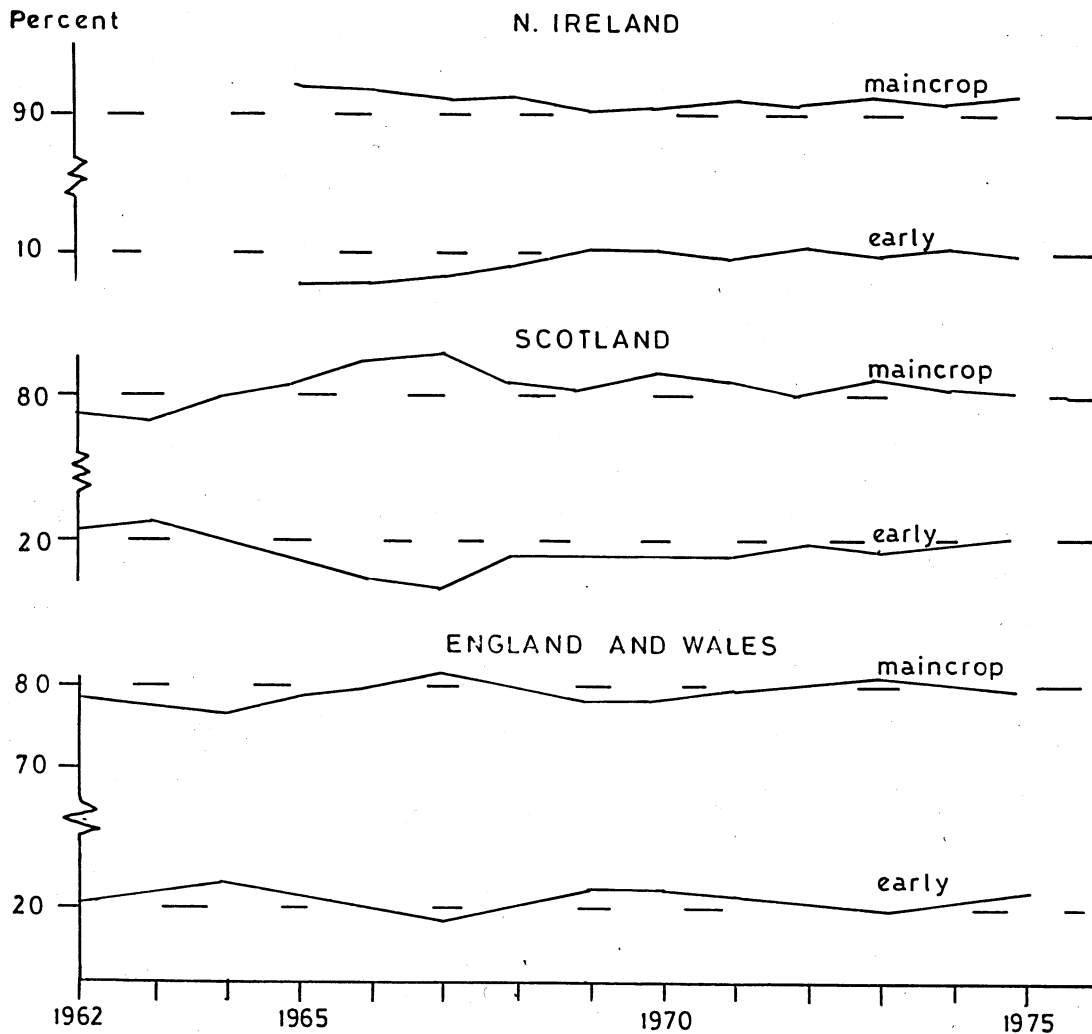
Figure 2, based on PMB data for Great Britain, shows that the chief imports are of early season or "new" potatoes and that imports of ware or main season potatoes have declined appreciably since 1968. Imports of main crop potatoes are now considerably less than in the period 1957 to 1958, partly on account of import restrictions since the early 1960's. Imports of seed potatoes, too, are relatively small in quantity and these have declined in recent years. Processed potato imports, which were not recorded in the import figures before 1965, rose to a high level in 1967, but have fallen off somewhat since 1973. Most of the potatoes used for seed are not imported. They come mainly from Scotland and Northern Ireland where they are grown at altitudes which render them free of potato viruses.

Fig. 2. Supplies of Potatoes in Great Britain



Of the potato acreage in England and Wales, a fifth comprises early varieties, the same proportion of earlies is grown in Scotland, these proportions have been roughly the same for a number of years with some variations in particular seasons. In Northern Ireland, by contrast, at least ninety per cent are maincrop varieties.

Fig. 3. Proportion of U.K. acreage in maincrop and Early Varieties



Source: PMB Handbook and The Statistical Review for Northern Ireland

### The Location of Production

Almost half the potatoes in England and Wales are grown in the Eastern Counties and East Midlands.<sup>a</sup> About fifteen per cent are grown in East Yorkshire and Lancashire. Apart from these regions, the crop is widely spread with eight per cent in South Eastern England and twelve per cent in the West Midlands. Five per cent of the acreage, nearly twice the Welsh acreage, is grown in the mild South West. The Northern region, despite its disadvantages, grows seven per cent. The regional shares of potato production have been remarkably stable over the last few years with a slight increase in Wales and a fall in the East Midlands. Early potato<sup>b</sup> production is also widely distributed throughout England and Wales. Again the Eastern Counties and the East Midlands account for most of the crop, over forty per cent. The South East and West Midlands each grow fifteen per cent. Ten per cent is grown in the South West, and the Yorks-Lancashire region and the Northern region together grow only seven per cent of the crop, in contrast to Wales with twelve per cent. The majority of the early potatoes in Wales are grown in the lowland areas of South Wales. Again the Eastern Counties and East Midlands account for most of the crop, over forty per cent. The South East and West Midlands each grow fifteen per cent. Ten per cent is grown in the South West, and the

<sup>a</sup> MAFF Regions.

<sup>b</sup> Lifted before July 31.

Yorks-Lancashire region and the Northern region together grow only seven per cent of the crop, in contrast to Wales with twelve per cent. The majority of the early potatoes in Wales are grown in the lowland areas of South Wales.

The data for Scotland distinguishes seed potatoes, earlies for consumption and maincrops. As in England, most of the crop is grown on the eastern side of the country. Seventy per cent in the South East of Scotland and thirteen per cent in the North East. There has been a distinct shift in production since 1968 when the main region, the South East, grew rather less, sixty per cent. The North East also grew less, six per cent, but the South West grew twice as much and the North West slightly more. It would seem that the shift in location of potato production to the eastern part of the country took place in England earlier than it did in Scotland.

Seed potatoes account for more than half the Scottish crop and three-quarters are grown in South East Scotland. Early potatoes, for ware, account for only four per cent of the acreage and two thirds of these are found in the mild South West. Forty per cent of all potatoes grown in Scotland are maincrop ware, and two thirds of these are grown in the South East, in the region of Scotland most equivalent to the arable farming area of East Anglia.

### The Size Distribution of the Potato Crop

Three fifths of the acreage of maincrop potatoes in England and Wales is grown on farms classified by MAFF as "general cropping farms", chiefly in association with sugar beet, field scale vegetables and cereals. "Cropping farms," with emphasis on cereals, and "mixed farms" account for nearly a further fifth of the total, and the remainder is distributed among a variety of farms including small and part-time ones. The number of farms growing potatoes shows the reverse pattern. Nearly three fifths are of types not specialising in cropping, or are very small holdings. Over half the farms growing maincrop potatoes are outside the major growing areas. In particular, these farms lie in the South West of England and in Wales. These regions account for less than ten per cent of the total acreage grown, but they include a quarter of all farms with maincrop potatoes. On the "general cropping farms" larger acreages are grown so that a high proportion of the total acreage is concentrated in the hands of a relatively small proportion of growers with large potato enterprises. The average acreage of maincrop potatoes per farm of 24 acres on the relatively specialised "general cropping farms" is nearly three times the national average of ten acres. Thus, the average acreages per holding in the Eastern, East Midlands and Yorks and Lancs Regions are above the national level.

One farm in five in England and Wales grows maincrop potatoes. Among "general cropping farms," where over three out of four grow maincrop potatoes, and on mixed holdings, three out of five grow maincrop potatoes. The crop occurs most frequently on farms in the Eastern and East Midland Regions. In England and Wales as a whole maincrop potatoes occupy under two per cent of the total crops and grass area. In Wales and the South Western Region this figure is under 0.5 per cent, but in the Eastern Region it is four per cent, and nearly three per cent in the East Midlands and Yorks-Lancashire. On the "general cropping farms" as a group the total maincrop potato acreage is between six and eight per cent of the total crops and grass area.

Over the last ten to fifteen years there has been little change in the proportion of production grown on different types of farms, other than a slight gain since 1965 to cropping farms with an emphasis on cereals, at the expense of general cropping and mixed farms. Potatoes, including earlies, form a fifth of the gross output on general cropping farms.

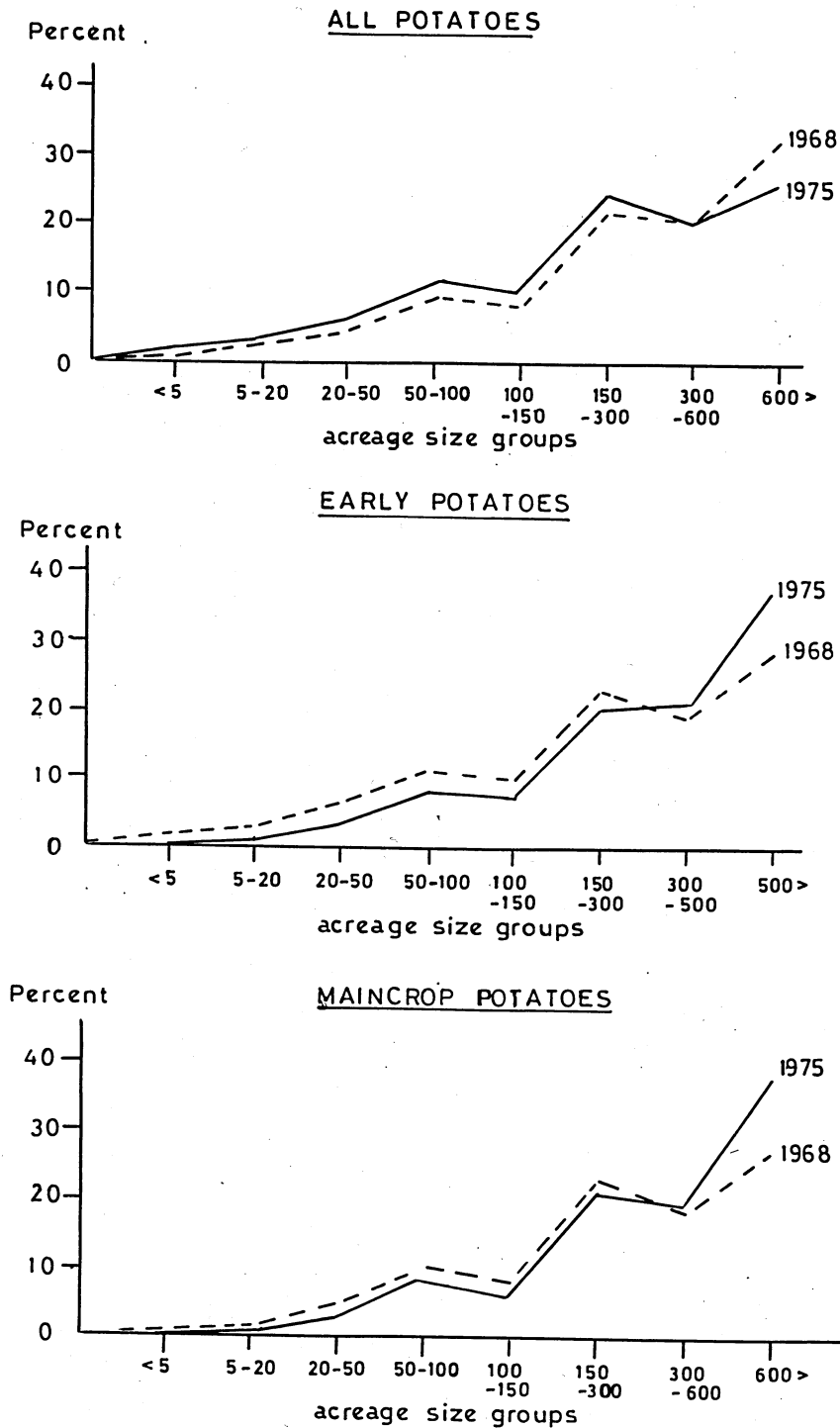
In Scotland, forty-five per cent of the maincrop acreage is grown on general cropping farms as is nearly fifty per cent of the early and fifty-five per cent of the seed potato acreage. The remainder of the potato acreage is however spread widely over a large range of farm types and early potatoes, seed and maincrop are grown in varying proportions. Ten years ago, the general cropping farms had a bigger share of all types of potato production in Scotland. For instance, arable with livestock farms now grow a fifth of the seed potato acreage, a tenth of the earlies and a seventh of the maincrop, having increased their share considerably over the last ten years. The group of farms known as rearing with arable now account for ten per cent of the Scottish potato production and rather more of the early production; double their share ten years ago. Upland farms where maincrop potatoes predominate have also increased their share of production and now grow five per cent of the maincrop potatoes. Dairy farms grow as much as a fifth of the early crop and a tenth of the maincrop. Their proportion of early potatoes has held in recent years at the expense of the maincrop acreage. Even intensive livestock farms produce some potatoes of all types as do intensive farms. Scottish data on the type of farm growing potatoes is very complete. For instance, it shows that eight per cent of the maincrop acreage is grown on part-time farms, a big increase on their share of potato production a decade ago. It is evident that while the potato plays some part in the farm production of a great many farms in England, potato production is even more widespread in Scotland.

The distribution of the potato acreage in England and Wales between farms of different sizes in recent years, Figure 4, has been comparatively constant. The crop is distributed over all sizes of farms with a naturally higher acreage proportion on the larger farms. Between 1968 and 1975 the proportion of the

potato crop grown on farms of 500 acres or more has increased at the expense of the smaller sizes of farm.

In the last decade there has been a considerable reduction in the number of farms growing potatoes, from 55 thousand in 1968, for instance, to 35 thousand in 1975. The number of early potato growers has declined more than that of maincrop growers. Farmers growing the early crop halved in number from 12 thousand to 6 thousand and the number of maincrop growers fell from 52 thousand to 33 thousand. The marked concentration of the crop among fewer producers has undoubtedly contributed to raising the potato yield and to the efficiency of production by removing from production those farmers and those farms less well adapted to the crop.

Fig. 4. Distribution of Farm size – 1968 and 1976.  
England and Wales

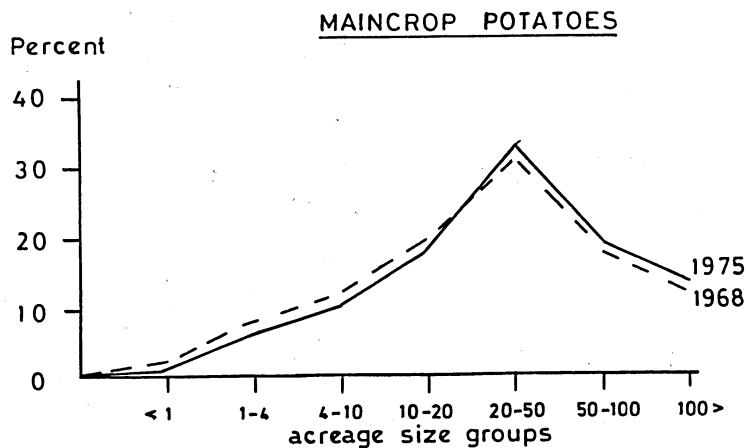
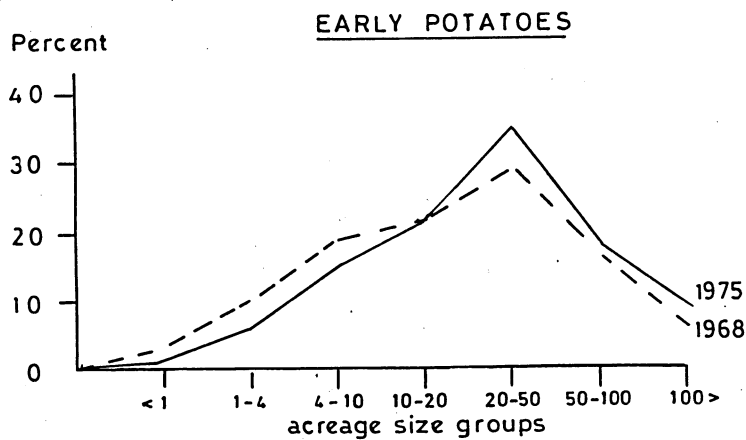
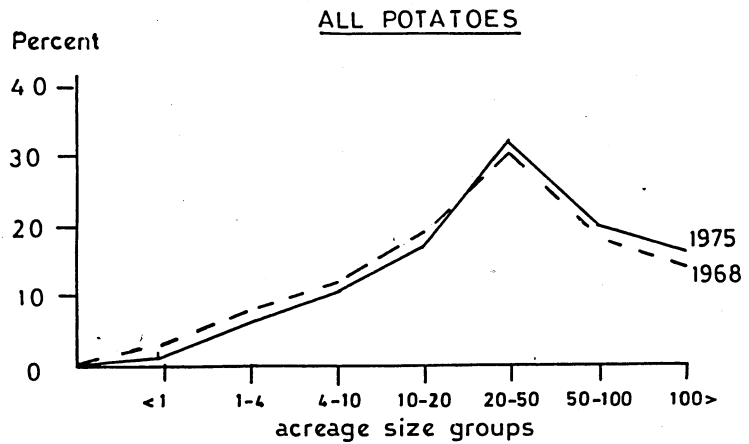


Source: Agricultural Returns for England and Wales

The distribution of potatoes in England and Wales by crop size, Figure 5, shows a slight increase in the size of the enterprise from 1968 to 1975 and that some 30 per cent of the acreage is grown by farmers in the 20 to 50 acre size group. In the case of both early and maincrop potatoes, the larger enterprise size groups have gained a higher proportion of the potato acreage at the expense of the smaller size groups.

While the changes in the number of growers have been great in recent years, the change in the average potato acreage has not been so great. In 1968 the average size of the potato enterprise was 9.4 acres and by 1975 this had risen to 11.5. The size increase of the early potato enterprise is appreciably more marked than that of the maincrop. The early crop averaged 6.2 acres in size in 1968 and 9.7 acres in 1975. In 1968 the maincrop average size was 9.7 acres and in 1975 it was 11.5 acres.

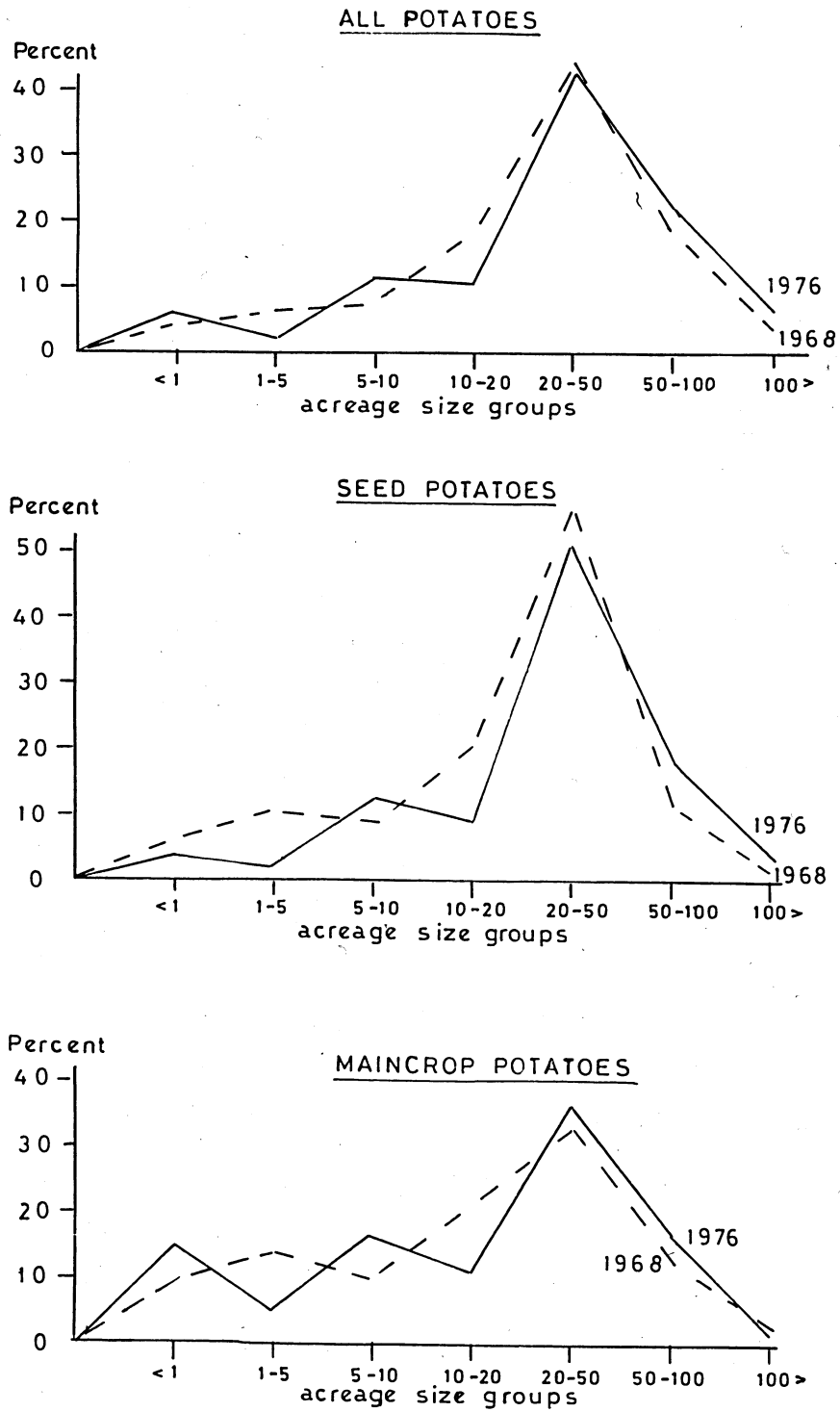
Fig. 5. Distribution of Crop size – 1968 and 1975.  
England and Wales



Source: Agricultural Returns for England and Wales

Potatoes in Scotland are grown on farms of all sizes, the most common size, 20 to 50 acres, being much smaller than that in England and Wales. The crop size distribution for Scotland is shown in Figure 6. As in England and Wales a third of the acreage is grown on enterprises of some 20 to 50 acres in size. In recent years a greater proportion of the seed potato and the maincrop acreage has been grown by the larger enterprises but this is not a marked shift.

Fig. 6. Distribution of Crop size – 1968 and 1976  
Scotland



Source: Agricultural Returns for Scotland

The fall in the number of potato growers in Scotland in recent years has been even greater than in England and Wales. In 1968, 23 thousand farms grew potatoes in Scotland but in 1976 the number had declined to 13 thousand. Seed potato production in Scotland is on a much bigger scale than potato production in England and Wales. The average size of the seed potato enterprise in Scotland was eleven acres in 1968 and is now twenty-three acres. Only two thousand farmers now grow the seed potato-crop compared with six thousand in 1968. The maincrop enterprise in Scotland is very small, only 3 acres and this has changed little in recent years. Eighteen thousand growers produced maincrop potatoes in Scotland in 1968 and eleven thousand grow them now. The average potato enterprise in Scotland is almost half that in England and Wales. It was 5 acres in 1968 and 6.4 acres in 1976.

### Production in Scotland

In the survey of farms growing potatoes in 1974 carried out by the Scottish Agricultural Colleges, 51 farms out of a total 69 followed the practice of hiring land. There were 57 lets on 51 farms. The average rent paid was £61 an acre, roughly fifty per cent more than in the previous year. More rent was paid for land used for seed than for ware and the most typical rents ranged from £58 to £70 an acre. For this sum, the land was usually ploughed and cultivated ready for planting. In a few cases, higher rents were paid to include summer cultivation or weed spraying.

Ninety per cent of the land was let to merchants. Farms letting land varied from 100 acres to over 2000 acres, but the majority were about 300 to 400 acres. As in Northern Ireland, the proportion of potato land let is increasing. There was a twelve per cent increase from 1971 to 1974 and now some forty per cent of the seed potato crop is let to merchants. This amounts to a fifth of all potatoes in Scotland. Land let for ware potatoes is less common, about 1500 acres were let in the South West.

That farmers should let land for potatoes rather than grow the crop themselves is mainly due to difficulties in getting casual labour for harvesting. This applies especially to outlying areas, and small acreages. Another reason for letting land is that the farmer avoids the capital costs of planters and harvesters which are now expensive.

The Scottish report states that it is less easy to understand why farmers choose to let rather than give up potatoes, but the need for potatoes as a break crop emerged as the most important reason. Farmers were also concerned to retain their acreage quotas. The merchant or farmer renting the land can get economies of scale in harvesting, which the small farmer cannot. Potato growers renting land have a large acreage in total. Both benefit from the arrangement, the farmer with his rent and the grower with his profit. Apart from the rent, the farmer letting land has no other financial interest in the crops. There is no doubt that the value of a break in the rotation may be as much to the farmer who lets land as the actual rent for the use. Rents in Scotland were about £65 per acre in 1974 but have since doubled. In return, the merchants insist on strict rotational conditions, and freedom from potato root eelworm must be established each year. Where both seed and ware potatoes are grown on the same farm the entire potato acreage has to satisfy the strict requirements to which the seed potato acreage must comply.

### Production in Northern Ireland

The acreage of potatoes in Northern Ireland fell from 57 thousand in 1966 to 27 thousand in 1975. As the acreage has declined so the practice of letting land to a merchant or farmer has increased. Land so hired in Northern Ireland is known as conacre. The proportion of conacre land rose from twenty-eight per cent in 1966 to forty per cent in 1970 and to forty-five per cent in 1975<sup>a</sup>. The rise is principally due to the increasing problem of finding sufficient owned land to maintain an adequate rotational programme for potatoes. This problem is not so great elsewhere in Britain because of the generally larger size of the farms. The increased rotational pressures on many growers in Northern Ireland came from the trend for large units of production and more stringent planting regulations under the Potato Root Eelworm order of 1968 which limited the frequency of the crop in the rotation. In 1971, the rent for conacre land ranged from £25 to £35 per acre, but in 1972 rents rose by £20 an acre.

In Northern Ireland forty-five per cent of the potatoes are for seed. No distinction is made in the returns between maincrop and earlies. The decline in the Northern Ireland potato acreage has been chiefly of maincrop ware potatoes, which accounted for seventy per cent of the potato crop in 1966 and fell from forty thousand acres in 1966 to seventeen thousand in 1974. By contrast, seed potatoes increased between 1966 and 1967, and then remained at about twenty thousand acres up to 1970 to fall to seventeen thousand by 1974.

The changes in the proportion of ware and seed acreages provide the clearest picture of the overall shift in the production pattern. From 1966 to 1969 there was a continuous decline in the proportion of the acreage grown for ware, but more recently the proportion of ware has increased. One reason for the change could be the improvement in the ware price since 1969, which must be related to the declining

<sup>a</sup> Michael C. F. Cook. "Some changes in the pattern of potato growing in Northern Ireland" from *Agriculture in Northern Ireland*, Vol. 48, No. 5, and "The changing structure of potato growing in Northern Ireland". Vol. 48, No. 3.

ware acreage. From 1966 to 1969 the proportion of seed acreage rose from twenty-nine to forty-seven per cent, but dropped to forty-two per cent by 1972. This decline is due in part to the fall in demand for Northern Ireland seed by potato growers in Britain, the traditional market. The pattern in Northern Ireland, a rise then a decline in the seed acreage, contrasts with that in Scotland, where there was a continuous increase in the proportion and relative importance of the seed acreage over the same period. These two situations are related, potato growers in England now show more preference than before for Scottish seed and the Northern Ireland Seed Marketing Board has concentrated on the export market.

A notable feature of potato growing in Northern Ireland over the last ten years has been the increase of mechanisation. For instance, in 1966 only twenty planters were recorded for every 100 growers, but by 1972 there were 32. Harvesters and diggers rose in number from 54 per 100 growers in 1966 to 73 in 1972, still far behind the English growers who are much more highly mechanised. As in England, greater mechanisation has been brought about by the shortage of labour at planting and harvest time; but in Northern Ireland this was reinforced by the need to obtain a damage-free graded product, especially for the seed trade.

An analysis of the potato acreage according to the size of crop indicates a steady decline over the last ten years in the proportion of units of less than 10 acres. In 1966 three quarters of the potato acreage comprised these small areas and by now the proportion has dropped to half. Over ten per cent of the growers with less than 3 acres have now given up potatoes and the large size groups have increased their share. The number of growers declined from 22 thousand in 1966 to 11 thousand in 1972, a trend which has continued. These significant changes in the structure of potato growing in Northern Ireland suggest that potato growers are recognising the economic effects of rationalising production to meet the changing economic and market conditions.



## Chapter 3

### ECONOMIC RESULTS FROM POTATO PRODUCTION

#### The 1974 Potato Season

An economic survey of the potato crop was carried out in four University areas covering eighty per cent of the maincrop potato acreage in England and Wales in 1974 and in the University areas covering sixtyfour per cent of the maincrop acreage in 1975.

The 1974 crop survey gave 112 records which complied for size distribution very closely with that of the random sample provided by the Ministry of Agriculture.

Potato Acreage Size group	Sample Sought per cent	Sample Obtained per cent
5 - 20	38	38
20 - 40	33	32
40 - 70	17	16
70 - 100	7	7
100 and over	5	7

The proportion of the sample acreage in different varieties for the 1974 and 1975 crop was as follows:-

	1974 per cent	1975 per cent
King Edward	26	27
Record	22	33
Pentland Crown	16	11
Pentland Dell	10	5
Maris Piper	9	11
Desiree	7	7
Other varieties	10	6

The results of the 1974 survey are shown in Table 3 for all potato enterprises together and for the three size groups, small, less than 20 acres, medium, 20 to 40 acres and large, over 40 acres. All size groups obtained above average yields and the price per ton varied relatively little between the size groups. There was also little difference in returns per acre, though farmers growing 40 acres and over had lower returns. Farmers in the large size group also had slightly higher yields and the lowest price per ton. Variable costs per acre were at a similar level in all size groups and the per acre gross margin, average of £220 or so, was also similar throughout. Fixed costs were lower in the smaller and large size groups than in the middle size group which had noticeably higher fixed costs. As a result of the relatively small differences in the cost and return levels of the three size groups, differences in net profit were also quite small. Net profit was higher in the small size group, which had similar returns to the middle size group, but the small size group had substantially lower fixed costs. The disadvantage of the large size groups in returns and yield was almost offset by lower fixed costs, which were so high in the middle size group.

The small size group comprises enterprises of an average size of 10 acres, the middle size group, enterprises of 30 acres and the large size group, enterprises of 86 acres average size. Numerically predominant in the sample and in the country are growers in the small size group, though the large growers account for most of the potatoes grown. As would be expected variable costs are similar over the size range but they are slightly lower in the middle range, the group which incurs conspicuously high fixed costs.

It might also be expected that the large scale growers are "average" performers. They have in mind returns from the total acreage grown rather than the return per acre. However, apart from their relatively poor attention to returns per acre, a factor very difficult to achieve repeatedly on a very large acreage such that it would influence the average of the group, they use resources equally efficiently as the growers in the small size range, who are very conscious of output per acre. For instance, the large scale growers actually out yielded the small scale growers. On the marketing side, the high fixed cost middle sized growers seem to have advantages over growers in the other size ranges. They would seem to be the best at marketing, the smallest size group of growers, next, and the large scale growers the poorest. There would appear to be economies in marketing in the middle size range and economies in production below and above this size range, but the degree of these differences is not very great. Advantages of scale are not proven in potato production because factors other than size are important.

Table 3. POTATO COSTS AND RETURNS PER ACRE – 1974 CROP RESULTS

	All farms	Potato acreage size group		
		Less than 20 acres	20–40 acres	40 acres and over
Number of farms	112	42	36	34
Acres of Potatoes	39.4	10.0	29.75	86
Yield – Tons per acre	13.77	13.82	13.52	13.98
Price – £'s per ton	24.41	24.49	25.08	23.59
RETURNS	£	£	£	£
Sales	336.05	338.48	339.16	329.75
Retained on farm	8.66	11.37	10.52	3.33
Chats	3.95	4.70	4.30	2.67
<b>TOTAL RETURNS</b>	<b>348.66</b>	<b>354.55</b>	<b>353.98</b>	<b>335.75</b>
<b>VARIABLE COSTS</b>				
Seed	37.46	36.64	36.60	39.39
Fertilisers	24.95	25.80	25.38	23.44
Spray materials	9.19	8.36	9.39	10.01
Bags and Ties	10.32	9.83	13.22	7.84
Contract	8.85	7.91	7.59	11.34
Casual labour	30.19	34.37	26.46	28.97
Miscellaneous	7.09	7.02	7.26	7.02
<b>TOTAL VARIABLE COSTS</b>	<b>128.05</b>	<b>129.93</b>	<b>125.90</b>	<b>128.01</b>
<b>GROSS MARGIN</b>	<b>220.61</b>	<b>224.62</b>	<b>228.08</b>	<b>207.74</b>
<b>FIXED COSTS</b>				
Regular labour	47.76	45.60	56.92	40.71
Tractors	27.40	28.16	29.14	24.63
Machinery	18.60	16.13	18.35	21.91
Rent and rates	15.17	13.30	15.82	16.79
Overheads (15% of cost)	34.20	33.73	35.78	33.11
<b>TOTAL FIXED COSTS</b>	<b>143.13</b>	<b>136.92</b>	<b>156.01</b>	<b>137.15</b>
<b>TOTAL COSTS</b>	<b>271.18</b>	<b>266.85</b>	<b>281.91</b>	<b>265.16</b>
<b>NET MARGIN (PROFIT)</b>	<b>77.48</b>	<b>87.70</b>	<b>72.07</b>	<b>70.59</b>

The 1974 potato crop gave the highest yield recorded in Britain, but because of weather conditions at harvest time, the full potential of the crop in the ground was not realised.<sup>a</sup> Harvesting was in fact seriously interrupted by wet weather over an extended period so that by the end of November over 40,000 acres of the five hundred thousand planted were still in the ground. Some progress was made in December and by the end of the month about 15,000 acres remained. Even at the end of March, over 5000 acres of the 1974 crop had yet to be lifted. Eventually, although some had been economic to lift, most of this unlifted acreage was harvested, though often at considerably reduced yields.

Despite these difficulties the average harvested yield reached a record level, but a lower planted acreage in 1974 gave a total production below that of the 1973 crop. The quantity moving into human consumption continued the upward trend of the previous three seasons. Producer prices were reasonably good until the end of January when prices began to fall. The seasonal recession of prices was greater than usual and it extended over a longer period than normal, being affected in many cases by the urgency to empty stores of potatoes which went into store in poor condition. Wastage was high and the supply available from April onwards became closely in line with demand and prices rose to levels reflecting local shortages in June.

Higher wastage affected the 1974 crop, but production was sufficient to meet demand, apart from some local shortages caused by reduced imports of new potatoes and delays due to the weather in the home crop of earlies. Exports of ware continued throughout the season, although at a reduced level compared with the previous two seasons. Seed potato exports continued to increase. Contrary to the trend in all other countries of the EEC the rate of movement into human consumption in Great Britain increased in the three seasons ending in 1974–5.

<sup>a</sup> Potato Marketing Board. Annual Report 1975.

Prices from the beginning of August until early December, apart from a period in September and some weather markets during the period, were generally stable at an average of £23 to £24 per ton in England and Wales, and about a £1 more in Scotland. However, the range in price for individual varieties, particularly King Edward, was quite wide. This reflected the variation in quality and presentation resulting from the very adverse conditions at lifting time. In December, the average price in Great Britain increased by nearly £3 per ton, largely because of the Christmas demand for the best samples available. As January and February progressed, with little farm work owing to the prolonged wet weather, producers loaded supplies in excess of market requirement, and, in consequence, prices fell progressively by almost £7 per ton on average from the December peak. For a while in February, and even early March, some white varieties were making only £16 per ton in England and £17 per ton in Scotland. Even King Edwards were down to £17 per ton in England, although top quality samples were double that price. During this period of trade depression the average price for February was only fractionally over £21 per ton.

At first in March the trade was slow to recover because spring land work was interrupted by continuing wet conditions. This resulted in heavy loadings off the farms, however, in April when land work increased, the movement of potatoes off farms slowed down with the result that potato prices recovered to exceed £34 per ton and potatoes became more profitable. In May, farm prices were generally steady and they eased slightly towards the end of the month. In early June supplies were in strong demand owing to the low yields of the new crop and also because of reduced imports of potatoes, particularly from Cyprus and Jersey. The price of free stocks varied considerably in June, prices starting off at £40 per ton in early June but, exceeded £100 per ton for the very limited stocks available towards the end of the month. The higher price made it economical to lift some of the 1974 crop which remained in the ground on heavy soils followed almost continuous adverse lifting conditions in England since mid October.

Throughout the season the cumulative average growers' prices for Great Britain exceeded the guarantee of £22 per ton and finally reached a little over £25 per ton. However, the continuing inflationary trend meant that returns, though higher, were not enough to compensate producers adequately.

#### The 1975 Potato Season

The wet weather which extended the harvesting of the 1974 crop into the spring of 1975 resulted in extremely late and poor planting conditions for the 1975 crop.<sup>a</sup> This, combined with poor returns from the previous season, resulted in a drop in acreage, a tenth less than the target acreage for the season. Of greatest consequence to the extremely low yields which resulted was the delay in planting. Work at the Terrington Experimental Husbandry Station<sup>b</sup>, for instance, shows that after mid April there is an increasing yield penalty from late planting for which the latter part of April may be taken as 0.1 ton per acre per day or a yield loss of 1.5 tons for a 15 day delay.

The wet spring was followed by a drought. As the result of these two extremes, the yield of the 1975 crop suffered greatly and it became clear that production would fall far short of the previous year and of the country's requirements. Similar conditions on the Continent, although not so severe, had also restricted yields there so that even with freedom for imports of ware and increased supplies of earlies from abroad there were insufficient supplies of potatoes to meet demand. As a result potatoes were, in effect, rationed by price. It is estimated that the extra cost over the previous season of imports from all sources which arose from the home shortage was £125 m to £150 m. Movement into human consumption fell by fourteen per cent, and the rate of human consumption fell from 222 lb (101 Kg) per head per annum in the previous season to 191 lb (87 Kg) in 1975/6. The yield at 8.9 tons per acre (22.3 tonnes per ha) was the lowest since 1964 and followed a record yield of 12.8 tons per acre (32 tonnes per ha) in 1974. The reduced yield was the main cause of the very substantial fall in the total production which was 34 per cent down on 1974.

Throughout the season the effect of the shortfall in production, consequent on the slightly reduced acreage and the significantly reduced yields, was apparent in producer prices. From a level of almost £100 per ton at the beginning of August, the average producer's price drifted downwards during the next two months to around £72 per ton at the end of October. This price and those prices of the preceding four weeks were lower than the free market price by some £10 per ton due to loadings to processors at previously contracted but low prices.

Once the crop was in store there was an increasing awareness that supplies would not meet the normal trade requirements and prices rose progressively to an average of £115 per ton by the end of December. In January, the reduction in stocks was beginning to be felt to a greater extent than hitherto, and prices rose by £43 per ton in that month, by £17 per ton in February and by a further £24 per ton in March when the average reached £199 per ton by the end of the month. It was, however, during April that the most notable increase took place and by the end of the month the average prices had reached £271 per ton. On one day towards the end of April the average reached nearly £290 per ton.

<sup>a</sup> Potato Marketing Board. Annual Report 1976.

<sup>b</sup> E. J. Mundy Seed Procurement, Treatment and Planting Systems. Paper given at P.M.B. Conference, November 1974.

During May prices dropped dramatically, not because of excess supplies of old ware but because of the high degree of resistance from consumers and retailers to the sharp increase in prices during the latter half of the month, coupled with increasing supplies of imported new potatoes. By the end of May the producers' price had fallen to £140 per ton and the very small stocks remaining made prices around this level until the end of June when stocks were virtually exhausted.

Throughout the season the price difference between England and Scotland was generally minimal and the traditional premium for King Edwards reappeared. One feature of the season was the increased sales of "Mids"<sup>a</sup> for which prices varied quite widely according to local demand and presentation. From the beginning of the maincrop season the cumulative producers' average price exceeded the guarantee of £28 per ton by a considerable margin. For the season as a whole the margin was £105.6 per ton although prices were very much higher than this from January onwards.

Table 4. POTATO COSTS AND RETURNS PER ACRE AND PER HECTARE  
1974 AND 1975 CROP RESULTS (IDENTICAL SAMPLE)

	All Farms	
	1974	1975
Acres of potatoes	40.0 (16.2 ha)	43.0 (17.4 ha)
Yield — tons per acre	13.9 (34.9 t/ha)	8.4 (21.1 t/ha)
Price — £'s per ton	25.2 (24.8 per t)	97.5 (96.0 per t)
<b>RETURNS</b>	<b>£</b>	<b>£</b>
Sales	350.3	819.0
Retained	7.4	51.7
Chats	4.3	1.5
<b>TOTAL RETURNS</b> (£ per ha)	<b>362.0</b> (894.5)	<b>872.2</b> (2155.2)
<b>VARIABLE COSTS</b>		
Seed	37.7	51.2
Fertiliser	24.9	40.0
Spray materials	9.7	11.5
Bags and ties	13.7	12.5
Contract	12.5	17.4
Casual labour	31.0	24.1
Miscellaneous	6.6	6.6
<b>TOTAL VARIABLE COSTS</b> (£ per ha)	<b>136.1</b> (336.5)	<b>163.3</b> (403.5)
<b>GROSS MARGIN</b> (£ per ha)	<b>225.9</b> (558.2)	<b>708.9</b> (1751.7)
<b>FIXED COSTS</b>		
Regular labour	45.2	40.0
Tractors	25.8	24.5
Machinery	18.0	17.9
Rent and rates	16.3	17.9
Overheads	34.3	36.9
<b>TOTAL FIXED COSTS</b> (£ per ha)	<b>139.6</b> (345.0)	<b>137.2</b> (339.0)
<b>TOTAL COSTS</b> (£ per ha)	<b>275.7</b> (681.3)	<b>300.5</b> (742.5)
<b>NET MARGIN (PROFIT)</b> (£ per ha)	<b>86.3</b> (213.3)	<b>571.7</b> (1412.7)

<sup>a</sup> Potatoes below normal ware size

Economic results for the 1975 crop are shown for an identical sample for 1974 on Table 4. Results for the 1975 crop in comparison with those for the 1974 crop show that yield fell by 40 per cent while profits rose nearly seven-fold and the price of potatoes increased by almost four times, a measure of the scarcity.

Variable costs went up by one fifth between the two years, but fixed costs were slightly lower in 1975. Expenditure on seed potatoes increased by a third, that on fertiliser by two thirds and on spray materials by a fifth. Reliance on contract work went up in 1975 by more than a third but outlay on casual labour decreased by a fifth. The per acre gross margin in 1974 was £225 and in 1975 this more than trebled to reach upwards of £700. Returns, £361 per acre in 1974, were £870 an acre in 1975. The Survey yields were actually slightly above the Ministry of Agriculture estimates in 1974 and slightly below official estimates for 1975. It is possible that yields in the Survey are more accurate than the official estimates since yield particulars are actually recorded in the survey. No two seasons could give a greater contrast in economic results than those of 1974 and 1975.

#### The 1976 Season

The 1976 crop was planted under very favourable conditions and at this stage there were prospects of good yields. These prospects were removed however, by the prolonged drought which started in May, and conditions were worsened by the exceptionally hot weather in July and August. Rain in September was too late to improve the extremely low yields caused by the long period of drought. The hot, dry weather conditions also favoured aphids and the spread of disease over the potato crop. In October and November persistent and heavy rain delayed lifting and added to the difficulties in harvesting, and caused the spread of tuber blight and soft rot. The result was an even lower yield than the exceptionally low yield of 1975 and the lowest yield since 1958. The yield in 1976, as that of 1975, was thirty per cent short of the average yields experienced in the early years of the 1970's, quite beyond expectation and against the upward trend in yield of recent years.

The 1976 crop costs and returns, updated in collaboration with the NFU and the PMB, are shown on Table 5. In 1976 prices increased by thirty per cent over the record high price of 1975, and returns per acre also increased by thirty per cent. Variable costs were almost doubled and seed costs more than trebled because of the scarcity of seed potatoes due to the low yield in 1975. The inflationary upsurge in costs caused fixed costs to rise by a third, and total costs increased by two thirds. As a result the gross margin per acre increased by over forty per cent on 1975, while the net profit increased by almost fifty per cent.

Table 5 also gives updated figures for the 1977 crop. This year's crop was planted a little late but under good conditions. The projection is necessarily less firm than that for 1976. Crop yield is put at 12 tons per acre, and a range of price is given, £50 - 100 per ton. The lower end of this range is a little above the guaranteed price for 1977 of £46.50 per ton. Costs in 1977 will show less of a rise than did the 1976 costs over the 1975 costs. At an assumed price of £50 per ton with a normal yield, net profit in 1977 should be about £95 per acre, but if the price of potatoes in 1977 should reach £100 per ton, profit may be over £700 per acre. The likelihood is that yields will be normal in 1977, if not higher, and prices little higher than £50 a ton.

**Table 5. POTATO COSTS AND RETURNS 1975 CROP AND PROJECTIONS FOR 1976 AND 1977 CROPS**

	1975	1976	1977
Yield – tons per acre	8.4	8.3	12
tonnes per ha	21	21	30
Price – £'s per ton	97.5	128	50-100
£'s per tonne	96	126	49- 98
<b>RETURNS</b>	<b>£</b>	<b>£</b>	<b>£</b>
Sales	819.0	1062.4	600-1200
Retained	53.2	85.0	42- 70
<b>TOTAL RETURNS</b>	<b>872.2</b>	<b>1147.4</b>	<b>642-1270</b>
(£ per ha)	(2155.2)	(2835.2)	(1586-3138)
<b>VARIABLE COSTS</b>			
Seed	51.2	184.0	200.0
Fertiliser	40.0	42.8	45.4
Spray materials	11.5	13.3	14.9
Bags and ties	12.5	14.6	16.4
Contract	17.4	21.8	27.0
Casual labour	24.1	27.2	29.4
Miscellaneous	6.6	7.3	8.0
<b>TOTAL VARIABLE COSTS</b>	<b>163.3</b>	<b>311.0</b>	<b>341.1</b>
(£ per ha)	(403.5)	(768.5)	(842.9)
<b>GROSS MARGIN</b>	<b>708.9</b>	<b>836.4</b>	<b>301-929</b>
(£ per ha)	(1751.7)	(2066.7)	(744-2296)
<b>FIXED COSTS</b>			
Regular labour	40.0	47.6	51.4
Tractors	24.5	29.4	37.6
Machinery	17.9	21.5	25.4
Rent and rates	17.9	21.5	25.2
Overheads	36.9	59.6	66.4
<b>TOTAL FIXED COSTS</b>	<b>137.2</b>	<b>179.6</b>	<b>206.0</b>
(£ per ha)	(339)	(443.8)	(509)
<b>TOTAL COSTS</b>	<b>300.5</b>	<b>490.6</b>	<b>547.1</b>
(£ per ha)	(742.5)	(1212.3)	(1351.9)
<b>NET MARGIN (PROFIT)</b>	<b>571.7</b>	<b>656.8</b>	<b>95-723</b>
(£ per ha)	(1413)	(1623)	(235-1787)

## HIGHER OUTPUT

Low yields in the potato crop over the last two years have brought an awareness about supplies in Britain, unprecedented since the siege years of the last War. This raises the question of the possibilities of increasing yields and producing more potatoes from a smaller acreage. In fact, yields per acre have increased by thirty per cent in the last fifteen years and seem likely to increase further in future. Concern really amounts to securing a more reliable and a higher yield. Yields do however vary greatly between seasons, and this can cause gluts and shortages. Yields also vary greatly between farms in the same season. In the Cambridge Survey in 1974, for instance, yields ranged from as low as 9 tons per acre to 24 tons. Nearly thirty per cent of the farms had yields below 12 tons per acre and over thirty per cent had yields of 15 tons or more per acre. The following sections deal with the problems of high potato output in Britain. They give attention to the economic results from high and low cost production of farmers in the Cambridge Sample, and to the ADAS design for high yield production, which would result in more output from less than half our existing acreage.

With the reliability of the potato yield in mind, the economics of irrigation are also discussed. Both high yield production and irrigation require additional capital expenditure, but the nature of the investment is different. High yield production implies high annual production costs and a high return on investment each year. Investment in irrigation requires a very high initial outlay and only gives a high return on investment in years of drought. In fact, only in certain years, probably less than one in ten, does the potato crop in Britain suffer extensively from lack of rainfall.

## High or Low Cost Production

Potatoes are regarded as a high cost crop and many growers believe that profit can be increased by minimising the cost. A few believe in intensive high cost production, a system recently brought into prominence by work by ADAS.

An examination of the 1974 and 1975 potato results throws some light on the issue of high or low cost production. In simple terms, high cost production, with the added risk, is only justifiable when correspondingly high yields are obtained.

Table 6 shows the results for the ten highest cost farms in each year set against the results for the ten lowest cost farms. In 1974, the ten high cost farms made a loss and the low cost farms made a profit of £90 per acre. In 1975, however, the high cost farms made a profit of over £800 an acre compared with that of the low cost farms of £326.

In 1974, the high cost farms cropped 15 tons an acre and the low cost farms, 12 tons. High cost producers also received a premium price, which resulted in returns per acre of £390 as compared with £276 for low cost producers. The advantage of the high cost producers in returns was, however, more than offset by higher costs. Variable costs of high cost producers were £178 per acre as compared with £99 for the low cost producer, while fixed costs were higher still, £216 per acre as against £88. Total costs of the high cost producers were little short of £400 an acre, while those of the low cost producers were under £200 an acre.

In considering these two years' results it should be borne in mind that 1974 was a normal year. The results for 1975 might suggest that high cost production pays, but 1975 was a year of exceptionally low yields and very high prices. The yields of high cost producers dropped by a third over those of 1974, but yields of low cost producers fell more. High cost producers, with longer term storage, secured the very high prices of the latter part of the marketing season. Their price per ton was almost double that of the low cost producers, and their returns were more than double. The advantage of high cost producers in returns per acre greatly offset their extra costs of £60 per acre on variable costs and £100 an acre on fixed costs. (Fixed costs were actually appreciably lower on the high cost farms in 1975 and very slightly lower on the low cost farms). In 1975, high cost producers secured a gross margin of over £1000 per acre and low cost producers one of some £400 per acre.

## High Yield Production

Average yields of maincrop potatoes in Britain (30 tonnes per hectare) are far lower than the theoretically possible maximum. Since the early 1970's work done at the Experimental Husbandry Station at Stockbridge House in Yorkshire has demonstrated what can be done by removing known limitations to higher yields.<sup>a</sup> The application of these findings on commercial farms has not always been successful, but from this work there is the possibility of increasing potato yields by two or three times. The Stockbridge House system of producing high yields of maincrop potatoes is known as the "blue-print" system, taking its name from other crop recipes of the Agricultural Advisory and Development Service.

Doubling of yields requires doubling of tuber numbers since oversize tubers must be avoided, and a doubling of the stem population per hectare. Fertiliser levels are increased to twice the usual amounts to support a heavy crop. The level of fertiliser required was calculated by considering the nutrients removed

<sup>a</sup> Maximum potato yield in the United Kingdom by S. A. Evans, ADAS, Leeds. Outlook on Agriculture, Vol. 4 1975.

by a crop of 85 tonnes per hectare (35 tons per acre) of ware potatoes. Recommendations on treatment for pests and disease treatments were straightforward. When putting across the blue-print system in 1975 Stockbridge House acknowledged that maximising yields might appear to be uneconomic and impractical, and that traditional potato growers might have difficulty in accepting the concept. However, the model had then been on test for four years but on an area of only 0.2 to 0.3 hectares, some three-quarters of an acre. In 1975 and 1976 the system was tried out on commercial farms. Experiments at Stockbridge House showed that with high fertiliser levels and 340,000 stems per hectare, yields of 90, 75, 85, 87 tonnes per hectare were obtained for crops from 1971 onwards.

Table 6. COMPARISON OF ECONOMIC RESULTS OF HIGH AND LOW COST FARMS

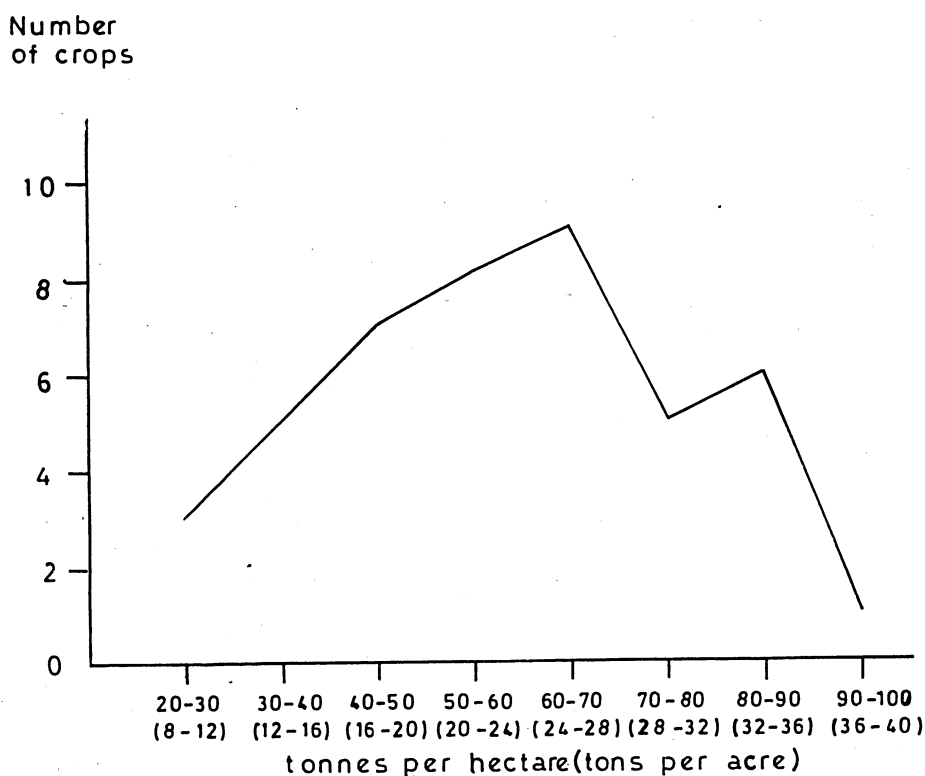
	High Cost		Low Cost	
	1974	1975	1974	1975
Acres of potatoes	37.8	49.0	50.3	48.8
Hectares	15.3	19.8	20.3	19.7
Yield — tons per acre	14.8	10.4	12.3	7.4
tonnes per ha.	37.2	26.1	30.9	18.6
Price — £.s per ton	25.8	113.9	21.2	64.6
£'s per tonne	25.4	112.1	20.9	63.6
<b>RETURNS</b>	£	£	£	£
Sales	382.5	1184.6	261.2	478.4
Retained and chats	8.2	26.3	14.8	73.3
<b>TOTAL RETURNS</b>	390.7	1210.9	276.0	551.7
(£ per ha)	965.4	2992.1	682.0	1363.2
<b>VARIABLE COSTS</b>				
Seed	39.2	54.4	37.9	48.5
Fertiliser	25.7	44.9	21.9	38.7
Spray materials	11.9	18.5	8.8	7.3
Bag and ties	23.4	23.8	3.9	6.0
Contract	12.9	28.8	9.5	12.4
Casual labour	56.6	21.1	12.3	20.4
Miscellaneous	8.8	7.9	4.5	5.3
<b>TOTAL VARIABLE COSTS</b>	178.5	199.4	98.8	138.6
(£ per ha)	441.1	492.7	244.1	342.5
<b>GROSS MARGIN</b>	212.2	1011.5	177.2	413.1
(£ per ha)	524.3	2499.4	437.9	1020.8
<b>FIXED COSTS</b>				
Regular labour	79.2	60.0	20.6	19.5
Tractors and machinery	67.1	61.8	29.6	26.2
Rent and rates	20.1	20.4	14.7	13.5
Overheads	49.8	46.9	23.1	27.8
<b>TOTAL FIXED COSTS</b>	216.2	189.1	88.0	87.0
(£ per ha)	534.2	467.3	217.4	215.0
<b>TOTAL COSTS</b>	394.7	388.5	186.8	225.6
(£ per ha)	975.3	960.0	461.6	557.5
<b>NET MARGIN (PROFIT)</b>	-4.0	822.4	89.2	326.1
(£ per ha)	-9.9	2032.1	220.4	805.8



It is of some interest that unirrigated crops grown from 1972 to 1974 were on average actually superior in yield to irrigated crops.

As a result of this work; based on the normal European style of potato growing; commercial growers in this country have been experimenting since 1974 with small areas. Yields in the first year varied from 40 to 72 tonnes per hectare. This work brought out the practical difficulties, such as planting large seed close together, planting quickly by machine and applying top dressing fertiliser without damage to the dense foliage. Some growers also failed to apply fertiliser in the autumn, an essential part of the system. Commercial farmers who take up the system will in fact apply it with modifications because they are not likely to take the high risks involved by adopting the system in the true sense.

Fig. 7. Distribution of Yield Blue-print crops 1975 and 1976 on 44 farms  
Tonnes per hectare (tone per acre)



More than a quarter of the farms cropped over 70 tonnes per hectare (30 tons per acre). These results are quite remarkable, but in a much wider application of the new system of growing potatoes it should be remembered that the growers concerned would be receiving less professional advice and they would include a big proportion of less progressive farmers, not so capable of applying the sophisticated techniques of the new system as the very few growers to whom the above yield results relate.

As is so common with technical innovations in agriculture, their result on production is so spectacular that the scientists do not stop to make an economic assessment of their work. No economic assessment for the blue-print system has been made, but an article in Euro Business<sup>a</sup> outlined the arguments in favour of the system. This compares the blue-print costs of seed, fertiliser and sprays for 1974, £198 per acre, with £175 per acre for the traditional system. However, the blue-print gross margin was £572 an acre from a yield of 35 tons at £22 a ton. In 1975 the three variable costs of the new system totalled £227 an acre, against £104 for the traditional system. Yet the blue-print gross margin was an outstanding £1,798 from a yield of 27 tons valued at £75 per ton. The financial viability of the blue print, however, relies heavily on seed costs remaining reasonable, as the seed rate is 3½ tons per acre or three times the average. In 1975 seed cost £77 an acre, but in 1976 seed costs reached £400 an acre, the three variable cost items together amounting to £645 an acre in comparison with those for the traditional system of £177.

<sup>a</sup> High input potato growing pays best - John Parry - Euro Farm Business, Vol. 5 No. 1. April 1976.

The article questions that the blue-print system variable costs for seed, sprays and fertiliser can be recovered by blue-print output but concludes that this can just about be done. Based on an estimated yield of 30 tons sold at £35 a ton (assumed in April 1966) the gross margin for 1976-7 should be £405 an acre. If extra variables, such as chitting and interest foregone on working capital, are deducted as in the Potato Marketing Board model farm figures, the gross margin is reduced to £305. If fixed costs of £290, based on the model, plus a tonnage weighting are then deducted, the net margin comes out at £15 an acre. This is not much of a margin for such a large input, and hardly attractive to growers. Two points must be made. The £35 per ton assumed in this assessment may be a little low for what we might now consider to be a normal price for ware potatoes, therefore there should be more scope in the output for a better net margin. However, the net margin given in the above analysis is extremely low when the considerable risk element of the blue-print system is considered. Not only is there a high input investment risk but there is a more significant risk for most farmers — that of not coming up to the expectations of the blue-print in regard to yield. A high input blue-print grower must also be a high output grower and the exacting discipline demanded by the blue-print crop cannot be met by many potato growers. The blue-print does have potential to raise the profitability of the potato crop but relatively few growers have the technical ability and discipline to realise it, and most growers will quite correctly be put off by the considerable risk from adopting the system. What is perhaps of the greatest importance is that research surrounding the blue-print system will strengthen the general economic husbandry of potato production in relation to better yields and that more growers, as confidence in research develops, will be growing crops of higher yield, though not exceptionally high like those of the blue-print system.

### The Economics of Irrigation

Only a small part of the potato crop is irrigated, in fact the acreage of main crop potatoes irrigated in the driest region of England and Wales, the Eastern region, decreased between 1970 and 1975.

The two succeeding years of a short potato crop and the spectacular yields from the irrigated crops in these years of scarcity has led to some euphoria in relation to expanding irrigation, in the belief that irrigation is not only the answer to higher production but also that it pays immense returns. Those with this belief leave out of perspective the normal trend of potato yields and prices over the years, and that in most years the price of potatoes does not give a return on irrigation, and that response to irrigation greatly depends on the particular soils on the farm.

For many years work on irrigation has been carried out at the ADAS Experimental Husbandry Station at Gleadthorpe in Nottinghamshire, on light soils responsive to irrigation. The results of their work showing response to irrigation on potatoes is shown in the following table:

Table 7. ECONOMIC RESPONSE TO IRRIGATION

Maincrop Potatoes at Gleadthorpe 1958-76

	Average Yield increase per year (tons/ac.)	Average Water used per year (inches)	Cost of water per acre £	Value of increased yield at £60/t £	Margin £
Low Response Years (7 years = 37%)	0.04	2.4	33	2	-31
Medium Response Years (5 years = 26%)	1.63	4.7	40	98	+ 58
High Response Years (7 years = 37%)	8.91	7.1	46	535	+489
All Years (19)	3.66	4.7	40	220	+180

Source: ADAS Experimental Husbandry Station, Gleadthorpe.

In 19 years, seven show high responses and seven low, with an overall increase of 3.7 tons per acre and good positive margins in high response years, but negative margins in low response years. Clearly for some growers in certain areas irrigation will pay, but not every year and for most growers it is likely that irrigation will not pay for its investment. It is the concern of each grower to look into this in his own situation.

Comment on the economics of irrigation was made by the Farm Director of the Gleadthorpe Station earlier this year.<sup>a</sup> He pointed out in 1976, an exceptionally dry year, that maincrop potatoes at Gleadthorpe responded to irrigation to an extent never encountered before. Preliminary yields from Record and Pentland Crown unirrigated were £9.8 tons per acre, and irrigated with 10.7 inches of water, 27.4 tons per acre, an increase of 17.6 tons. Other farms on light land would also have achieved a similar increase in 1976, if they had had sufficient irrigation capacity to keep up with the very heavy loss of moisture in the continuous hot weather. The drought of 1976 aroused much interest in irrigation but the heavy autumn rains that followed damped the enthusiasm. In perspective it is helpful to look at the effect of irrigation over the years leading up to the two seasons of scarcity. At Gleadthorpe, from 1960 to 1968, early varieties lifted in early July gave yield responses over nine years of 1.8 tons per acre for an average of 2.9 inches of water. Higher yields in earlies also mean that the crop can be lifted earlier at a better price. With maincrop potatoes, however, yield benefits have been more variable than with earlies, because their longer growing season gives them more time to make up for lost ground after short drought periods.

It may be questioned whether there happened to be too many "bonanza" irrigation years in the sample quoted to be representative of a longer run of seasons. Rainfall records going back to 1933, however, indicate one dry summer in four, little different from the results in the trials. If indeed we are to encounter more dry summers in future the work at Gleadthorpe could be repeated on different soils and in different parts of the country. Such information would be of value not only to farmers deciding whether to invest in irrigation but, of more importance, it could demonstrate from a national point of view the scope for increased production.

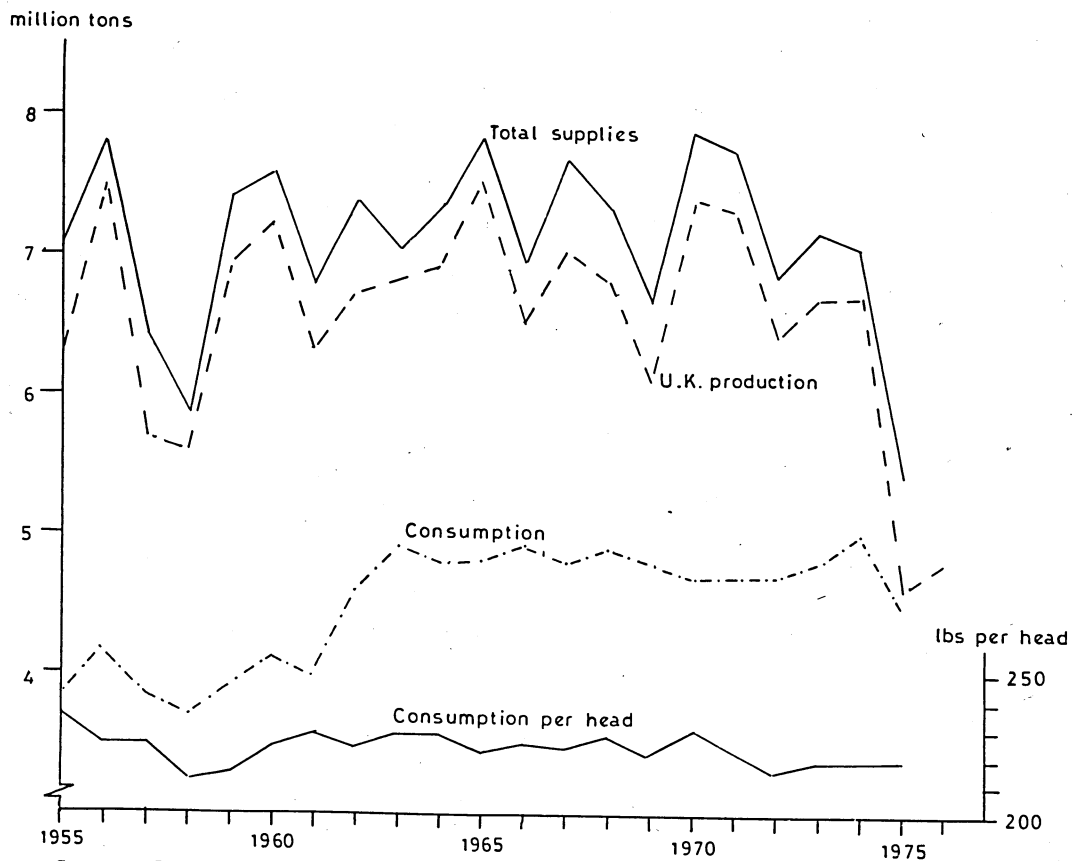
<sup>a</sup> Irrigation: will it pay in the Future? ADAS Experimental Station, Gleadthorpe.

## SCARCITY, SUFFICIENCY OR SURPLUS?

## Supply, Consumption and Utilisation

Government policy, as carried out through the operations of the Potato Marketing Board is to ensure an adequate supply of home grown potatoes to meet the needs of consumers, consistent with providing proper remuneration to the producer. Acreage targets for Great Britain are set by the Ministry of Agriculture from which individual basic acreages are allocated to producers by the PMB in Britain. Then, according to the PMB assessment of intended planting, a quota percentage is imposed, so securing the actual acreage required.<sup>a</sup> These provisions do not apply to Northern Ireland. Board operations are supported by a levy on producers and acreage control is effected by penalties calculated as a multiple of the levy, and applied when producers exceed their allocated acreage. A guarantee price is set by the Government for each season to give a floor to the market, otherwise the price is left to market forces. The guarantee price is set high enough to encourage the planting of enough acres to meet consumers' needs with a normal yield. When yields are high the surplus is diverted to other uses, mainly to livestock feed. The quota is however intended as a top limit to minimise Exchequer payments when the price falls below the guarantee. The system has worked well in normal seasons and it is only in the years of unusual scarcity such as 1975 and 1976 that it has not achieved its purpose. In the last twenty years the area planted has generally fallen short of the basic acreage. Since 1956 the acreage planted has fallen as much as 20 per cent or more below the basic acreage and has only come below ten per cent on two occasions — 1956 and 1976. Clearly the basic quota has not been much of a restriction on supply. The acreage planted has determined the level of production which in turn has been influenced in particular by the market price of potatoes and the guarantee price over the years. The shortfall between acreage planted and the quota acreage reflects producers' reaction to comparatively low prices. As costs have risen over the years the full quota acreage has seldom been grown and the price has not risen in proportion to costs.

Fig. 8. Production and Consumption of Potatoes



Source: Output and Utilisation Series — MAFF.  
PMB Handbook and the Statistical Review for Northern Ireland.

<sup>a</sup> Government policy allows for a reserve acreage of 250,000. Since the drought of 1975 this has been raised to 300,000 acres.

Figure 8 throws light on the supply and demand for potatoes in Britain. Supplies have been about seven million tons from 1955 to 1975 and home production has supplied 86 to 96 per cent of this total. Production in Britain has however fluctuated by as much as fifteen per cent above or below an average of six to seven million tons. In 1975, a year of drought, production fell by more than thirty per cent to less than five million tons – enough to cause an unprecedented scarcity. Beyond expectations, and defying existing production trends, 1976 was also a dry year with production only a little higher than the year before.

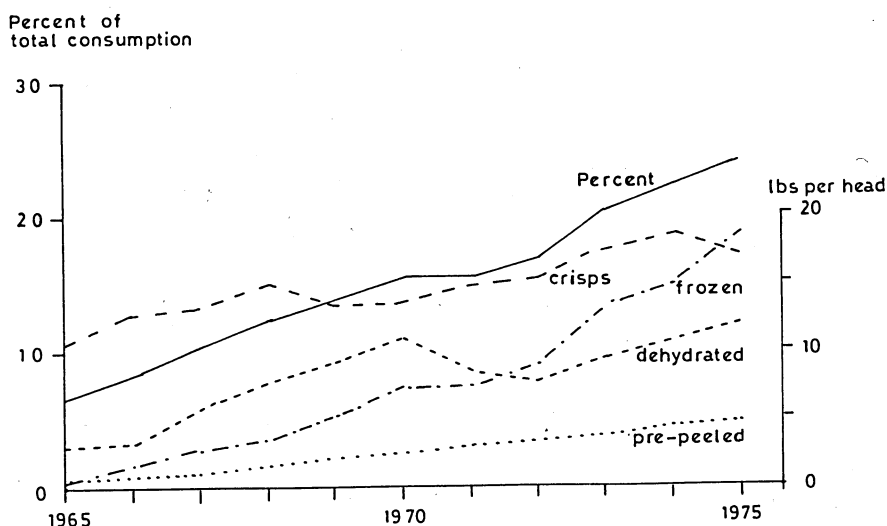
Potato consumption in Britain is higher than in other countries of the EEC except for the Irish Republic and Belgium. Since 1955 consumption per head of potatoes and potato products has shown a slight but consistent decline from 234 lbs in 1955 to 219 in 1975. Trends in consumption in relation to total supplies and home production are shown in Figure 8.

In the years before 1975, consumption was more consistent than production, deficiencies being made up by imports. The demand for potatoes is inelastic and in normal years there is little evidence that more potatoes are bought in years of plenty and less in years of lower production as shown by Figure 7. This amount is given as consumption in Figure 7, of course much more relevant to demand and supply than is the figure for total home production.

Since 1955, while the consumption of potatoes has fallen, that of other vegetables has increased<sup>a</sup>. This is part of a move away from starchy foods. In the same period the usage of grain products also declined fairly steadily, considerably more than the drop in potato consumption. Grain products and potatoes contributed 55 per cent of the carbohydrate intake in 1955, but by 1972 they provided only 49 per cent. The consumption of wheat flour reflects a 30 per cent drop in bread consumption from 3½ to 2¼ lb per week offset to some extent by a growth in demand for breakfast cereals. The carbohydrate content of the British diet has dropped by nearly 10 per cent since 1955 as consumers have become more weight conscious. Demand for the relatively low priced commodity, the potato, is falling, but not as much as bread. Even when prices are high demand remains high and substitutes do not satisfactorily replace potatoes.

One reason for the continuing high demand for potatoes is that new products have appeared which have partly replaced the raw product. See Figure 9. In the last twenty years the demand for raw potatoes has fallen from 230 lbs per head to 166 lbs. As the standard of living has improved the housewife spends more on processed potatoes which are more convenient to use. As a result a quarter of the raw product now processed. The fall in demand for raw potatoes is largely due to their alleged capacity for putting on weight. Paradoxically, processed potatoes that probably put on more weight because of added fat, are not recognised in this way. As a result the demand for raw potatoes has been cut by more than a quarter in the last twenty years, while the demand for processed potatoes has risen to almost the same extent.

Fig. 9 The Development of the Market for Processed Potatoes 1965 – 1975  
Consumption per head – lbs.



Source: Food Facts, MAFF.

<sup>a</sup> Estimates of food supplies moving into consumption in the United Kingdom. Trade and Industry. August 30th 1973.

Table 8. SUPPLIES AND UTILISATION OF POTATOES IN THE U.K. ('000 TONS JUNE--MAY HARVEST YEAR)

A	1969-70	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77*
<b>SUPPLIES</b>								
Total Production	6117	7364	7279	6527	6845	6791	4551	4523
Maincrop Exports – EEC	8	8	7	22	20	8	6	8
Others	84	91	76	202	172	143	92	81
Consumption of home crop	4811	4772	4888	5158	5299	5328	3659	3519
Raw Imports Channel Isl.	–	–	–	42	47	21	22	25
Earlies – EEC	67	59	60	9	7	15	61	7
Others	230	244	268	219	243	165	233	264
Maincrop – EEC	8	–	–	–	–	–	277	202
Others	13	–	–	–	–	–	76	93
Processed Imports – EEC	44	54	61	38	57	43	73	98
Others	104	84	42	61	80	17	312	394
<b>TOTAL SUPPLIES</b>	<b>5277</b>	<b>5213</b>	<b>5319</b>	<b>5527</b>	<b>5733</b>	<b>5589</b>	<b>4713</b>	<b>4602</b>
Present home production	91	92	92	93	92	95	78	76
<b>B – Output and utilisation of farm produce in the U.K.</b>								
<b>UTILISATION</b>								
Human consumption – Raw	4738	4580	4670	4704	4644	4594	3548	3519
Processed	710	797	815	899	1160	1068	1221	
Seed (Retained on farm)	757 (392)	715 (336)	650 (316)	664 (341)	635 (321)	624 (319)	621 (320)	
Animal feed (Retained on farm)	208 (206)	895 (206)	836 (206)	239 (206)	401 (374)	435 (413)	138 (138)	
Others (including surplus disposal for compensation + waste)	299	973	906	265	346	286	47	

Source: A – Annual price review

B – Output and utilisation of farm produce in the U.K.

\*Forecast figures.

The consumption of potato crisps has risen from 11 to 17 lbs per head in the last ten years, while frozen potatoes have risen from almost zero over ten years ago to 18 lbs per head in 1975. Dehydrated, canned and par-fried are next in line and have risen in consumption from 3 lbs to 12 lbs since 1965 and pre-peeled potatoes have risen from less than 1 lb to nearly 5 lbs per head in the same period.

Data on total supplies and utilisation of potatoes in Britain, is substantially complete for the last ten years, and is shown in Table 8.

The low level of total home production which occasioned scarcity in 1975-6 and 1976-7 shows a deficit exceeding twentyfive per cent of the production in all previous years but 1966-7, and a reduction of more than twenty per cent on that year. Exports from Britain of potatoes are very low and have in fact been banned since September 1975. Imports of potatoes are listed since 1969-70 and again these imports hardly exceed five per cent of our home crop. Imports of processed potatoes are now greater than raw potato imports. The contribution of home production to supplies, over the years, ninetyone per cent or greater, was only seventyeight per cent in 1975-6 and seventysix per cent in 1976-7. In the calendar year 1975 total imports were 374.6 thousand tonnes, costing £39.3 million and in 1976 the figures were 631.7 thousand tonnes at a cost of £123 million. By value, imports run at about fifteen per cent of total supplies. Exports of potatoes from Britain are not encouraged and no organised export market has emerged. Discouragement of exports is implicit in the guarantee price given by the Government. There is however an opportunity export market in times of surplus. For instance in 1974 140,000 tons were exported, mainly to the Canary Islands, Argentina and Greece. Since the 1975 shortage, exports have been banned in Britain. Indeed, whenever there has been a prospect of a shortage, it has been policy to ban exports.

The crop is utilised substantially for human consumption in the raw or processed state. Except in years of surplus only small quantities now go to animal feed and seed for farms represents the biggest recorded outlet other than that for human consumption.

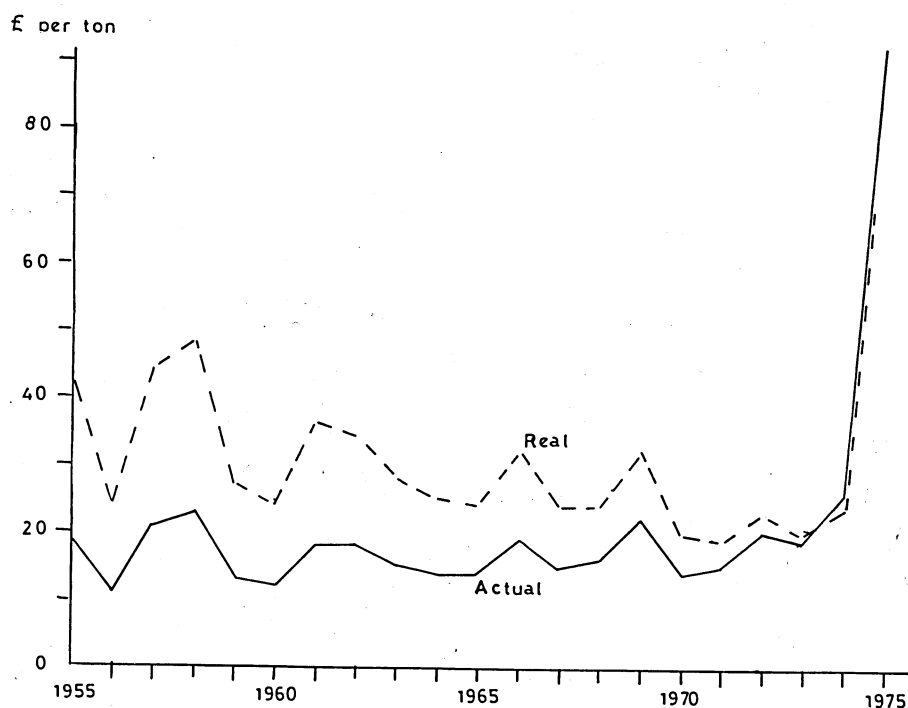
#### The Success of Government Policy

The success of the Government policy for controlling the supply and price of potatoes for human consumption is supported by a statistical analysis over the period 1955 to 1976. It is clear that over-planting could lead to over supply and a consequent decline in price of potatoes and in the returns to producers. Without the guarantee price the market cycle could well have taken the following form. Since the supply response of producers is controlled by price, setting the guarantee price too high could lead to supplies in excess of demand and a consequent decline in profits. This would in turn lead to a fall in production in succeeding seasons and to higher prices. A succession of high and low prices for consumers is the situation of the typical "Cobweb Model", which can lead to increasing fluctuations in price. This unwanted instability has been largely avoided in the potato sector in Britain. Indeed, in addition to price stability, both the retail and wholesale price of potatoes has fallen in real terms over the years.

Fig. 10 Actual and Real Retail Prices 1955 - 75



Fig. 11. Actual and Real Wholesale Prices 1955 – 75



It is difficult to say to what extent real prices have declined due to Government policy, but this policy is most likely to have had a direct effect on this. While potato consumption has been falling due to a change in consumers' habits, the acreage planted has kept in step. The guarantee price in real terms has also been falling over the last 22 years, yet supply, apart from 1975 and 1976, has been remarkably stable. Technical change and improved potato varieties have played their part, but Government policy has responded to these changes. The yield per acre in Britain has risen by seventyfive per cent over the period and Government policy has taken account of this in setting the guarantee price and the target acreage.

The following model examines the relationship between price, acreage, and yield:

$$Y = b_0 + b_1 X_1 + b_2 X_2 + e$$

where

- Y = guarantee price
- X<sub>1</sub> = yield per acre
- X<sub>2</sub> = acreage grown

#### Results

$$Y = 81.142 - 2.888 X_1 - 0.062 X_2$$

$$t \text{ Ratio} = (5.71) \quad (2.80) \quad (5.68)$$

$$\bar{R}^2 = 61.35$$

$$F. \text{ Ratio} = 17.66$$

$$r = -.711 \text{ (Correlation between } X_1 \text{ and } X_2)$$

$$N = 22$$



There is a strong negative relationship between the acreage grown and the guarantee price. This a priori is to be expected because consumption is falling and policy would be to reduce the acreage grown within which the increasing yield effect is built. In fact, as much as fifty per cent of the year to year variance in the guarantee price is explained by changes in the acreage grown. A further thirteen per cent is explained by the yield trend.

The guarantee price and observed price, shown in Figure 12 give added strength to the model. The relationship between target acreage and yield per acre:

$$Y = b_0 + b_1 X_1$$

Y = target acreage  
X<sub>1</sub> = yield

*Results*

$$Y = 1209.05 - 53.52 X_1$$

t Ratio = (10.63) (4.48)

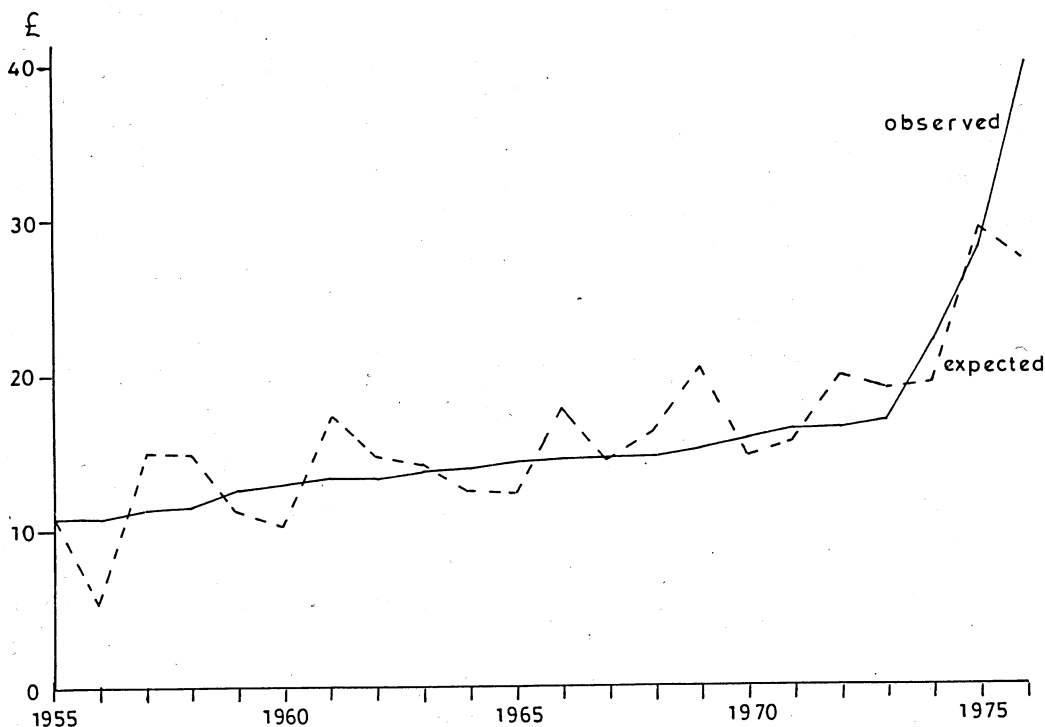
$$R^2 = 47.64$$

F. Ratio = 20.1065  
N = 22

Nearly fifty per cent of the variance in the target acreage is explained by yield, and the results may be interpreted as follows: An increase of 1 ton per acre is followed on average over the years by a decline of 53,000 acres. Over the period the acreage fell by 323,000 or thirtyseven per cent, while yields rose by seventyfive per cent. The average yield over the period was 9.42 tons per acre, and the average acreage was 706,000. Thus the long run yield elasticity with respect to the acreage planted is 0.71 which is remarkably high. If yield rose by say ten per cent over the acreage of 9.4 tons per acre, we could expect to see the acreage planted to go down by seven per cent.

In the absence of a shift in the demand for potatoes or of imported supplies the decline in the acreage of potatoes in Britain will continue. This could result in potatoes being increasingly grown by specialist producers who can best compete with rising production costs. It also means that some 60,000 acres a year could become available for other crops.

Fig. 12. Expected and Observed Guaranteed Prices 1955 - 76



The success of the British system is that the guarantee price has offered the producer a safeguard, though in most years the market price has been much better, but at the same time the individual producer has been free to decide the acreage he should grow in each season. This is subject to individual producers being penalised for growing more than their quota and some of these producers have excluded their quota by design. The quota acreage, which is derived via the basic acreage from the target acreage, has acted as a control on the total acreage planted each year while not preventing those who wish to, from growing more. The guarantee price, sufficient to attract the most efficient producers to grow potatoes, has also had the effect of holding down the retail price of potatoes in the interests of consumers.

### The Common Organisation of the Market in Potatoes

Since potatoes are a major food in the Community and their regular supply at reasonable prices is the concern of all consumers, and of the Governments on whom they depend for support, the proposals for the common organisation of the market in potatoes now under discussion in Brussels is of particular importance. The EEC proposal for the potato market is also of vital importance for British Government policy in this sector since the application of the proposals as they now stand throughout the Community would mean that Britain would be obliged to give up her own policy which has been so successful over the years in providing a stable supply of potatoes at a reasonable price.

It is necessary for the Community to make regulations relating to the common organisation of the potato market following the Charmasson Judgment which was delivered by the Community Court of Justice, which will soon prohibit Member States from maintaining obstacles to trade in agricultural products not yet covered by a market organisation. The proposal for the common organisation of the market in potatoes was published by the Commission in January 1976 and voted on in the Committee on agriculture in June 1976. The proposal aims to regulate production and trade in the European potato sector. Quality and marketing norms are proposed to ensure that the market receives a regular supply of better quality potatoes. Support measures are also proposed to protect producers in periods of surplus. Intra-Community trade will be encouraged because the national regulations will at last be harmonised. The Commission suggests that the responsibility for managing the European potato supply should be given to recognised producer groups so that the producers would be responsible for stabilising the market. The groups would also be responsible for administering market support measures for maincrop potatoes. As a market regime commodity, new potatoes would be given reference prices in relation to third country imports. Production control of any kind, like the successful measures operated in Britain where measures to equate demand with supply are the envy of other members of the Community, would have to go.

Some aspects of this proposal are very questionable. One is that Intra-European free trade measures are necessary at all since each Member State has a relatively large home supply and, like Britain and West Germany, can take their own measures to regulate imports. In the debate, Mr. Bourdellès mentioned fluctuation in prices between countries and between seasons as justifying the proposal. As a support to the common measure this point has little value because with a commodity such as potatoes price differences will always exist, and no common marketing measure can change the economic character of the potato market.

The point concerning the relative price stability or indeed the lack of it, which will arise from the new market proposal was most clearly made by Mr. Hughes of Britain. He referred to the previous debate from the Commissioner who said that as a consequence of the action of the PMB the British housewife would have to pay more for her potatoes. Using figures from Mr. Bourdellès report, Mr. Hughes illustrated that the amplitude of fluctuations in the price to the farmer is less in Britain over the period 1964-5 to 1973-4 than in any other country in the Community. Broadly, in Britain the ratio between the highest and the lowest producer price is 1.46 to 1. Compare that with Belgium, which gives a ratio of 5 to 1 between the lowest and the highest prices. The size of these fluctuations is as damaging to both the consumer and the producer as are actual changes in the price level. It is these enormous variations in price that cause both political and consumer objections. Whatever else may be said against the British Scheme of regulation through the Potato Marketing Board, the record, on the basis of data provided in June 1975 to the Directorate-General for Agriculture in the Commission itself, at least illustrates that the procedures we have deployed in Britain for 30 years have given the British producer and the British consumer a greater level of certainty as to price. For example, in the period 1971-2, the price index in Belgium for ware potatoes (farmers' receipts) is 66.7, based on 1964-5 = 100. In 1972-3 it was 249. This change must be compared with the greatest change in Britain, from 106 to 140. It was in this area that Mr. Hughes saw no evidence that the present Community proposals will do other than increase the possibility of wide fluctuations in price and that such instability of price would benefit neither the producer nor the consumer. The potato is perishable and it can best be given common market regulations similar and no more restricting than those for fruit and vegetables. The marketing of potatoes has always had its own particular problems and the systems which now organise the market have considerable experience and responsibility in this field, tempered as they are by risk on the one hand and the profit

motive on the other. The complexity of the problems of marketing potatoes will not disappear if the market is organised in common, indeed, financial support and market power to producers given from Brussels is likely to bring about less, rather than more efficiency in the market for a perishable commodity like potatoes, required in bulk supply every day of the year. It is questionable that any more restrictive market regulations than those operating in individual Member States at present can act so as to give more assured supplies at reasonable prices than the policies they operate at present. All States are practically self-sufficient for potatoes.

Reliance on producer groups is an aspect of particular curiosity. At present a number of countries do not have producer groups. For instance, there are very few in Britain and the Irish Republic has one. Only ten per cent of the maincrop potatoes and five per cent of the new potatoes in the Community are at present handled by producer groups. This is much too small a base from which to develop an active Community market for potatoes.

When the proposal was voted on by the Committee on Agriculture in June 1976, it was not surprising that it was rejected by Britain, Denmark and West Germany. Four members abstained and eleven voted in favour. The report was adopted unanimously by the Committee on Budgets and provision has been made to give large amounts of grant aid to producer groups over three years (five years has been recommended by several speakers in the European Parliament in the September 1976 debate). One reason for the opposition is that most countries already have a potato marketing organisation. For instance, we have the Potato Marketing Board in Britain, there is the Irish Potato Marketing Company in Ireland, SNIPOT in France, STOPA in the Netherlands and AIMA in Italy. There is an automatic assumption in the marketing proposal that producer groups, whose marketing experience must be comparatively limited, would organise the market more efficiently than the organisations with which they have (obviously unsuccessfully) been competing for years. It is unlikely that trade responsibility given to producer groups, who would clearly have a vested interest in high prices, would mean that the potato will continue to be reasonably priced to the housewife. Producer groups would tend to use their new Community-blessed monopoly power. Another serious criticism is the cost of operating the marketing scheme. The cost of high potato prices and the cost of establishing producer groups could well work against basic Government policy in the Member States aimed at containing the cost of food. One absolute absurdity in the proposals is that producer groups should give three years' notice if they wish to go out of production.

Since the debate has been started on the proposal, it is now possible that the PMB will be acceptable to Brussels but so far we have not heard that Britain will be allowed to regulate supply as in the past. One problem is the great number of producers in France and Germany, for instance, where organisation of producers would be difficult.

The debate on the proposals for the common organisation of the market will go on for some time, but it is of some importance, however, that the market proposals should be fully examined now so as to give a commonsense strategy for marketing potatoes and so as to recognise genuine trade characteristic qualities of the potato, to reduce the cost of the scheme and to increase service to the housewife, and above all avoid high prices which have so commonly in the past been associated with Community market measures for agricultural commodities.

Now is the time to ask whether responsibility for the market organisation should not be arranged by national bodies linked to the trade. Clearly the obvious answer is that the trade should be used in some measure for this purpose. The trade has the experience, it has the commercial responsibility to supply and distribute potatoes, and competitive trading both maintains competitive prices and ensures that wherever there is a demand, supply will meet it. The trade has the organisational structure to share with a national organisation the market administration, and it embraces imported potatoes as well as home grown, that is, the whole supply. There can be little doubt that the most efficient marketing scheme for potatoes would result from a combination of Government (acting on behalf of consumers) and producer authority making use of the trade. This would be both in the interests of producers in giving them more stable prices, and in the interests of consumers in avoiding high prices, and in the interests of all taxpayers contributing to Community funds. There is an important lesson for the Community in the successful marketing policy controlled by the Government and implemented through the PMB and the trade in Britain. Such a policy would lead to a sufficient supply of potatoes at stable and reasonable prices in the Community, the object of the new market proposal. This is also the time to consider most seriously a quota system for the Community based on the practice of ours in Britain, a quota system which is not directly restrictive, but encourages production to respond to demand. Quotas for sugar beet exist in the Community but it is recognised that most member countries are opposed to quotas on potatoes at present because their potato industry is not well organised. A quota, apart from ensuring supplies avoids the use of land in producing unwanted potatoes and would release land for other agricultural uses.

Potatoes are important in the Community and in its food supply. All Community Governments now face a challenge with respect to the market for potatoes and we must achieve stability in supply and price. The Community is a big producer of potatoes with 2½ million growers and an output of some 40 million tonnes giving near self-sufficiency. So, while the potato is very much the concern of producers in the Community and its price and supply the concern of consumers and all Member Governments, since the

market regulations (as proposed) may cover new potatoes, it is important that Brussels does not regulate unfairly on supplies from the Mediterranean and North Africa, from countries outside the Community.

Can Brussels succeed with potatoes where it has frequently failed with the marketing of so many other agricultural products? Community countries have such varied interests in the crop. For instance, West Germany grows considerable quantities for livestock and the Netherlands has a strong industrial demand as well as a large export market. Community farm policy has failed, it should be remembered, in the marketing of commodities which, by their nature, have a much more stable price and a more regular supply than potatoes. The problem of market policy is therefore far more difficult for potatoes if supplies are to be assured at reasonable prices. The most important problems in Community farm policy have in fact arisen because the CAP sought to support the incomes of small farmers through raising the price of the commodities they produce. This meant that larger and often more efficient farmers representing a big part of the supply were encouraged to produce more which has led to surpluses and led also to a chronic market problem. The temptation to raise potato prices should not be so great since potatoes only represent part of the income of the farmers concerned. The real problem in the potato market is that of annual fluctuations in production which a not too restricted quota system, combined with a modest guarantee price, could do much to relieve. Significant shortfalls in domestic supply and significant surpluses are best met by changes in import policy. Within the framework the consumer and the producer are best satisfied by the activity of the trade working to match demand and supply. The Common policy for the market in potatoes should be worked out with this in mind.

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## ADDRESSES OF UNIVERSITIES

- ABERYSTWYTH** Department of Agricultural Economics, University College of Wales, School of Agricultural Sciences, Penglais, Aberystwyth, Dyfed SY23 3DD.
- CAMBRIDGE** Agricultural Economics Unit, Department of Land Economy, Silver Street, Cambridge CB3 9EL.
- EXETER** Department of Agricultural Economics, Lafrowda, St. German's Road, Exeter, Devon.
- MANCHESTER** Department of Agricultural Economics, Faculty of Economic and Social Studies, Manchester, M13 9PL.
- NEWCASTLE  
upon TYNE** Department of Agricultural Economics, Newcastle upon Tyne NE1 7RU.
- NOTTINGHAM** Department of Agriculture and Horticulture, School of Agriculture, Sutton Bonington, Loughborough, Leics. LE12 5RD.
- READING** Department of Agricultural Economics and Management, 4 Earley Gate, Whiteknights Road, Reading RG6 2AR.
- WYE** School of Rural Economics and Related Studies, Wye College, Ashford, Kent TN25 5AH.

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