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Potatoes - Cost of prod.

Agricultural Enterprise Studies in England + Wales #44

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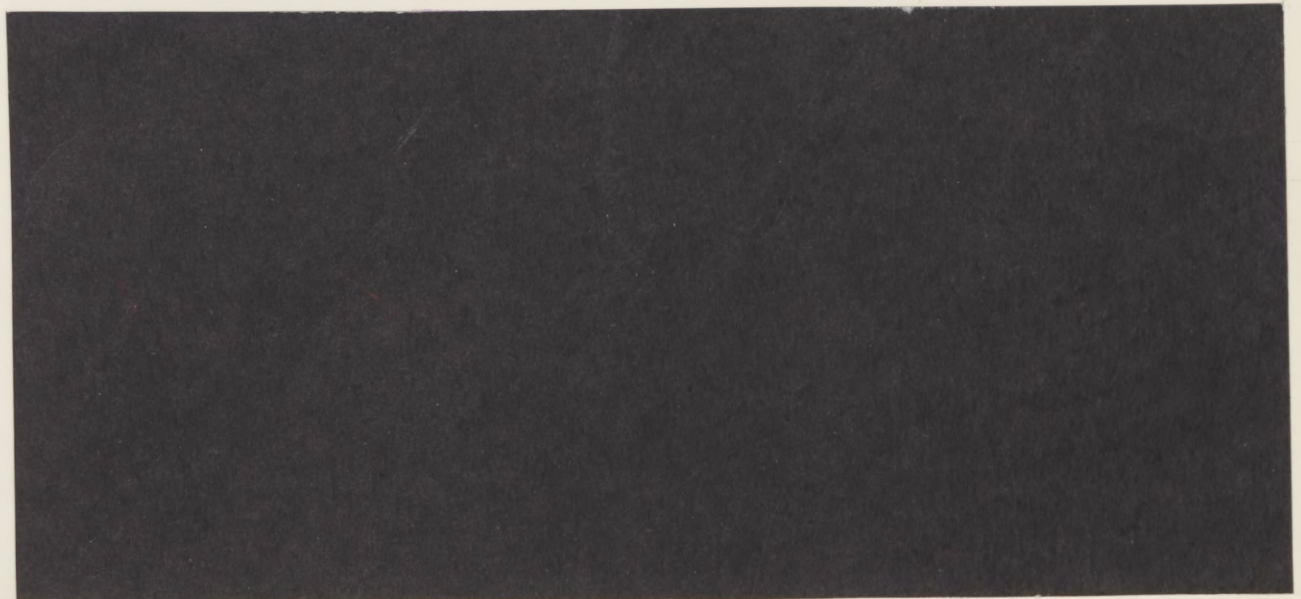
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1975

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A. Lloyd

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Department of Agricultural Economics
The University College of Wales,
Aberystwyth.

Price: £1.00

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A. Lloyd.

AGRICULTURAL ENTERPRISE STUDIES IN ENGLAND AND WALES

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.

Departments in different regions of the country conduct 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 are 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.

Early Potato Production in England and Wales

1975

Summary

A survey of early potato production in England and Wales was conducted on the 1975 crop, consisting of a sample of seventy three farms. Details of the costs of production, seed types and rates, and yields were collected. The most significant item of cost in the sample as a whole was seed followed by casual labour. Total costs of over £700 per hectare were recorded (£295 per acre) of which seed accounted for nearly 32 per cent.

Irrigation was especially significant on eight of the Pembrokeshire farms where yields were 23 per cent above the average for all regions. On a per hectare basis the mean yield for all 73 farms was 15.1 tonnes of which 14.1 tonnes were sold; the average price obtained was £130 per tonne. Overall net profit was equal to £1,245 per hectare (£82 per tonne).

Factors significant in determining total output appeared to be the seeding rate, date of lifting and irrigation; the last-mentioned, however, would seem to be the most important of all in a very dry year, such as 1975.

It emerges that the costs involved in early potato production are high, as is the degree of risk associated with the margin attainable

over total costs. In 1975 most early potato producers found the risk worth taking. But 1975 was an exceptional year, as is 1976, and future end prices could change dramatically from those of the past two seasons.

National Production

Potato production has fluctuated considerably in recent years according to profitability, PMB quotas, weather conditions, and so on. The following table lists estimated hectares of early and maincrop potatoes with per hectare yields and total output (in tonnes) in England and Wales from 1963 until 1973. The extent of early potato production has declined considerably over this period, by 43 per cent throughout England and Wales, but by over 50 per cent in Wales. This is a reflection, in part, of the general decline in the area of potatoes grown, down by 19 per cent, but also of the later lifting of the bulk of the early crop which led to a certain proportion of what, normally, would have been classified as early potatoes, in fact coming into the maincrop category. In 1973 early potatoes (in terms of weight) in England and Wales accounted for 8 per cent of total potato production, a relatively insignificant figure; however, in Wales the proportion was 31 per cent giving an indication of the importance of early potato growing in the Principality as a whole, but especially in its southwestern corner where practically all the earlies are grown. (In 1963 earlies accounted for nearly 50 per cent of total Welsh production). Yields according to figures published by the Ministry of Agriculture, have increased somewhat over the period, especially in England.

Table 1

Estimated Early and Maincrop Potato Production in England and Wales, 1963-73.

Total Hectares, Tonnes per Hectare, and Total Tonnes

	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
<u>Early Potatoes - Total Hectares</u>											
England and Wales - '000 hectares	37	38	34	30	30	28	21	24	24	23	21
England - " "	32	33	30	26	26	24	18	21	21	20	19
Wales - " "	5	5	4	4	4	4	3	3	3	3	2
<u>Maincrop - Total Hectares</u>											
England and Wales - '000 hectares	180	186	184	168	183	183	168	183	175	162	155
England - " "	176	182	180	165	179	179	164	179	171	159	152
Wales - " "	4	4	4	3	4	4	4	4	4	3	3
<u>Early Potatoes - Tonnes per Hectare</u>											
England and Wales - Tonnes per hectare	15.6	15.8	16.8	16.3	15.6	18.8	17.8	16.8	19.6	18.6	20.1
England - " " "	15.1	15.6	16.8	16.3	15.8	19.1	17.3	16.6	19.8	18.3	20.3
Wales - " " "	17.8	17.1	15.8	15.8	14.8	18.8	20.1	17.6	18.3	19.1	17.8
<u>Maincrop Potatoes - Tonnes per Hectare</u>											
England and Wales - Tonnes per hectare	24.1	24.6	28.6	26.9	26.9	25.9	26.1	29.6	30.9	29.9	31.4
England - " " "	24.1	24.6	28.6	27.1	26.9	25.9	26.1	29.6	30.9	29.9	31.4
Wales - " " "	20.3	21.3	22.6	20.8	23.3	24.6	26.4	27.4	28.6	25.9	29.9
<u>Early Potatoes - Total Tonnes</u>											
England and Wales - '000 tonnes	568	596	568	480	459	533	369	406	474	425	426
England - " "	483	515	497	416	400	458	305	352	414	367	382
Wales - " "	85	81	71	64	59	75	64	54	60	58	44
<u>Maincrop Potatoes - Total Tonnes</u>											
England and Wales - '000 tonnes	4342	4571	5250	4528	4887	4740	4421	5414	5402	4846	4865
England - " "	4250	4480	5162	4458	4805	4651	4325	5295	5290	4754	4767
Wales - " "	92	91	88	70	82	89	96	119	112	92	98

Source: Agricultural Statistics England and Wales 1973.

The Sample

A survey of early potato producers was carried out in 1975 by five University Agricultural Economics Departments, namely, Aberystwyth, Cambridge, Exeter, Manchester, and Wye, covering those areas within their regions where early potato production is an important farm enterprise. The sample was randomly selected and included farms of all types and with areas of early potatoes ranging from under one hectare to over thirty. In all, seventy three farmers cooperated, distributed among the five centres as follows:- Aberystwyth - 14, Cambridge - 23, Exeter - 17, Manchester - 14, and Wye - 5. The early potato areas involved are: South Dyfed or Pembrokeshire, Lincolnshire, Bedfordshire, Essex, Cornwall, Cheshire, Lancashire and Kent. The area covered by the survey broadly represents approximately 80 per cent of the area of early potato production in England and Wales.

Types of Farms

The farms on which early potato crops were costed are enumerated in the table below with particulars of cropping and stock numbers per farm. The average size of farm engaged in early potato growing varied between regions. Those in the Eastern and South Eastern counties were largest, farms which grew relatively large areas of cereals and other arable crops. Farms in the North West, South West and in Wales were, on average, appreciably smaller, and where grassland and livestock were much more important. A striking feature of the table is the high absolute and relative area of early potatoes grown on farms in South

Dyfed (i.e. in Pembrokeshire) in the sample, for which almost 20 per cent of the farm area was devoted to this crop.

Table 2

Cropping and Stocking per Costed Farm by Region

	Aber- ystwyth	Cam- bridge	Exeter	Man- chester	Wye	All Regions
No. of Farms	14	23	17	14	5	73
	H'ares	H'ares	H'ares	H'ares	H'ares	H'ares
Cereals	15	62	13	16	91	35
Early Potatoes	14	7	4	2	10	7
Maincrop & Seed Potatoes	1	5	-	3	9	3
Sugar Beet	-	8	-	1	-	3
Brassicas	-	7	3	-	-	3
Other Arable Crops	-	16	-	1	34	7
Fodder Crops	1	-	1	1	2	1
Temporary Grass	10	4	31	17	14	15
Permanent Grass	25	2	6	12	15	10
Rough Grazing	3	4	2	-	2	2
Other	1	5	1	1	8	2
Total Farm Area	70	120	61	54	185	88
	No.	No.	No.	No.	No.	No.
Dairy Cattle	18	13	38	48	24	27
Beef Cattle	51	38	56	46	17	43
Sheep	128	-	23	2	237	47
Pigs	-	5	18	3	40	9
Poultry	257	-	1	129	1300	163

Definitions of Terms

Early potatoes can be categorized according to date of lifting, a basis which enables one to distinguish between earlies and maincrop potatoes and further between first earlies and second earlies. The

whole range of these categories are in fact grown in these areas. Most of the farms in the national sample grew either first earlies (e.g. South Dyfed, Cornwall) or second earlies (e.g. Cheshire, Lancashire, Lincolnshire) but with a few stretching sales into October. No attempt was made however to isolate these latter cases because of the insignificance of the tonnage of potatoes involved. Our definition of early potatoes, however, follows that of the Ministry of Agriculture, namely those lifted up to the 31st of July; those lifted at a later date should be regarded as maincrop, but are included as earlies for the reason given above. Because of the extraordinary circumstances of the 1975 season price variations through the year did not follow a normal pattern thereby justifying a slightly flexible approach to this particular question.

The 1975 Crop Year

1975 was an exceptional year, when the performances of most crops were lower than average due to an exceptionally dry summer. The year began with a mild winter but a dry spring with low temperatures retarded growth until late May, after which it became hot and dry. Apart from a short period of rain in early July, the weather was dry throughout the rest of the summer. Such conditions gave lower than normal yields of early potatoes; and the price rose from about £170 per ton at the beginning of the lifting season to as much as £200 in early July. Those who lifted the majority of their crops at around this time, came off best. Irrigation played a vital role in the performance of some of the crops in 1975; for those who had

irrigation equipment and water available, the additional rewards were considerable. The low yields of potatoes generally engendered a good deal of concern over likely short falls in the potato supply; however, this problem was associated more with the maincrop than the early potato crops.

1974 and 1975 Early Potato Production

Table 3 gives data of the area of early potatoes, in 1974 and 1975 and the proposed area in 1976, along with the yields, by area groups. Without exception the number of hectares planted with early potatoes had fallen since some time in the ten year period up to 1975. This could have been due to the cutting back of quota sizes or to farmer policy arising possibly from market uncertainty. In Pembrokeshire the fall was of the order of 20 per cent whereas over the whole sample it averaged 15 per cent. An interesting point revealed is the substantial increase in the area of earlies grown on the eastern counties farms in 1975 compared with 1974, an increase from 9.3 to 11.6 hectares per farm; furthermore no change was anticipated for 1976.

There was virtually no change in the overall area of potatoes grown between 1974 and 1975 but an anticipated increase of 7 per cent for the following year. The question concerning the anticipated change was answered, in the main, during the first visit of the field officers, that is before the exceptionally dry summer and the much reduced yields.

Table 3

Hectares of Early Potatoes Per Farm and Yields Per Hectare
By Region.

	No. of Farms	Max. Hectares in past 10 years	1974		1975		1976 Proposed Hectares per farm
			Hectares per farm	Yield-tonnes per hectare	Hectares per farm	Yields-tonnes per hectare	
Aberystwyth ¹ - Irrigating	8	24.9	19.8	20.6	20.0	18.6	21.0
- Non Irrigating	6	8.2	6.5	18.1	6.0	9.3	6.9
- All Farms	14	17.7	14.2	20.1	13.8	16.8	14.9
Cambridge - Under 4 hectares	12	4.2	3.5	21.3	3.4	13.6	3.4
- Over 4 hectares	11	11.9	9.3	21.3	11.6	14.1	11.8
- All Farms	23	7.9	6.2	21.3	7.3	14.1	7.4
Exeter - Under 4 hectares	12	2.9	2.2	18.8	2.2	14.1	2.4
- Over 4 hectares	5	7.1	6.3	15.1	7.6	14.8	8.5
- All Farms	17	4.1	3.4	16.3	3.8	14.6	4.2
Manchester - Under 4 hectares	9	2.1	1.7	20.6	1.7	13.1	1.8
- Over 4 hectares	5	6.1	5.5	18.1	4.2	14.1	5.3
- All Farms	14	3.5	3.1	19.1	2.5	13.8	3.0
Wye - All Farms	5	10.9	10.3	25.6	9.6	14.1	10.9
All Regions - All Farms	73	8.3	6.8	20.1	7.0	15.1	7.5

¹ Only two farms had less than four hectares of early potatoes and so sub-division according to irrigation was thought to be more meaningful.

Whether or not replies would have been significantly different after the harvest is difficult to judge. Whilst, on the one hand, the much higher cost of seed may well have frightened many away from thinking of expansion, with all the attendant risks involved, on the other the profits earned in 1975 were considerable.

The effect of the climatic conditions prevailing in 1975 on the performance of the crop were very marked. Yields were reduced by as much as 25 per cent compared with the previous year, from twenty to fifteen tonnes per hectare. There is a distortion here however in that the Pembrokeshire farms carrying out irrigation have such large enterprises that the overall area of early potatoes grown is biased heavily in their favour. Excluding them from the sample reduces the average for England and Wales to 13.5 tonnes per hectare, and the percentage difference between the two years is increased to 33. The fall in output experienced by the growers of south Dyfed who irrigated was only 10 per cent, forcibly illustrating the importance of irrigation in years like 1975 and 1976.

One might have expected that as the amount of money tied up in potato production increases, and the cost of machinery and materials continues to rise, that the smaller grower would be thinking of contracting or finishing potato production altogether, and any future expansion in area would be amongst the larger growers. This does not appear, generally, to be the case.

Of those who planned to change their area of early potatoes in 1976, eight gave reasons for expanding, and eight for contracting. For those thinking of expanding one gave as his reason the amount of home grown seed available, three others the field sizes involved, (i.e. they happened to be larger in total than those of the previous year) and four the high degree of confidence they had in future returns. Of those reasons for reducing size of operation, one was due to field size, two to the limited availability of home grown seed, four to the cost and inadequate supply of labour, and one other because expected returns would not be good enough. Because of the small number of replies to this question (due to the fact that most were contemplating no change) it is not possible to draw any conclusions concerning attitude differences between regions.

Seed

1) Varieties

No less than 98 per cent of the area under early potatoes on the farms in the sample were planted with 10 varieties. These are listed in Table 4 according to order of importance and by region. The overwhelming importance of Home Guard, which accounted for 38 per cent of the total sample area is obvious; this variety accounted for 76 per cent and 63 per cent respectively in the major first early growing areas, namely Pembrokeshire and Cornwall. Pembrokeshire is a good example of concentration of varieties, for five varieties accounted for the total area costed in that county. The areas covered by Cambridge and Manchester, on the other hand, have a greater diversity

of varieties due, presumably, to the later dates of lifting and the opportunity to select according to a number of different factors.

In general the larger hectare groups grew more varieties than did the smaller ones - for example, in the eastern counties seven varieties were grown by the group with under four hectares, and eleven by the larger groups. Regional differences are apparent: Home Guard especially, and Maris Peer to a much lesser extent, were most popular in Pembrokeshire, and in Cornwall. Ulster Sceptre, Ulster Prince and Red Craigs Royal in the Eastern counties, Arran Comet in Kent (to be treated with caution because of the small number of sampled farms), and Ulster Sceptre and Ulster Prince again in the north west.

Table 4
Hectares of Early Potatoes By Variety¹ and Region

	HG	US	UP	MP	RCR	AC	CA	PJ	PR	M. Page	Other	Total
Aberystwyth - Irrigating	131			18			10					159
- Non Irrigating	18	7			11							36
- All Farms	149	7		18	11		10					195
Cambridge - Under 4 hectares		11	13		9			1			7	41
- Over 4 hectares	5	35	28	15	22	3		6	6	6	1	127
- All Farms	5	46	41	15	31	3		7	6	6	8	168
Exeter - Under 4 hectares	18			6	2							26
- Over 4 hectares	23	1		7	3			3			1	38
- All Farms	41	1		13	5			3			1	64
Manchester - Under 4 hectares		6	7								1	14
- Over 4 hectares	2	10	4	2			3					21
- All Farms	2	16	11	2			3				1	35
Wye - All Farms		6		3		36	3					48
All Regions - All Farms	197	76	52	51	47	39	16	10	6	6	10	510

¹ HG - Home Guard, US - Ulster Sceptre, UP - Ulster Prince, MP - Maris Peer, RCR - Red Craigs Royal, AC - Arran Comet, CA - Craigs Alliance, PJ - Pentland Javelin, PR - Premier, M. Page - Maris Page.

2) Sources

The combination of sources of seed were many and varied; listed in the table below is a count of the number of times sources were quoted on a per farm basis. For example, Scottish seed was purchased by 46 farmers; equivalent to 63 per cent of the sample. This was by far the most important source; all the Kent growers made use of it, as did all but one of the Pembrokeshire growers. Relative locations of early potato producing and seed producing areas does not seem to have any significance as far as the purchase of seed is concerned.

Table 5
Source of Seed by Region¹

	Scottish	Irish	English	Welsh	Home Grown
Aberystwyth	13	4	1	2	5
Cambridge	14	9	4	-	15
Exeter	10	4	7	4	-
Manchester	4	8	1	-	12
Wye	5	-	-	-	2
All Regions	46	25	13	6	34

¹ Rows will total more than the number of farms per region due to more than one source per farm.

Home-grown seed was the most important source in the north west where twelve out of the fourteen growers engaged in this practice. 47 per cent of farmers in the whole sample stated that they grew seed for their own use in early potato production.

3) Planting

Seeding rates varied significantly between regions, from 3.3 tonnes per

hectare in the eastern counties to 4.8 tonnes in Pembrokeshire. With a national average of 4.0 tonnes per hectare the deviation around this was considerable. Perhaps it could be theorised that the earlier planting and lifting in Pembrokeshire necessitates the heavier rates but on the other hand the Cornish crop which is just as early, had an average seeding rate of one tonne less than that for Pembrokeshire. The seed cost per tonne varies also; the figures shown in the table include home grown seed which was valued at its opportunity cost rather than at cost of production. This particular section illustrates the change that has taken place in the last two years; the price of seed now in 1976 bears no relationship to what it was back in late 1974, early 1975.

Planting in 1975 started on time but the table illustrates the overall length of time the operation can actually take. This is due, to a certain extent, to the different intentions within any one subgroup; for example, one farmer is growing for the very early market and that alone, whilst another is planning on producing both first and second earlies, whilst another may be concentrating on the later market. The differences between first and second earlies areas however are clear, with 77 per cent of the crop having been planted by the end of March in Pembrokeshire and 100 per cent in Cornwall. Kent was slightly later with the majority planted in April, followed by the northwestern, and then the eastern counties. In general the larger size groups planted earlier than the small size

Table 6

Planting Times, Weights and Seed Cost By Region

	Planting Dates 1975	% of area planted in:-				Seed per hectare (tonnes)	Seed Cost per tonne (£)
		Feb	March	April	May		
Aberystwyth - Irrigating - Non Irrigating - All Farms	Feb 10 - April 30	36	36	28	-	4.9	51
	Feb 25 - March 30	29	71	-	-	4.7	54
	- -	35	42	23	-	4.8	51
Cambridge - Under 4 hectares - Over 4 hectares - All Farms	March 3 - May 8	-	17	48	35	3.4	69
	Feb 27 - May 12	-	8	81	11	3.3	73
	- -	-	10	73	17	3.3	72
Exeter - Under 4 hectares - Over 4 hectares - All Farms	Feb 6 - March 31	15	85	-	-	3.7	55
	Feb 2 - March 21	63	37	-	-	3.8	51
	- -	43	57	-	-	3.8	52
Manchester - Under 4 hectares - Over 4 hectares - All Farms	March 4 - May 10	-	14	85	1	3.7	56
	March 4 - May 9	-	52	29	19	3.3	63
	- -	-	36	52	12	3.4	60
Wye - All Farms	Feb 25 - April 30	4	21	75	-	4.0	53
All Regions - All Farms	- -	19	31	43	7	4.0	58

groups with the exception of Pembrokeshire where the non-irrigating smaller size group completed planting by the end of March.

Fertilizer Application

Application rates, expressed in terms of units of N.P. and K. per hectare, are laid out in the table below. Nitrogen applications were highest in the Welsh region with irrigated crops getting slightly more. Overall levels of fertilizer applied were roughly equal in the two first early areas and in the eastern counties. The Kent growers applied considerably less of all nutrients, nearly 100 units less in total than the three regions mentioned above. This however, is not reflected in the output; yields were up to the national average (that is, if the Pembrokeshire irrigated sample is excluded).

Table 7
Fertilizer Applied Per Hectare

	Units per Hectare			Total
	N	P	K	
Aberystwyth - Irrigating	358	373	381	1112
- Non Irrigating	348	351	420	1119
- All Farms	356	368	388	1112
Cambridge - Under 4 hectares	358	385	430	1173
- Over 4 hectares	346	321	437	1104
- All Farms	348	336	435	1119
Exeter - Under 4 hectares	351	472	393	1216
- Over 4 hectares	301	418	334	1053
- All Farms	321	440	358	1119
Manchester - Under 4 hectares	304	255	368	927
- Over 4 hectares	341	314	484	1139
- All Farms	326	289	435	1050
Wye - All Farms	259	353	297	909
All Regions - All Farms	339	361	395	1095

Spraying

Nearly all the potato crops costed were sprayed. Amounts, types, and costs of materials varied considerably; the average cost of materials throughout the whole sample amounted to £15 per hectare. Of the ten crops not sprayed two were in the eastern counties, one in Cornwall, six in the 'under 4 hectares' category of the Manchester sample and one of the Kent crops.

Irrigation

Mention has already been made that irrigation was a most significant factor in early potato production, especially in 1975, and again in 1976. The Pembrokeshire sample was sub-divided into two groups according to whether or not irrigation was carried out. Of the total area surveyed in Wales 80 per cent was accounted for by those farms where irrigation of the early potato crop took place. The difference in yields which can be attributed to this practice was considerable; in the case of the Pembrokeshire farms yields were twice as large on the farms which irrigated than on those which did not. Six of the eastern counties sample irrigated their crops giving an average yield per hectare of 14.6 tonnes worth £1720. This compared with 13.6 tonnes and £1628 for the non-irrigating farms; the fact that the difference here is not as great as in Pembrokeshire is due to the later date of harvesting in the eastern counties and the advantage accruing to all farms of the rain that fell later in the season. Within the other regions only two farmers in Cornwall irrigated their crops. In both cases only an inch per hectare was applied; however,

in one the potatoes were probably lifted too early to have benefitted fully from the additional water, whilst in the other yields were better although only a quarter of the total area received any water. The average yield from those two farms was 14.1 tonnes per hectare compared with a non-irrigating average of 14.6 tonnes.

The most popular sources of water supply in Pembrokeshire were ponds or reservoirs whilst the eastern counties and Cornish farms extracted from streams and rivers. The cost of irrigation is somewhat difficult to measure, but account was taken of extraction charges, depreciation of equipment, fuel consumed, and labour charges. In the relevant Pembrokeshire group irrigation costs totalled £47 per hectare but when measured against the increased output the worthwhileness is overwhelmingly apparent.

Irrigation, Seeding and Fertilizer Rates, and Output

The relationships between seeding rates and fertilizer application on irrigated and non-irrigated crops in Cornwall and Pembrokeshire is illustrated in the two tables below. Both of these regions being first early areas the 31 costed crops have been tabulated as one sample. Unfortunately only two of the Cornish crops were irrigated; however, despite this and the fact that the total number of crops is small, nevertheless the relative importance of these three factors does emerge.

Table 8

A Distribution of Crops According to Seeding Rates and Crop Yield on (a) Irrigated Crops and (b) Non Irrigated Crops in Cornwall and Pembrokeshire

Yield - tonnes per hectare	Seeding Rate - tonnes per hectare			
	Irrigated		Non Irrigated	
	Less than 4.5	4.5 and over	Less than 4.5	4.5 and over
Under 15	1	--	11	5
15 and over	1	8	3	2

From both tables it is evident that irrigation was of overwhelming significance; this is especially marked in the second where half the irrigated crops received under 1100 units of fertilizer per hectare but still yielded over 15 tonnes of potatoes.

Table 9

A Distribution of Crops According to Fertilizer Application and Crop Yield on (a) Irrigated and (b) Non Irrigated Crops in Cornwall and Pembrokeshire.

Yield - tonnes per hectare	Fertilizer Application - units per hectare			
	Irrigated		Non Irrigated	
	Under 1100	1100 and over	Under 1100	1100 and over
Under 15	-	1	8	7
15 and over	5	4	2	4

High seeding rates and irrigation of the crops went together, resulting in over 15 tonnes of potatoes per hectare for eight of the nine crops concerned. On those crops not irrigated, however, of seven that had

the higher seeding rates only two achieved over 15 tonnes, suggesting that when irrigation (or adequate rainfall) is not present a number of other factors are important as well as these two instanced.

Costs of Production, Revenue and Net Profit

Costs have been divided into the customary variable and fixed categories and in the tables below are shown per hectare of early potatoes grown and per tonne of potatoes produced. Yields in physical and financial terms are also given, as well as the net profit derived from this particular enterprise.

1) "Variable" Costs

The variable costs of production include the materials used, plus the cost of chitting the seed and the cost of casual labour employed in planting and picking. Costs of chitting include depreciation and repairs on the buildings and equipment involved, and running costs; the labour involved has been included in the regular labour item. The costs of chitting vary to a certain extent between regions and size-groups. Purpose built sheds were owned by five farmers in the Pembrokeshire sample, nearly all of which were erected in the last four or five years at an average cost of £2,500 each. A large proportion of the eastern counties sample also had such sheds; however, most of them dated from the 1930's and 1940's and so depreciating the original cost of these buildings yielded a much lower charge per hectare than on the Welsh farms.

Table 10

Yields, Costs and Returns By Region

Per Hectare

Region and Size Group	Aberystwyth			Cambridge			Exeter			Manchester			Wye	All Regions
	Irrigating	Non Irrigating	All Farms	Under 4 H'ares	Over 4 H'ares	All Farms	Under 4 H'ares	Over 4 H'ares	All Farms	Under 4 H'ares	Over 4 H'ares	All Farms	All Farms	All Farms
Hectares - per farm	20.0	6.0	13.8	3.4	11.6	7.3	2.2	7.6	3.8	1.7	4.2	2.5	9.6	7.0
Seeding rate - tonnes per hectare	4.9	4.7	4.8	3.4	3.3	3.3	3.7	3.8	3.8	3.7	3.3	3.4	4.0	4.0
Yield - sales (tonnes)	18.3	9.3	16.6	11.1	11.8	11.8	14.1	14.6	14.4	11.1	12.8	12.3	12.6	14.1
- retained (tonnes)	0.3	-	0.2	2.5	2.3	2.3	-	0.2	0.2	2.0	1.3	1.5	1.5	1.0
- total (tonnes)	18.6	9.3	16.8	13.6	14.1	14.1	14.1	14.8	14.6	13.1	14.1	13.8	14.1	15.1
Sales	£ 2696	£ 1366	£ 2454	£ 1208	£ 1386	£ 1344	£ 1868	£ 1999	£ 1945	£ 1317	£ 1527	£ 1441	£ 1174	£ 1833
Seed retained	27	-	22	321	324	324	-	35	20	213	138	170	136	141
Gross Output	2723	1366	2476	1529	1710	1668	1868	2034	1965	1530	1665	1611	1310	1974
<u>Variable Costs</u>														
Seed - Purchased	215	180	210	89	121	114	195	173	183	59	94	79	180	163
- Home Grown	30	72	37	146	114	121	-	25	15	171	109	133	32	69
Chitting Costs	22	17	20	10	15	12	15	17	17	10	12	12	15	17
Fertilizers	89	89	89	94	89	91	114	96	104	69	101	87	72	89
Sprays	7	8	7	32	22	25	10	10	10	7	15	12	17	15
Bags and Ties	44	22	40	22	27	25	42	40	39	15	25	22	30	32
Casual Labour	198	101	180	52	49	49	64	91	79	17	47	35	74	104
Total	605	489	583	445	437	437	440	452	447	348	403	380	420	489
Gross Margin	2118	877	1893	1084	1273	1231	1428	1582	1518	1182	1262	1231	890	1485
<u>Fixed Costs</u>														
Irrigation	47	-	40	3	22	17	-	15	7	-	-	-	-	22
Specialist Machinery	17	17	17	22	54	47	35	42	40	62	47	52	27	35
Tractor Costs	27	27	27	42	37	37	25	27	27	62	44	52	20	32
Other Machinery	5	10	5	7	10	10	15	7	10	7	10	10	10	7
Contract	20	5	17	17	12	12	5	-	2	2	7	5	-	12
Regular Labour	55	82	60	138	119	124	106	72	84	185	148	163	57	92
Rent/Rental Value	32	30	32	47	50	50	27	40	35	40	32	35	47	40
Total	203	171	198	276	304	297	213	203	205	358	288	317	161	240
Net Profit	1915	706	1695	808	969	934	1215	1379	1313	824	974	914	729	1245

Nearly all those taking part in the survey stored the seed in such a way as to warrant the use of the term chitting but not a very large number actually controlled temperature and lighting in order to enhance the chitting process. A small number were unable to do any chitting because of late seed delivery. Apart from these, the seed was generally laid out from the time of arrival on the farm, with many turning and sorting the seed on a regular basis, until planting time. Seed that had been grown on the farms was generally stored immediately for chitting.

The cost of fertilizer does not take account of any farmyard manure applied. Where such manure was applied, and in many instances large amounts were, the labour and machinery involved were costed and added to the regular labour and other machinery items.

Bags and ties constitute an important item in the list of variable costs. The amount varied with yield per hectare making the large difference between the two groups in the Pembrokeshire sample understandable. The highest cost per tonne was experienced in Cornwall where it approximated to £2. 70.

Yields, Costs and Returns By Region

Per Tonne

Region and Size Group	Aberystwyth			Cambridge			Exeter			Manchester			Wye	All Regions
	Irrigating	Non Irrigating	All Farms	Under 4 H'ares	Over 4 H'ares	All Farms	Under 4 H'ares	Over 4 H'ares	All Farms	Under 4 H'ares	Over 4 H'ares	All Farms	All Farms	All Farms
Hectares	20.0	6.0	13.8	3.4	11.6	7.3	2.2	7.6	3.8	1.7	4.2	2.5	9.6	7.0
Seeding rate - tonnes per hectare	4.9	4.7	4.8	3.4	3.3	3.3	3.7	3.8	3.8	3.7	3.3	3.4	4.0	4.0
Yields - sales (tonnes)	18.3	9.3	16.6	11.1	11.8	11.8	14.1	14.6	14.4	11.1	12.8	12.3	12.6	14.1
- retained (tonnes)	0.3	-	0.2	2.5	2.3	2.3	-	0.2	0.2	2.0	1.3	1.5	1.5	1.0
- total (tonnes)	18.6	9.3	16.8	13.6	14.1	14.1	14.1	14.8	14.6	13.1	14.1	13.8	14.1	15.1
	£	£	£	£	£	£	£	£	£	£	£	£	£	£
Sales	145	147	146	89	98	95	132	135	133	101	108	105	83	122
Seed retained	1	-	1	23	23	23	-	2	2	16	10	12	10	9
Gross Output	146	147	147	112	121	118	132	137	135	117	118	117	93	131
<u>Variable Costs</u>														
Seed - Purchased	11	19	12	6	9	8	14	12	13	5	7	6	13	11
- Home Grown	2	8	2	11	8	9	-	2	1	13	8	10	3	5
Chitting Costs	1	2	1	1	1	1	1	1	1	1	1	1	1	1
Fertilizers	5	10	5	7	6	6	8	6	7	5	7	6	5	6
Sprays	-	1	1	2	2	2	1	-	1	1	1	1	1	1
Bags and Ties	2	2	2	2	2	2	3	3	3	1	2	2	2	2
Casual Labour	11	11	11	4	3	3	4	6	5	1	3	2	5	7
Total	32	53	34	33	31	31	31	30	31	27	29	28	30	33
Gross Margin	114	94	113	79	90	87	101	107	104	90	89	89	63	98
<u>Fixed Costs</u>														
Irrigation	3	-	2	-	1	1	-	1	-	-	-	-	-	2
Specialist Machinery	1	2	1	2	4	3	2	3	3	5	3	4	2	2
Tractor Costs	1	3	2	3	3	3	2	2	2	5	3	4	1	2
Other Machinery	-	1	-	1	1	1	1	-	1	-	1	1	1	-
Contract	1	-	1	1	1	1	-	-	-	-	-	-	-	1
Regular Labour	3	9	4	10	8	9	8	5	6	14	11	12	4	6
Rent/Rental Value	2	3	2	3	3	3	2	3	2	3	2	2	3	3
Total	11	18	12	20	21	21	15	14	14	27	20	23	11	16
Net Profit	103	76	101	59	69	66	86	93	90	63	69	66	52	82

Labour requirements varied considerably as illustrated by Tables 10 and 12.

The size of the casual labour bill, in some instances, was large in relation to the total costs incurred, especially on the high yielding farms in Pembrokeshire where it accounted for one third of the variable costs. The high degree of dependence of early potatoes on labour makes the hiring of casual workers a necessity on the larger farms.

As can be seen from both tables, on a per hectare basis the larger growers were generally more dependent on casuals than the smaller ones; the difference between the requirements of the Pembrokeshire groups can be explained with reference to the variation in yields. Rates paid to casual workers varied significantly; many were paid on a per bag basis, which for the purpose of this analysis necessitated the estimation of an hourly rate. The availability of casual labour at economic rates is a growing problem in many areas, as illustrated by the reasons for reducing the scale of enterprise given by four growers. One way of meeting this would be the expansion of self-picking by the public, but this could only meet a small part of the total problem.

Table 12

Casual and Regular Labour Hours and Costs

	Casual Labour - Hours per Hectare	Casual Labour - Rate per Hour - £	Regular Labour - Hours per Hectare	Total Cost of Labour - £ per Hectare
Aberystwyth - Irrigating	220	0.90	43	253
- Non Irrigating	101	1.00	65	183
- All Farms	198	0.91	47	240
Cambridge - Under 4 hectares	67	0.76	111	190
- Over 4 hectares	57	0.87	95	168
- All Farms	59	0.84	99	173
Exeter - Under 4 hectares	77	0.84	85	170
- Over 4 hectares	96	0.93	57	163
- All Farms	89	0.90	67	163
Manchester - Under 4 hectares	25	0.74	148	202
- Over 4 hectares	69	0.70	119	195
- All Farms	49	0.71	130	198
Wye - All Farms	109	0.69	45	131
All Regions - All Farms	121	0.87	73	196

Seed accounts for a major share of the variable costs, nearly 50 per cent, in fact, of the average for all sample farms; the price of seed has, therefore, an important bearing upon the profitability of the whole enterprise, in conjunction with the planting rate. The highest planting rate was experienced on the irrigating farms in Pembrokeshire and this, combined with irrigation of the crop, appeared to pay off. Research has shown that the optimum planting rate, in terms of output and returns, could be much in excess even of this level of five tonnes per hectare; what must be borne in mind however are the very high interest charges incurred by a farmer borrowing money from the time of purchasing the seed in October/November of one year through to the time of selling the crop in June, July or August of the next. Strictly, these interest charges should be added to the costs of production, and if additional seed per hectare results in a diminishing rate of return then further intensification may not be worthwhile. This is not to say that the average seed rates shown in the above table were anything like that required for the optimum rate of planting.

2) Fixed Costs

Regular labour was costed at a standard rate throughout, £1. 25 per hour. In Pembrokeshire and Kent the regular labour requirement is low. The reason for this in the former instance, especially in the irrigating sub sample, is the large scale of operation and the heavy dependence upon casual labour. Specialist machinery was costed

historically and depreciated accordingly with additions for repairs and maintenance where necessary. Lowest in this respect is the Pembrokeshire sample, which is rather surprising due to the highly organized nature of the enterprise in that region; perhaps older machinery is the explanation. Tractor costs were calculated on an hourly basis and charged so as to reflect depreciation and running costs; other machinery was treated similarly.

The last item included in the list of fixed costs, namely rent or rental value, was determined either by the actual rent paid or by an assessment of the rental value of the land in the light of the tenure system within the district.

The total fixed costs line reveals no definite pattern between these costs and the area of the crop grown. In the case of the eastern counties the higher costs for the larger size group are almost solely due to the charge made for specialist machinery, a difference between the size groups of £32 per hectare (£13 per acre).

3) Net Profit

Net profit is an indication of the net income per hectare earned by growing early potatoes. No charges have been made for overheads, usually applied on a percentage basis and, as has been mentioned already, interest charges have not been taken into account either. The overall variation in net profit is wide, both within and between

regions. It would appear that the first early areas (with the exception of the non-irrigating Pembrokeshire farms and Kent, which is on the borderline), have the advantage in terms of profitability. The difficulty with drawing any definite conclusions regarding the 1975 crop year is apparent and all these figures must be taken with the knowledge always in one's mind that conditions then were exceptional, as they are in 1976, and that hard and fast conclusions are therefore even more difficult to make than in a normal year.

Sales and Prices

Earliest recorded liftings were found in the Cornish sample; one farmer lifted half a hectare of Home Guard in mid May at 12.5 tonnes per hectare, and realised £120 per tonne. This was the only instance, however, of lifting before the last few days of May; harvesting really got under way at the beginning of June and continued through until mid July. The Pembrokeshire farmers started harvesting early in June, the earliest recorded date being June 3rd, and again continued until the middle of July. The north western counties, those covered by Manchester, were slightly ahead of the eastern counties, with Kent slightly ahead of them both but behind Cornwall and Pembrokeshire. A daily sales sheet was compiled on the basis of those farms where weights and prices were recorded on a daily basis and a summary of this is presented in the table below - subdivided into fortnightly periods. There were twenty six such farms throughout all five regions. Of these Cornwall was the best represented with 12 farms included. On the other hand only one Kent farm was available; and

Table 13

Disposal of Crop by Time Period and Region

		Aberystwyth	Cambridge	Exeter	Manchester	Wye	All Regions
Number of Farms		2	4	12	7	1	26
Hectares per Farm		12.8	6.5	3.3	3.0	6.1	4.5
Up to end of May	Tonnes %			1.2			0.4
	Revenue %			1.6			0.5
	Price per tonne £			173			173
<u>June 1 - 15</u>	Tonnes %	23.2		37.6			17.6
	Revenue %	22.4		35.9			18.1
	Price per tonne £	145		128			133
<u>June 16 - 30</u>	Tonnes %	48.5	4.2	45.9	2.6	100	33.3
	Revenue %	46.8	2.4	44.1	4.0	100	32.5
	Price per tonne £	145	72	129	168	90	127
<u>July 1 - 15</u>	Tonnes %	24.4	61.7	15.3	19.5		27.9
	Revenue %	28.2	74.5	18.4	27.6		34.0
	Price per tonne £	173	152	161	155		158
<u>July 16 - 31</u>	Tonnes %	3.9	27.8		47.6		14.7
	Revenue %	2.6	19.1		42.2		10.5
	Price per tonne £	98	86		97		93
<u>August 1 - 15</u>	Tonnes %				21.2		3.3
	Revenue %				18.3		2.4
	Price per tonne £				95		95
<u>August 16 - 31</u>	Tonnes %		6.3		6.1		2.4
	Revenue %		4.0		5.1		1.6
	Price per tonne £		81		92		86
<u>September & Later</u>	Tonnes %				3.0		0.4
	Revenue %				2.8		0.4
	Price per tonne £				98		98
<u>Total Sales</u>	Tonnes per hectare	15.6	15.1	14.1	12.8	15.6	14.6
	Revenue per hectare £	2350	1875	1883	1394	1386	1871
	Price per tonne £	151	125	134	109	90	129
<u>Seed Retained</u>	Tonnes per hectare		2.0	-	2.0	6.0	1.0
	Revenue per hectare £		321	2	235	516	141
	Price per tonne £		160	98	117	86	140
<u>Total Crop</u>	Tonnes per hectare	15.6	17.1	14.1	14.8	21.6	15.6
	Revenue per hectare £	2350	2196	1885	1629	1902	2012
	Price per tonne £	151	129	134	110	89	129

sales from this farm were made through a cooperative with prices much lower than those on the open market.

By the end of June nearly three quarters of the Pembrokeshire crop (in this particular sample) had been disposed of, and 85 per cent in Cornwall, whilst in the eastern counties and in the northwest, very little, - 2 or 3 per cent had been cleared. A much larger proportion of the eastern counties' crop had been lifted by the end of the first half of July which gave a considerable price advantage because of the fall-off in the market from about the 10th or 11th of the month. Prices in late May at around £175 per tonne were not the highest of the season and as many of the Cornish growers lifted during this early period they did not do as well financially as the later Pembrokeshire and eastern farmers who were able to take advantage, with irrigation, of the bulking up of the crops with an increasing price early in June which reached a peak of over £200 per tonne on the 8th July. This is reflected in the 'total' lines at the bottom of Table 13; the price per tonne of potatoes sold on the two Pembrokeshire farms averaged £151 whilst the difference between average prices in the eastern counties and Cornwall was only £5 per tonne.

The "All Regions" column gives a good indication of the general trend in prices throughout the selling period. The prices at the beginning of the season were very high but they dropped steadily during June. However, as the drought became more pronounced,

they rose again towards the end of the month, and after a slight drop they reached a peak around the 8th of July, from which time they fell back to around £100 per ton.

Table 14 below shows this in more detail and also affords an opportunity to observe the regional variations which appear to exist. A comparison of Cornish and Pembrokeshire prices, two true first early areas, reveals that in general the latter has the more favourable price levels. Nearly always, throughout June and early July the price obtainable (according to this small number of case studies) in Pembrokeshire was always a few pounds, sometimes ten or twenty, higher than in Cornwall. The reasons for this are uncertain. It has been reported that organization of the Pembrokeshire growers is fairly well advanced with respect to marketing of the crop, putting them less at the mercy of the wholesalers and merchants than their counterparts in Cornwall. This would seem to be substantiated by the prices shown here. On the other hand, the different markets to which the bulk of the crops goes and the relative distances involved may have a part to play in this question. Most of the Pembrokeshire crop went to the Midlands, distances of around 150 miles, whilst the Cornish crop appeared to be divided between the West Country and Bristol, and further afield, for example, London, over 250 miles away. One might expect transport costs to be higher for the Cornish growers, and as end prices quoted in this report are net of any transport costs or commission, one could expect the effect of this to be shown in the prices received.

Table 14
Daily Prices By Region

Price per Tonne

Date	A	C	E	M	W	Date	A	C	E	M	W
May 29			173			July 24		79		93	
30			173			25				92	
31			173			26					
June 1			173			27					
2			169			28				102	
3	177		167			29		84		98	
4	157		138			30				98	
5	141		133			31				98	
6	141		118			August 1				108	
7			110			2					
8						3					
9	108		108			4				102	
10	113		103			5				102	
11	133		128			6				98	
12	157		148			7				92	
13	167		143			8					
14			138			9					
15	153					10					
16	138		126			11				92	
17	138		116			12				92	
18	123		113			13					
19	118		123			14					
20	148		138			15				92	
21	132		138		93	16					
22	138		131		89	17					
23	138		142		89	18				92	
24	162		157		89	19				92	
25	179		162	144	79	20				92	
26	177		143			21				92	
27			123			22				83	
28			118			23					
29	143					24					
30	144	138	133			25				92	
July 1	159	149	141								
2	177	169	153	167							
3	191	175	167	165							
4	177	177	157	167							
5		182	157								
6				157							
7	187	192	177	187							
8	197	204	187	187							
9	157	190	177	187							
10		141	118	133							
11		118		108							
12											
13											
14		113		133							
15		113		133							
16		89		98							
17		79		98							
18		74		89							
19		79									
20											
21	98	98		98							
22		89		98							
23		79		93							

Prices realised in the eastern counties were slightly lower than those for Pembrokeshire, whilst the north western counties obtained prices which were a little higher than those in the eastern counties in the latter part of July; at the beginning of the month they tended to be slightly below.

Method of Sale

The overwhelming mass of the sample potato crop was sold bagged off the field to merchants and wholesalers for an agreed price. There were a few examples of sales to retailers and direct to the public but this sort of outlet accounted for only a very small proportion of total sales.

Replies to the question concerning changes in selling methods over the past five years showed regional variations but a definite trend away from commission sales (i.e. sold through an agent who keeps a certain proportion of the realised amount) to a fixed price agreed in the field for the crop on any particular day. By 1975, the Pembrokeshire farmers nearly all were selling to several wholesalers, in order to gain as high a price as possible. One of the Cornish growers was moving away from wholesale to retail whilst a number of others were going over from commission agents to wholesalers. One of the Manchester sample had actually acquired a potato merchant business in order, as he saw it, to improve market outlets, whilst another was trying to build up the farm gate trade to shops and the

public in order to obtain a better price. Many of the eastern counties growers had changed from selling on commission to selling direct to merchants and wholesalers, expressing at the same time more confidence in this method. Two of the Kent growers sold entirely through a local cooperative at substantially reduced prices whilst another dealt entirely with local hotels.

The final destination of crops from Pembrokeshire and Cornwall have already been mentioned in the section above. Of the other regions the north western growers were mainly concerned with local markets, Liverpool, Preston and Manchester, as well as a little further afield, for example, Birmingham. Those farms in the eastern region appeared to send a large proportion of their crop to London with Sheffield and other more northern centres of significance also.

Conclusions

For those farmers who have grown early potatoes in 1975 (and again in 1976) the profits have been considerable. Two very dry summers have led to serious potato shortages and consequently prices have been high. On the sample farms irrigation did much to further enhance the returns of some. However, the future is uncertain, the profitability of the 1977 crop could be very different. The price of seed has risen threefold over the past two years; casual labour is becoming increasingly expensive and difficult to obtain. Given this high-risk situation perhaps only the dedicated can afford to continue growing early potatoes on any significant scale.

APPENDIX

The following tables are equivalent to those in the text only in imperial units.

Table	I	-	Estimated Early and Maincrop Production in England and Wales 1963-73.
Table	II	-	Cropping and Stocking Per Costed Farm By Region.
Table	III	-	Acres of Early Potatoes Per Farm and Yields Per Acre.
Table	IV	-	Acres of Early Potatoes By Variety and Region.
Table	V	-	Planting-Times, Weights and Seed Cost By Region.
Table	VI	-	Fertilizer Applied Per Acre.
Table	VII	-	Yields, Costs and Net Profit Per Acre.
Table	VIII	-	Casual and Regular Labour Hours and Costs.
Table	IX	-	Disposal of Crop By Time Period and Region.
Table	X	-	Daily Prices By Region.

Table I

Estimated Early and Maincrop Potato Production in England and Wales, 1963-73.

Total Acres, Tons per Acre, and Total Tons

	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
<u>Early Potatoes - Total Acres</u>											
England and Wales - '000 acres	91	93	84	73	72	70	51	60	60	57	52
England - " "	79	81	73	63	63	60	43	52	52	49	46
Wales - " "	12	12	11	10	10	10	8	8	8	7	6
<u>Maincrop Potatoes - Total Acres</u>											
England and Wales - '000 acres	446	460	454	416	451	452	416	453	432	401	384
England - " "	435	450	445	408	442	443	407	442	422	392	376
Wales - " "	11	11	10	8	9	9	9	11	10	9	8
<u>Early Potatoes - Tons per Acre</u>											
England and Wales - Tons per acre	6.2	6.3	6.7	6.5	6.2	7.5	7.1	6.7	7.8	7.4	8.0
England - " " "	6.0	6.2	6.7	6.5	6.3	7.6	6.9	6.6	7.9	7.3	8.1
Wales - " " "	7.1	6.8	6.3	6.3	5.9	7.5	8.0	7.0	7.3	7.6	7.1
<u>Maincrop Potatoes - Tons per Acre</u>											
England and Wales - Tons per acre	9.6	9.8	11.4	10.7	10.7	10.3	10.4	11.8	12.3	11.9	12.5
England - " " "	9.6	9.8	11.4	10.8	10.7	10.3	10.4	11.8	12.3	11.9	12.5
Wales - " " "	8.1	8.5	9.0	8.3	9.3	9.8	10.5	10.9	11.4	10.3	11.9
<u>Early Potatoes - Total Tons</u>											
England and Wales - '000 tons	559	586	559	472	452	525	363	399	467	418	420
England - " "	475	507	489	409	394	451	300	346	408	361	376
Wales - " "	84	80	70	63	58	74	63	53	59	57	43
<u>Maincrop Potatoes - Total Tons</u>											
England and Wales - '000 tons	4274	4499	5167	4458	4810	4666	4351	5329	5317	4770	4789
England - " "	4183	4409	5081	4388	4729	4578	4257	5212	5207	4679	4692
Wales - " "	90	90	86	69	81	88	94	118	110	90	96

Source: Agricultural Statistics England and Wales 1973.

Table II

Cropping and Stocking per Costed Farm By Region.

	Aberystwyth	Cambridge	Exeter	Manchester	Wye	All Regions
No. of Farms	14	23	17	14	5	73
	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>
Cereals	36	152	32	41	226	86
Early Potatoes	34	18	9	6	24	17
Maincrop & Seed Potatoes	3	12	1	6	23	7
Sugar Beet	-	20	-	2	-	7
Brassicas	-	17	7	-	-	7
Other Arable Crops	-	40	1	3	84	17
Fodder Crops	2	1	3	2	6	2
Temporary Grass	25	11	76	43	34	38
Permanent Grass	63	4	15	29	36	25
Rough Grazing	8	9	6	-	6	5
Others	1	13	1	2	19	6
Total Farm Acreage	172	297	151	134	458	217
	<u>No.</u>	<u>No.</u>	<u>No.</u>	<u>No.</u>	<u>No.</u>	<u>No.</u>
Dairy Cattle	18	13	38	48	24	27
Beef Cattle	51	38	56	46	17	43
Sheep	128	-	23	2	237	47
Pigs	-	5	18	3	40	9
Poultry	257	-	1	129	1300	163

Table III

Acres of Early Potatoes Per Farm and Yields Per Acre
By Region.

	No. of Farms	Max Acres in past 10 years	1974		1975		1976
			Acres per Farm	Yield per Acre - Tons	Acres per Farm	Yield per Acre - Tons	Proposed Acres per Farm
Aberystwyth - Irrigating	8	62	49	8.2	49	7.4	52
- Non Irrigating	6	20	16	7.2	15	3.7	17
- All Farms	14	44	35	8.0	34	6.7	37
Cambridge - Under 10 Acres	12	10	9	8.5	8	5.4	9
- Over 10 Acres	11	30	23	8.5	29	5.6	29
- All Farms	23	20	15	8.5	18	5.6	18
Exeter - Under 10 Acres	12	7	6	7.5	6	5.6	6
- Over 10 Acres	5	18	16	6.0	19	5.9	21
- All Farms	17	10	9	6.5	9	5.8	10
Manchester - Under 10 Acres	9	5	4	8.2	4	5.2	4
- Over 10 Acres	5	15	14	7.2	10	5.6	13
- All Farms	14	9	8	7.6	6	5.5	8
Wye - All Farms	5	27	25	10.2	24	5.6	27
All Regions - All Farms	73	20	17	8.0	17	6.0	19

Table IV

Acres of Early Potatoes by Variety¹ and Region.

	HG	US	UP	MP	RCR	AC	CA	PJ	PR	M. Page	Other	Total
Aberystwyth - Irrigating	323			45			26					394
- Non Irrigating	45	17			26							88
- All Farms	368	17		45	26		26					482
Cambridge - Under 10 Acres		26	32		24			2			16	100
- Over 10 Acres	13	87	70	36	53	8		14	16	15	3	315
- All Farms	13	113	102	36	77	8		16	16	15	19	415
Exeter - Under 10 Acres	45			16	4			1				66
- Over 10 Acres	56	2		17	8		1	8			2	94
- All Farms	101	2		33	12		1	9			2	160
Manchester - Under 10 Acres		16	18				1				1	36
- Over 10 Acres	4	24	9	6		1	8				1	53
- All Farms	4	40	27	6		1	9				2	89
Wye - All Farms		14		7	1	88	7				1	118
All Regions - All Farms	486	186	129	127	116	97	43	25	16	15	24	1264

1. HG - Home Guard, US - Ulster Sceptre, UP - Ulster Prince, MP - Maris Peer, RCR - Red Craigs Royal, AC - Arran Comet, CA - Craigs Alliance, PJ - Pentland Javelin, PR - Premier, M. Page - Maris Page.

Table V

Planting Times, Weights and Seed Cost By Region.

	Planting Dates 1975	% of acreage planted in:-				Seed per acre (cwt).	Seed Cost per Ton (£)
		Feb	March	April	May		
Aberystwyth - Irrigating - Non Irrigating - All Farms	Feb 10 - April 30	36	36	28	-	39	52
	Feb 25 - March 30	29	71	-	-	37	55
	- -	35	42	23	-	38	52
Cambridge - Under 10 Acres - Over 10 Acres - All Farms	March 3 - May 8	-	17	48	35	27	70
	Feb 27 - May 12	-	8	81	11	26	74
	- -	-	10	73	17	26	73
Exeter - Under 10 Acres - Over 10 Acres - All Farms	Feb 6 - March 31	15	85	-	-	29	56
	Feb 2 - March 21	63	37	-	-	30	52
	- -	43	57	-	-	30	53
Manchester - Under 10 Acres - Over 10 Acres - All Farms	March 4 - May 10	-	14	85	1	29	57
	March 4 - May 9	-	52	29	19	26	64
	- -	-	36	52	12	27	61
Wye - All Farms	Feb 25 - April 30	4	21	75	-	32	54
All Regions - All Farms	- -	19	31	43	7	32	59

Table VI

Fertilizer Applied Per Acre

	Units Per Acre			
	N	P	K	Total
Aberystwyth - Irrigating	145	151	154	450
- Non Irrigating	141	142	170	453
- All Farms	144	149	157	450
Cambridge - Under 10 Acres	145	156	174	475
- Over 10 Acres	140	130	177	447
- All Farms	141	136	176	453
Exeter - Under 10 Acres	142	191	159	492
- Over 10 Acres	122	169	135	426
- All Farms	130	178	145	453
Manchester - Under 10 Acres	123	103	149	375
- Over 10 Acres	138	127	196	461
- All Farms	132	117	176	425
Wye - All Farms	105	143	120	368
All Regions - All Farms	137	146	160	443

Table VII

Yields, Costs and Returns By Region

Per Acre.

Region and Size Group	Aberystwyth			Cambridge			Exeter			Manchester			Wye	All Regions
	Non Irrigating	All Irrigating	All Farms	Under 10 Acres	Over 10 Acres	All Farms	Under 10 Acres	Over 10 Acres	All Farms	Under 10 Acres	Over 10 Acres	All Farms	All Farms	All Farms
Acres - per farm	49	15	34	8	29	18	6	19	9	4	10	6	24	17
Seeding Rate - cwts per acre	39	37	38	27	26	26	29	30	30	29	26	27	32	32
Yield - sales (tons)	7.3	3.7	6.6	4.4	4.7	4.7	5.6	5.8	5.7	4.4	5.1	4.9	5.0	5.6
- retained (tons)	0.1	-	0.1	1.0	0.9	0.9	-	0.1	0.1	0.8	0.5	0.6	0.6	0.4
- total (tons)	7.4	3.7	6.7	5.4	5.6	5.6	5.6	5.9	5.8	5.2	5.6	5.5	5.6	6.0
Sales	£ 1091	£ 553	£ 993	£ 489	£ 561	£ 544	£ 756	£ 809	£ 787	£ 533	£ 618	£ 583	£ 475	£ 742
Seed retained	11	-	9	130	131	131	-	14	8	86	56	69	55	57
Gross Output	1102	553	1002	619	692	675	756	823	795	619	674	652	530	799
<u>Variable Costs</u>														
Seed - Purchased	87	73	85	36	49	46	79	70	74	24	38	32	73	66
- Home Grown	12	29	15	59	46	49	-	10	6	69	44	54	13	28
Chitting Costs	9	7	8	4	6	5	6	7	7	4	5	5	6	7
Fertilizers	36	36	36	38	36	37	46	39	42	28	41	35	29	36
Sprays	3	3	3	13	9	10	4	4	4	3	6	5	7	6
Bags and Ties	18	9	16	9	11	10	17	16	16	6	10	9	12	13
Casual Labour	80	41	73	21	20	20	26	37	32	7	19	14	30	42
Total	245	198	236	180	177	177	178	183	181	141	163	154	170	198
Gross Margin	857	355	766	439	515	498	578	640	614	478	511	498	360	601
<u>Fixed Costs</u>														
Irrigation Costs	19	-	16	1	9	7	-	6	3	-	-	-	-	9
Specialist Machinery	7	7	7	9	22	19	14	17	16	25	19	21	11	14
Tractor Costs	11	11	11	17	15	15	10	11	11	25	18	21	8	13
Other Machinery	2	4	2	3	4	4	6	3	4	3	4	4	4	3
Contract	8	2	7	7	5	5	2	-	1	1	3	2	-	5
Regular Labour	22	33	24	56	48	50	43	29	34	75	60	66	23	37
Rent/Rental Value	13	12	13	19	20	20	11	16	14	16	13	14	19	16
Total	82	69	80	112	123	120	86	82	83	145	117	128	65	97
Net Profit	775	286	686	327	392	378	492	558	531	333	394	370	295	504

Table VIII

Casual and Regular Labour Hours and Costs

	Casual Labour - Hours per Acre	Casual Labour - Rate per Hr. - £	Regular Labour - Hours per Acre	Total Cost of Labour -£ per Acre
Aberystwyth - Irrigating	89	0.90	17	102
- Non Irrigating	41	1.00	26	74
- All Farms	80	0.91	19	97
Cambridge - Under 10 Acres	27	0.76	45	77
- Over 10 Acres	23	0.87	38	68
- All Farms	24	0.84	40	70
Exeter - Under 10 Acres	31	0.84	34	69
- Over 10 Acres	39	0.93	23	66
- All Farms	36	0.90	27	66
Manchester - Under 10 Acres	10	0.74	60	82
- Over 10 Acres	28	0.70	48	79
- All Farms	20	0.71	53	80
Wye - All Farms	44	0.69	18	53
All Regions - All Farms	49	0.87	30	79

Disposal of Crop By Time Period and Region

		Aberystwyth	Cambridge	Exeter	Manchester	Wye	All Regions
Number of Farms		2	4	12	7	1	26
Acres per Farm		31.75	16	8	7.4	15	11.2
<u>Up to the end of May</u>	Tons %			1.2			0.4
	Revenue %			1.6			0.5
	Price per ton £			176			176
<u>June 1 - 15</u>	Tons %	23.2		37.6			17.6
	Revenue %	22.4		35.9			18.1
	Price per ton £	147		130			135
<u>June 16 - 30</u>	Tons %	48.5	4.2	45.9	2.6	100	33.3
	Revenue %	46.8	2.4	44.1	4.0	100	32.5
	Price per ton £	147	73	131	171	91	129
<u>July 1 - 15</u>	Tons %	24.4	61.7	15.3	19.5		27.9
	Revenue %	28.2	74.5	18.4	27.6		34.0
	Price per ton £	176	154	164	158		161
<u>July 16 - 31</u>	Tons %	3.9	27.8		47.6		14.7
	Revenue %	2.6	19.1		42.2		10.5
	Price per ton £	100	87		99		94
<u>August 1 - 15</u>	Tons %				21.2		3.3
	Revenue %				18.3		2.4
	Price per ton £				97		97
<u>August 16 - 31</u>	Tons %		6.3		6.1		2.4
	Revenue %		4.0		5.1		1.6
	Price per ton £		82		93		87
<u>September and later</u>	Tons %				3.0		0.4
	Revenue %				2.8		0.4
	Price per ton £				100		100
<u>Total Sales</u>	Tons per Acre	6.2	6.0	5.6	5.1	6.2	5.8
	Revenue per Acre £	951	759	762	564	561	757
	Price per ton £	153	127	136	111	91	131
<u>Seed Retained</u>	Tons per Acre		0.8	-	0.8	2.4	0.4
	Revenue per Acre £		130	1	95	209	57
	Price per ton £		163	100	119	87	142
<u>Total Crop</u>	Tons per Acre	6.2	6.8	5.6	5.9	8.6	6.2
	Revenue per Acre £	951	889	763	659	770	814
	Price per ton £	153	131	136	112	90	131

Daily Prices By Region

Price per Ton

Date					Date				
A	C	E	M	W	A	C	E	M	W
May 29		176			July 26				
30		176			27				
31		176			28			104	
June 1		176			29	85		100	
2		172			30			100	
3	180	170			31			100	
4	160	140			August 1			110	
5	143	135			2				
6	143	120			3				
7		112			4			104	
8					5			104	
9	110	110			6			100	
10	115	105			7			94	
11	135	130			8				
12	160	150			9				
13	170	145			10				
14		140			11			94	
15	155				12			94	
16	140	128			13				
17	140	118			14				
18	125	115			15			94	
19	120	125			16				
20	150	140			17				
21	134	140		95	18			94	
22	140	133		90	19			94	
23	140	144		90	20			94	
24	165	160		90	21			94	
25	182	165	146	80	22			84	
26	180	145			23				
27		125			24				
28		120			25			94	
29	145								
30	146	140	135						
July 1	162	151	143						
2	180	172	155	170					
3	194	178	170	168					
4	180	180	160	170					
5		185	160						
6				160					
7	190	195	180	190					
8	200	207	190	190					
9	160	193	180	190					
10		143	120	135					
11		120		110					
12									
13									
14		115		135					
15		115		135					
16		90		100					
17		80		100					
18		75		90					
19		80							
20									
21	100	100		100					
22		90		100					
23		80		95					
24		80		95					
25				94					

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