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Potatoes

Agricultural Enterprise Studies
in England and Wales

Economic Report No. 19

UNIVERSITY OF EXETER
Agricultural Economics Unit

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EARLY POTATOES IN WEST CORNWALL 1962-72

An Economic Study

Helen M. Cole

June 1973
Price 35p.

Report No. 19

EARLY POTATOES IN WEST CORNWALL 1962-1972

AN ECONOMIC STUDY

June, 1973

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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.

A recent development is that departments in different regions of the country are now conducting joint studies into those enterprises in which they have a particular interest. This community of interest is being recognised by issuing enterprise reports in a common series entitled 'Agricultural Enterprise Studies in England and Wales', although the publications will 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.

ACKNOWLEDGMENTS

Cordial thanks are due to all the growers who have co-operated in this long period study and especially the small group who continued for the whole 11 years.

The author is very grateful to members of the Potato Marketing Board for help received in the form of statistics and in many other ways throughout the period of the survey and in the preparation of the report and also to Mr. A. E. Cox, the Crop Husbandry Adviser at Starcross, for making available experimental findings and for help in understanding the technicalities of seed and ware crop production.

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FOREWORD

In most regions of the country where it is grown the early potato crop is regarded as a farm crop. However, in Cornwall and particularly in the Western peninsula early potatoes, while grown on farms, are very much part of the horticultural rotation. They are complementary to the winter maturing crops such as July planted broccoli and anemones or spring cabbage planted in September or direct drilled in July or August.

This long established local industry is worth about £750 thousand to Cornwall, which represents a significant part of the county's horticultural output, some 17 per cent, but only about 2 per cent of the total agricultural output. In terms of the national acreage Cornwall early potatoes account for about 4 per cent of the first and second early crop; in terms of tonnage it accounts for some 15 per cent of the national crop up to the end of June and about 5 per cent of the total home crop by the end of July.

The Cornish earlies along with those from Pembrokeshire follow the crops from the Scilly Isles and Jersey and are therefore among the first of the home crop to reach the market. They are followed by small areas of earlies from Anglesey, the Gower Peninsula of Glamorgan and Kent, where earlier planting in some areas has recently advanced the crop, while irrigation may have speeded up the bulking of late June earlies in Suffolk.

In recent years, despite the expanding market for early potatoes, the Cornish industry has had to meet increasing competition from these other regions, particularly from Pembrokeshire. Increased competition, however, is only one of a whole medley of circumstances which influence the economics of the early potato crop in Cornwall, and this long term study by Helen Cole highlights, as no previous study has done, the hazards and uncertainties which face the grower of early potatoes in this far corner of the United Kingdom. To persist with this enterprise demands a large measure of that optimism for which Cornish farmers are noted.

S. T. Morris
Director

May, 1973.

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INTRODUCTION

The market for early potatoes cannot be looked at in isolation for earlies are an integral part of the whole potato crop. Stored maincrop ware from the previous season is being sold alongside the new crop for several weeks of its marketing period. As a fresh, new crop first earlies from the earliest areas (Scilly Isles, Jersey, West Cornwall and Pembroke) command a relatively high starting price for a relatively small supply. As the home supply from other areas builds up prices fall but at varying speeds, depending on the timing and the rate of bulking.

The season for West Cornwall earlies may last from four to seven weeks. In an early season it will start during the last week in May but in a late one it may be the end of the first week in June. Similarly, other major producing counties that follow on such as Lincolnshire, with nearly 20 per cent of the home acreage and Kent may also bulk up early or late, i.e. in the second or not until the fourth week of June.

Moreover early and late seasons are not necessarily uniform over the country. A late one in Cornwall may coincide with an early one in Lincolnshire (as in 1968) or vice versa (as in 1966), resulting either in relatively low or relatively high prices for Cornish earlies. In addition, the starting price for earlies is influenced by the size of stored ware from the previous season: a relatively large stock in an early season has a depressing effect on the starting price whereas a relatively small stock in a late season can keep prices buoyant well into July. Thus it is the unpredictable size and timing of supplies that influence the market for the short, sometimes very short period in which West Cornwall growers can hope to secure relatively high prices to offset the high transport costs and that make the crop such a risky one.

I. FACTORS INFLUENCING THE MAY/JUNE MARKET FOR EARLY POTATOES 1962-72

Early potato prices are determined by the free market forces of demand and supply. On the demand side, although the consumption of fresh potato substitutes (crisps, frozen chips and canned new potatoes) has increased considerably over the period under review, there is no evidence that this has yet made any serious inroad into the market for fresh new potatoes. On the supply side a number of factors contribute to the determination of the level of prices at the beginning of the season, also the extent and timing of their fall over a five to six week marketing period.

The stage is set for the starting price level of earlies by what might be termed the static or given factors - the existing and the potential potato supply. By this is meant the size of the estimated stock of old ware at the Potato Marketing Board stock census on the first of April, plus the tonnage of new potato imports up to April and in May; also the trade's expectations of the anticipated supply, based on estimated size of the home crop of earlies and the rate at which they reckon it will bulk up.

Once the home grown season starts the dynamic and largely unpredictable weather factors affecting timing are responsible for what may be a rather erratic movement of the price graph. For example, within the basic falling price pattern heavy rain in the lifting areas, particularly if it is prolonged, can result in a price rise for a period; on the other hand if early crops are late and late ones are early, causing a rapid bulking up of the home crop, prices can drop by £30 to £40 per ton in a few days.

Climatic advantage enables Cornwall and Pembroke to benefit from higher prices early in the season and this compensates for high transport costs[1] due to distance from the main markets. Therefore it is generally thought that an early season favours Cornwall and Pembroke. For it allows the major part of their crops to be cleared at relatively high prices before the heavier yields and large tonnages of later counties come on the market and push prices down. This is true provided the size of old ware stocks is not unduly large for the April-June period and that an early season in West Cornwall is not matched by a very early season in Lincolnshire and Kent.

Four of the 11 seasons (1964, 1965, 1966 and 1971) were early for

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(1) In 1972 the transport cost ranged from £6 to £10 per ton.

Cornwall. The two latter gave Cornish growers one very good net return, averaging £272 per acre and a good one of £204, mainly because Lincolnshire was later than in 1964 and 1965. But Cornish growers had three late seasons (1962, 1967 and 1969) with very good returns (£250-£300 per acre net) and two others (1970 and 1972) giving a near average net return of £200 per acre. On the other hand one early season (1964) brought a very poor return (£132). Clearly the other factors already mentioned are at work as well.

Statistics indicating the relative importance of the static and dynamic factors in each season and their effect on the sample crops in West Cornwall are shown in Table 1.

The early Cornish seasons

In each early season, 1964, 1965, 1966 and 1971, a sizeable proportion of the sample crops were marketed by the 5th June, 16 per cent, 26 per cent, 35 per cent and 29 per cent respectively.

The 1964 season had an unfavourable start, there was a relatively large supply of old ware on hand, imports of new potatoes in May and June were high and Great Britain had the largest home acreage in the 11 year period. Even the 16 per cent of early marketed crop was not sufficient to give West Cornwall a head start, for Lincolnshire came in early as well and before mid-June the price was down to £20 a ton. Had it not been for the low price of seed potatoes eight, rather than two of the 13 growers in the sample that year, would have made a loss.

At the start of the 1965 season given factors were even less favourable. There was a larger supply of old ware and imports were only a little lower than in 1964 as was the home acreage. Again Lincolnshire had an early season. However, adverse weather during the first three weeks of June moderated the flow of supplies and allowed a larger proportion than would otherwise have been the case to get away from West Cornwall, at low but not disastrous prices.

The earliness of the 1966 crop and the accompanying high prices were due to an almost freak weather pattern. Because of wet soil conditions the Cornish crop was not planted until the first week of March but unusually favourable growing weather, particularly in May, brought the crop forward in record time. Moreover these weather conditions also favoured early hay and silage making up country which, in turn, reduced the rate at which farmers were able to riddle and dress their old ware potatoes. As the Lincolnshire crop was

Table 1 — Home and imported potato supplies, home West Cornwall samples - weekly

	1962	1963	1964	1965
	'000 tons	'000 tons	'000 tons	'000 tons
Remaining supply old ware at 1st April	395	722	751	1127
Ware imports January - July	149	189	1	-
New potato supplies				
January - April imports	83	50	69	68
May Imports	103	81	101	94
Jersey	2	1	10	13
Total	105	82	111	107
June Imports	127	77	83	63
Jersey	36	33	32	27
Total	163	110	115	90
	'000 acs.	'000 acs.	'000 acs.	'000 acs.
Acres Great Britain first and second earlies	135	146	148	132

	'000 tons		'000 tons		'000 tons		'000 tons	
Home crop clearances	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
(1) By Mid June								
(2) By end June								
Cornwall County	4	12	2	12	9	18	8	19
Pembroke	4	28	2	10	17	52	19	53
Kent	-	5	-	3	1	7	2	10
Lincolnshire	-	4	-	6	3	23	2	26
Total Great Britain	9	88	4	80	41	163	50	160

The West Cornwall sample crop week by week	(1) %	(2) £	(1) %	(2) £	(1) %	(2) £	(1) %	(2) £
(1) Weekly tons May 29th					1	62	8	41
Cleared by June 5th	1	110	1	74	15	48	16	31
June 12th	17	75	15	51	26	20	26	28
(2) Net return* June 19th	38	70	17	34	31	23	18	22
Per ton at June 26th	32	43	17	23	20	16	23	20
	88		50		93		91	

*Net home to grower.

Sources P.M.B. and Fruit Intelligence.

acreages and crop clearances of earlies

clearances and net prices

1966	1967	1968	1969	1970	1971	1972
'000 tons	'000 tons	'000 tons	'000 tons	'000 tons	'000 tons	'000 tons
1020	685	1170	880	660	1530	1615
–	26	–	–	21	–	–
70	55	80	56	66	65	70
72	106	108	79	79	75	94
11	7	12	8	6	9	13
83	113	120	87	85	84	107
78	118	87	93	114	113	104
28	33	35	37	28	33	27
106	151	122	130	142	146	131
'000 acs.	'000 acs.	'000 acs.	'000 acs.	'000 acs.	'000 acs.	'000 acs.
113	105	119	113	124	116	102

'000 tons		'000 tons		'000 tons		'000 tons		'000 tons		'000 tons		'000 tons	
(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
6	18	4	13	6	12	7	15	6	10	6	14	3	10
14	40	14	35	7	22	10	34	11	27	24	34	10	33
3	10	2	10	3	15	1	8	1	11	4	13	5	17
–	8	–	5	3	12	–	3	–	8	1	11	3	20
42	128	25	97	33	107	28	110	22	88	50	155	36	151

(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
%	£	%	£	%	£	%	£	%	£	%	£	%	£
6	70									7	60		
29	60	5	55	8	42	7	71	3	70	22	29	8	70
22	40	25	55	19	13	25	40	28	45	25	39	22	30
37	37	35	57	24	12	27	47	23	30	27	39	20	23
6	38	27	48	20	16	29	30	11	34	18	18	34	24
100		92		71		88		65		99		84	

rather late prices remained at nearly £40 a ton up to the end of June and West Cornwall growers had a very good net return.

The 1971 season, like that of 1965, also started with a large supply of old ware and the highest January to April imports of new potatoes in the whole period. Again in June, imports were above average and moderately early crops up country nearly brought disaster by the 5th June and the beginning of the following week, when Jersey reached its peak. Several growers in the sample stopped lifting. However a rainy period in the second and third weeks of June caused a weather market, prices rose by £10 per ton and saved the situation for West Cornwall growers.

The late Cornish seasons

Seven of the 11 seasons covered by the study could be described as late ones, these were 1962, 1963, 1967, 1968, 1969, 1970 and 1972. In each of them the survey growers had marketed 8 per cent or less of their crops by 5th June, Despite this, in three of the seasons, 1962, 1967 and 1969, particularly good net returns of £250-300 per acre were obtained.

The first, 1962, was exceptional. Old ware was in very short supply. Although the home early acreage was above average the crop was very late and heavy imports in May and June did not entirely fill the gap. Consequently prices of £40 per ton and more held well into July.

In the other two very good seasons the total acreage of the home crop was low. In 1967 May and June imports, respectively 15 and 20 thousand tons above the 11 year average, were absorbed without giving rise to unduly low starting prices for the home crop. In 1969, when May imports were some 10,000 tons below the 11 year average, the starting home price was about £15 per ton higher than in 1967.

Two of the late Cornish seasons, 1970 and 1972, were good (average net returns £200 per acre) but for different reasons.

Old ware was a little short in 1970 and so were imports in May, the home acreage was well up to average but the crop was late generally and yields were low because of the low rainfall in May. Despite heavy June imports prices did not fall below £30 per ton right through the month.

Given factors in 1972 were the opposite of those in 1970. There was a

large surplus of old ware, which the Potato Marketing Board kept under control through its buying programme. Imports of new potatoes from January to April and in May were above average but the home acreage had dropped by 14,000 acres from 1971 and was the lowest not only of the 11 survey years but for the previous 17 years. Starting prices for the home crop were at the same level as in 1970, possibly too high in view of the poor quality. The rapid bulking up of the home crops, due to early Kent/Lincolnshire crops impinging on late Jersey/Cornwall/Pembroke ones, coincided with a shipload of French new potatoes and prices fell almost overnight by £40 per ton. Anti-dumping legislation was invoked and this may have prevented prices falling much further for the rest of June.

For West Cornwall the two really disastrous, late seasons were 1963 and 1968.

The earlier of the two years had the misfortune to follow the short season of 1962, with exceptionally good prices throughout. Consequently the home crop increased by 11,000 acres. A relatively good stock of old ware was on hand but the extreme backwardness of the home crops made the authorities apprehensive and 189,000 tons of old potatoes were allowed into the country between January and July. Although imports of new potatoes were lower than in 1962 markets were soon over-supplied when the home crop started and growers were advised to stop lifting. By the end of June little more than 50% of the sample crop had been cleared. Rarely can the West Cornwall crop have hung on to such a late date.

The 1968 season was also bedevilled by overloaded markets, from a large supply of old ware and by heavy imports of new potatoes from January right up to June, when disastrously low prices deterred them to some extent. While Cornish and Pembroke crops were late those from Kent and Lincolnshire were early. Moreover the home area had increased by 14,000 acres following the very good season in 1967. West Cornwall growers suffered severely that year, not only from low returns but from the high cost of potato seed. It was the one year in which the sample, on average, sustained an overall loss.

An emerging trend

Apart from the complexity of the factors influencing the May/June market for earlies an analysis of the past 11 years suggests that the length of the marketing period in which the Cornish growers can expect high prices is being curtailed. The two seasons, 1964 and 1965, in which the total first and second

early acreage in Great Britain was at or near its peak, were also early ones. By the end of June, 163 and 160 thousand tons respectively were estimated to have been marketed - Table 2. In the more recent early season of 1971 the total tonnage marketed by June 30th was not much less, although the total acreage had fallen by 16,000. The estimated acreage cleared by June 30th was 6,000 less than in 1965 but the yield was over a ton per acre higher. This development was even more marked in 1972 when Cornwall and Pembroke had a late season. The tonnage marketed by June 30th was the same as in the previous year, as were the estimated acreage cleared and the yield per acre but the total acreage had fallen by another 14,000. This trend towards earlier marketing in traditionally later areas is probably due to a number of factors, such as improved seed higher seed rates per acre, earlier planting and irrigation. Whatever the reasons it means greater competition for the earliest areas like West Cornwall and Pembroke.

Table 2 Early potato acres, tonnage marketed and yield per acre in Great Britain at June 30th 1964, 1965, 1971 and 1972

Year	Total 1 and 2 earlies G.B.	At June 30th			
		Estimated clearance	Proportion of total acres	Marketed	Yield per acre
	'000 acres	'000 acres	%	'000 tons	Tons
1964	148	30	20	163	5·43
1965	132	28	21	160	5·71
1971	116	22	19	151	6·86
1972	102	22	22	151	6·86

Source: Potato Marketing Board.

II. WEATHER AND OTHER FACTORS INFLUENCING CROP EARLINESS/LATENESS 1962-72

In view of the need to market as much of the crop as possible at the highest prices, it is not surprising that much thought and experimental work has gone into assessing the importance of various factors considered likely to induce earliness in the crop.

Since weather is undoubtedly the main influence, weather right through the life of the seed as well as the ware crop, experimentation is hampered by seasonal differences. The effect of variations in such factors as physiological maturity of the seed, its size, or temperature levels during chitting, may be counteracted by seasonal variations in weather conditions. Different varieties also behave differently under the same conditions.

Weather influences on the crops 1962-72

The 11 seasons can be divided into four early, fast bulking ones, with the remaining seven grouped according to varying degrees of lateness or speed of bulking up.

The one certain feature that the analysis in Table 3 brings out is that

Table 3 Crop and weather indicators of early and late seasons

West Cornwall samples

Year	Nature of season		Planting period	Weather in May*		Crop marketed by	
	Timing	Bulking rate		Av. soil temp. at 4"	Rainfall	June 12	June 19
				°F	Inches	%	%
1964	Early	Fast	Mid Feb-Mid Mar & Apr	54·8	3·18	42	73
1965			Mid Feb-Mid Mar	53·8	2·65	50	68
1966			Early-Mid Mar	54·2	3·95	57	94
1971			Mid Feb-Mid Mar	54·0	2·43	54	81
1967	Inter-mediate	Mod. fast	Mid Feb, Mar, Early Apr	52·1	5·17	30	65
1968			End Jan, Feb, Mar	52·4	2·71	27	51**
1969			Early Mar, Early Apr	53·2	3·95	32	59
1970	Inter-mediate	Slow	Early Mar, Early Apr	55·5	1·12	31	54
1972			Mid Mar-Mid Apr	51·6	4·37	30	50
1962	Late	Slow	Feb-Early Mar	52·1	2·83	18	46
1963		V.Slow	Late Feb, Early Mar	53·3	1·63	16	33**

* From Rosewarne Experimental Horticultural Station.

** Lifting held up by very low prices.

the marked earliness and fast bulking in 1964, 1965, 1966, and 1971 were due to a combination of three factors (1) early planting (2) high soil temperature in May (54^{o})^{F} (3) good rainfall in May, around $2\frac{1}{2}$" or more.

In all the other years one or more of these criteria was not met. For example, in 1962 early planting with adequate rainfall in May was negated by the low soil temperature then. If a very low soil temperature in March that year (at 39^{oF} compared with an 11 year average of $42{\cdot}6^{o}$)^{F} did not also check the crop it was certainly responsible for a very high incidence of little potato disorder. Planting was early in 1963 and 1968 but again low soil temperature in May held the crop back and in 1963 insufficient rainfall as well delayed it. Planting was rather later in 1967, 1968 and 1970 but May temperatures were again too low in 1967 and 1969. In 1970 the soil temperature in May was the highest of the period but rainfall was also the lowest, this had a similar delaying effect. Finally in 1972 late planting, together with very low soil temperature in May retarded the crop, despite the high rainfall.

Other factors

In the absence of much experimental work on the irrigation of early potatoes the rather generalised data presented in the table suggests that low soil temperature in May could be a limiting factor (1972) that might make irrigation ineffective.

In trials at Starcross with Cornish and Irish Home Guard seed, produced under similar conditions, the Cornish seed gave a slightly earlier crop which bulked up faster than the Irish. This was thought to be due to the rather greater physiological maturity of the Cornish seed, resulting from a slightly warmer growing season. Advanced physiological age is the resultant of temperatures during growing and storage. Time of lifting will have some effect on this.

Early lifted seed, or seed lifted later from warm soil in a mild autumn has the added advantage of relative immunity from gangrene, which attacks damaged tubers at low temperatures.

Regarding size of seed, experiments indicate that in early potatoes the weight planted per acre is more important than the seed size. Therefore 35 to 40 cwt. per acre, whether made up of large or small seed, (not less than $1\frac{1}{4}$") should, other things being equal, give a fairly similar degree of earliness and bulking up rate, for the first few weeks of lifting.

In conducting storage temperature experiments (chitting) with Home Guard seed to study the subsequent incidence of coiled sprout, Rosewarne Experimental Horticultural Station found that in two out of three years higher temperatures, at 50°F or more, when compared with storage at 40°F, increased coiled sprout but also earliness and yield. The fact that seed subjected to the higher temperatures in the third year, afterwards produced later crops, suggests that attempts to force earliness may lead to over advanced physiological maturity. In addition, high chitting temperatures may result in sprouts that are too long for mechanical planting.

These experimental findings are, therefore, pointers to further investigation rather than recommendations. However, the result of the Cornish/Irish seed experiment hints at a possible future for the expansion of seed growing in North Cornwall. But, if this is to compete with and gain ground from traditional seed sources it must be along lines of blueprint production for growers' needs and receive priority over other farming enterprises.

III. THE EARLY POTATO STUDY IN WEST CORNWALL 1962-72

The samples

The 11 year survey really embraces two periods (1) from 1962-66, when the average early potato area in the sample was under five acres and represents the pre-mechanisation era (2) from 1967-72 when a dwindling sample was increased to include rather larger areas, with some growers using complete harvesters, planters and from 1970 rotaplanters; the average crop area of the sample rose to 10 and then to 14 acres. In 1972 only two growers had less than five acres of earlies.

In 1962 the survey started with 19 growers. In 1967, when it would have included only 10 of the original sample, it was increased to 18 and finished up with 14 co-operators in 1972. Of the 17 growers who withdrew over the period, nine found the crop no longer worthwhile and stopped growing earlies, most had small areas of three acres or less. The remaining eight growers dropped out for personal or other reasons.

When the sample was increased in 1967 larger holdings were automatically brought in. In 1962 the average acreage of the holding was 59 but by 1972 had risen to 143. Of the original 19 growers all but one kept livestock, usually dairy cows and sometimes pigs and poultry as well. On six holdings early potatoes were the only cash crop, all the remaining 13 grew broccoli and in addition some produced spring cabbage, anemones or narcissus. The 12 new holdings brought into the survey had very similar enterprises but on a larger scale, only two were without livestock.

The results

Returns

Information presented in the section on factors influencing the market for early potatoes will have indicated that there was a wide variation in the seasonal average net returns per ton of early potatoes sold and therefore in the net return per acre, since the variations in the yield were much smaller (Table 4, page 13).

Costs

Although the range in annual average total costs per acre was also considerable, when the seed was deducted remaining costs (i.e. labour, manures,

chemicals, lighting, depreciation and P.M.B. levy) fluctuated only slightly and

Table 4 Annual summary of early potato results in West Cornwall 1962-72

Year	Per acre: Net return*	Per acre: Total cost**	Per acre: Margin	Per acre: Yield	Per ton: Net return
	£	£	£	tons	£
1962	292	119	173	4·30	68
1963	150	131	19	6·91	24
1964	132	101	31	5·06	26
1965	189	112	77	6·46	31
1966	272	115	157	5·30	52
1967	285	138	147	5·48	53
1968	133	142	- 9	8·30	18
1969	277	116	161	7·60	38
1970	205	132	73	6·00	37
1971	204	128	76	6·60	31
1972	207	144	63	6·36	34
Average	213	125	88	6·22	37

* Net return = market price less transport, commission, handling charges and sacks.

** Includes depreciation of specialised potato equipment, mainly planters and lifting equipment, it excludes all other overheads, i.e. depreciation on other equipment, hedge upkeep and other unproductive labour, rent, insurance and general office overheads.

rose very little until the last year or two (Table 5).

Seed costs

Seed prices moved in step with market returns during the previous year. That is to say they rose following a very good season and were therefore high in 1963, 1967, 1968 and 1970; they fell equally dramatically after a poor season so were low in 1964, 1965 and 1969. The low average price in 1971 can be explained by the large amount of seed saved from 1970 by the growers themselves, over 1/5th of the total seed used, and the highest proportion in the 11 years. Although at £33 per ton the price of seed in 1972 was the same as

in 1962, the per acre cost was £13 higher in 1972, because of the higher seed rate. The fairly steady upward trend in weight of seed planted per acre was probably a response to acreage quotas. The higher seed rate is also recommended practice for early crops.

Table 5 Total early potato costs, seed costs, seed rate planted in West Cornwall 1962-72

Per acre				Per ton	Per acre
Year	Total cost	Seed cost	Total cost less seed	Seed cost	Seed rate
	£	£	£	£	cwt
1962	119	42	77	33	25½
1963	131	55	76	44	25
1964	101	27	74	21	26
1965	112	32	80	24	26
1966	115	39	76	27	29
1967	138	59	79	38	31
1968	142	62	80	39	32
1969	116	40	76	23	34
1970	132	60	72	39	31
1971	128	46	82	29	32
1972	144	55	89	33	33
Average	125	47	78	32	

Labour costs

Between 1962 and 1972 the basic minimum hourly wage rate almost exactly doubled from 19p to 38½p. The hourly rate charged in the surveys more than doubled from 21p to 45p due to the increase in National Health Insurance, in Graduated Pension and the cost of the additional week of paid holiday which was introduced in 1972. Labour costs per acre did not rise to anything like the extent that the wage increases might suggest for three reasons, first mechanisation, secondly the use of herbicides and thirdly the introduction of piece rates for casual pickers at lifting, a practice which has increased since 1969.

Other costs

The cost per acre of seed and labour together over the 11 years averaged 94 per cent of the total cost shown in the survey results. The remaining 6 per cent consisted of manures, chemicals, lighting, machinery depreciation and acreage levy. The major item here was of course fertiliser and there was little change in the cost per acre, £15 in 1962, and £17 in 1972. The cost of F.Y.M.[1] (charged throughout at £1·25 per ton) fell by half in 11 years from an average of £10 to £5 per acre. As the cost of F.Y.M. diminished so other items were introduced or increased. Herbicides first became a measurable average cost in the West Cornwall sample in 1965, lighting in chitting houses in 1969. The acreage levy rose by 50p to £1·50 in 1967 and by another 60p to £2·10 in 1972. Machinery depreciation costs (which include only specialised potato equipment i.e. planters, rotaplanters, spinners, elevator-diggers, and picking baskets, complete harvesters and weighing equipment) increased only gradually, despite the addition to the sample in 1967 of five growers with complete harvesters, for the relatively higher cost was spread over much larger acreages.

Margins

Margins fluctuated as widely as net returns and mainly in the same direction. It has been shown that costs, excluding seed, remained remarkably constant over the period, (Table 5). Changes in seed prices, therefore, influenced the level of margin too. As already mentioned high seed prices sometimes coincided with low net returns and reduced an already low margin even further. This was particularly true in 1963 and 1968 when 50 per cent and 65 per cent respectively of growers in the samples suffered losses. There were also seasons when seed price changes worked the other way. In 1962, 1966 and 1969 very low seed prices further increased very good margins (Figure 1).

The 11 year average sample margin was £88 an acre but it ranged from £173 to a loss of £9. This is a measure of the risk involved in growing the crop.

Moreover, the margins shown in Table 4 are only the difference between the net return and the variable costs plus fixed labour and machinery costs directly attributable to the early potato crop. Not included in the costs are any allowance for a share of unproductive labour (i.e. work on repairs and maintenance, hedge upkeep or time lost through bad weather, depreciation on vehicles or other

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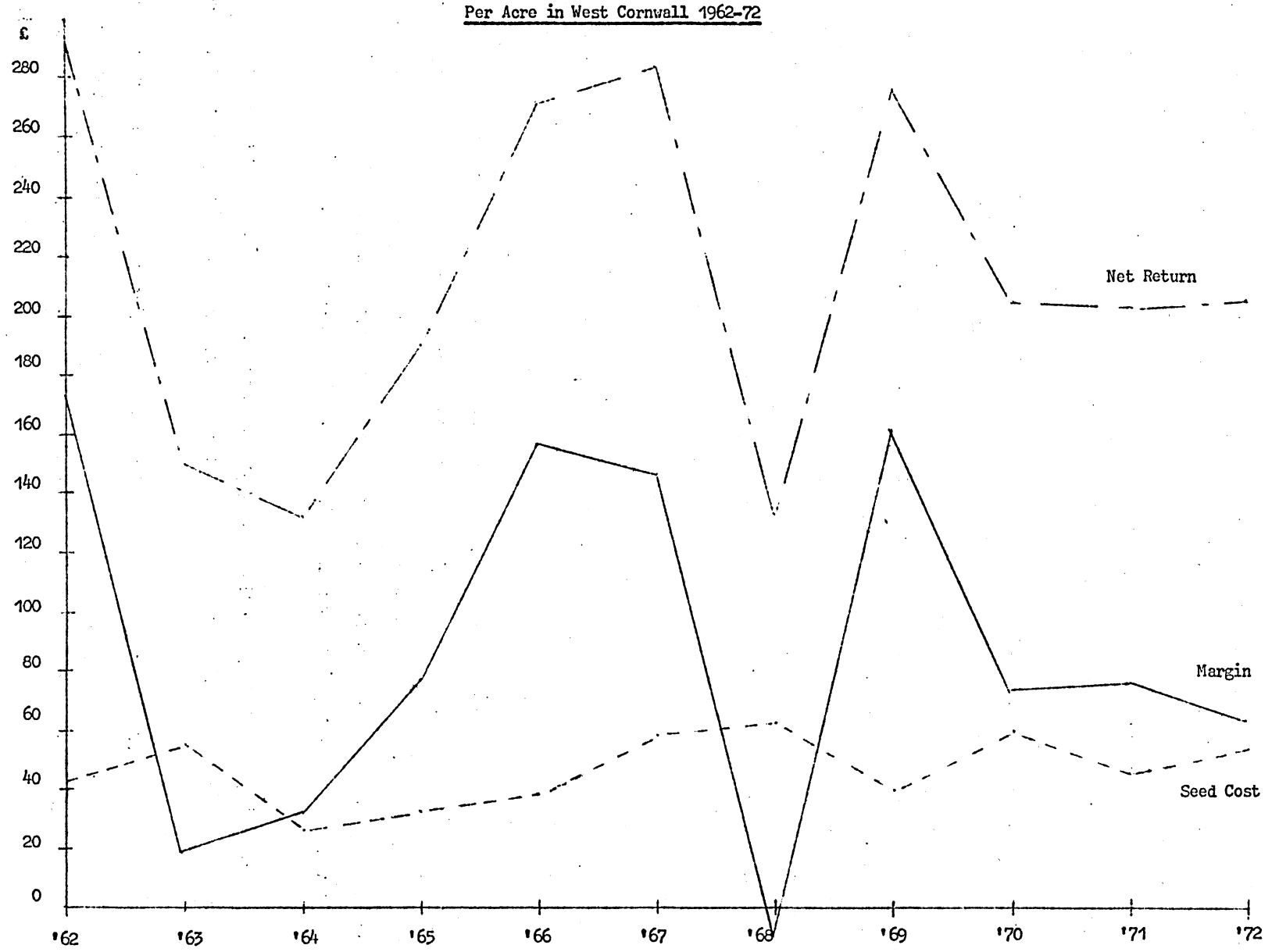
(1) The fall in the average cost per acre of F.Y.M. reflects a change in sample rather than in the number of growers applying it. From 1962-66 growers with small early potato acreages tended to dress the whole or the greater part of it. With the introduction of larger acreages 1967-72 a smaller proportion was dressed.

Figure 1

Annual Movements in Net Return, Margin and Seed Cost

Per Acre in West Cornwall 1962-72



farm machinery and equipment, general overheads (insurance and office expenses) and rent. These costs have been omitted because, apart from rent, they are difficult to allocate.

In 1962 and 1963 some overhead expenses were collected. Fairly straightforward were rent, hedge upkeep (an estimated annual cost divided by the holding acreage) and machinery, other than that used specifically for early potatoes which was estimated at £1 per acre. General overheads were allocated on the basis of the early potato crop's contribution to the total output of the holding.

In making an overall assessment of the early potato crop's performance an estimated figure may be better than nothing. The total sum of these overhead items, averaged for 1962 and 1963 was £12 an acre (made up of rent £5, non-specialised machinery depreciation £1, hedge upkeep £1·50 and other overheads £4·50). For the present day one could safely double this figure and suggest about £25 an acre. Including this overhead figure would reduce the 11 year margin per acre from £88 to something between £60 and £70, not perhaps the big margin some of the very high returns might suggest but high enough to have made the crop worthwhile in the 1960's despite the risks involved.

IV. TECHNICAL CHANGES AND DEVELOPMENTS

Although the samples were depleted by growers dropping out over the first five years, then reinvigorated with a new group, which changed a little in composition during the remaining six years, the technical changes introduced by the growers over the whole period probably occurred fairly generally among West Cornwall growers.

Changes fall roughly into three groups (1) seed, sources and treatment (2) cultural methods (3) sales outlets.

Seed

Varieties

It is difficult to make a clear cut distinction between first and second earlies. Some second earlies, particularly Craigs Royal, will mature in West Cornwall almost as early in some seasons as a genuine first early and are grown as first earlies.

When a similar economic study was made of the early potato crop in West Cornwall from 1952-54 Arran Pilot was an important variety. In 1954 it accounted for 43 per cent of seed planted. By 1962 it was on the way out.

Table 6 Changes in seed varieties planted by the West Cornwall samples 1962-72

Variety	1962	1967	1972
	%	%	%
Home Guard	69	77	89
Craigs and Red Craigs Royal	20	10	2
Arran Pilot	5	-	-
Craigs Alliance	2	6	3
Maris Peer	-	5	1
Other*	4	2	5
	100	100	100

* Includes 1962 - Craigs Defiance, Ulster Chieftain
1967 - Arran Consul, Ulster Sceptre, Sirtema
1972 - Ulster Prince, Ulster Sceptre, Arran Comet
Maris Page, Desiree, Pentland Javelin

Some other less popular commercial varieties grown in the early 1950's, such as Sharpe's Express, Craigs Defiance and May Queen, have virtually disappeared. Home Guard averaged 34 per cent in the samples from 1953-54. As it is considered to be a more reliable variety than Arran Pilot it is now the most widely grown variety in Cornwall. (Table 6).

Sources

This information was not collected until 1964. For the first three years when the samples were similar Ireland was the most important source of seed.

A major change in sample in 1967 brought a significant change in the distribution of seed sources (Table 7). North Cornish seed, which had come on to

Table 7 Sources of early potato seed West Cornwall samples 1964-72

Whole sample									
Source	1964	1965	1966	1967	1968	1969	1970	1971	1972
	%	%	%	%	%	%	%	%	%
Ireland	68	59	58	27	31	31	42	15	18
Scotland	6	20	16	15	21	11	20	42	42
Wales	-	2	8	5	9	6	3	3	7
Cotswolds	5	5	5	16	6	11	11	11	12
Other counties	1	8	4	9	9	12	2	-	-
North Cornwall	-	1	9	23	22	15	11	7	6
Own	20	5	-	5	2	14	11	22	15
	100	100	100	100	100	100	100	100	100
Total acres	65½	60¾	52¼	180¾	157¾	152¾	170½	204	196¼
Identical sample (5 growers)									
Ireland	60	54	42	40	36	38	58	38	55
Scotland	7	26	17	-	14	12	12	30	10
Wales	-	5	17	28	18	16	14	12	9
Cotswolds	10	8	6	-	-	-	-	-	-
North Cornwall	1	3	18	32	32	34	14	17	23
Own	22	4	-	-	-	-	2	3	3
	100	100	100	100	100	100	100	100	100
Total acres	32¾	27	23¾	23½	25½	22¾	24	20¼	25¾

the scene about 1964, was nearly as popular as Irish. However, the North Cornwall seed growers encountered some teething troubles and there were complaints about grading, quality and gangrene. The fall in proportion of North Cornish seed in 1969 and again in 1971 was partly due to change in sample, although new growers taken on in that period were using small amounts, and partly to a grower in 1969 dropping North Cornish for a couple of years and two growers dropping it in 1971. A truer picture of the progress of this seed is probably shown by the same five growers who co-operated throughout the nine years when the data was collected. This is also shown in Table 7.

Some growers in the samples made fairly frequent changes in seed purchase from one source to another while some remained loyal to one or two sources. No one seed producing area seemed to have suffered unduly when North Cornish seed took some of the trade. The large drop in the proportion of Irish seed planted in 1971 reflects some switching to Scottish and to own-produced seed as well as to an increase in the acreage costed which was planted with Scottish seed.

Provision of lighting during storage

Although the technique of providing lights in the chitting house were used in the Eastern Counties in the late 1950's it was the mid 1960's before it seemed to be adopted on any scale in Cornwall. For the samples as a whole it did not become a measurable cost per acre until 1969 when it averaged 25p; in 1971 and 1972 it was between 50p to £1 per acre on average, reflecting a more widespread use of the technique.

Yields

Sample average yields per acre increased over the 11 years. An increasing seed input, from 25 cwt to over 30 cwt per acre, Table 5, must have contributed to this. There did not appear to be any increase in yield per ton planted, though variations of course, occurred. For example, the two highest years, 1963 and 1968 (5·83 tons and 5·30 tons respectively), resulted from very low prices leading to protracted lifting seasons. The low yield of 3·84 tons per ton planted in 1964, was influenced by the high proportion of salvaged seed (20 per cent, Table 7) from the difficult-to-sell ware crop in 1963. Equally low yields per ton in 1962 and 1967 (3·39 tons and 3·58 tons respectively) were a direct consequence of late seasons and June drought. The earliest season of the series, 1966, in which 94 per cent of the crop had been marketed by 19th June (Tables 1 and 3) also produced a rather low yield at 3·77 tons. Growers were obviously taking advantage of the earliness and high prices while

they lasted, having just experienced much lower prices in the early season of 1965.

When the Rotaplanter was introduced there were fears of yield reduction because of the very unequal spacing, unless the seed was graded within very narrow limits but these fears appeared to be unfounded. As indicated above weather and economic factors seem to be the main determinants of yield.

Cultural methods

The main changes in cultural methods arose from developments designed to reduce the use of labour, viz, herbicides and mechanisation.

Herbicides

Herbicides first came into commercial use about 1960. Not until 1964 did six growers in the West Cornwall sample apply a pre-emergence preparation of paraquat or diquat. The number of growers in the sample using herbicides increased over the years and other paraquat, prometryne, linuron or simazine based materials became popular. In the last three years of the survey the average cost of herbicides was about £3·50 an acre.

Mechanisation

In the 1962 sample over one-third of the acreage was hand planted. In terms of acreage proportion, this method showed little sign of decreasing, until the advent of the Rotaplanter in 1970. However, the number of hand planted crops did decline slowly as the smaller growers went out of production but one or two growers with larger acreages, first costed in 1967, were hand planting up to 1969. These growers had the labour available and it did a better job than the planter, with a large enough staff it was also faster.

For speed of operation the Rotaplanter has the edge over the hand planters and when weather conditions conspire to delay planting well into March speed is all important, particularly on crops of over 20 acres. Placing tubers in the furrows is only part of a larger team operation which includes carting trays to the field and 'feeding' the Rotaplanter. Speeding up the dropping operation has led to problems and growers have found it necessary to use additional labour and transport to keep the planter on the move.

Unlike planting, lifting was almost entirely mechanised from 1962. Apart from one crop, which was ploughed out in 1962 and 1963, spinners were used on

the smaller acreages and lifted nearly one third of the 94 acres in the 1962 sample. Up to 1966 some two-thirds of the total acreage was lifted with elevator diggers. The change in 1967 was due entirely to the increase in sample size and the introduction of five complete harvesters. Two growers, lifting with spinners in 1967, continued using them up to 1970, when one replaced with an elevator-digger and the other with a harvester.

The complete harvester was soon adopted on the larger acreages[1] to overcome labour problems rather than for greater efficiency. Assuming the availability of a good team of casuals for picking up, the elevator digger is faster and tends to cause less damage to the potatoes. Most growers preferred the greater speed potential of the elevator-digger and a couple of them reverted to it even after using a harvester.

Table 8 Mechanisation changes in the West Cornwall samples 1962-72

Year	Area planted				Area lifted				
	Hand	Planter	Rota-planter	Total	Plough	Spinner	E/ digger	Har-vester	Total
	%	%	%	%	%	%	%	%	%
1962	36	64	-	100	4	27	69	-	100
1963	58	42	-	100	6	34	60	-	100
1964	38	62	-	100	-	28	67	5*	100
1965	46	54	-	100	-	30	70	-	100
1966	37	63	-	100	-	21	79	-	100
1967	29	71	-	100	-	4	47	49	100
1968	32	68	-	100	-	4	52	44	100
1969	31	69	-	100	-	5	54	41	100
1970	7	39	54	100	-	5	44	51	100
1971	4	22	74	100	-	-	38	52	100
1972	1	19	80	100	-	-	38	52	100

* Contract.

Spread over 20 acres or so the difference in capital and depreciation costs between the two machines is relatively small and the more expensive

(1) Four and a half acres was the smallest lifted with a harvester - the average over six years was 13 acres.

harvester gains greater justification if, in addition, it is used for bulb lifting, as was the case on one or two holdings.

It is possible to calculate the acreage at which the cost of labour plus depreciation per acre for the harvester equals that of the elevator digger, or the Rotaplanter equals that of the hand-fed planter but in practice the exercise is a little academic. From 8-10 acres upwards labour availability together with speed and timeliness of operation are the over-riding considerations and there may be the added bonus of other crops on which the machinery can be used as well.

Sales outlets

In the 1962 sample nearly half the crop was sold through wholesalers and nearly half through merchants and a small quantity was disposed of locally. By 1972 over 80 per cent went to the merchants. Lest it be thought that this change was due to the differing samples an analysis of the sales of the same five growers in each year is given in Table 9 and shows a similar result.

Table 9 Proportion of early potato sales to different outlets West Cornwall 1962 and 1972

	Wholesalers	Merchants	Local	Total
	%	%	%	%
Whole)1962	45	49	6	100
Samples)1972	16	83	1	100
The same 5)1962	52	47	1	100
Growers)1972	13	84	3	100

The swing away from the wholesaler to the merchant reflects an increasing competitiveness in the trade and the stronger bargaining power of growers, many of whom have larger acreages or have joined together into a selling group. For the small grower the merchant sometimes provides an additional advantage in the form of credit. He supplies the seed but receives no payment until the crop is sold, some six months later.

V. LEVELS OF PROFITABILITY: FOUR CASE STUDY HOLDINGS

Four growers co-operated without a break during the 11 years of the survey, in each year their early potato crops were always less than 10 acres. The holdings of two growers, A and B, were situated in areas where lifting was normally earlier than on the holdings of the other two growers, X and Y (this was so in both early and late seasons as shown in Table 10). In each district one grower, A and X respectively, usually lifted as early as possible, weather and market conditions permitting, but the other growers, B and Y, tended to wait, either for the crop to bulk up or in order to spread the lifting over a longer period, or partly for both reasons; they are referred to as 'late growers'.

Table 10 A comparison of crop clearances in West Cornwall
Four growers 1962-72

Week ending	Four early seasons 1964, 1965, 1966, 1971				Four late seasons 1967, 1968, 1969, 1970			
	Early districts		Late districts		Early districts		Late districts	
	% of tonnage marketed				% of tonnage marketed			
	A	B	X	Y	A	B	X	Y
May 29th	11	-	-	-	-	-	-	-
June 5th	49	15	9	-	48	-	-	-
" 12th	19	12	27	18	48	11	22	-
" 19th	21	16	30	10	4	29	11	35
" 26th	-	12	19	38	-	27	19	11
The Rest	-	45	15	34	-	33	48	54
	100	100	100	100	100	100	100	100

The 11 year average results, in both the early and the late districts, as shown in Table 11, produced one high yield at a relatively low net return per ton and one low yield at a relatively high return per ton. The interesting feature is the much higher margin per acre for each grower producing the higher yield, even though at a lower net return per ton.

The reasons for the higher margins appear to be slightly different in each district.

In the early district, grower A had a much shorter marketing period than grower B. In one year it lasted only five days, in four years it covered a week and in the remaining six years about two weeks. Grower B, on the other hand, had an average marketing period of four and a half weeks and it was never less than three. Grower A obtained higher average net returns per ton (£44) by marketing all his crop in the very short periods but they were not sufficient to compensate for the lower yields, 5 tons compared with 8½ tons for grower A.

Table 11 Eleven year average results. Four growers 1962-72

Grower	Per acre				Per ton	Per acre	Per ton planted
	Yield	Net return	Total cost	Margin	Net return	Seed planted	Yield
	tons	£	£	£	£	cwt	tons
Early) A	4¾	204	133	71	44·32	29¾	3·43
Dist.) B	8½	278	136	142	33·64	27¼	6·05
Later) X	5	149	105	44	31·84	29	3·88
Dist.) Y	8½	205	124	81	25·36	22¾	7·88

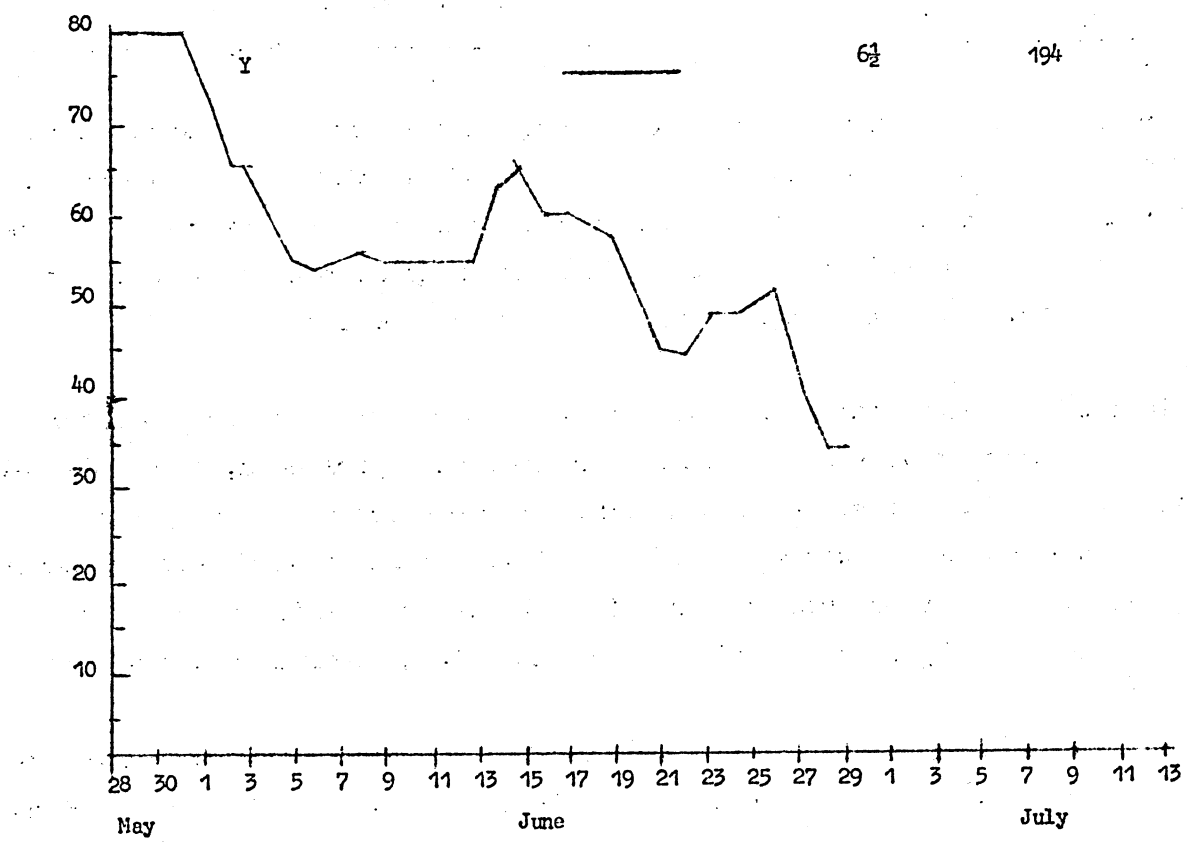
In the later district, growers X and Y usually started lifting too late to benefit from the higher prices at the beginning of the Cornish season, which were obtained by growers A and B. The higher yield produced by grower Y appears, therefore, to be the main reason for his higher margin compared with that of grower X and this despite a higher total cost of production.

In the middle or latter part of nearly every season there was an upturn in prices, sometimes very short-lived, sometimes more prolonged, sometimes only slight but sometimes considerable depending on the cause of the temporary shortage in supplies. This was another, entirely fortuitous factor influencing the results, not only of growers X and Y in the later district but also of grower B in the early district, who spread his lifting over a longer period.

If the price movements, marketing periods, yields and margins of all four growers are examined in individual seasons it will be seen that in some of them a modification of the short-lifting-period, on the late-bulking policies would very likely have brought the growers concerned a higher margin. Two seasons, 1967 and 1968, have been chosen as examples, the seasonal prices in these years are shown in Figures 2 and 3 while other information on these seasons is given in Table 1, pages 4 and 5.

Figure 2 Daily Prices for the Season. Marketing Period, Yield and Margin Per Acre in 1967. Four Growers

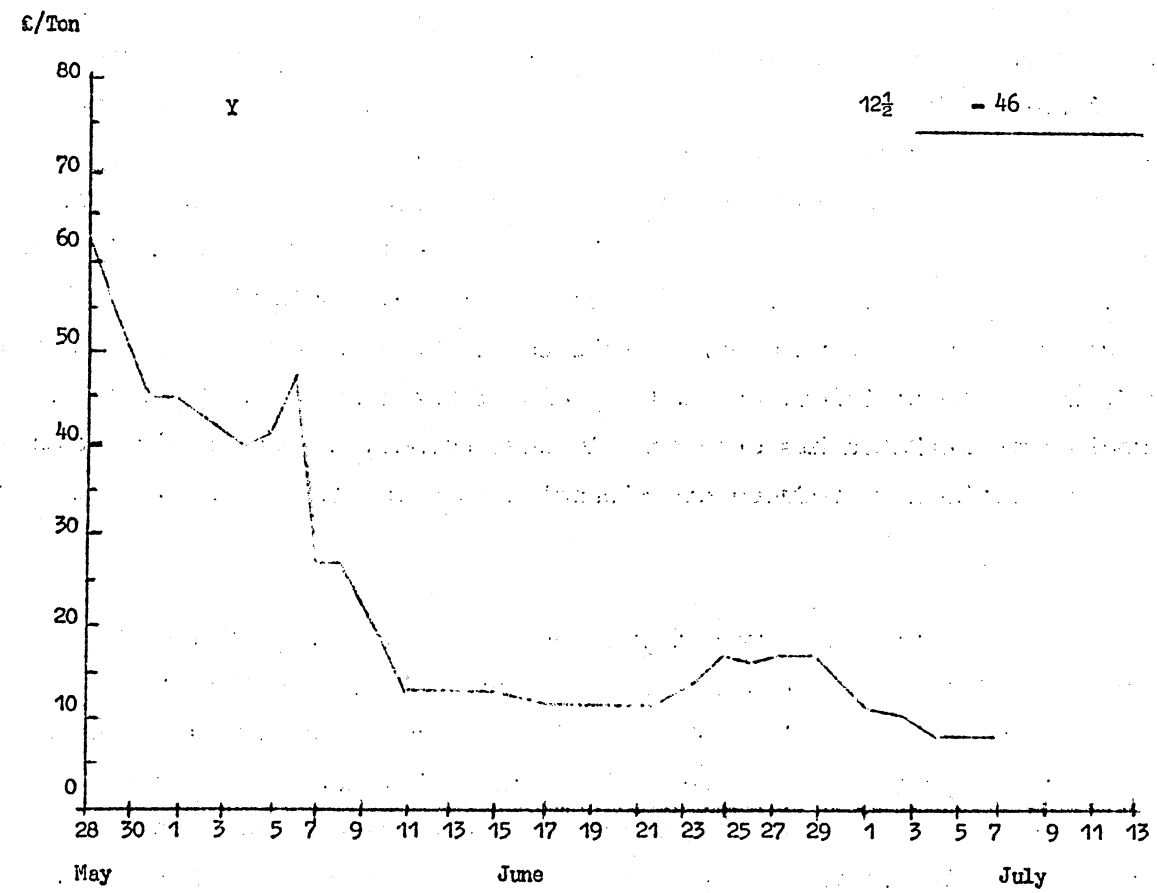
Grower	Yield Per Acre tons	Margin Per Acre £
A	3	70
B	8¼	277
X	4¼	96
Y	6½	194



Source of daily prices: Potato Marketing Board.

Figure 3 Daily Prices for the Season. Marketing Period, Yield and Margin Per Acre in 1968. Four Growers

Grower	Yield Per Acre tons	Margin Per Acre £
A	5	8
B	9¾	- 48
X	8½	10
Y	12½	- 46



Source of daily prices: Potato Marketing Board.

Supplies of old ware at the beginning of the 1967 season were relatively short and home crops were delayed by drought. Since prospects for the season were good there was no great need for growers A and X to lift as early as possible. However, after an early start and by getting his crop away in seven days grower A in the early district, produced only three tons per acre, his lowest yield in 11 years. Had he been able to prolong his lifting, over say a three week period, to obtain a heavier yield he would undoubtedly have gained a larger margin, for prices remained at a relatively high level. Grower X, in the late district, also marketed an early, relatively low yielding crop. At the time, though, there was little he could have done to remedy the situation, he was just unlucky to market nearly 80 per cent of his crop at relatively low prices. Grower Y, also in a late district, was lucky to get 50 per cent of his higher yielding crop away at a relatively high price.

By contrast in the oversupplied season of 1968 it was the 'leave-the-crop-to-bulk-up', protracted-lifting policies that brought disaster in the form of losses approaching £50 per acre to growers B and Y. Grower B, in an early district, was obviously cautious of starting to lift at a low yield, resulting from the drought. However, in view of the large supply of old ware and heavy imports of new potatoes up to June, a big drop in prices was predictable. By delaying, the first consignment grower B sent away made only £23 net per ton. Thereafter the timing of his marketing was unfortunate, 24 per cent of the crop was sold when June prices were at their lowest and only 9 per cent during the up-turn at the end of June. But he could and should have avoided selling 24 per cent of the crop in July, when prices fell to less than £10 per ton. Similarly grower Y, in a late district, who had a yield of 12½ tons per acre early in July, could have marketed his crop some 10 days sooner, the lower yield sold at better prices would have reduced his financial loss and led possibly to a small profit.

Thus, although in the 11 year period as a whole the high yielding crops produced the better overall result, there appear to be weaknesses inherent in keeping to only one policy, irrespective of the factors that are influencing the market in any particular season. It is true that growers in later areas have less room for manoeuvre in adjusting their marketing period, for they usually miss the highest prices, yet the example of grower Y in 1968 was an instance of overdoing the policy of waiting for the crop to bulk up.

On the cost side growers X and Y in the later districts spent less on the crop than growers A and B in the early districts, seemingly in anticipation of

a lower level of return, Table 12. Grower Y economised on seed and manure, grower X on labour mainly because he used more herbicide. Grower X, like

Table 12 Eleven year average cost structure per acre
Four growers 1962-72

Items	Early districts		Later districts	
	Grower A	Grower B	Grower X	Grower Y
	£	£	£	£
Seed	53	46	48	41
Manure	25	22	20	14
Chemicals	1	2	3	2
Levy	1	1	1	2
Labour growing	29	35	18	25
Labour lifting	19	24	12	34
Depreciation	5	6	3	6
Total	133	136	105	124

grower B, was also more efficient than growers Y and A in the use of labour for lifting the crop, which, for growers X and B averaged only £2·40 and £2·80 per ton respectively, compared with £4·00 for growers Y and A.

VI. CONCLUDING OBSERVATIONS

Market intelligence

For West Cornwall growers in the period 1962-72 profitability depended on the level of the market price and the rate at which it fell up to the end of June. As shown in Chapter 1 the main factors determining those prices were stock levels of old ware, new imports, the size of the home crop and the rate at which it bulked up in relation to the Cornish crop. In Chapter V it was suggested that growers could benefit by adjusting their rate of marketing in the light of what was known of these factors. By the middle of May information could be obtained from the Potato Marketing Board as to the stock of old ware on hand and approximate plantings of earlies at home and probably crop conditions in the Eastern counties. Growers could, with advantage, make better use of market intelligence available from the regional office in Truro, not only at the beginning of the season but right through the lifting period.

A forward look

The 1962-72 analysis will have shown just how unpredictable have been the various factors that determine the profitability of the early potato crop for West Cornwall growers - unpredictable almost until the start of the new season's marketing. Even the most fickle of them, the weather, can change the course of the price curve during the lifting period, as it did in 1971.

Crop yields and therefore the size of the crop, whether the previous year's ware crop or the current early crop, will probably continue to fluctutate in response to variations in weather and other factors both here and on the continent. For the last seven years at least the Potato Marketing Board has successfully cushioned the market at the start of the early season with its buying programmes in seasons of surplus. Whether and for how long it will be allowed to continue this function under E.E.C. regulations remains to be seen.

Imported new potatoes will certainly have easier access to our markets. It would appear that Cyprus, who is seeking associate status within the E.E.C., will have no tariff barrier to surmount in the transitional period i.e. up to 1977, unless she exceeds an annual quota now being negotiated and which will take effect from January 1st 1974. The continental producer will need to popularise the yellow flesh potato before large quantities can be sold in this country. However, a promotional campaign could probably achieve the desired result in one or two seasons and make an impact on our market. Maybe Cornish growers should be thinking in terms of a brand image for Cornish earlies, a

brand name is rapidly becoming the hallmark of survival. At the moment, however, the competitive threat would seem to be coming from earlier home crops in other areas, rather than from imports.

Regarding the picture in West Cornwall in the last decade the changing economic climate has favoured the larger early potato grower compared with the traditional one with just a few acres of the crop. Holding size, or the acreage managed by one grower has been increasing and if other relatively labour intensive crops such as broccoli, spring cabbage and bulbs are grown as well as early potatoes a fairly large permanent staff is needed. With the new automatic planters and complete harvesters a team of seven or eight people can, if necessary, handle the crop without additional casual labour. This can bring extra benefit by providing the better and more even standard of grading required increasingly by the market. Expensive equipment may also be used on other crops and the depreciation spread over more acres. This trend seems likely to continue with early potato growing confined to the holding of 100-300 acres and dropped by the ones of 50-100 acres or less.

There will always of course be the exceptional holdings where special circumstances make it possible to carry on small scale production. Indeed this might be kept alive to some extent by expanding tourism, though the scope from this outlet would appear to be much less than with a crop like strawberries.

With wages increasing by larger steps the grower who depends on casual labour will face some steep cost increases. For instance casual labour for lifting the crop is likely to cost £6-7 per ton in 1973, compared with £4-£5 last year. This could add up to another £10 per acre. The grower using only permanent staff may lift part of the crop at overtime rates even so his cost increase would be far less.

Seed is a major item of cost, over the 11 year period it averaged 38 per cent of the total cost but ranged from 27 per cent to 45 per cent. The larger holding is more likely to be able to produce some once-grown seed, at a considerable saving over purchased seed. For the same reason one would like to see an expansion in contractual arrangements with North Cornwall growers, producing seed at a more stable price which should, on average, be lower than Scottish or Irish because of the lower transport cost.

APPENDIX

First and second early potato acreages in Great Britain, Cornwall Pembroke, the three divisions of Lincolnshire and Kent.

Year	Great Britain	Cornwall	Pembroke	Lincs.	Kent	Remaining 82 counties
1962	134,870	4,970	7,850	27,990	7,220	86,840
1963	146,210	5,410	9,670	27,900	7,960	95,270
1964	148,070	5,440	9,260	28,810	8,390	96,170
1965	132,240	5,060	8,830	25,590	7,660	85,100
1966	112,740	4,230	7,760	22,540	7,560	70,650
1967	104,610	4,030	7,640	19,810	7,200	65,930
1968	119,230	4,860	8,410	21,140	7,800	77,020
1969	113,190	4,670	7,220	18,890	7,390	75,020
1970	124,220	4,690	7,770	20,100	8,060	83,600
1971	115,580	4,320	7,210	19,290	7,610	77,150
1972	101,820	3,920	6,740	16,790	6,620	67,750

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