THE UNIVERSITY COLLEGE OF WALES

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EARLY POTATO PRODUCTION IN GREAT BRITAIN, 1984

A Survey of 109 Early Potato Farms in England, Wales and Scotland

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AGRICULTURAL ENTERPRISE STUDIES IN ENGLAND AND WALES
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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, receiving financial and technical support from the Ministry of Agriculture, Fisheries and Food. Since April 1978 this work has been supported in Wales by the Welsh Office following the transfer of responsibilities for agriculture to the Secretary of State for Wales.

The departments in different regions conduct joint studies of those enterprises in which they have a particular interest. This community of interest is recognised by issuing enterprise studies reports prepared and published by individual departments in a common series entitled "Agricultural Enterprise Studies in England and Wales".

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

This survey was conducted by the following:
in England, the Farm Business Unit of the School of Rural Economics at Wye College and the Agricultural Economics Unit at the University of Exeter;
in Wales, the Department of Agricultural Economics at the University College of Wales, Aberystwyth;
in Scotland, the Economics Division at the West of Scotland Agricultural College.

Grateful acknowledgement is therefore made to those in these Departments who contributed to the work, and to those early potato growers in the various regions who supplied valuable and detailed information.

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Introduction

This report covers one half of a pair of surveys undertaken of potato production in Great Britain in 1984 (1). Since the annual agricultural census only distinguishes between potatoes to be lifted before and after the end of July, the recruitment of a sample of farms for a survey of true early potatoes had to be made from lists of producers known by the Potato Marketing Board (PMB) to be growing earlies. The farms contacted were drawn at random from among such producers. However, it was not possible to stratify the sample by area of early potatoes grown, nor can the results of the survey be 'raised' in a statistical sense and thus generalised to the industry as a whole. Participation in the survey, by growers was entirely voluntary.

Results from the survey are therefore presented in this report simply for the sample within each region covered and with no claim to a wider validity. As can be seen, variation in results between individual farms is often large, which is not surprising in an enterprise noted for its volatility and speculativeness. Despite these provisos, the sample was relatively large in terms of early potato area covered, as shown in Table 1: 109 growers in four regions were included, with selection confined to those growing the crop on a commercial scale who could assert, in the winter of 1983, their intention to lift their potatoes by the first week in July 1984. Although

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(1) A study of maincrop potato production will be published by Cambridge University in the Enterprise Studies series in due course.

Table 1

Areas covered by the survey in the sample regions

	S.W.England	S.E. England	Wales	Scotland
No. of farms in survey	32	30	31	16
Early potato areas on survey farms (ha.)	197.6	391.5	562.2	211.6
Total area of earlies grown in: (a)	Cornwall	Kent & Essex	Pembrokeshire	S.W.Scotland
First earlies (ha.)	865	3338	1673	730
First & second earlies (ha.)	1835	4535	2200	830

(a) Source: PMB

the areas covered by the survey cannot be precisely related to those recorded by the PMB for various reasons, it would appear that as a minimum the sample covered perhaps one quarter of the total area of earlies grown in Wales and Scotland and perhaps ten per cent in the two English regions or possibly more in Cornwall.

It is also not possible to generalize the results from a one year survey to early potato growing generally, irrespective of year. Not only are weather conditions variable between years and between regions in any one year, marketing circumstances are also widely divergent, being determined by a complex interaction of conditions both national and international. 1984 was characterized by a cold start which impeded development of potatoes planted early, and by very dry conditions throughout the

growing season; but even within this general scenario, variations were noted, with regional impediments to both planting and harvesting activities being encountered. On the marketing side, 1984 was characterised by few carryover stocks of 1983 potatoes to influence the early season and by little disruption from imports.

The Sample and Characteristics of the Farms Included

Table 2 shows the distribution of the regional samples by area of early potatoes grown. The preponderance of very small growers of under 5 hectares in the South West England sample is not matched elsewhere, the other regions having a more even distribution of farms across size groups. In terms of early

Table 2

Distribution of survey farms by early potato areas

Early potato area (ha.)	Farms: No.	%	cumulative percentage	Total early potato area grown: ha.	%	cumulative percentage
S.W. England						
under 5	19	59	59	46.7	24	24
5- 9.9	5	16	75	33.3	17	41
10-19.9	7	22	97	93.0	47	88
20 and over	1	3	100	24.6	12	100
Total	32			197.6		
S.E. England						
under 5	6	20	20	20.3	5	5
5- 9.9	10	33	53	65.6	17	22
10-19.9	9	30	83	124.7	32	54
20 and over	5	17	100	180.9	46	100
Total	30			391.5		
Wales						
under 5	5	16	16	22.1	4	4
5- 9.9	8	26	42	59.0	10	14
10-19.9	6	19	61	89.2	16	30
20 and over	12	39	100	391.9	70	100
Total	31			562.2		
Scotland						
under 5	4	25	25	16.0	8	8
5- 9.9	3	19	44	26.5	12	20
10-19.9	7	44	87	106.4	50	70
20 and over	2	13	100	62.7	30	100
Total	16			211.6		

potato areas grown, the Welsh sample stands out with 70 per cent of the area covered by the survey on the farms of the larger growers (over 20 hectares). In all, the total sample covered 1,362.9 hectares, of which over 40 per cent was in Wales.

Table 3 shows the structure of the sample by broad farm type. In all regions, general cropping farms predominate, although outside the South East of England early potato growing also appears on several dairy farms.

Table 3

Structure of the sample by farm type

Farm type	No. of farms: S.W.England	S.E.England	Wales	Scotland
Dairy(a)	12	-	9	5
Other livestock types(b)	2	1	2	4
Cropping types(c)	13	24	17	7
Horticultural types(d)	5	5	3	-
	32	30	31	16

Key to types: (a) EEC particular types 411,412,431,812
(b) EEC particular types 422,442,443,814,821
(c) EEC particular types 111,121,122,123,621,624,811,813
(d) EEC particular types 211,214,215,217,321,625

A categorisation of the survey farms by type of business is given in Table 4. In Wales, the survey farms were exclusively family concerns, and family farms were also predominant in the Scotland and South West England samples. Only in the South East England sample did farming companies appear in significant numbers. The average age of the farmers involved was lowest in Scotland and highest in Wales (Table 5), with farmers in their forties tending to predominate.

Table 4

Survey farms by type of business

Type of business	No. of farms: S.W.England	S.E.England	Wales	Scotland
Sole trader	14	2	7	6
Family partnership	14	16	24	7
Farming company	2	11	-	2
Other (a)	2	1	-	1

(a) including non-family partnerships

Table 5

Survey farms by age of farmer(a)

Age (years)	No. of farms: S.W.England	S.E.England	Wales	Scotland
up to 29	2	1	1	2
30-39	8	6	4	6
40-49	11	10	8	4
50-59	7	10	9	3
60 and over	4	3	9	1
Average age(years):	44	47	50	42

(a) the age of the 'moving force' behind the farm business.

Early Potato Growing on the Survey Farms

An indication of the importance of early potato growing to the farms in the sample is given in Table 6, which relates the area which growers intended to devote to early potatoes in 1984 to their total farm area. Only in Wales and the South West of England did a significant number of growers intend to put more than 30 per cent of their farms down to earlies. The median levels were substantially higher for these two regions, and indicate a relatively high level of dependence on the crop by growers there.

Table 6

Proportion of area on survey farms intended for early potatoes

Proportion	No. of farms: S.W.England	S.E.England	Wales	Scotland
less than 5%	11	14	2	4
5-10%	2	8	7	6
10-20%	12	6	11	3
20-30%	3	1	6	3
30-50%	4	1	3	-
over 50%	-	-	2	-
Median (%)	12.9	5.5	13.4	8.3

Table 7 shows the place of early potatoes within the rotations of the farms concerned. Rotations of grassland leys with earlies were common outside South East England, where the potatoes more commonly formed part of a rotation with cereals and sometimes brassicas. Brassicas also featured prominently as a succeeding crop in South West England.

The soils in which early potatoes were grown on the survey farms tended to be classed as medium in South West England, medium to light in Wales, and predominantly light in the other regions (Table 8). Under the MAFF/ADAS five grade agricultural land classification, growers appeared considerably less favoured in Wales amd Scotland than in England; in South East England, over half the growers in the sample produced their earlies off grade 1 land which is virtually unknown in the early potato areas of Wales and Scotland. In terms of location (Table 9), the survey farms in South West England showed consistently higher altitudes than the other regions, although in the Welsh sample too a significant number of farms grew earlies above 50 metres. A south facing aspect appears particularly desirable in Wales, and growers in South East England were often found at greater distances from the coast than is normal in the other regions.

One third of the survey farms rented the land on which they grew early potatoes - the proportion was highest in Scotland and lowest in South West England (Table 10). The renting of land additional to the usual farm area solely for growing earlies was also encountered more frequently in the Scottish sample than elsewhere. The value attributed to early potato land was highest in the South East of England and lowest in Scotland.

Table 7

Crops preceding and succeeding early potatoes on survey farms

	No. of farms:			
	S.W.England	S.E.England	Wales	Scotland
Preceding crop				
Leys	13	3	16	10
Cereals	8	24	6	4
Potatoes	3	1	9	2
Brassicas (a)	8	2	-	-
Succeeding crop				
Leys	8	-	13	12
Cereals	3	12	5	-
Potatoes & other roots	1	3	7	-
Brassicas (a)	20	14	5	3
Other crops (b)	-	1	1	1

(a) Incl. rape, kale
(b) Eg. peas, beans

Table 8

Soil types and land classification on survey farms (a)

	No. of farms:			
	S.W.England	S.E.England	Wales	Scotland
Soil type:				
Heavy	1	1	-	-
Medium	27	9	19	5
Light	4	20	12	11
Land classification:				
Grade 1	5	16	1	-
Grade 2	22	9	4	1
Grade 3	5	5	26	12
Grade 4	-	-	-	2
Grade 5	-	-	-	1

(a) Early potato land only.

Table 9

Location of early potatoes on survey farms

	No. of farms: S.W.England	S.E.England	Wales	Scotland
Altitude (metres a.s.l.)				
under 25	-	19	7	10
25-50	4	10	6	5
50-100	17	1	16	1
100-150	10	-	1	-
over 150	1	-	1	-
Aspect				
south-facing	21	10	24	4
other	11	20	7	12
Distance from coast (miles)				
up to 2	27	14	26	16
2-5	5	9	5	-
over 5	-	4	-	-

Table 10

Rents, rental values and land values on survey farms (a)

	S.W.England	S.E.England	Wales	Scotland
No. of farms on which the land rented	7	11	12	7
No. of farms on which additional land rented	1	3	2	3
Average land value (£/ha)	5,029	5,762	4,975	3,906

(a) Early potato land only.

The growers in the sample were asked to state the largest and the smallest areas of early potatoes which they had grown in any of the ten years up to 1984. Such maximum and minimum areas could then be related to growers' intentions for 1984 as an indication of growers' perceptions of the buoyancy of the early potato enterprise. Table 11 shows the results: in all regions the figures show a certain degree of confidence in the enterprise, with only South East England recording a sizeable number of growers whose intended plantings in 1984 were down on their plantings of 1983.

The purchase of potato quota additional to that granted from the primary allocation of basic area under PMB regulation 54 took place on only 18 farms in the total sample of 109. These farms were distributed as follows: 8 in South East England, 7 in Wales and 3 in Scotland.

Growers in the survey were also asked to estimate the area of their farms technically suited to early potato growing and the areas which they would like to grow were they not constrained by quota limitations. Their answers are summarised in Table 12. Areas considered suitable for earlies exceeded actual plantings by a factor of 4.2, with the excess especially pronounced on the survey farms in South West England. However, growers did not generally express a desire to plant much larger areas than they actually did in 1984, particularly in Wales, suggesting an unwillingness to acquire additional resources of labour and equipment or to divert such resources away from other farm activities.

Table 11

Growers' intended plantings in relation to previous years(a)

	S.W.England	S.E.England	Wales	Scotland
No. of farms growing maximum area in 1984	21	11	9	9
No. of farms growing minimum area in 1984	11	9	7	5
No. of farms growing same or larger area in 1984 than 1983	26	17	23	15
No. of farms growing smaller area in 1984 than 1983	6	13	8	1

(a) maximum and minimum areas refer to the largest and smallest areas planted in any of the 10 years to 1984

Table 12

Actual, suitable and desired early potato areas on survey farms

(hectares)	S.W.England	S.E.England	Wales	Scotland
Total area of actual plantings	197.6	391.5	562.2	211.6
Total area suitable for planting	1309.8	1604.5	1947.5	926.5
Total area of desired plantings:				
on farm	258.2	496.3	547.6	254.7
on and off farm	258.2	580.2	635.4	285.9

Seed Potatoes and Chitting

The seed potatoes purchased or retained by the survey farms for their 1984 early crop are listed by variety in Table 13. By far the greatest number of varieties was found in Wales. Each region had its clear favourites: the Scottish farms were 88 per cent dependent on Epicure; over 70 per cent of the seed on the survey farms in South East England was Pentland Javelin and Arran Comet; and the surveyed growers of South West England relied on Home Guard for almost 50 per cent of their seed requirements. Welsh growers too showed a clear preference for Home Guard, although significant quantities of other varieties were also found. On average, growers in the Wales and South West England samples went in for a larger number of different varieties per farm than those elsewhere. Growers in Scotland rarely grew more than 1 or 2 varieties.

Practice with regard to the purchase and retention of seed varied widely between regions. Whereas almost 92 per cent of the seed used on the Scottish farms was home-grown retained seed, in South West England, by contrast, over three quarters of the survey growers' seed requirements were purchased. Growers in South East England, too, showed a preference for retentions of seed, with less than 30 per cent of requirements purchased; on the survey farms in Wales, retentions amounted to 37 per cent of total seed requirements.

The average cost of purchased seed was somewhat less on the Welsh farms at £169 per tonne; in the other regions, the average cost proved remarkably similar at around £190 per tonne. The

lower cost in Wales was related to the prevalence of Home Guard, which proved consistently cheaper than most other varieties. Purchases by farms in England and Wales were predominantly of Scottish seed, although Irish seed was also frequently found on Welsh farms.

Table 13

Seed potatoes by variety on survey farms

Variety	Quantity of seed (tonnes): (a)			
	S.W.England	S.E.England	Wales	Scotland
Home Guard	389.2	11.0	846.8	-
Arran Comet	104.8	584.3	102.4	-
Wilja	66.7	7.5	33.8	17.1
Maris Peer	51.9	-	101.5	-
Maris Bard	46.8	194.5	13.0	-
Pentland Javelin	33.8	444.7	257.0	54.2
Estima	23.2	-	59.0	8.0
Ulster Sceptre	-	89.7	375.3	-
Epicure	-	-	-	674.1
Craigs Alliance	-	-	264.3	-
Other varieties	73.2	114.0	444.3	12.6
	789.6	1,445.7	2,497.4	766.0

(a) Incl. both seed purchased and seed retained for chitting.

Chitting periods varied widely among the survey farms, averaging 99 days in the South West England region, 120 days in Wales, 136 days in South East England, and 177 days in Scotland. In no region was a significant quantity of seed chitted loose rather than in boxes or trays. Environmental control in chitting houses varied: in South East England only 5 of the 30 survey farms chitted in an uncontrolled environment without artificial heating or light, yet such uncontrolled chitting took place on 22 of the 32 farms in South West England, on 18 of the 31 farms in Wales, and on all but 3 of the 16 farms in Scotland.

The type and age of the buildings used for chitting seed potatoes on the survey farms are given in Table 14. The extent of the use of old buildings for this purpose is striking in all regions as is the fact that purpose-built chitting sheds were confined to Wales and to a lesser extent South East England. The average age of buildings appeared to be highest in Scotland and South West England; and only in the latter region and in Wales had significant numbers of buildings been improved in recent years.

Table 14

Buildings used for chitting seed on survey farms

Type of building	No. in sample: S.W.England	S.E.England	Wales	Scotland (a)
Glasshouses	-	2	3	-
Purpose-built chitting sheds	-	7	19	-
Recently erected 10 year life buildings	5	-	2	-
Recently erected 30 year life buildings	3	2	2	1
Old buildings	24	24	18	20
Age of building (years)				
up to 5	3	6	3	-
6 to 10	3	2	7	-
11 to 25	2	2	16	-
26 to 50	4	22	12	12
over 50	20	3	6	3
Buildings with recent improvements	8	4	8	1

(a) No data available on age of some buildings.

Planting

The planting dates for the 1984 early potato crop on the survey farms are shown diagrammatically by region in Figure 1. The growers surveyed in Wales and the South West of England commenced planting in the first days of February, somewhat earlier than those in the other regions; the Welsh growers, however, also finished planting significantly later than those in the other regions, with the final 10 per cent of their total area not planted until the second half of March. In general, the growers in Wales and the South West of England were earlier planters than those in Scotland and South East England, although, in these later-planting regions, once planting was underway it continued at a more consistent rate. Planting schedules also varied within the separate regions according to potato varieties: in Wales and South-West England, Home Guard was generally planted earlier than other varieties, and in South East England the surveyed growers generally planted Arran Comet earlier than Pentland Javelin.

Average seeding rates on the survey farms are shown in Table 15. Seeding rates among Welsh growers proved considerably higher than in England or Scotland, a fact not entirely attributable to potato variety since the lowest rate recorded among the Welsh growers was a full 1 tonne per hectare higher than the lowest rates in England. The variation in seeding rates between individual growers was also considerably higher in the Welsh sample than elsewhere. While in Wales and South East England

Figure 1

Planting schedules on survey farms

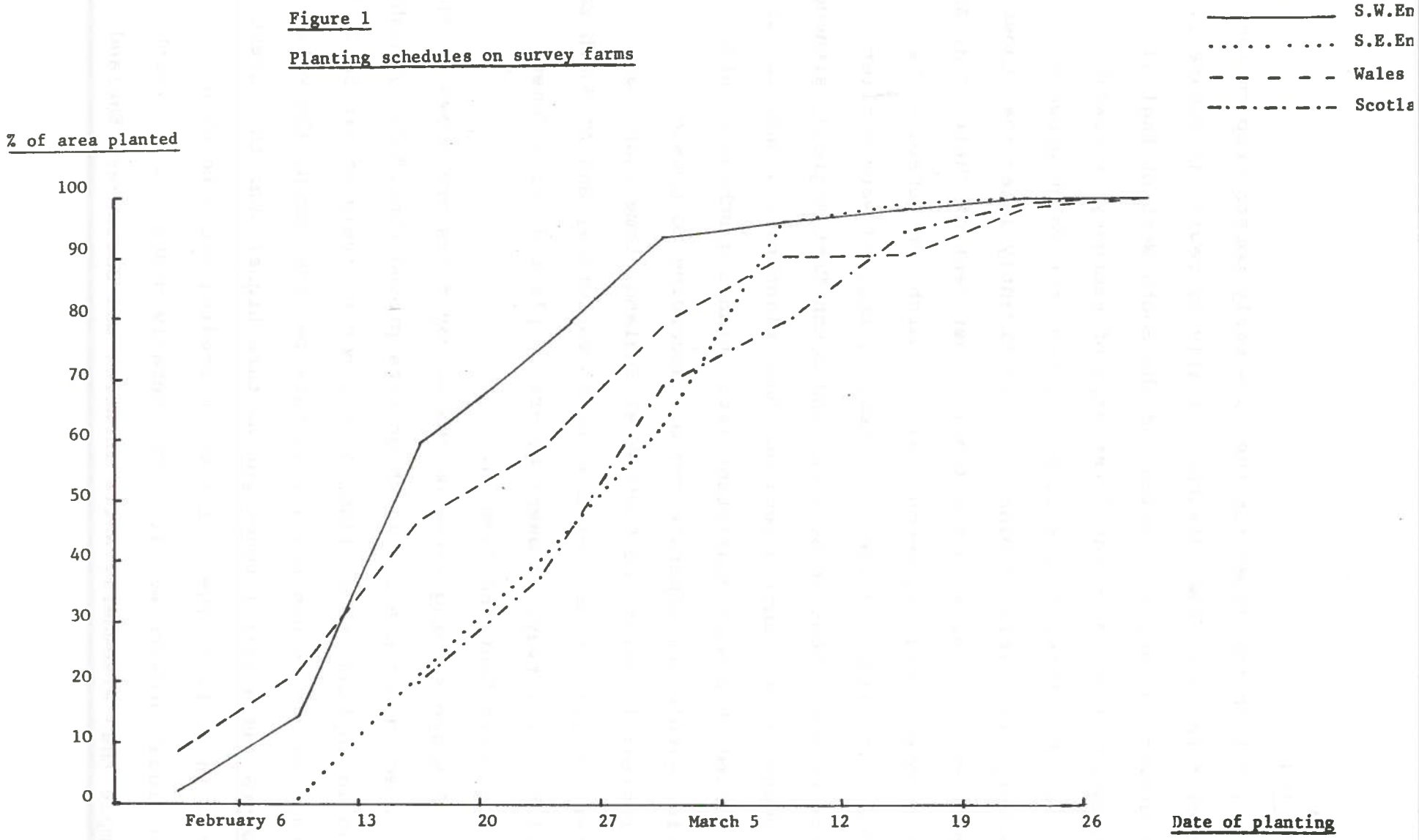


Table 15

Seeding rates on survey farms

(tonnes planted per hectare)	S.W.England	S.E.England	Wales	Scotland
Per farm averages	3.76(0.68)	3.60(0.54)	4.45(0.99)	3.39(0.58)
Range	2.25-5.00	2.38-4.80	3.24-5.63	2.61-4.89
Averages for total area surveyed(a)	3.97	3.62	4.44	3.50

Figures in parentheses are standard deviations.

(a) i.e. total seed planted divided by total area planted in each region.

the seeding rates on survey farms did not show any consistent variation according to the extent of the area planted, figures from the South West England sample (and to a lesser extent from the Scottish sample) suggest that the smaller growers had lower seeding rates than the growers of larger areas.

Table 16 shows the principal method of planting employed on the survey farms. Automatic planters without fertilizer attachments were the most common machines among the English growers sampled, whereas in Scotland hand-fed planters were predominant. The Welsh sample was characterised by a wide variety of planting methods, ranging from a considerable number of growers employing simple hand planting, using casual labour, to a sizeable number of large automatic planters on the larger areas.

Losses of seed potatoes between purchase or retention and planting were generally negligible, totalling under 1 per cent on the survey farms in both South West England and Wales, just under 2 per cent in South East England, and just over 3 per cent in Scotland. While the mild winter of 1983/84 presumably contributed to such low losses, it is notable that losses in areas of high seed retention exceeded those in areas where significant purchases of seed were made.

Table 16

Planting methods on survey farms

	No. of farms:			
	S.W.England	S.E.England	Wales	Scotland
Simple hand planting	2	-	6	2
Hand-fed planters:				
2 row	3	5	6	4
3 row	3	1	2	4
4 row	-	1	-	3
Automatic planters:				
2 row	18	17	7	2
3 row	-	-	2	-
4 row	4(a)	6(b)	8(a)	-

(a) with fertilizer attachments
(b) 3 with fertilizer attachments

Plastic Covers and Irrigation

The use of plastic coverings by the farms in the sample is shown in Table 17, and was negligible outside Wales and South East England. On no farm were plastic covers used on more than 40 per cent of total early potato area. The period for which crops were covered varied widely on individual farms, particularly in Wales, and on average was highest in Scotland and lowest in South East England.

Irrigation was most widespread among the Welsh survey farms, with almost 90 per cent of the total area planted subject to irrigation treatment (Table 18). By contrast, irrigation was comparatively rare in South West England, and in South East England several of the survey farms irrigated only a part of their early potato crop. The quantities of water applied varied considerably among farms in all regions, and on average were considerably lower in Scotland and South East England than in Wales and South West England. The most common sources of irrigation water were lagoons and reservoirs, either stream-fed or winter catchment, although in Scotland the main source was river water.

Table 17

Use of plastic coverings on survey farms

	S.W.England	S.E.England	Wales	Scotland
No.of farms in sample	32	30	31	16
No. of farms using plastic coverings	1	4	6	1
% of area covered on farms using covers	1.6	20.5	13.8	2.1
% of total planted area covered	0.2	3.5	3.9	0.3
Average period of covering (days)	60	50	63	68

Table 18

Irrigation on survey farms

	S.W.England	S.E.England	Wales	Scotland
No.of farms in sample	32	30	31	16
No.of farms irrigating	6	20	24	7
% of area irrigated on irrigating farms	92.9	71.9	98.1	90.0
% of total planted area irrigated	33.0	52.9	89.7	43.6
Average quantity of water applied (mm)	71	47	70	42

Harvesting and Sales

Table 19 summarises the harvesting and grading methods employed on the survey farms. The most notable feature is the prevalence of simple hand-picking methods on half the Welsh farms, whereas virtually all the farms in the other regions used mechanical harvesters. Elevator-diggers proved common in all regions, and unmanned trailed harvesters were frequently encountered on the survey farms in England.

Grading practices varied considerably between the regional samples (Table 19). In England, any grading other than that done by hand was rare on the survey farms; in Wales, one-third of the farms in the sample used mechanical grading or off-field grading lines; and among the Scottish farms hand grading was rare and grading of some description was always practised.

Lifting commenced on 22nd May in the South West England sample, one day later in Wales, on 1st June in the South East England sample, and on 4th June in Scotland. Figure 2 shows the lifting schedules for the four regions. In terms of the proportion of area lifted, the Welsh growers had a head start but were soon overtaken by those in South West England who had virtually completed lifting by early July. Welsh liftings were more evenly spread throughout the season than those in other regions, with the growers in Scotland and South East England lifting their earlies over a relatively short time span.

In all regions, the areas under plastic coverings on the survey farm were among the earliest to be lifted. Such liftings took place between 23rd May and 7th June in Wales, and between

7th and 22nd June in South East England. The small areas under plastic on the sampled farms in South West England were lifted on 28th and 29th May and in Scotland on 4th to 6th June. Plastic users in Wales therefore had a clear advantage over those in South East England, the former having completed the lifting of their covered crop just as the latter had begun.

Table 19

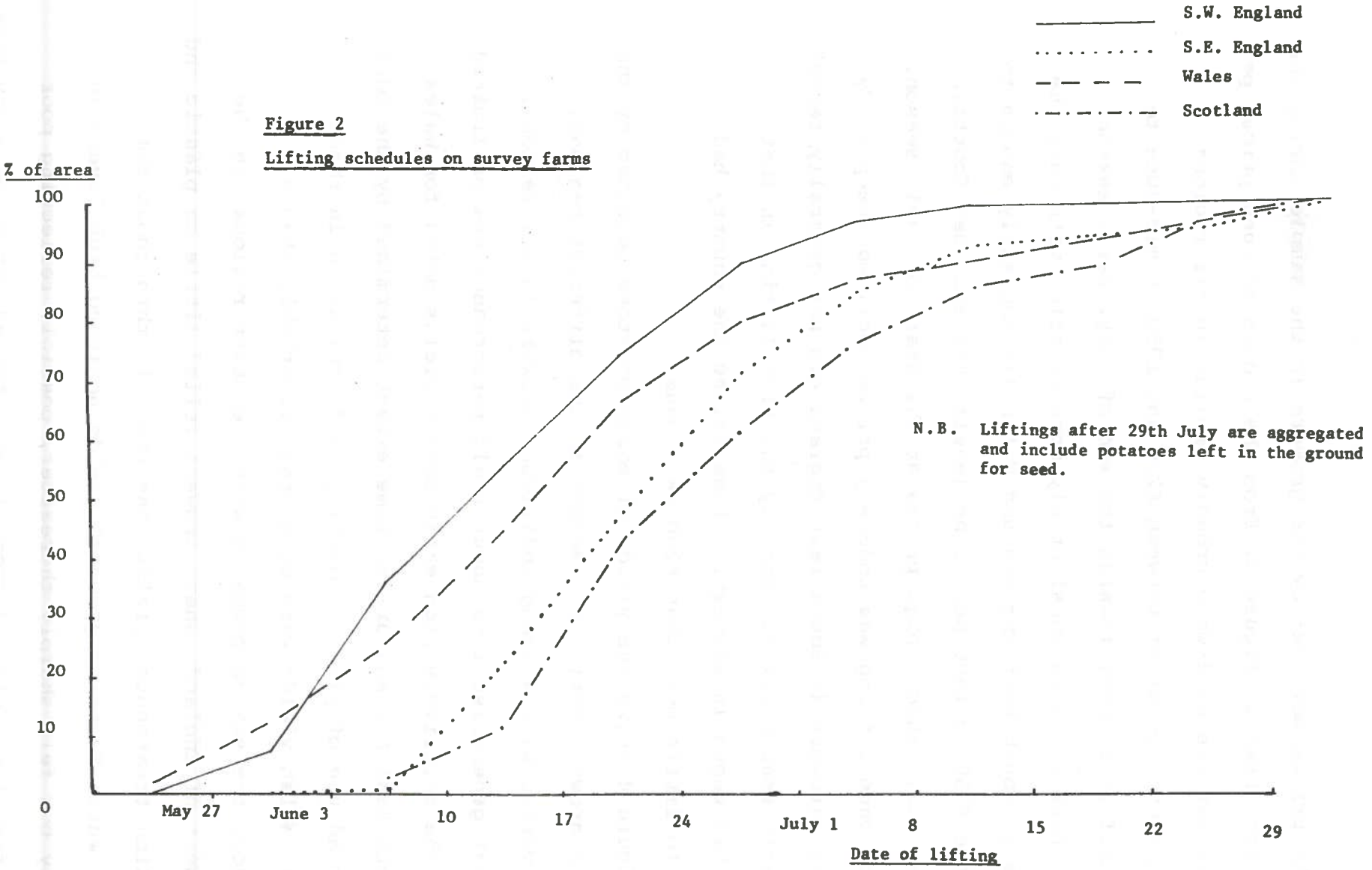
Harvesting and grading methods on survey farms

	No. of farms:			
	S.W.England	S.E.England	Wales	Scotland
Harvesting by:				
Simple hand-picking (a)	-	-	16	1
Elevator-digger:				
1-row	4	2	2	5
2-row	3	11	3	3
Tractor-mounted harvester:				
1-row	4	2	1	4
2-row	-	-	3	-
Trailed harvester (unmanned):				
1-row	16	8	3	3
2-row	1	3	2	-
Trailed harvester (manned):				
1-row	-	1	-	-
2-row	-	2	1	-
Grading:				
Mechanical on-field	-	-	4	5
Grading line off-field	-	1	6	9
Hand grading	-	17	8	1
No grading	28	12	13	-

(a) incl. the use of spinners.

Figure 2

Lifting schedules on survey farms



The prices obtained by the growers in the sample during the season are shown in Figure 3. From the middle of June prices per tonne of earlies sold were broadly similar in all regions, falling from a level of between £200 and £250 in mid-June to about half that level towards the end of July. Early season prices, however, were considerably more erratic, with only the growers in South West England and Wales lifting early enough to catch the £350 to £400 per tonne levels. The earliest Scottish lifters, too, managed high prices at the start of their season, although once lifting was underway prices declined steeply. By contrast, growers in South East England did not generally report high early season prices, and, by the time lifting in that region had begun in earnest, prices across the country had fallen to little more than £200 per tonne.

Figure 4 shows the yields of early potatoes obtained by the surveyed growers during the season in the different regions. Yields varied widely among individual growers in all regions, such that generalisations about yield performance are of limited value. The relatively high early season yields noted for Wales and South East England are to some extent determined by the more widespread use of plastic coverings and irrigation in these regions. Welsh yields were on average remarkably stable throughout the season compared with the other regions; in the South West of England, where growers relied little on plastic and irrigation treatments, yields rose steadily throughout the season; while Scottish growers' yields achieved high levels in mid-July but fell sharply thereafter, possibly reflecting poor yields from later-planted crops in what turned out to be a dry season.

Figure 3

Yields obtained on survey farms

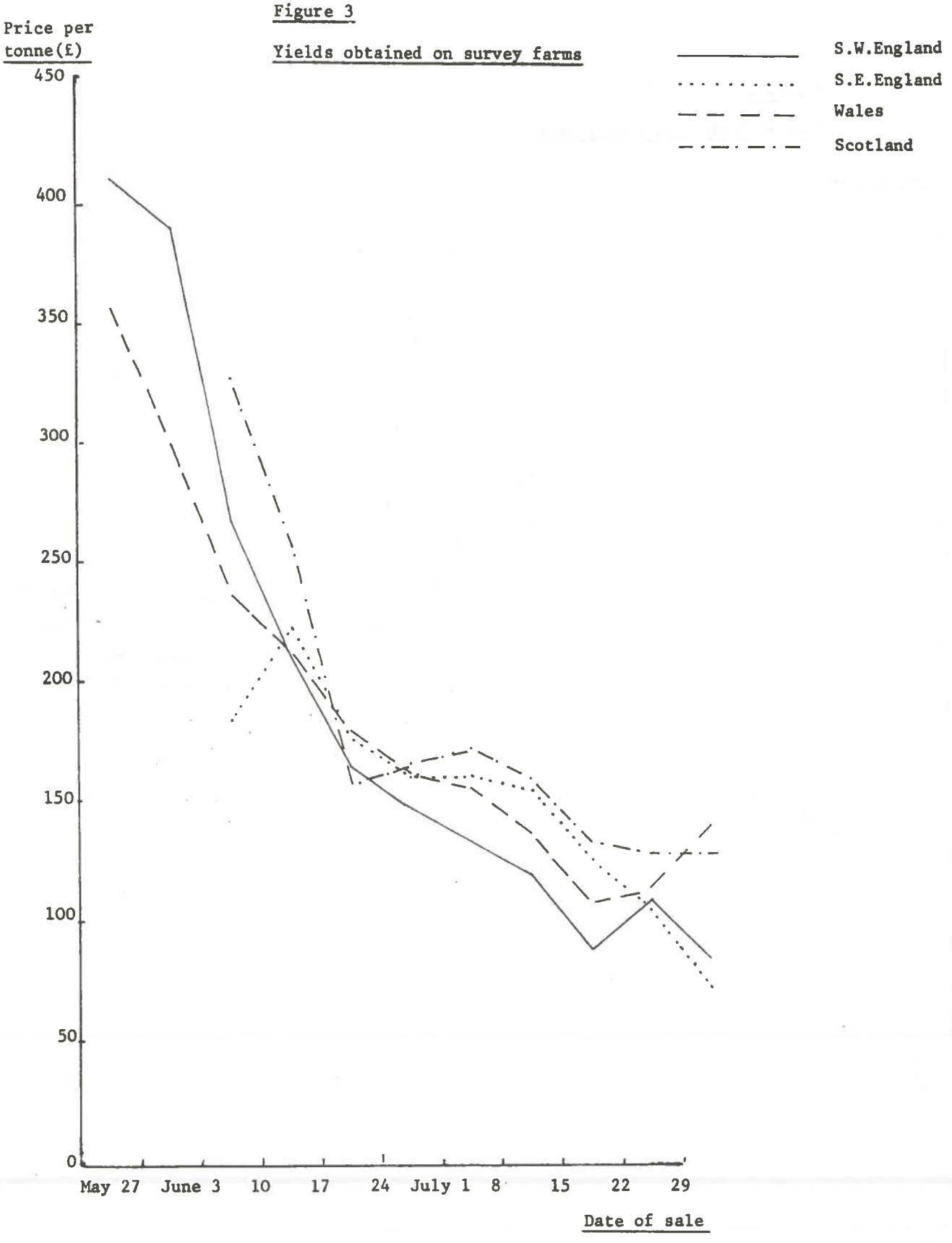


Figure 4

Yields obtained on survey farms

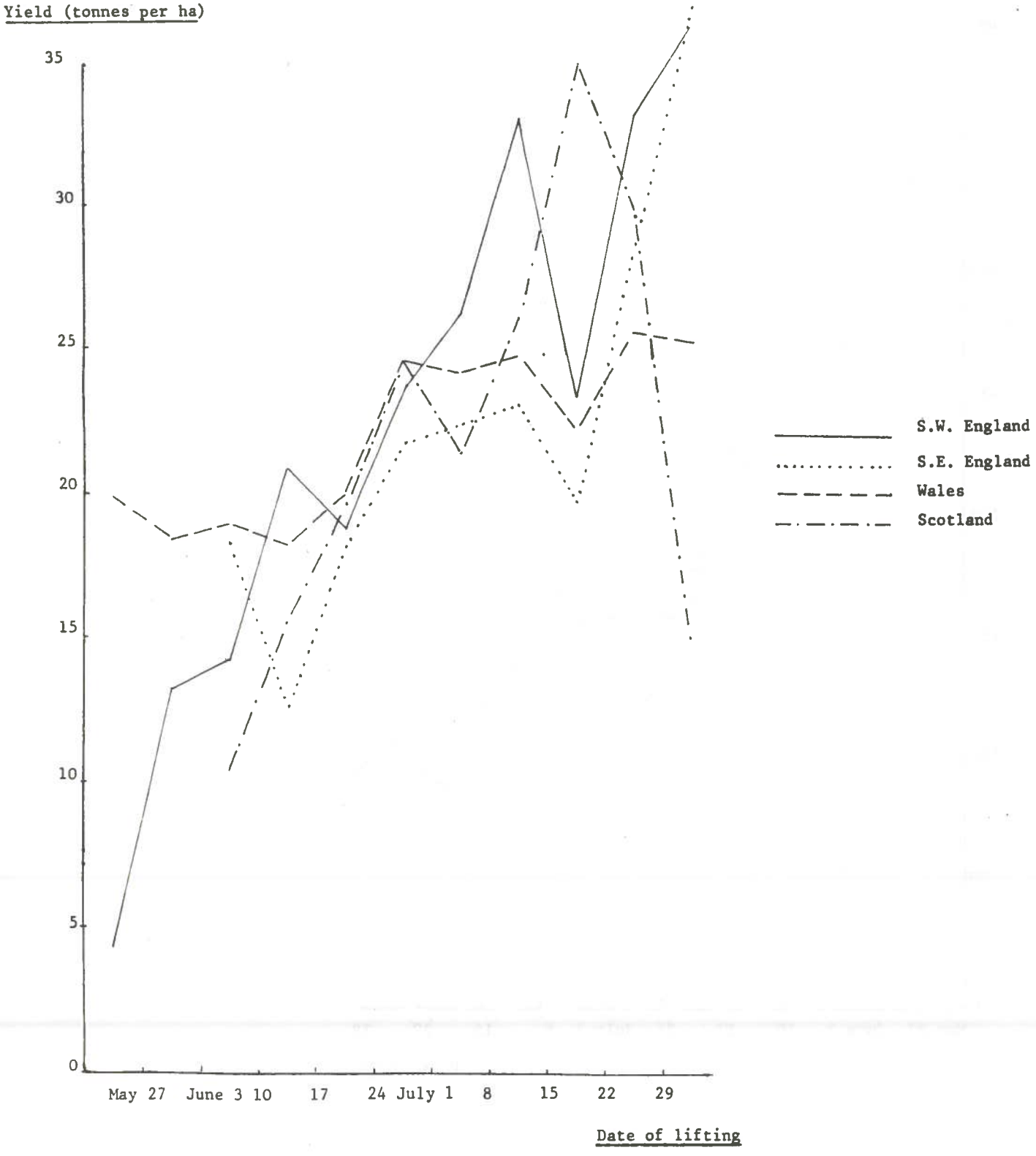


Table 20 shows the 1984 yields of individual growers in relation to yields reported by the same farms for 1983. The figures suggest a very similar harvest in 1984 as in 1983, with the exception of Scotland where 1984 was an improvement. Table 21 gives the average yields by region: overall, the Scottish sample achieved the highest average yields, although differences between regions were not great. The figures do not suggest that in general small growers achieve yields which are different from the average: there is some evidence from the farms in South West England that the smaller growers had lower yields, since the per farm average is lower than the area average, but the position is reversed in South East England and the difference between the averages is negligible in Wales and small in Scotland. The range of yields encountered on the survey farms was wide, especially in Wales and South West England where yields are often regarded by growers as very much a secondary consideration when high prices are available in the early season.

Table 20

Yield comparisons on survey farms, 1983 and 1984

	No. of farms:			
	S.W.England	S.E.England	Wales	Scotland
1984 yields lower than 1983	17	13	16	3
1984 yields the same or higher than 1983	15	17	15	13

Table 21

1984 yields on survey farms

(tonnes/ha.)	S.W.England	S.E.England	Wales	Scotland
Average per farm yield	20.5	20.5	20.8	21.8
Range of per farm yields	6.3-30.2	13.3-32.2	7.5-41.4	13.0-30.8
Average yield for surveyed area(a)	22.0	19.5	20.8	22.1

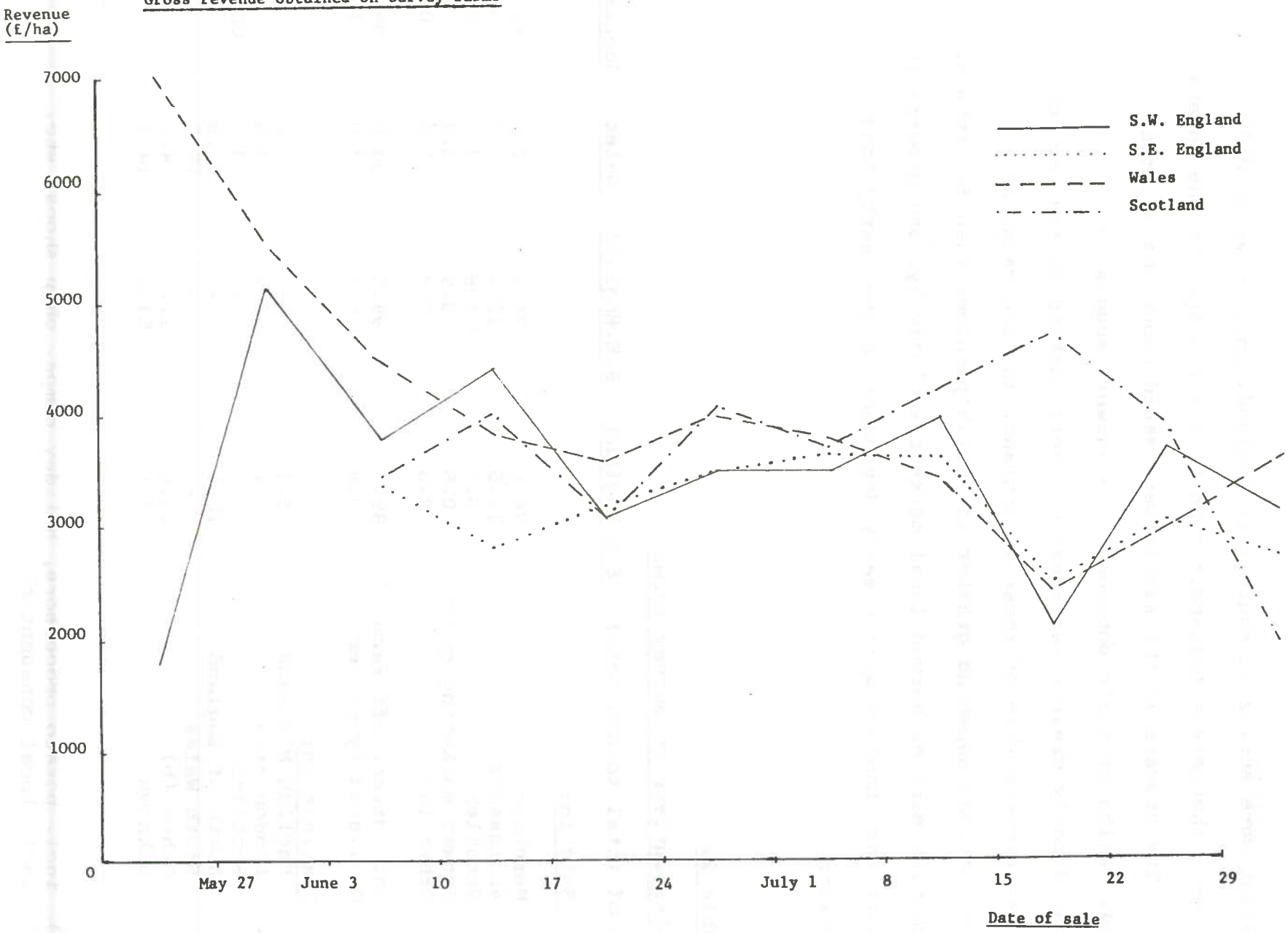
(a) i.e. per farm yields weighted according to areas grown.

The result of price and yield considerations is growers' revenue, shown for the farms in the survey in Figure 5. The contrasting positions of the Welsh and South West England samples in terms of gross revenue per hectare in the early season is clearly shown: Welsh yields were relatively high with the extensive use of plastic covering and irrigation, while the low yields among South West England growers did not permit them to capitalise to the same extent on the high prices available. Mid-season revenues were fairly steady and similar for all regions, while poor yields for liftings in mid-July in England and Wales caused revenues to fall below Scottish levels for a time.

In all the regions covered, the surveyed growers sold the bulk of their early potato crop directly off the farm to merchant buyers (Table 22). In Scotland, this appeared to be virtually the only outlet used. Grower marketing groups were the buyers of a significant proportion of the crop in Wales and to a smaller

Figure 5

Gross revenue obtained on survey farms



extent were active in South East England. Only in Wales did growers themselves transport much of their output to the buyers.

The growers in the sample were asked about the ultimate destination of their potatoes. The answers suggest a considerably greater awareness of their markets on the part of Welsh growers than of those in England, and the range of destinations appeared greater for Welsh potatoes than for others. Scottish earlies served local markets exclusively, and growers in South East England were clearly dependent on the nearby London markets.

Table 22

Sales outlets on survey farms

(% of total tonnes sold)	S.W.England	S.E.England	Wales	Scotland
1. Sold to:				
Merchant	76.6	75.1	77.8	98.5
Wholesaler	12.5	16.4	9.3	0.3
Retailer	0.9	1.8	3.3	0.4
Grower marketing group	0.8	3.9	8.4	-
Other (a)	9.3	2.8	1.2	0.8
2. Sold direct off farm	99.2	99.5	88.0	99.0
Delivered by grower	0.8	0.5	12.0	1.0
3. Destination:				
English Midlands	5.1	-	24.2	-
London area	0.1	24.7	2.8	-
Scotland	-	-	3.1	100.0
North of England	10.1	-	25.8	-
South Wales	-	-	15.8	-
Other (b)	11.6	21.7	14.0	-
Unknown	73.1	53.6	14.3	-

(a) incl. potato processors, holiday camps, chip shops, etc.
(b) incl. local consumption.

Machinery and Equipment

Virtually all the specialist machinery and equipment used on the survey farms for early potatoes was wholly-owned by the farms. The hiring of equipment was occasionally practised, but instances of leasing were not encountered. The overall average age of specialist equipment on the survey farms in South West England was 10 years, in South East England 7.5 years, in Wales 8.5 years and in Scotland 7 years.

For the purposes of this survey, machinery and equipment costs to be attributed to the early potato enterprise were calculated separately for specialist and non-specialist equipment.[1] For specialist items data on maintenance and running costs were collected directly from the farms in the survey. Such specialist equipment was valued from the original cost to the farmer, revalued and depreciated annually from the time of acquisition, and depreciation was calculated by taking the difference between the 1983 and 1984 valuations, adjusted for any usage on crops other than early potatoes.[2]

Non-specialist items were costed on a 'standard cost' basis, either per hour of use or per hectare - such standards reflect running, maintenance and depreciation costs.[3]

Total machinery and equipment costs on the survey farms are given by region in Table 23, and proved to be somewhat lower on the farms in South West England than elsewhere. The Welsh sample

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(1) Specialist equipment is defined as that used solely or largely for the potato enterprise.
Non-specialist equipment is defined as that used to a significant extent on enterprises other than potatoes.

(2) See Appendix for details of the depreciation and revaluation rates applied.

(3) See Appendix for details of the standard costs used.

showed the largest degree of variability between farms. The considerable differences between farms are in part the result of differing practices with regard to labour intensity and the use of contractors. It may therefore be that a preferable comparison is that between the total costs of machinery and equipment, labour (regular and casual) and contractors' charges, a comparison also made in Table 23. Under such a comparison, costs were remarkably similar for the survey farms in England and Wales and were rather higher for those in Scotland.

Table 23

Operating costs for early potato growing on survey farms

(£ per ha.)	S.W.England	S.E.England	Wales	Scotland
Total machinery and equipment costs	343 (122)	394 (113)	410 (185)	416 (139)
Total machinery and equipment, labour and contract costs	847 (194)	829 (184)	860 (254)	961 (210)

Figures in parentheses are standard deviations.

Fertilizers and Sprays

The use of farmyard manure or slurry in the preparation of land for early potatoes varied widely between regions: it was used by all the farms in the Scottish sample, by 15 of the 31 Welsh farms, but only by 4 of the 30 farms in South East England and by 3 of the 32 farms in South West England. Such limited usage in South West England is particularly surprising given the number of early potato farms with dairy enterprises. Occasionally, farms in Scotland and South West England also used seaweed as a fertilizer. None of the farms in the samples used lime in their land preparation for earlies.

Inorganic fertilizers were used by the overwhelming majority of the survey farms in all regions. Table 24 shows the composition of the applications by region: Wales and South East England showed a similar pattern, with predominant use of balanced compounds and occasionally of fertilizers high in potash and phosphate, while the Scottish farms largely required nitrogen dressings and those in South West England required phosphate. All the English farms used purchased fertilizers, some making more than one application: occasional exceptions were noted in in Scotland and Wales.

Virtually all the farms in the samples used herbicides for their early potato crops. Sprays for blight control were also commonly used outside Scotland, and on farms in South East England insecticides were also quite frequently required.

Expenditure on sprays and fertilizers is given in Table 25. Costs per hectare were generally lower on the farms in South East England, but fairly similar in other regions. Only in South West

England and Wales did the survey farms which used irrigation spend more on fertilizers and sprays than farms which did not irrigate; the opposite situation was recorded in Scotland and South East England.

Table 24

Fertilizer usage on survey farms

Type	No. of applications recorded: S.W.England	S.E.England	Wales	Scotland
balanced compounds	2	15	17	3
high N	2	1	2	11
high P	27	7	6	-
high P & K	2	1	1	-
high K	10	9	7	-

Table 25

Expenditure on fertilizers and sprays on survey farms

(£ per ha.)	S.W.England	S.E.England	Wales	Scotland
Fertilizers	202	170	228	236
Sprays	43	41	28	32
Total (all farms)	245	212	256	268
Total (irrigating farms)	279	186	269	259
Total (non-irrigating farms)	237	218	211	294

Labour Use

A typology of the survey farms according to their source of labour for the 1984 earlies crop is given in Table 26. Outside the South East of England, the farms were essentially family concerns, often relying on unpaid family labour which was usually supplemented by paid outside labour. Among the farms in South East England, early potatoes were quite frequently grown without outside help, and also, reflecting the relatively high incidence of farming companies, on the basis of paid labour only. In Wales and South West England, farm families often relied on their own labour with assistance from casual or contract workers at peak periods, and in all regions a considerable number of the farms were large enough to employ regular labour too.

Table 26

Sources of labour on survey farms

	No. of farms:			
	S.W.England	S.E.England	Wales	Scotland
1. Farmer and/or partners and/or family (with no outside labour)	-	7	1	-
2. 1 above, plus regular paid labour (but no additional outside labour)	-	1	-	-
3. 1 above, plus outside casual labour	13	3	9	1
4. 2 above, plus outside casual labour	18	12	21	15
5. Regular paid labour and/or outside casual labour only	1	7	-	-

'Casual labour' includes the use of contractors.

Financial Results

As an indication of the importance of the early potato enterprise to the farms in the survey, growers were asked to estimate the percentage of the total net profit of their farms attributable to early potatoes in both a 'normal' year and in the 1984 crop year. This also allowed some assessment to be made of growers' perceptions as to whether 1984 was a 'good', 'average' or 'poor' year for the crop.

In all the regions, by this criterion 1984 was seen by growers as a 'good' year (Table 27), although less so in South East England than elsewhere. From the figures given in the Table, the economic importance of the earlies crop to the survey farms in Wales and Scotland can be seen to be considerable, with farmers on average believing that almost half their farm profit came from this enterprise in 1984. By contrast, in South East England the crop was seen as relatively unimportant overall. The figures are, however, only subjective estimates on the part of growers, and the term 'net profit' was not precisely defined.

Table 27

Net profit attributable to early potatoes on survey farms

	Average for farms in:			
	S.W.England	S.E.England	Wales	Scotland
Proportion of net profit from earlies (%):				
in 'normal' year	18.1	8.2	35.4	35.0
in 1984	29.4	8.8	48.5	46.8

Table 28 summarises the financial results obtained by the growers in the sample in 1984 from their early potato enterprises. The figures are presented on a per hectare basis, and reflect output, actual variable costs, those actual fixed costs which can reasonably be attributed to the early potato enterprise, and notional overhead costs. Such overheads are calculated on the basis of 7 per cent of actual cost levels (both fixed and variable) in respect of normal overheads(1) and a further 3 per cent of actual cost levels in respect of labour and machinery overheads, making a total of 10 per cent of actual costs.

The highest average per farm gross output was achieved by the Welsh sample, which exceeded the result from the South East England farms by almost 30 per cent. Lower costs enabled the farms in South West England to achieve the highest average per farm net margin, which, after deduction of overheads, was more than double that of the South East England farms.

Comparison of the per farm average results with the averages for the total area surveyed shows little difference in Wales and Scotland, since the size of early potato area grown on the survey farms in these regions had no significant bearing on the financial results obtained. In England, however, particularly in the South West region, the figures suggest considerably better results on the farms growing the larger areas: as shown earlier, the number of survey farms growing small areas of earlies was considerably larger in South West England than elsewhere.

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(1) Normal overheads are taken to include occupier repairs, rates, insurance, professional fees, office expenses, telephone charges, etc.

Table 28

Summary of financial results from early potatoes on survey farms

(£ per ha.)	S.W.England	S.E.England	Wales	Scotland
Per farm averages:				
Gross output	4051 (1188)	3175 (780)	4090 (1302)	3635 (828)
Gross margin	2726 (1103)	1929 (787)	2596 (1219)	2366 (773)
Net margin	2014 (1133)	1013 (796)	1910 (1161)	1663 (720)
Net margin excl. overheads	1810 (1131)	797 (803)	1692 (1155)	1466 (722)

Figures in parentheses are standard deviations

	(a)			
Averages for surveyed area:				
Gross output	4360	3208	4022	3641
Gross margin	2973	1972	2501	2321
Net margin	2264	1105	1831	1594
Net margin excl. overheads	2054	895	1612	1389

(a) i.e. per farm averages weighted according to areas grown.

Variation in results between individual farms was very considerable in all regions, and is portrayed in Table 29. The lowest degree of variability would seem to have been in Scotland and the highest generally in Wales - however, net margins on the survey farms in South East England were exceptionally variable.

The relationship between gross output, gross margin and net margin on the survey farms was strong (Table 30), although generally somewhat weaker in Scotland than elsewhere. The relationship between the measures of financial performance and potato yields and prices obtained by the survey farms are also investigated in the Table. The correlations with yield obtained per hectare are much stronger than with price realised per tonne, suggesting that in 1984 yield performance was a more important determinant of financial results than the price obtained for the crop. The sensitivity of results to price was, however, greater in Scotland and Wales than in England.

Table 29

Variation in financial results on survey farms

(£ per ha.)	S.W.England	S.E.England	Wales	Scotland
Gross output:				
upper quartile	5511	4310	5844	4663
lower quartile	2531	2280	2735	2550
coefficient of variation (a)	0.29	0.25	0.32	0.23
Gross margin:				
upper quartile	4037	2969	4272	3258
lower quartile	1291	995	1325	1406
coefficient of variation (a)	0.40	0.41	0.47	0.33
Net margin:				
upper quartile	3389	2104	3467	2566
lower quartile	555	30	787	810
coefficient of variation (a)	0.56	0.79	0.61	0.43

(a) standard deviation ÷ mean.

Table 30

Correlation coefficients (r) for financial results (£/ha.) on survey farms

	S.W.England	S.E.England	Wales	Scotland
Gross output with gross margin	0.984	0.954	0.968	0.929
Gross margin with net margin	0.987	0.960	0.988	0.962
Gross output with net margin	0.977	0.930	0.945	0.867

All coefficients significant at the 0.01 level.

Gross output with:				
yield (£/ha.)	0.666	0.719	0.795	0.686
price (£/t.)	0.274*	0.219**	0.352*	0.509*
Gross margin with:				
yield (£/ha.)	0.661	0.651	0.791	0.613
price (£/t.)	0.274*	0.264*	0.339*	0.526*
Net margin with:				
yield (£/ha.)	0.634	0.655	0.749	0.595
price (£/t.)	0.291*	0.232**	0.373*	0.456*

Coefficients significant at the 0.01 level, except where marked * (significant at the 0.1 level) and ** (not significant).

Details of average costs and margins on the survey farms are given in Table 31. The main item among the variable costs was seed potatoes(1): in per hectare terms this proved particularly expensive in Wales (as a result of heavier seeding rates) and relatively cheap in Scotland. The cost of materials was remarkably similar in all regions. The third major variable cost item, expenditure on casual labour and contract work, varied considerably between regions and was substantially higher in Scotland and Wales than in England, particularly the South East.

Variable costs accounted for around 60 per cent of the total costs incurred by the farms in the survey. The remaining costs were largely those of regular labour(2), general farm machinery and equipment used on the early potato crop, and overheads.

The ratio of total labour costs (regular, casual and contract(3)) to total machinery costs (specialist and non-specialist equipment, including depreciation) was 1.10 on the survey farms in both Wales and South East England, 1.31 in Scotland, and 1.47 in South West England. This suggests that earlies were grown more labour-intensively on the farms in South West England and Scotland than elsewhere.

Total costs per hectare were highest in Wales (£2398/ha.) and South East England (£2378/ha.) and lowest in South West England (£2241/ha.) and Scotland (£2170/ha.).

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(1) Retained seed was valued on each farm according to variety, quality and condition, with regard to market prices prevailing in the regions concerned.
(2) Unpaid labour, including that of the farmer, was costed according to hours worked at a reasonable rate for the region.
(3) Definitional problems make it impossible to separate the costs of hiring casual labour from those of employing contractors. In some cases contractors used their own machinery and equipment as well as their labour.

Table 31

Output, costs and margins on survey farms

(£ per ha.)	S.W.England	S.E.England	Wales	Scotland
Gross output	**4051 (1188)**	**3175 (780)**	**4090 (1302)**	**3635 (828)**
Variable costs	**1325 (225)**	**1246 (237)**	**1494 (328)**	**1270 (306)**
of which:				
seed potatoes(a)	671 (130)	596 (141)	750 (274)	518 (237)
materials (b)	356 (60)	343 (126)	381 (137)	352 (98)
casual labour and contract costs	230 (150)	185 (188)	284 (244)	308 (342)
specialist equipment maintenance and running costs	29 (30)	40 (34)	38 (38)	59 (60)
other (c)	39 (30)	81 (85)	41 (39)	33 (17)
Gross margin	**2726 (1103)**	**1929 (787)**	**2596 (1219)**	**2366 (773)**
Fixed costs	**712 (182)**	**916 (223)**	**686 (194)**	**703 (213)**
of which:				
depreciation on specialist buildings and equipment	49 (48)	96 (90)	69 (80)	48 (51)
regular labour	274 (113)	250 (137)	165 (81)	237 (91)
rent (rental value)	119 (38)	292 (65)	143 (77)	109 (113)
non-specialist equipment costs	270 (105)	278 (97)	307 (148)	310 (106)
Net margin	**2014 (1133)**	**1013 (796)**	**1910 (1161)**	**1663 (720)**
Overhead costs	**204 (25)**	**216 (29)**	**218 (43)**	**197 (41)**
of which:				
normal overheads	143 (18)	151 (21)	153 (30)	138 (29)
labour and machinery overheads	61 (8)	65 (9)	65 (13)	59 (12)
Net margin excl. overheads	**1810 (1131)**	**797 (803)**	**1692 (1155)**	**1466 (722)**

Figures in parentheses are standard deviations.

(a) incl. value of retained seed.
(b) incl. fertilizers (purchased and value of home produced FYM), sprays, irrigation water, plastic coverings, sacks and other containers, ties, wire, labels, disinfectant, etc.
(c) largely PMB levies for basic and excess areas, net of early lifting rebates.

Net margins after deduction of overhead costs averaged over 40 per cent of gross output in the South West England, Wales and Scotland regions. However, the percentage for the survey farms in South East England was considerably lower at 25 per cent, reflecting both a relatively low gross output and high rents and rental values.

Table 32 evaluates the average gross output and net margin figures in terms of the sampled growers' use of plastic coverings and irrigation. The results require cautious interpretation since the number of growers using plastic in all regions was very limited and the areas covered often represented a small proportion of the total areas grown; also, especially in Wales and South West England, the distribution of farms between irrigating and non-irrigating growers was uneven. In both Wales and the South East of England, the plastic-using growers in the sample performed considerably better than the remainder; the net margins of plastic users were over 40 per cent higher than those of the remainder in Wales and over 50 per cent higher in South East England. With regard to irrigation, the picture is less clear: while, again, those Welsh and South East England growers using irrigation produced substantially better results in net margin terms than the remainder, the difference was marginal in Scotland, and in South West England the small number of growers using irrigation performed on average slightly worse than the remainder.

Table 32

Financial results of plastic-using and irrigating farms in the sample

(£ per ha.)	S.W.England	S.E.England	Wales	Scotland
	(a)			
1. Plastic users				
gross output	-	3816 (542)	4616 (1263)	-
net margin	-	1454 (669)	2526 (1393)	-
Others				
gross output	-	3077 (771)	3964 (1304)	-
net margin	-	945 (803)	1762 (1079)	-
	(b)			
2. Irrigators				
gross output	4039 (1024)	3365 (851)	4328 (1293)	3573 (987)
net margin	1986 (1095)	1259 (809)	2038 (1218)	1721 (835)
Others				
gross output	4054 (1241)	2797 (437)	3273 (1031)	3684 (741)
net margin	2020 (1163)	521 (506)	1473 (877)	1617 (666)

Figures in parentheses are standard deviations.

Net margins are before any deduction for overheads.

(a) Nos. of plastic-using growers: 1,4,6,1 in the four regions respectively
(b) Nos. of irrigating growers: 6,20, 24, 7 in the four regions respectively

In general, no strong relationship existed between financial performance and time of lifting on the survey farms. The relevant correlations between net margin per hectare of earlies grown and average lifting date, weighted by area lifted, were -0.369, -0.189, -0.236, and -0.219 in the four regions respectively(1). Nevertheless, it is of interest to examine whether financial performance was better on average on early-lifting farms than on late-lifting farms.

Within each region, average lifting dates (weighted by areas lifted) on the survey farms varied widely, and were 16th June in South West England, 22nd June in Wales, 27th June in South East England, and 1st July in Scotland. The determination of 'early lifters' or 'late lifters' within each region is necessarily somewhat arbitrary, but can be made from consideration of the distribution of farms by average lifting date. Details are given in Table 33.

The figures suggest that 'early lifters' did considerably better than the remainder in all regions except South East England, where variations among the survey farms were considerable. This reflects the fact that the relatively late average lifting dates in South East England opened the region up to competition from the West; by contrast, relatively late lifting of early potatoes in Scotland was shielded from the bulk of production in South West Britain by geographical distance. The 'late lifters' in the survey in all regions realised lower net margins than the remainder.

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(1) Only in South-West England was the coefficient significant at the 0.1 level.

Table 33

Financial results of early-lifting and late-lifting farms in the sample

(£ per ha.)	S.W.England	S.E.England	Wales	Scotland
1. Early lifters (a)				
gross output	4834 (1557)	3025 (524)	4493 (1527)	3859 (1417)
net margin	2762 (1433)	975 (631)	2383 (1525)	2092 (979)
Others				
gross output	3871 (1042)	3213 (836)	3994 (1258)	3584 (712)
net margin	1841 (1008)	1023 (843)	1797 (1064)	1564 (657)
2. Late lifters (b)				
gross output	3262 (671)	2958 (824)	3868 (527)	3276 (986)
net margin	1290 (912)	828 (783)	1805 (568)	1475 (875)
Others				
gross output	4233 (1215)	3230 (777)	4143 (1430)	3718 (809)
net margin	2181 (1128)	1059 (809)	1935 (1271)	1706 (714)

Figures in parentheses are standard deviations.

Net margins are before any deduction for overheads.

(a) 6 farms up to 10th June, 6 farms up to 20th June, 6 farms up to 9th June, 3 farms up to 21st June in the four regions respectively.

(b) 6 farms 27th June onwards, 6 farms 8th July onwards, 6 farms 27th June onwards, 3 farms 8th July onwards in the four regions respectively.

Summary of Findings

1. 109 farms took part in this survey, 32 of them in South West England, 30 in South East England, 31 in Wales and 16 in South West Scotland. Between them, the survey farms grew 1,363 hectares of early potatoes in 1984.

2. 61 of the survey farms were cropping types and a further 26 were dairy farms. Family farms predominated, although several farming companies were included in South East England.

3. As measured by the proportion of farm area devoted to early potatoes, the enterprise was especially important to the growers surveyed in South West England and Wales.

4. The growers' planting intentions showed a modest degree of confidence in the enterprise. Only in South East England did many survey growers intend to plant smaller areas of early potatoes in 1984 than in 1983. Only 18 of the 109 farms in the whole sample purchased additional quota to increase their initial quota area.

5. The widest selection of seed potato varieties was found in the Welsh farm sample, and each region had its clear favourites - Epicure on the survey farms in Scotland, Pentland Javelin and Arran Comet on those in South East England, and Home Guard on those in Wales and in South West England.

6. The average cost of purchased seed was cheaper for the survey farms in Wales at £169 per tonne than elsewhere at £190 per tonne. Only in Wales and South West England did the quantity of seed purchased exceed that retained on the survey farms.

7. Outside South East England, much of the chitting on the survey farms took place in uncontrolled environments (without artificial heating or light), and the chitting buildings on the farms in all regions were generally old.

8. The surveyed growers started planting somewhat earlier in South West England and Wales, although, once started, planting proceeded at a more consistent rate in South East England and Scotland.

9. Seeding rates among the Welsh growers were considerably higher than in England or Scotland, and variation in seeding rates between individual growers was large.

10. Over half the farms in the survey used automatic planters, although in Scotland, and to a lesser extent in Wales, simple hand-planting and hand-fed planters were frequent.

11. Only in Wales and South East England did significant numbers of the survey growers use plastic coverings on their crops. Even in these regions, less than 4 per cent of the total area surveyed was covered.

12. Irrigation was most widespread in the Welsh sample, with almost 90 per cent of the total area surveyed irrigated at some stage, and least widespread in the South West England sample, with only 33 per cent of the total survey area irrigated.

13. Lifting started earlier on the survey farms in South West England and Wales than in the other regions. Liftings of plastic-covered crops were completed by the Welsh farms just as those by the South East England farms were beginning.

14. Half the Welsh survey farms used simple hand-picking methods, whereas in the other regions virtually all lifting was performed with mechanical harvesters. Virtually all the English growers and the majority of the Welsh growers graded by hand or not at all; the Scottish growers almost invariably used mechanical grading methods.

15. High early season prices per tonne were not generally obtained by the survey growers in South East England, and the best prices were obtained by the earliest lifters in South West England.

16. Yields per hectare varied widely between the farms in all regions, but in general Welsh yields were considerably higher than elsewhere in the early part of the season. Over the whole season, yields were highest on the survey farms in Scotland.

17. Survey growers' revenues per hectare were higher in Wales than in South West England during the earliest part of the season, as higher Welsh yields allowed growers to capitalize on high prices.

18. In all regions, the survey growers sold the bulk of their crop directly off the farm to merchant buyers. Grower marketing groups played an insignificant role outside Wales where they took less than 10 per cent of the crop sold by the farms in the sample.

19. Total machinery and equipment costs per hectare of early potatoes grown was somewhat lower on the farm in South West England than elsewhere. Total operating costs per hectare (machinery and labour) were highest in the Scottish sample.

20. Farmyard manures were used in land preparation for early potatoes by all the Scottish farms, half the Welsh farms, but by few of the English farms. All the English farms and virtually all the Welsh and Scottish farms used purchased inorganic fertilizers.

21. Virtually all farms in the sample used herbicides; blight control sprays were common outside Scotland; and insecticides were quite frequently used on survey farms in South East England.

22. Expenditure per hectare on sprays and fertilizers tended to be lower for the South East England sample than elsewhere.

23. The majority of survey farms used casual labour at some stage to supplement the labour available on the farm.

24. On average, the surveyed growers in Wales and Scotland estimated that almost half their net profit came from early potatoes in 1984. Corresponding estimates for England were 29 per cent (South West) and 9 per cent (South East).

25. Per farm gross outputs per hectare were highest for the surveyed farms in South West England and Wales at just over £4000, almost 30 per cent higher than for those in South East England and 12.5 per cent higher than for those in Scotland. Net margins per hectare averaged £1810 on the farms in South West England, £1692 in Wales, £1466 in Scotland, and £797 in South East England.

26. Variations in financial results between the farms in the sample were considerable in all regions, but were less in Scotland than elsewhere. Results correlated better with yield performance than with prices realised for the crop.

27. Variable costs accounted for about 60 per cent of total costs. The main item of variable costs was seed potatoes, highest for the Welsh farms as a result of higher seeding rates. Expenditure on materials was similar for farms in all regions, and expenditure on casual labour was higher for farms in Scotland and Wales than in England.

28. The ratios of labour costs to machinery costs suggest that early potatoes were grown more labour-intensively by the farms in South West England and Scotland than elsewhere.

29. Total costs per hectare were higher for the farms in Wales and South East England at almost £2400 compared with around £2200 for those in South West England and Scotland.

30. Net margins accounted for over 40 per cent of gross output on survey farms in all regions except South East England where they were considerably lower at 25 per cent.

31. Evaluation of financial results shows that the plastic-using growers in the survey obtained considerably better net margins than the remainder. Irrigating farmers in the samples in Wales and South East England also performed better than the remainder in those regions.

32. No strong correlation existed overall between financial performance on survey farms and time of lifting, but the early lifters outside South East England performed better than the remainder and the late lifters in all regions performed worse than the remainder.

APPENDIX

Depreciation rates applied to specialist machinery and equipment

20% p.a.	Potato harvesters/elevators Power harrows
15% p.a.	Sprayers Rotavators Vehicles (cars, lorries, vans etc.)
12 1/2% p.a.	FYM spreaders Fertilizer attachments Ploughs Potato planters Spinners
10% p.a.	Harrows Ridgers Rollers Trailers Flailers Cultivators Irrigation equipment Destoners Conveyors Plastic layers Cooling plant
8% p.a.	Other equipment (riddles, lights, scales, chitting equipment, fans, pallets, graders, trays, heaters, baggers, stitchers, dressers, hoppers, etc.)

These rates are taken from various sources and advice given, and are necessarily very approximate estimations of the actual rates of usage. They are applied on a current cost basis by the diminishing balance method.

Revaluation rates applied to machinery and equipment

	%		%
March 1984	4.7	March 1979	13.6
1983	1.5	1978	18.2
1982	6.6	1977	21.1
1981	7.0	1976	16.7
1980	15.5	1975	23.7
1979		1974	

Source: MAFF Agricultural Machinery indices.

Standard costs applied to general machinery and equipment

	£ per ha.	£ per hour
Tractors: up to 55 HP		3.50
55 - 82 HP		4.80
over 82 HP		6.65
4 WD (120 HP)		10.71
Fork-lifts		3.50
Ploughs: reversible	13.00	
mounted	9.30	
chisel	2.20	
Harrows: spring-tine	1.80	
disc	1.60	
power	21.90	
seed and drag	0.50	
Rotovators	12.30	
Sprayers	2.30	
Fertiliser spreaders	1.00	
FYM spreaders		1.47
Slurry applicators		5.37
Trailers		0.90
Rollers	0.45	
Ridgers	1.30	
Cultivators	1.30	
Subsoilers	1.30	
Tillers	1.30	
Scales	0.80	
Flailers	0.80	
Link boxes	0.30	
Barn elevators		2.00
Lorries		7.00
Other vehicles		7.50
Irrigation equipment (per 25 mm.)	37.00	
Front loaders		1.00
Oil heaters		0.50

Source: MAFF

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