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The Economics of Oilseed Rape in England, 2004

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Farm Business Survey
School of Agriculture, Food and Rural Development
University of Newcastle upon Tyne

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CONTENTS

Special Studies in Agricultural Economics

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 Department for Environment, Food and Rural Affairs and previously 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 reports prepared and published by individual Departments in a common series entitled *Special Studies in Agricultural Economics*. Titles of recent publications in this series are given in Appendix 3.

The addresses of all departments involved in the collection of data in the Special Studies Programme are given in Appendix 4.

Foreword and Acknowledgements

This report is the sixth in a series of studies commissioned by the Department for Environment, Food and Rural Affairs (Defra), and formerly by the Ministry of Agriculture, Fisheries and Food (MAFF), concerned with the economics of oilseed rape production. The report provides detailed physical and financial information on the economics of oilseed rape production in England for the 2004 harvest year. Separate results are shown for the winter and spring sown crops, and for the three European Union regions in England – the North, West and East.

In undertaking and preparing this report thanks are due to many people: to the staff at the Economics and Statistics (Farm Business) division at Defra for help at the planning stage and for commenting on an earlier draft of the report; to the local co-ordinators and colleagues at university and college centres who carried out the fieldwork; to the farmers who took part in the survey; and to staff of the Farm Business Survey and School of Agriculture, Food and Rural Development at Newcastle University.

List of Tables

List of Tables (continued)

List of Tables (continued)

List of Figures

List of Figures (continued)

Summary

Oilseed Rape in the UK, EU and World

- The total area sown to oilseed rape in the UK over the nine years since the last special study has varied between 400,000 and 600,000 hectares. Yield per hectare has averaged slightly over three tonnes, and the value of production has fluctuated from a low of £249 million in 2000 to over £400 million in 1997, 1998 and 2003. The share of the subsidy in the value of the crop has been falling, prior to replacement of the area payment by the single farm payment.

- The majority of the UK's trade in oilseed rape is with other member states of the EU, although imports and exports have been less important in recent years. As a measure of self-sufficiency, the share of domestic production in total supply has risen from a low of 66% in 2001 to over 100% in 2003 and 2005.

- Within the EU, Germany and France are the largest producers, as a consequence of having the largest areas sown and above average yields. The UK and Poland were the next largest producers in 2004, though both had yields below the EU average.

- As a measure of total support resulting from the various policy measures that affect producers' revenue, the PSE for rapeseed in the EU peaked at 50% in 2000, falling to 34% in 2004. Since 2002, the level of support for oilseed rape has been somewhat less than that for cereals, but comparable to the level of support for agriculture in total.

- The EU-25 is the world's largest producer of rapeseed, followed by China and then Canada and India. Japan is by far the world's largest importer, followed by Mexico, Pakistan and the United States. Canada and Australia are the world's largest exporters.

Survey and Sample Characteristics

- The target sample was stratified by EU region and area of oilseed rape grown, according to Defra guidelines, based on census data. The number of farms sampled was 212, accounting for 11,600 hectares of oilseed rape, almost half of which was grown on large enterprises (>50 hectares) in the East region. Census data show that there were 8,700 growers of oilseed rape in England in 2004 and that the total area grown was 361,000 hectares. Thus, the sample represented 2.4% of those that grew the crop, and 3.2% of the total area grown.

- The 2003/04 growing season was poor for oilseed rape. Although temperatures and sunshine hours were close to average, rainfall was well below average during the autumn sowing period and well above average in August, 2004 during harvest.

Economic Results and Margins

- The average area of the winter sown crop was 59 hectares per farm, almost 50% higher than in the 1996 study. However, the average yield, 3.24 tonnes per hectare, and the average price, £146 per tonne, were both lower. Thus, the value of output, £708, was only 59% of the 1996 figure. Of this, £235 or 33% was the area payment under the Common Agricultural Policy, compared to £448 in 1996. The average net margin was £72 per hectare, rising to £75 when agri-environment scheme payments are included. This compares with a net margin in 1996 of £476 per hectare.

- Compared to the winter sown crop, the average area of spring sown oilseed rape was considerably lower at 32 hectares per farm, as was the average yield of 1.99 tonnes per hectare. The average price of £142 per tonne was only slightly lower. The value of output of the crop was £521 per hectare, about three-quarters of the value of the winter sown crop, with 46% attributable to the area payment. Fixed costs and overheads were higher than for the winter sown crop, leaving a *negative* net margin of -£55 per hectare, excluding agri-environment scheme payments of £4 per hectare. This compares with a net margin of £304 in 1996.

- For the winter sown crop, yields were highest in the North at 3.80 tonnes per hectare, which meant that despite having the lowest price this region had the highest value of output at £774 per hectare. Total costs in each of the three regions were broadly similar. There was no significant difference in net margin between the East (£58 per hectare) and the West (£57 per hectare), but in the North it was much higher (£138 per hectare) due to the higher yield. Though of a different magnitude, the agri-environment scheme payments varied between £3.41 per hectare in the East and £1.18 per hectare in the West.

- Overall, the greater profitability of farms in the North region was due almost entirely to the better yield, an outcome that accords with the results of the 1996 survey. The financial performance of farms in the East and the West in 2004 was broadly similar. The relative position of farms in the East, in terms of net margin, worsened compared with 1996, due to poorer yields.

- Based on rotational area, there are no significant differences in yield between farms of different size. Although the average price achieved by the largest farms (>450 hectares) is significantly greater than that achieved by the smallest (<150 hectares), there are no significant differences in total returns. Similarly, seed cost is significantly lower on the largest farms, but there are no differences in margin-over-materials across farms of different size.

- For the winter sown crop, the top 25 per cent of farms, based on margin-over-materials, had yields of 3.96 tonnes per hectare compared to 2.10 tonnes per hectare for the bottom 25 per cent. Coupled with a higher price (£151 versus £141 per tonne), this resulted in an average output per hectare for the best performing farms of £834 compared to £523 for the poorest performers. Material costs were similar across the two groups, meaning that margin-over-

materials was twice as high for the best performers. Indeed, other variable costs, fixed costs and overheads were also similar for the two groups of farms, but the difference in value of output meant that the worst performing farms had a *negative* net margin, excluding agri-environment scheme payments, of -£105 per hectare, whilst for the best performing farms it was £217 per hectare, compared to the average of all farms of £72.

- In terms of age of manager, the over 55 years group under-performed younger managers in yield, margin-over-materials and gross margin. Those managers with a college education performed better than those with only schooling in terms of gross margin. More convincingly, those with a college education out-performed those with a degree in terms of yield, margin-over-materials and gross margin. Not the best advert for a university education!

- A comparison of the costs and returns recorded in the last five special studies on oilseed rape shows that market price has fallen dramatically in real terms over the last 30 years. This has been compensated somewhat in the two most recent survey years by the area payment, following changes to the Common Agricultural Policy. Over the five survey years, value of output, margin-over materials, gross margin and net margin have all see-sawed, in real terms, being at their highest in 1982 and 1996.

- In exploring the possibility of economies of size in oilseed rape production, a long-run average cost curve, which relates average (unit) cost of production per tonne to size of enterprise, was estimated from the survey data. The result suggests that any economies of size are quickly exhausted at a fairly low level of output, around 75 tonnes, or 25 hectares.

Management Practices

- The most popular rate of seeding for the winter sown crop is around 5.5 kilograms per hectare, and the most usual cost of seed is around £40 per hectare. In terms of performance, yield per hectare on the farms in this survey falls as the seed rate increases, although statistically this is only significant at seed rates of up to 6 kilograms per hectare.

- The three most popular varieties of winter oilseed rape in this survey were Winner, accounting for 25% of the tonnage harvested, Recital (7%) and Canberra (6%). For the spring crop, the three most popular varieties were Senator (28% of tonnage harvested), Mozart (22%) and Tambora (19%).

- The most common rates of application for nitrogen fertiliser on those farms sampled were between 200 and 250 kilograms per hectare. In terms of performance, these rates produced statistically significant higher yields than on those farms applying lower rates. However, these higher yields were not translated into a higher margin-over-materials or gross margin.

- Of the farms surveyed, 50 did not apply any phosphates to the winter sown crop. Of those that did, the most popular rates of application were between 50 and 80 kilograms per hectare. There were no significant differences in terms

of performance by rate of phosphate application, including those growers who applied none.

- The pattern for potassium applications to the winter sown crop was similar to that for phosphates. Fifty-three growers applied none at all. Of those that did, the most common rates of application were between 50 and 90 kilograms. These rates of application produced significantly higher yields than those farms that used lower rates or no potassium at all.

- All growers in the sample used herbicides on the winter sown crop, with £60 per hectare being the most usual cost. Thirty-eight growers used no insecticide at all, and for the majority of the rest the cost was between £5 -10 per hectare. Slug pellets were used by less than a third of growers and dessicants by less than half. Although 24 growers used no fungicides, most of the rest were using up to £50 per hectare. On all chemicals, the majority of growers were spending between £75 and £125 per hectare.

- The majority of the winter sown crop is sold for crushing (93% of harvest tonnage) to merchants (87%). Spot and forward sales account for almost 70%, with 44% of the crop sold in August.

Supplementary Questionnaire Results

- Over three-quarters of the farmers surveyed chose ‘break crop’ as the most important reason for growing oilseed rape. This was followed, in importance, by profit-generation, spreading the workload, weed control and area payment.

- To grow oilseed rape in the future, at least 50% of growers would require a minimum price of £140 per tonne. A minimum price of £150 per tonne would include 80% of growers.

Chapter 1

Oilseed Rape in the UK, EU and World

1.1 Introduction

This chapter provides a background to the production of oilseed rape in England. Previous special studies have reported on the situation in the 1970s, 1980s and 1990s, the most recent by Askham Bryan College in 1996. In general, the data presented in this chapter cover the nine years since this last Special Study. The chapter begins with an overview of oilseed rape production in the UK, followed by brief overviews of the situation in the EU and the world.

1.2 Oilseed rape in the UK

The geographical distribution of oilseed rape in England in 2003 is shown in Figure 1.1. The map shows that the crop is concentrated in a central and eastern belt running the length of the country, with little in the western areas.

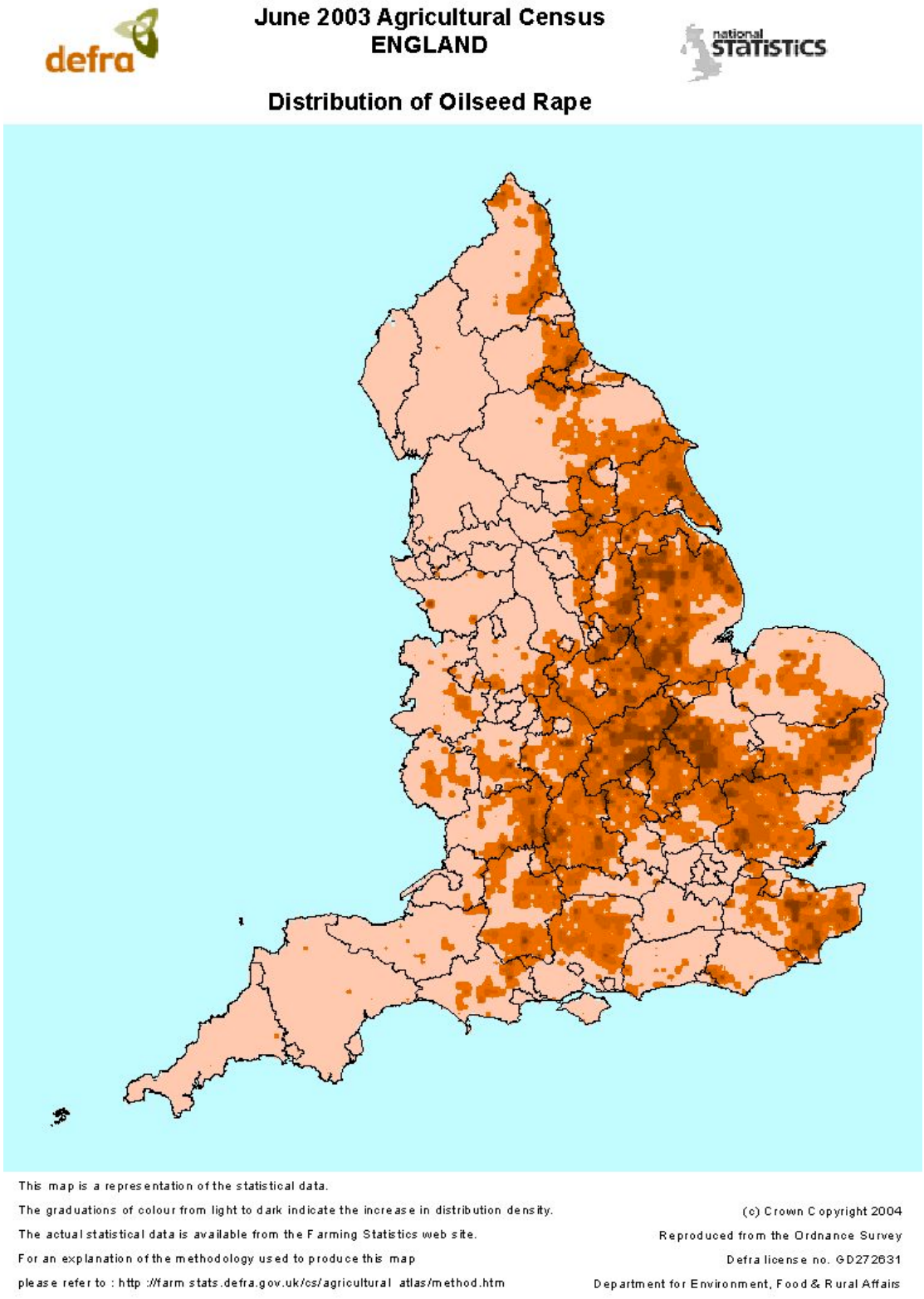
The area, yield and production of oilseed rape in the UK over the nine years since the last Special Study are shown in Table 1.1. The total area sown has varied between 400,000 and 600,000 hectares, the highest recorded area being the provisional figure for 2005. Yield per hectare has averaged slightly over three tonnes, with a high of 3.4 tonnes in 2002 and a low of 2.6 tonnes in 2001. Harvested production has varied from just under 1,200 thousand tonnes in 2000 and 2001, due to a combination of a lower area sown and below average yield, to 1,900 thousand tonnes in 2005, as a result of a larger area sown and above average yield.

Table 1.1 Area, yield and production of oilseed rape in the UK, 1997-2005

	1997	1998	1999	2000	2001	2002	2003	2004	2005
Area ('000 ha)	473	534	537	402	451	432	542	558	593
Yield (tonnes per ha)	3.2	2.9	3.2	2.9	2.6	3.4	3.3	2.9	3.2
Production ('000 tonnes)	1,527	1,568	1,733	1,157	1,157	1,468	1,771	1,609	1,902

Source: Defra

Figure 1.1 Oilseed rape in the UK, 2003



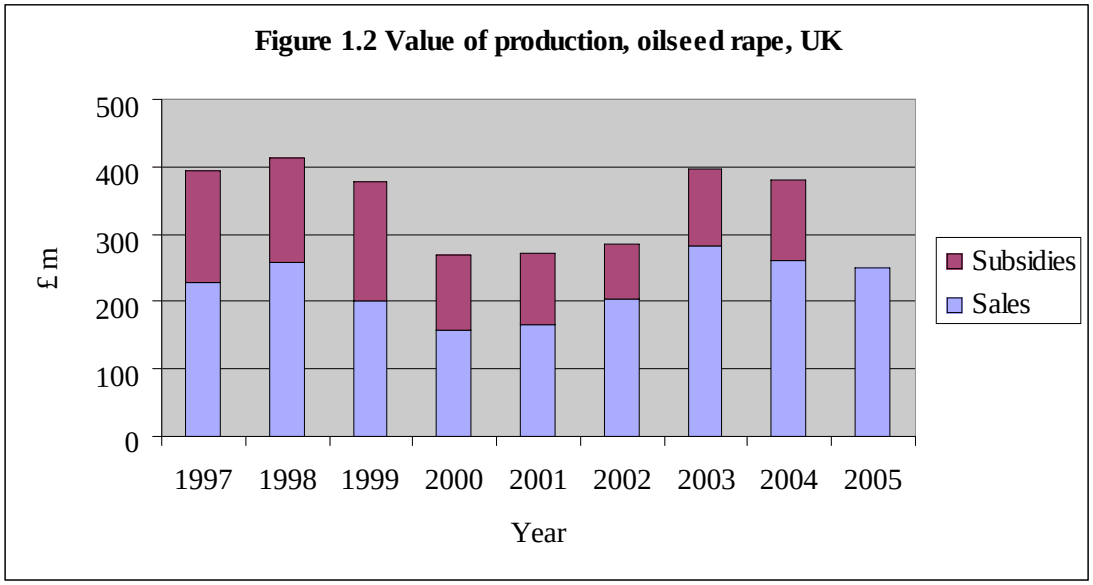
The value of production has fluctuated considerably from a low of £249 million in 2000 to over £400 million in 1997, 1998 and 2003 (Table 1.2). The subsidy accounted for almost half of the value of the crop in 1999. However, this share has been falling prior to replacement of the area payment by the single farm payment (Table 1.2 and Figure 1.2).

Table 1.2 Value of production of oilseed rape, UK 1997-2005

	1997	1998	1999	2000	2001	2002	2003	2004	2005
Value of production (£m)	406	417	371	249	276	298	417	375	263
of which:									
sales	227	259	202	158	167	205	283	262	250
subsidies*	167	155	175	110	104	80	113	118	. .
change in stocks	12	3	-6	-19	4	12	21	-5	13

Source: Defra

* includes arable area payments but excludes set-aside payments.



The situation regarding supply and use of oilseed rape in the UK is shown in Table 1.3. Imports and exports have been less important in recent years; the majority of trade is with other member states of the EU. As a measure of self-sufficiency in oilseed rape, the share of domestic production in total supply has risen from a low of 66% in 2001 to over 100% in 2003 and 2005.

Table 1.3 Supply and use of oilseed rape, UK

	1997	1998	1999	2000	2001	2002	2003	2004	2005
Production	1,527	1,568	1,733	1,157	1,157	1,468	1,771	1,609	1,902
Imports from:									
the EU	274	303	218	273	530	265	136	198	52
the rest of the world	3	23	105	15	75	62	-	-	-
Exports to:									
the EU	162	244	126	50	16	162	271	101	150
the rest of the world	24	32	149	-	-	45	1	3	5
Total new supply	1,617	1,618	1,781	1,396	1,746	1,587	1,634	1,703	1,800
Production as % of supply	94	97	97	83	66	92	108	94	106

Source: Defra

1.3 Oilseed rape in the EU

The production of oilseed rape in the EU is shown in Table 1.4. Germany and France are the largest producers, as a consequence of having the largest areas sown and above average yields. The UK and Poland were the next largest producers in 2004, though both had yields below the EU average.

Table 1.4 Rapeseed production in the EU, 2004

Country	Area ('000 ha)	Yield (t/ha)	Production ('000 t)
Austria	35	3.4	121
Belgium	6	4.1	23
Czech Republic	259	3.6	930
Denmark	122	3.8	468
Estonia	53	1.4	73
Finland	68	1.1	75
France	1,121	3.5	3,969
Germany	1,283	4.1	5,277
Hungary	104	2.2	232
Ireland	2	4.0	9
Italy	3	2.2	6
Latvia	55	1.9	105
Lithuania	101	2.0	205
Luxembourg	4	3.9	17
Netherlands	2	4.6	8
Poland	538	3.0	1,633
Slovakia	92	2.8	263
Slovenia	2	2.8	5
Spain	5	1.8	8
Sweden	84	2.7	230
United Kingdom	558	2.9	1,609
EU-25	4,497	3.4	15,266

Source: http://europa.eu.int/comm/agriculture/agrista/2005/table_en/4411.pdf

The level of support provided to producers of oilseed rape in the EU is shown in Table 1.5 and Figure 1.3. This is measured in terms of the Producer Support Estimate (PSE) as calculated by the OECD (Organisation for Economic Cooperation and Development) for the EU. (The OECD does not calculate PSEs for individual member states of the EU.) The PSE is a measure of total support resulting from the various policy measures that affect producers' revenue. Thus, it captures the subsidy (area) payments reported in Table 1.2 and Figure 1.2. In Table 1.5 and Figure 1.3 the PSE is expressed as a percentage of the value of output. The PSE for rapeseed peaked at 50% in 2000, falling to 34% in 2004. For comparison, Table 1.5 also shows PSEs for other oilseed crops, cereals and total agricultural output (all crop and livestock products). Since 2002, the level of support for oilseed rape has been somewhat less than that for cereals, but comparable to the level of support for agriculture in total.

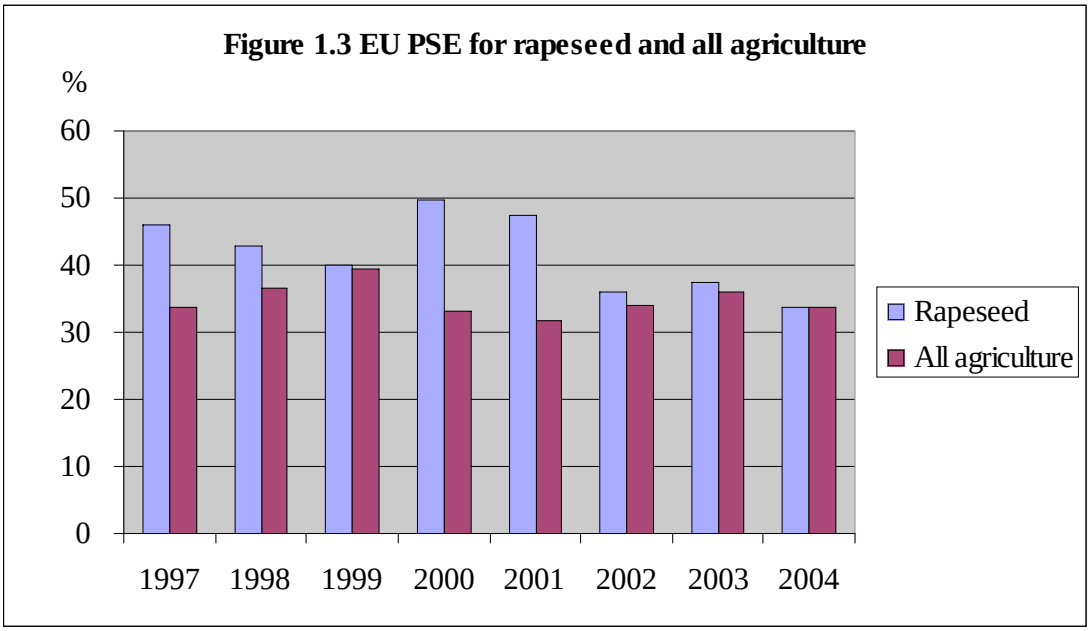
Table 1.5 EU Producer Support Estimates (PSEs)

(% of output value)

	1997	1998	1999	2000	2001	2002	2003	2004
Wheat	37	49	55	46	47	43	48	42
Barley	45	65	61	46	50	49	51	48
Maize	33	40	43	41	37	30	44	46
Rapeseed	46	43	40	50	47	36	38	34
Soybeans	46	51	44	48	48	42	45	39
Sunflower	48	43	40	49	45	35	42	38
All agriculture	34	37	39	33	32	34	36	34

Source: OECD

Figure 1.3 EU PSE for rapeseed and all agriculture



Source: OECD

1.4 The global situation

The world's major producers, importers and exporters of oilseed rape in 2004 are shown in Table 1.6 and Figures 1.4, 1.5 and 1.6. The EU-25 is the largest producer, followed by China and then Canada and India. In terms of international trade, Japan is by far the world's largest importer of oilseed rape, followed by Mexico, Pakistan and the United States. Canada and Australia are the world's largest exporters.

Table 1.6
World Production, Imports and Exports of Oilseed Rape, 2004

('000 tonnes)

Country	Production	Imports	Exports
Australia	1,533	0	1,080
Bangladesh	230	175	0
Canada	7,700	170	3,400
China	13,182	350	1
EU-25	15,290	168	412
India	7,000	0	0
Japan	1	2,300	0
Mexico	0	880	0
Pakistan	241	500	0
Romania	101	5	26
Russia	120	0	20
Ukraine	149	0	80
United States	613	470	134
Others	202	25	0
Total	46,362	5,043	5,153

Source: USDA

Figure 1.4 World's main producers

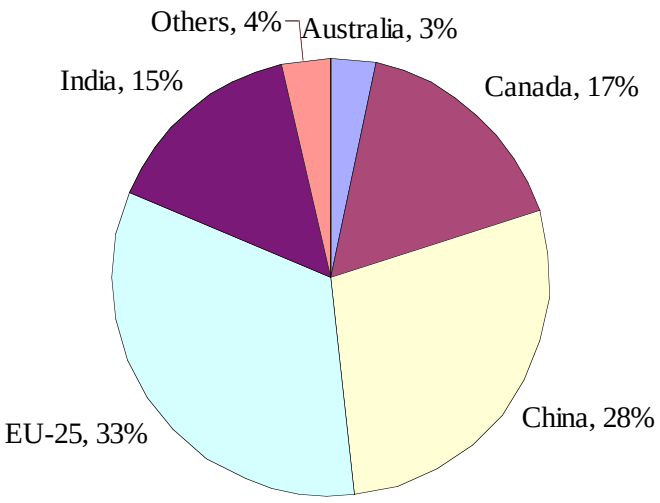


Figure 1.5 Main importers

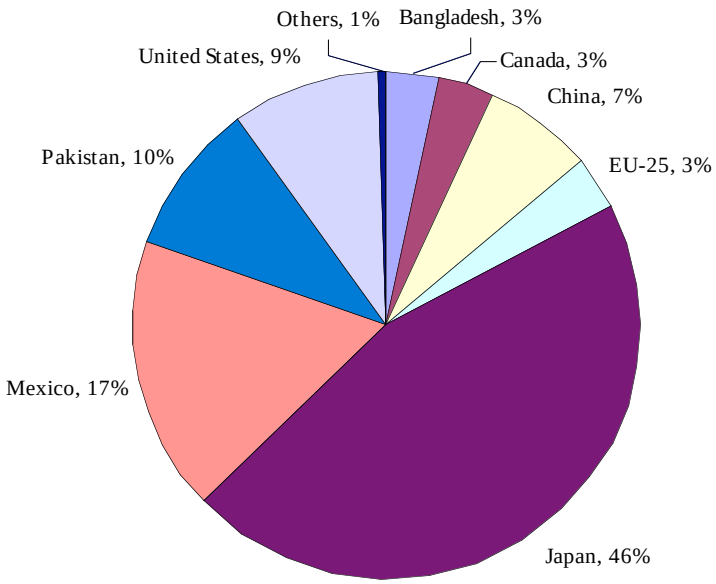
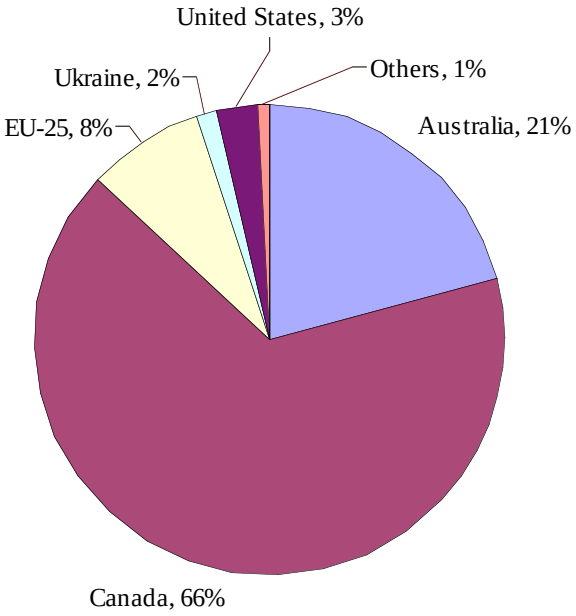


Figure 1.6 Main exporters



Chapter 2

Survey and sample characteristics

2.1 Introduction

This chapter describes the sample farms selected for the survey and their characteristics in relation to the overall population of growers of oilseed rape.

2.2 The sample

To obtain a representative sample, the target sample was stratified by EU region and area of oilseed rape grown, according to Defra guidelines, based on census data. Table 2.1 shows the target and actual numbers of sample farms by EU region and area. The actual number of farms sampled (212) was slightly larger than the target total (195), with most of the extra farms in the West region. The East region accounted for over half of all farms sampled. In terms of area grown, the largest size category (>100 hectares) was under-represented in the actual sample. The actual sample also included five farms with less than 10 hectares of oilseed rape.

Table 2.1
Oilseed rape businesses* by EU region and band size - target and actual sample, 2004

Oilseed rape size band (ha)		<10	10-20	20-50	50-100	>100	Total
EU England North	target	0	5	15	12	9	41
	actual	1	11	15	10	5	42
EU England East	target	0	15	44	31	26	116
	actual	4	15	41	38	22	120
EU England West	target	0	6	14	10	8	38
	actual	0	8	25	14	3	50
England All	target	0	26	73	53	43	195
	actual	5	34	81	62	30	212

* Businesses growing at least 5 ha of cereals and at least 10 ha of oilseed rape.

The sample farms accounted for 11,600 hectares of oilseed rape (Table 2.2). Almost half of this was grown on large enterprises (>50 hectares) in the East region.

Table 2.2 Oilseed rape area (ha) by EU region and band size - sample data, 2004

Oilseed rape size band (ha)	10-20	20-50	50-100	>100	Total
EU England North	171	434	635	790	2,029
EU England East	230	1,224	2,317	3,331	7,102
EU England West	122	770	836	761	2,490
England All	523	2,428	3,788	4,882	11,621

Census data show that there were 8,700 growers of oilseed rape in England in 2004 (Table 2.3) and that the total area grown was 361,000 hectares (Table 2.4). Thus, the sample represented 2.4% of those that grew the crop, and 3.2% of the total area grown. A breakdown, by region and size category, of the percentage area covered by the actual sample is given in Table 2.5.

Table 2.3 Oilseed rape growers by EU region and band size - census data, 2004

Oilseed rape size band (ha)	10-20	20-50	50-100	>100	Total
EU England North	833	977	257	85	2,152
EU England East	1,330	2,162	1,019	405	4,916
EU England West	601	756	247	77	1,681
England All	2,764	3,895	1,523	567	8,749

Table 2.4 Oilseed rape area (ha) by EU region and band size - census data, 2004

Oilseed rape size band (ha)	10-20	20-50	50-100	>100	Total
EU England North	12,117	30,464	17,311	13,527	73,418
EU England East	19,696	69,575	69,824	65,526	224,620
EU England West	8,719	24,037	16,886	13,194	62,836
England All	40,532	124,076	104,021	92,247	360,874

Table 2.5
Oilseed rape area by EU region and band size - sample share (%) of population, 2004

Oilseed rape size band (ha)	10-20	20-50	50-100	>100	Total
EU England North	1.4	1.4	3.7	5.8	2.8
EU England East	1.2	1.8	3.3	5.1	3.2
EU England West	1.4	3.2	5.0	5.8	4.0
England All	1.3	2.0	3.6	5.3	3.2

2.3 Sample weighting

On the occasions when weighted means are presented in this report, these means have been weighted on the basis of area grown. That is, the sample **area** data given in Table 2.2 and the population **area** data in Table 2.4 have been used to derive weighting factors which 'raise' the sample results to the level of the population. (See also Table 2.5.)

Chapter 3

Economic Results and Margins

3.1 Introduction

The economic results of the survey of the 2004 harvested crop are presented in this chapter. These include margin over materials, gross margin and net margin analysis. The results are presented mainly on a per hectare basis, for both the winter sown and spring sown crops. The number of farms growing the spring crop included in the sample was not large and these results therefore should be treated with some caution. Results are decomposed by EU region, rotational area, area of oilseed rape grown, and by quartiles, showing the top and bottom 25 per cent of farmers. There is also some analysis of performance by age and training of manager, and the chapter concludes with an overview of the economic results from the five oilseed rape surveys conducted since 1975.

3.2 Growing conditions

The 2003/04 growing season was poor for oilseed rape. Although temperatures and sunshine hours were close to average, rainfall was well below average during the autumn sowing period and well above average in August, 2004 during harvest (see the weather data in Appendix 2).

3.3 Costs and returns

Of the total farms sampled, seven had winter sown crops which failed and one had a spring crop which failed. Since these crops were not harvested, they have been excluded from the analysis. This leaves effective samples of 195 farms with winter sown crops and 30 farms with spring sown crops.

The overall results for England for both winter and spring sown crops are shown in Table 3.1.

Standard errors

The average results in this and other tables are presented with their associated standard errors. The standard error provides an indication of the range within which we can expect the true average of *all* farms (i.e., including those not surveyed) to lie. For example, the average yield of winter sown oilseed rape on the 195 farms reported in Table 3.1 was 3.24 tonnes per hectare, with a standard error of 0.06 tonnes. This means there is a 90% chance that the average yield on all farms in England that grew the winter sown crop was within the range of 1.65 standard errors of the sampled mean, i.e. 3.24 ± (1.65 x 0.06) tonnes, or between 3.14 and 3.34 tonnes per hectare. The size of the standard error is related to the number of farms included in the sample, to the size of the sample in proportion to the total number of farms, and to variability of the data – in general, the larger the sample, the smaller the standard error. Similarly, when we sub-divide our overall sample, for example to examine regional differences (see Table 3.3), the number of farms in each sub-sample becomes smaller, and the associated standard errors become correspondingly larger. In this situation,

the average of the farms included in the sample becomes a less reliable measure of the true average of all farms in that particular category.

Unweighted sample averages

Winter sown

The average area of the winter sown crop was 59 hectares per farm, almost 50% higher than in the 1996 study. However, the average yield, 3.24 tonnes per hectare, and the average price, £146 per tonne, were both lower. Thus, the value of output of the crop was £708, only 59% of the value of output in 1996. Of this, £235 or 33% was the area payment under the Common Agricultural Policy, compared to £448 in 1996. (A detailed comparison with earlier years is presented later in the chapter.)

Material costs (seed, fertiliser and crop protection) totalled £220 per hectare, giving a margin over materials of £488 per hectare. With other variable costs of £44 per hectare, the gross margin was £444 per hectare. Fixed costs and overheads totalled £372 per hectare, of which the largest item was rent, leaving a net margin of £72 per hectare, which rises to £75 when agri-environment scheme payments are included. This compares with a net margin in 1996 of £476 per hectare.

Spring sown

Compared to the winter sown crop, the average area of spring sown oilseed rape was considerably lower at 32 hectares per farm, as was the average yield of 1.99 tonnes per hectare (Table 3.1). The average price of £142 per tonne was only slightly lower. The value of output of the crop was £521 per hectare, about three-quarters of the value of the winter sown crop, with 46% attributable to the area payment. Although variable costs were also lower, the gross margin was smaller at £333 per hectare. Fixed costs and overheads were higher than for the winter sown crop, at £389 per hectare, largely because of higher general overheads, leaving a *negative* net margin of -£55 per hectare, excluding agri-environment scheme payments of £4 per hectare. This compares with a net margin of £304 in 1996.

For both the winter and spring sown crops, the contrast with margins in 1996 is due to the lower value of output in 2004, owing to lower yields, lower prices and reduced area payments. Costs in 2004 were, in general, similar to those in 1996.

Table 3.1
Output, costs and margins for oilseed rape on sample farms in England, 2004

(Unweighted)	Winter		Spring	
Number of observations	195		30	
CROP YIELD AND OUTPUT		s.e.		s.e.
Average area grown (ha)	59	4.6	32	4.7
Yield (tonnes/ha)	3.2	0.1	2.0	0.1
Sale price (£/tonne)	146	1.0	142	2.6
RETURNS	£/ ha		£/ha	
Area payment	235	1.3	237	0.3
Output - OSR	473	9.5	284	21.8
Output - straw	0	0.1	0	0.0
Total	**708**	**10.0**	**521**	**21.8**
MATERIAL COSTS				
Seed	30	1.0	28	3.3
Fertiliser	94	2.4	72	6.6
Crop protection materials	96	2.3	50	6.2
Total	**220**	**3.7**	**151**	**10.6**
MARGIN OVER MATERIALS	**488**	**9.7**	**370**	**21.9**
OTHER VARIABLE COSTS				
Casual labour	2	0.2	2	0.6
Contract	27	4.7	24	14.5
Fuel for drying	4	0.3	3	0.5
Marketing Costs	4	0.4	3	0.3
Miscellaneous	7	0.6	6	0.9
Total	**44**	**4.8**	**37**	**14.5**
GROSS MARGIN	**444**	**10.7**	**333**	**25.9**
FIXED COSTS				
Labour - Farmer & Spouse	8	1.2	7	2.5
Labour - unpaid	2	0.6	6	1.6
Labour - paid	19	1.4	16	3.1
Machinery - Tractors	43	2.2	38	4.1
Machinery - Implements	62	5.4	53	11.3
Specific Machinery - Unused	0	0.1	0	0.0
Combine Crop Storage Equipm't Charge	3	0.6	2	1.1
Combine Crop Storage B'dings Charge	3	0.6	1	0.4
Rent	149	4.2	134	11.9
Drainage Charges	2	0.3	3	0.9
Total	**293**	**8.2**	**261**	**16.8**
OVERHEADS				
Overheads - Labour	8	0.4	8	0.9
Overheads - Machinery	12	0.8	10	1.7
Overheads - Buildings	0	0.1	0	0.1
Overheads - General	59	2.8	108	15.4
Total	**80**	**3.2**	**127**	**15.4**
TOTAL COSTS	**636**	**10.0**	**576**	**24.8**
NET MARGIN	**72**	**13.1**	**-55**	**27.7**
Agri-environment payments (H)	3	0.8	4	2.6
NET MARGIN (including H)	**75**	**13.2**	**-51**	**27.5**

***Weighted sample averages*[1]**

Winter sown

Weighted averages for England for the winter and spring sown crops are shown in Table 3.2. Compared to the unweighted averages presented in Table 3.1, the weighted averages for the winter sown crop show slightly lower returns and higher costs, resulting in a net margin, before agri-environment scheme payments, of £54 per hectare, compared to £75 per hectare in the unweighted sample.

Spring sown

For the spring sown crop, differences between the weighted and unweighted averages are much smaller, with a weighted net margin, before agri-environment scheme payments, of -£59 compared to the unweighted average of -£55.

[1] These averages are weighted on the basis of the area of oilseed rape grown in each of four size categories (see Chapter 2).

Table 3.2
Output, costs and margins for oilseed rape, weighted results for England, 2004

	Winter		Spring	
Number of observations	195		30	
CROP YIELD AND OUTPUT		s.e.		s.e.
Average area grown (ha)	42	4.6	31	4.7
Yield (tonnes/ha)	3.2	0.1	2.0	0.1
Sale price (£/tonne)	145	1.0	143	2.6
RETURNS	£/ha		£/ha	
Area payment	235	1.3	237	0.3
Output - OSR	468	9.5	283	21.8
Output - straw	0	0.1	0	0.0
Total	**703**	**10.0**	**520**	**21.8**
MATERIAL COSTS				
Seed	31	1.0	29	3.3
Fertiliser	95	2.4	72	6.6
Crop protection materials	94	2.3	49	6.2
Total	**221**	**3.7**	**149**	**10.6**
MARGIN OVER MATERIALS	**482**	**9.7**	**371**	**21.9**
OTHER VARIABLE COSTS				
Casual labour	2	0.2	2	0.6
Contract	35	4.7	27	14.5
Fuel for drying	3	0.3	3	0.5
Marketing Costs	5	0.4	2	0.3
Miscellaneous	7	0.6	6	0.9
Total	**51**	**4.8**	**40**	**14.5**
GROSS MARGIN	**431**	**10.7**	**331**	**25.9**
FIXED COSTS				
Labour - Farmer & Spouse	11	1.2	8	2.5
Labour - unpaid	3	0.6	5	1.6
Labour - paid	17	1.4	15	3.1
Machinery - Tractors	45	2.2	37	4.1
Machinery - Implements	63	5.4	55	11.3
Specific Machinery - Unused	0	0.1	0	0.0
Combine Crop Storage Equipm't Charge	4	0.6	2	1.1
Combine Crop Storage Buildings Charge	3	0.6	1	0.4
Rent	147	4.2	133	11.9
Drainage Charges	2	0.3	3	0.9
Total	**294**	**8.2**	**259**	**16.8**
OVERHEADS				
Overheads - Labour	9	0.4	8	0.9
Overheads - Machinery	13	0.8	10	1.7
Overheads - Buildings	0	0.1	0	0.1
Overheads - General	61	2.8	112	15.4
Total	**83**	**3.2**	**131**	**15.4**
TOTAL COSTS	**649**	**10.0**	**579**	**24.8**
NET MARGIN	**54**	**13.1**	**-59**	**27.7**
Agri-environmental payments (H)	3	0.8	5	2.6
NET MARGIN (including H)	**56**	**13.2**	**-55**	**27.5**

Comparison by EU region

Winter sown

For the winter sown crop, yields were highest in the North at 3.80 tonnes per hectare, which meant that despite having the lowest price this region had the highest value of output at £774 per hectare (Table 3.3). Material costs were broadly similar. In the East, other variable costs were also lower, due to less contract work, but fixed costs were higher than in the other two regions, due to higher machinery costs. Total costs in each of the three regions were broadly similar, ranging from £631 in the East to £650 in the West. There was no significant difference in net margin between the East (£58 per hectare) and the West (£57 per hectare), but in the North it was much higher (£138 per hectare) due to the higher yield. Though of a different magnitude, the agri-environment scheme payments varied between £3.41 per hectare in the East and £1.18 per hectare in the West.

Overall, the greater profitability of farms in the North region was due almost entirely to the better yield, an outcome that accords with the results of the 1996 survey. The financial performance of farms in the East and the West in 2004 was broadly similar. The relative position of farms in the East, in terms of net margin, worsened compared with 1996, due to poorer yields.

Spring sown

With only 30 farms in the total sample growing the spring sown crop, the number of farms in the regional sub-samples is small. No figures for the North have been reported as there is only a single sampled farm in this region growing the spring sown crop. The figures for the other two regions, reported in Table 3.4, should be treated with a degree of circumspection. Yields and price, and therefore value of output, were similar in the East and West regions. Material costs in the West were higher due to higher crop protection costs, but net margin-over-materials across the two regions was similar. There are some differences in other costs between the two regions, for example, contract, machinery, rent and general overheads, causing total costs to be £23 per hectare higher in the West (£597 per hectare versus £574). The average net margin per hectare, excluding agri-environment scheme payments, was negative in both regions, -£54 in the East and -£64 in the West. As with the winter sown crop, agri-environment scheme payments were considerably higher on farms in the East (£5.48 per hectare versus £2.22).

Table 3.3 Output, costs and margins for winter oilseed rape by EU region, 2004

	North		East		West	
Number of observations	41		107		47	
CROP YIELD AND OUTPUT		s.e.		s.e.		s.e.
Area grown (ha)	50	7.3	65	5.5	53	13.2
Yield (tonnes/ha)	3.8	0.1	3.1	0.1	3.1	0.1
Sale price (£/tonne)	141	2.3	146	1.4	150	1.7
RETURNS	£/ha		£/ha		£/ha	
Area payment	237	0.1	234	2.2	236	1.8
Output - OSR	538	17.7	455	13.3	470	16.9
Output - straw	0	0.0	0	0.1	0	0.4
Total	**774**	**17.6**	**689**	**14.2**	**707**	**17.8**
MATERIAL COSTS						
Seed	32	2.1	29	1.4	30	2.0
Fertiliser	104	4.7	88	3.4	102	4.9
Crop protection materials	92	5.0	95	2.8	102	5.2
Total	**229**	**8.0**	**212**	**5.2**	**235**	**6.3**
MARGIN OVER MATERIALS	**546**	**18.4**	**477**	**13.3**	**472**	**17.8**
OTHER VARIABLE COSTS						
Casual labour	1	0.3	2	0.4	3	0.4
Contract	37	11.5	22	5.8	35	10.1
Fuel for drying	4	0.6	3	0.4	5	0.6
Marketing Costs	5	0.8	5	0.6	4	0.7
Miscellaneous	5	1.0	7	0.8	7	1.0
Total	**51**	**11.3**	**38**	**6.1**	**53**	**10.3**
GROSS MARGIN	**495**	**20.0**	**439**	**14.9**	**419**	**20.2**
FIXED COSTS						
Labour - Farmer & Spouse	10	2.1	7	1.7	8	2.5
Labour - unpaid	5	1.6	2	0.7	1	0.8
Labour - paid	17	2.6	20	2.0	19	2.3
Machinery - Tractors	46	3.4	43	3.5	39	3.1
Machinery - Implements	53	3.5	70	9.5	50	4.8
Specific Machinery - Unused	0	0.2	0	0.0	0	0.1
Crop Storage Equipm't Charge	5	0.9	3	0.9	4	0.9
Crop Storage Build'g Charge	2	0.5	3	1.0	3	1.2
Rent	143	3.9	150	7.3	154	4.5
Drainage Charges	1	0.3	3	0.4	0	0.1
Total	**281**	**8.1**	**301**	**13.7**	**279**	**10.4**
OVERHEADS						
Overheads - Labour	9	0.7	8	0.7	8	0.7
Overheads - Machinery	12	0.6	13	1.3	10	1.0
Overheads - Buildings	0	0.1	0	0.1	0	0.2
Overheads - General	56	1.4	58	4.5	64	5.6
Total	**76**	**1.9**	**80**	**5.2**	**83**	**5.9**
TOTAL COSTS	**637**	**11.2**	**631**	**17.0**	**650**	**11.2**
NET MARGIN	**138**	**18.1**	**58**	**20.3**	**57**	**19.4**
Agri-environment payments (H)	1	2.7	3	1.0	1	0.5
NET MARGIN (including H)	**139**	**18.3**	**62**	**20.4**	**58**	**19.4**

Table 3.4 Output, costs and margins for spring oilseed rape by EU region, 2004

	East		West	
Number of observations	20		9	
CROP YIELD AND OUTPUT		s.e.		s.e.
Average area grown (hectares/farm)	29	4.9	37	11.5
Yield (tonnes/ha)	2.0	0.2	2.1	0.1
Sale price (£/tonne)	141	3.2	144	5.0
RETURNS	£/ha		£/ha	
Area payment	237	0.5	237	0.1
Output - OSR	283	30.9	296	24.7
Output – straw	0	0.0	0	0.0
Total	**520**	**31.1**	**533**	**24.7**
MATERIAL COSTS				
Seed	28	4.4	26	5.4
Fertiliser	73	9.5	72	6.4
Crop protection materials	43	8.7	65	7.7
Total	**145**	**15.9**	**163**	**3.8**
MARGIN OVER MATERIALS	**375**	**31.4**	**370**	**23.3**
OTHER VARIABLE COSTS				
Casual labour	2	0.9	1	0.6
Contract	18	16.0	34	33.3
Fuel for drying	2	0.6	4	0.9
Marketing Costs	3	0.4	2	0.2
Miscellaneous	5	1.2	7	1.8
Total	**31**	**15.9**	**47**	**33.7**
GROSS MARGIN	**345**	**36.8**	**323**	**29.5**
FIXED COSTS				
Labour - Farmer & Spouse	5	2.1	8	6.1
Labour - unpaid	3	1.6	13	4.2
Labour - paid	21	4.0	10	4.3
Machinery - Tractors	35	4.5	41	9.4
Machinery - Implements	66	15.9	35	8.9
Specific Machinery - Unused	0	0.0	0	0.0
Combinable Crop Storage Equipment Charge	1	0.7	4	3.2
Combinable Crop Storage Buildings Charge	1	0.5	2	0.7
Rent	126	17.0	156	9.1
Drainage Charges	5	1.3	0	0.0
Total	**261**	**23.4**	**270**	**22.5**
OVERHEADS				
Overheads - Labour	8	1.1	9	2.0
Overheads - Machinery	11	2.1	9	3.7
Overheads - Buildings	0	0.1	0	0.1
Overheads - General	118	18.5	98	30.1
Total	**137**	**18.0**	**117**	**32.0**
TOTAL COSTS	**574**	**31.6**	**596**	**39.2**
NET MARGIN	**-54**	**37.1**	**-64**	**41.1**
AGRI-ENVIRONMENT SCHEME PAYMENTS (H)	5	3.7	2	2.7
NET MARGIN (including H)	**-48**	**37.0**	**-62**	**40.6**

Comparison by size of enterprise[2]

A breakdown of the costs and returns of the winter oilseed rape crop by size of holding is given in Tables 3.5 and 3.6. Size of holding is defined in terms of rotational area in Table 3.5, and in terms of area of oilseed rape grown in Table 3.6. Any differences reported are significant at the 10% level, which means we can be fairly confident (90%) that a difference exists between the corresponding groups of *all* farms growing winter oilseed rape. The size of the sample for the spring sown crop was not sufficiently large to allow a corresponding breakdown.

Winter sown

Based on rotational area, there are no significant differences in yield between the four size groups (Table 3.5). Although the average price achieved by the largest farms (>450 hectares) is significantly greater than that achieved by the smallest (<150 hectares), there are no significant differences in total returns. Similarly, seed cost is significantly lower on the largest farms, but there are no differences in margin-over-materials across the four groups. Lower contract labour costs on the two largest farm groups lead to higher gross margins on these farms. Similarly, there are clear differences in the costs of the different types of labour that are categorised under fixed costs, but these cancel out such that there are no significant differences in total fixed costs. However, the farms with a rotational area of more than 450 hectares have lower total costs, and higher net margins, than farms with less than 250 hectares. Although the sample data suggest that average production costs per tonne fall across all four groups as rotational area increases, these differences are not significant. However, average costs of production and economies of size are examined in greater detail in section 3.4.

Based on area of oilseed rape grown, there are again no significant differences in yield across the four groups (Table 3.6). The price obtained on the smallest enterprises (10-20 hectares) was significantly less than the prices obtained by the other three groups, but this was insufficient to generate differences in total returns. There are differences in costs of seed and crop protection materials, but again not sufficient to cause any significant differences in margin-over-materials. However, differences in other variable costs, particularly for contract labour, lead to higher gross margins for the larger enterprises (50-100 and >100 hectares). As with the breakdown based on rotational area, differences in some of the elements of fixed costs, particularly labour and rent, cancel out, resulting in no significant differences across the four groups in total fixed costs. Lower overheads on the larger enterprises contribute to higher net margins on these farms. Again, no significant differences are recorded in average costs of production per tonne across the four groups.

[2] A detailed analysis of economies in costs of production is presented in section 3.4.

Table 3.5 Output, costs and margins for winter oilseed rape by rotational area, 2004

	1		2		3		4		
	<150 ha		150-250 ha		250-450 ha		>450 ha		Significant
Number observations	52		54		47		42		
CROP YIELD & OUTPUT		se		se		se		se	
Area grown (ha)	20	1.4	35	1.9	60	3.4	138	15.3	1<2,3,4; 2<3,4; 3<4
Yield (tonnes/ha)	3	0.1	3	0.1	3	0.1	3	0.1	
Sale price (£/tonne)	141	2.4	144	1.5	146	2.2	148	2.0	1<4
RETURNS	£/ha		£/ha		£/ha		£/ha		
Area payment	235	1.6	237	1.6	229	4.7	237	0.3	3<4
Output – OSR	446	19.1	465	16.5	483	20.7	475	19.1	
Output - straw	0	0.3	0	0.4	0	0.0	0	0.0	
Total	**681**	19.7	**703**	17.2	**712**	23.4	**712**	19.1	
MATERIAL COSTS									
Seed	32	2.3	34	1.8	33	2.0	27	2.0	1,2,3>4
Fertiliser	92	5.6	104	3.8	96	5.0	90	4.7	1<2; 2>4
Crop protection materials	93	5.8	93	3.2	95	3.9	98	4.7	
Total	**217**	9.3	**231**	5.1	**225**	6.6	**214**	7.8	2>4
MARGIN OVER MATERIALS	**464**	19.1	**472**	17.6	**487**	21.8	**498**	18.0	
OTHER VARIABLE COSTS									
Casual labour	1	0.3	1	0.3	1	0.5	3	0.7	1,2,3<4
Contract	58	11.7	50	8.5	31	8.1	12	5.8	1>3,4; 2,3>4
Fuel for drying	3	0.5	4	0.5	3	0.5	4	0.7	
Marketing Costs	6	1.1	5	0.7	5	0.7	4	0.5	
Miscellaneous	9	1.4	6	0.9	5	1.1	7	1.0	1>3
Total	**76**	12.0	**66**	8.6	**46**	8.2	**30**	6.0	1>3,4; 2>3,4
GROSS MARGIN	**387**	20.5	**406**	20.3	**442**	23.0	**468**	18.1	1<3,4; 2<4
FIXED COSTS									
Labour - Farmer & Spouse	28	3.0	18	1.7	6	0.8	2	0.8	1>2,3,4; 2>3,4; 3>4
Labour - unpaid	5	1.3	4	1.1	2	1.1	1	0.9	1>3,4; 2>4
Labour - paid	3	1.2	15	2.3	21	2.2	23	3.9	1<2,3,4; 2<3,4
Machinery - Tractors	48	4.0	51	3.9	44	3.2	39	6.5	
Machinery - Implements	48	7.7	53	8.6	72	17.4	64	6.5	
Specific Machinery - Unused	0	0.1	0	0.0	0	0.2	0	0.0	
Crop Storage Equip't Charge	4	0.7	5	0.8	4	0.8	3	2.2	
Crop Storage Build'g Charge	2	0.8	4	1.2	6	2.0	1	0.3	2,3>4
Rent	141	4.1	142	4.3	145	13.9	155	9.3	
Drainage Charges	1	0.4	1	0.4	2	0.6	2	0.7	2<4
Total	**281**	13.5	**292**	11.6	**301**	23.6	**291**	15.3	
OVERHEADS									
Overheads - Labour	11	0.9	10	0.8	8	0.6	8	1.2	1>3,4; 2>3,4
Overheads - Machinery	14	1.4	13	1.7	12	1.8	12	1.2	
Overheads - Buildings	1	0.2	1	0.2	1	0.2	0	0.0	1,2,3>4
Overheads - General	69	4.9	62	1.9	55	1.4	58	11.2	1,2>3
Total	**95**	5.1	**85**	3.1	**76**	2.0	**77**	12.7	1, 2>3
TOTAL COSTS	**669**	16.9	**674**	13.6	**648**	23.8	**612**	26.8	1,2>4
NET MARGIN	**12**	20.8	**29**	21.4	**64**	28.2	**100**	35.3	1,2<4
Agri-environm't payments (H)	4	2.3	3	1.1	2	1.1	2	1.2	
NET MARGIN (including H)	**15**	21.3	**32**	21.5	**67**	28.3	**103**	35.2	1,2<4
PRODUCTION COSTS (£/t)	211	21.7	208	10.6	196	60.9	190	16.7	

Table 3.6 Output, costs and margins for winter oilseed rape by area grown, 2004

	1		2		3		4		
	10-20 ha		20-50 ha		50-100 ha		>100 ha		Significant
Number of observations	33		74		55		27		
CROP YIELD AND OUTPUT		s.e.		s.e.		s.e.		s.e.	
Area grown (ha)	15	0.5	31	0.9	69	2.0	181	19.1	1<2,3,4; 2<3,4; 3<4
Yield (tonnes/ha)	3	0.2	3	0.1	3	0.1	3	0.1	
Sale price (£/tonne)	137	3.4	144	1.7	147	1.3	147	1.7	1<2,3,4
RETURNS	£/ha		£/ha		£/ha		£/ha		
Area payment	233	2.6	236	1.1	232	4.0	237	0.5	
Output - OSR	428	30.0	462	14.2	483	17.1	475	22.5	
Output - straw	1	0.6	0	0.2	0	0.0	0	0.0	
Total	**662**	31.4	**698**	14.3	**715**	19.4	**713**	22.4	
MATERIAL COSTS									
Seed	33	2.9	35	1.8	31	1.6	26	2.3	1,2>4; 2>3
Fertiliser	93	8.1	99	3.6	97	4.2	89	6.3	
Crop protection materials	82	6.1	95	3.7	93	3.8	101	5.5	1<2,4
Total	**209**	12.9	**229**	5.0	**220**	6.0	**216**	10.5	
MARGIN OVER MATERIALS	**453**	30.2	**470**	15.3	**494**	16.9	**497**	21.3	
OTHER VARIABLE COSTS									
Casual labour	0	0.1	2	0.4	1	0.4	3	0.8	1<2,3,4; 3<4
Contract	68	16.7	47	7.3	29	6.6	13	8.6	1,2>3,4
Fuel for drying	3	0.7	3	0.4	3	0.5	4	0.9	
Marketing Costs	6	1.4	5	0.8	4	0.4	4	0.6	
Miscellaneous	8	1.8	8	1.0	5	0.7	7	1.5	1,2>3
Total	**85**	17.1	**66**	7.4	**42**	6.8	**31**	8.9	1,2>3,4
GROSS MARGIN	**368**	31.0	**404**	17.7	**452**	17.4	**466**	21.7	1,2<3,4
FIXED COSTS									
Labour - Farmer & Spouse	24	4.1	17	1.8	7	1.4	3	1.0	1>2,3,4; 2>3,4; 3>4
Labour - unpaid	4	1.6	3	0.9	3	1.1	1	0.6	1,2>4
Labour - paid	9	3.8	14	1.9	20	1.9	23	5.0	1<3,4; 2<3
Machinery - Tractors	50	9.1	50	3.2	44	2.6	38	4.3	2>4
Machinery - Implements	51	11.2	66	11.2	66	9.8	59	4.9	
Specific Machinery - Unused	0	0.0	0	0.1	0	0.0	0	0.0	
Crop Storage Equip't Charge	4	2.8	4	0.6	4	0.8	3	0.9	
Crop Storage Build'gs Charge	1	0.4	3	0.8	6	1.9	1	0.4	1<2,3; 2,3>4
Rent	131	4.6	151	9.2	137	7.1	160	6.6	1<2,4; 3<4
Drainage Charges	1	0.6	2	0.5	1	0.2	2	1.0	
Total	**275**	22.7	**311**	16.3	**288**	12.0	**290**	9.6	
OVERHEADS									
Overheads - Labour	11	1.7	10	0.6	8	0.5	7	1.3	1,2>3,4
Overheads - Machinery	13	2.1	15	1.6	12	1.0	11	1.2	
Overheads - Buildings	0	0.1	1	0.1	1	0.2	0	0.0	1<2,3; 2,3>4
Overheads - General	77	12.5	62	1.6	56	1.2	56	1.4	1,2>3,4
Total	**102**	14.6	**87**	2.7	**77**	1.6	**75**	2.7	1,2>3,4
TOTAL COSTS	**671**	35.7	**693**	16.1	**627**	14.1	**612**	17.2	2>3,4
NET MARGIN	**-9**	45.6	**5**	18.6	**87**	21.1	**101**	26.6	1,2<3,4
Agri-environ payments (H)	4	3.3	2	1.0	3	1.2	2	1.6	
NET MARGIN (including H)	**-5**	46.1	**8**	18.7	**91**	21.2	**103**	26.4	1,2<3,4
PRODUCTION COSTS (£/t)	216	36.7	216	8.4	190	52.1	190	14.0	

Distribution of results

Underlying the averages for England presented in Table 3.1 is a range of performance across individual farms. As an indication of the extent of this range, the top 25 per cent (upper quartile) and bottom 25 per cent (lower quartile) of farms in the sample were separated in terms of margin-over-materials. The averages of these sub-samples are presented, along with the means, in Tables 3.7 and 3.8.

Winter sown

In terms of value of output, the most noticeable difference between these two groups is in yield; 3.96 tonnes per hectare for the top 25 per cent of farms and 2.10 tonnes per hectare for the bottom 25 per cent (Table 3.7). Coupled with a higher price (£151 versus £141 per tonne), this resulted in an average output per hectare for the best performing farms of £834 compared to £523 for the poorest performers. Material costs were similar across the two groups, meaning that margin-over-materials was twice as high for the best performers. Indeed, other variable costs, fixed costs and overheads were also similar for the two groups of farms, but the difference in value of output meant that the worst performing farms had a *negative* net margin, excluding agri-environment scheme payments, of -£105 per hectare, whilst for the best performing farms it was £217 per hectare, compared to the average of all farms of £72.

Spring sown

The picture is similar for the spring grown crop in terms of yield, price and value of output (Table 3.8). However, material costs for the bottom 25 per cent were considerably higher than for the top 25 per cent, accentuating the difference in margin-over-materials between the two groups. There are some further differences in other costs, but the sample sizes in this breakdown are small and the analysis needs to be treated accordingly. Net margin of the eight poorest performers averaged -£265 per hectare, compared to £13 per hectare for the eight best performers.

Table 3.7
Results for winter oilseed rape by margin over materials quartile groups, England, 2004

	Bottom 25%		Mean		Top 25%	
Number of observations	49		195		49	
CROP YIELD AND OUTPUT		s.e.		s.e.		s.e.
Area grown (ha)	46	6.0	59	4.6	59	6.7
Yield (tonnes/ha)	2	0.1	3	0.1	4	0.1
Sale price (£/tonne)	141	2.0	146	1.0	151	2.4
RETURNS	£/ha		£/ha		£/ha	
Area payment	227	4.9	235	1.3	237	0.1
Output - OSR	296	15.5	473	9.5	597	11.4
Output - straw	0	0.0	0	0.1	0	0.4
Total	**523**	**18.4**	**708**	**10.0**	**834**	**11.4**
MATERIAL COSTS						
Seed	27	2.4	30	1.0	28	1.9
Fertiliser	93	6.3	94	2.4	92	4.5
Crop protection materials	93	5.5	96	2.3	92	4.6
Total	**213**	**9.7**	**220**	**3.7**	**212**	6.4
MARGIN OVER MATERIALS	**310**	**13.1**	**488**	**9.7**	**622**	**10.7**
OTHER VARIABLE COSTS						
Casual labour	1	0.3	2	0.2	1	0.3
Contract	27	10.6	27	4.7	26	10.1
Fuel for drying	2	0.4	4	0.3	5	0.7
Marketing Costs	3	0.8	4	0.4	4	0.4
Miscellaneous	6	0.9	7	0.6	5	0.9
Total	**39**	**10.8**	**44**	**4.8**	**41**	**10.1**
GROSS MARGIN	**272**	**15.5**	**444**	**10.7**	**580**	**15.3**
FIXED COSTS						
Labour - Farmer & Spouse	11	2.2	8	1.2	7	1.7
Labour - unpaid	0	0.7	2	0.6	4	1.4
Labour - paid	19	3.8	19	1.4	19	2.3
Machinery - Tractors	40	6.1	43	2.2	43	3.2
Machinery - Implements	75	12.9	62	5.4	58	4.2
Specific Machinery - Unused	0	0.2	0	0.1	0	0.0
Crop Storage Equipment Charge	2	1.9	3	0.6	5	1.0
Crop Storage Buildings Charge	1	0.7	3	0.6	3	0.7
Rent	135	7.9	149	4.2	148	13.4
Drainage Charges	4	0.7	2	0.3	2	0.3
Total	**288**	**18.9**	**293**	**8.2**	**288**	**15.8**
OVERHEADS						
Overheads - Labour	9	1.2	8	0.4	9	0.7
Overheads - Machinery	15	1.8	12	0.8	11	0.7
Overheads - Buildings	0	0.1	0	0.1	0	0.1
Overheads - General	65	9.5	59	2.8	55	1.0
Total	**89**	**10.7**	**80**	**3.2**	**75**	**1.6**
TOTAL COSTS	**628**	**27.2**	**636**	**10.0**	**617**	**17.1**
NET MARGIN	**-105**	**26.3**	**72**	**13.1**	**217**	**14.8**
Agri-environment payments (H)	4	1.1	3	0.8	3	2.4
NET MARGIN (including H)	**-101**	**26.4**	**75**	**13.2**	**221**	**14.8**

Table 3.8
Results for spring oilseed rape by margin over materials quartile groups in England, 2004

	Bottom 25%		Mean		Top 25%	
Number of observations	8		30		8	
CROP YIELD AND OUTPUT		s.e.		s.e.		s.e.
Area grown (ha)	17	3.7	32	4.7	31	9.8
Yield (tonnes/ha)	1	0.1	2	0.1	3	0.2
Sale price (£/tonne)	145	2.1	142	2.6	154	3.9
RETURNS	£/ha		£/ha		£/ha	
Area payment	237	0.1	237	0.3	238	1.2
Output - OSR	150	15.4	284	21.8	410	31.8
Output - straw	0	0.0	0	0.0	0	0.0
Total	**387**	**15.4**	**521**	**21.8**	**647**	**32.0**
MATERIAL COSTS						
Seed	42	5.0	28	3.3	19	8.6
Fertiliser	79	6.4	72	6.6	66	3.7
Crop protection materials	64	13.0	50	6.2	52	13.7
Total	**185**	**13.5**	**151**	**10.6**	**137**	**15.1**
MARGIN OVER MATERIALS	**202**	**22.5**	**370**	**21.9**	**510**	**25.7**
OTHER VARIABLE COSTS						
Casual labour	0	0.0	2	0.6	5	2.0
Contract	29	30.5	24	14.5	28	38.5
Fuel for drying	0	0.5	3	0.5	2	0.6
Marketing Costs	1	0.1	3	0.3	5	0.9
Miscellaneous	5	1.8	6	0.9	8	2.1
Total	**36**	**29.9**	**37**	**14.5**	**48**	**39.2**
GROSS MARGIN	**166**	**33.0**	**333**	**25.9**	**462**	**53.6**
FIXED COSTS						
Labour - Farmer & Spouse	2	6.0	7	2.5	6	5.2
Labour - unpaid	1	2.3	6	1.6	3	3.2
Labour - paid	20	5.2	16	3.1	29	8.6
Machinery - Tractors	35	8.6	38	4.1	45	9.0
Machinery - Implements	65	17.5	53	11.3	73	33.3
Specific Machinery - Unused	0	0.0	0	0.0	0	0.0
Crop Storage Equipment Charge	0	0.3	2	1.1	3	1.7
Crop Storage Buildings Charge	1	0.4	1	0.4	1	0.7
Rent	89	41.3	134	11.9	144	10.2
Drainage Charges	4	1.7	3	0.9	7	2.7
Total	**218**	**38.1**	**261**	**16.8**	**313**	**39.3**
OVERHEADS						
Overheads - Labour	7	1.8	8	0.9	11	2.6
Overheads - Machinery	12	4.1	10	1.7	13	3.7
Overheads - Buildings	0	0.0	0	0.1	0	0.1
Overheads - General	194	27.7	108	15.4	113	28.9
Total	**213**	**30.5**	**127**	**15.4**	**137**	**24.9**
TOTAL COSTS	**651**	**49.8**	**576**	**24.8**	**635**	**35.1**
NET MARGIN	**-265**	**44.2**	**-55**	**27.7**	**13**	**46.8**
Agri-environment payments (H)	9	7.3	4	2.6	4	5.0
NET MARGIN (including H)	**-256**	**47.1**	**-51**	**27.5**	**16**	**44.0**

Comparison of performance by manager

Dividing the sample of the winter sown crop into three sub-samples according to age of the manager shows that the over 55 years of age group under-performs both groups of younger managers in terms of yield, margin-over-materials and gross margin (Table 3.9). Although the youngest group, under 46 years of age, appears to manage a larger area of the crop than the other two groups, this difference is not statistically significant. There are no other statistically significant differences between the under 46, and 46 to 55, age groups.

Table 3.9 Comparison of performance by age of manager, winter oilseed rape, 2004

Age band		1		2		3		Significant
Age range (years)		< 46		46 to 55		> 55		
Observations	number	71	s.e.	72	s.e.	52	s.e.	
Area Oilseeds	ha	70	10.1	56	5.5	57	7.7	
Yield	t/ha	3.1	0.1	3.3	0.1	2.9	0.1	2>3
Margin over Materials	£/ha	481	17	478	14	432	21.0	1,2>3
Gross Margin	£/ha	445	18	434	16	382	23.3	1,2>3

Dividing the sample on the basis of training and education, those managers with a college education perform better than those with only schooling in terms of gross margin (Table 3.10). More convincingly, those with a college education out-perform those with a degree over all three measures - yield, margin-over-materials and gross margin. Not the best advert for a university education! Those with a college or university education manage significantly larger areas planted to oilseed rape.

Table 3.10
Comparison of performance by training of manager, winter oilseed rape, 2004

Training band		1		2		3		Significant
Description		A level		College		Degree		
Observations	number	45	s.e.	117	s.e.	30	s.e.	
Area Oilseeds	ha	44.7	6.4	66.5	6.8	71.5	10.0	1<2,3
Yield	t/ha	3.1	0.1	3.2	0.1	2.8	0.1	2>3
Margin over Materials	£/ha	451	19.2	486	12.9	419	24.3	2>3
Gross Margin	£/ha	393	22.5	448	13.6	377	28.1	1,3<2

Historical comparison of costs and returns

A comparison of the costs and returns recorded in the last five special studies on oilseed rape is given in Tables 3.11 and 3.12. For ease of comparison, all prices have been expressed in 2004 values using agricultural price indices for outputs and inputs.

Winter sown

Market price has fallen dramatically over the last 30 years. This has been compensated somewhat in the two most recent survey years by the area payment, following changes to the Common Agricultural Policy. Over the five survey years,

value of output, margin-over materials, gross margin and net margin have all see-sawed, being at their highest, in 2004 prices, in 1982 and 1996. Fertiliser costs have halved in real terms over the period. A low yield led to an unusually high cost per tonne (£378) in 1975, and likewise, a high yield led to unusually low cost per tonne (£190) in 1996.

Table 3.11 Comparison between means for winter oilseed rape, 1975 to 2004

Year		1975	1982	1990	1996	2004
Sample size		61	147	201	242	195
Yield	(tonnes/ha)	1.9	3.3	3	3.9	3.2
Price	(£/tonne)	400	370	261	160	146
Area payment	(£/ha)				376	235
Oilseed output	(£/ha)	773	1207	784	625	473
Total Output	(£/ha)	773	1207	784	1000	708
Seed	(£/ha)	36	31	34	39	30
Fertiliser	(£/ha)	203	202	120	113	94
Crop protection materials	(£/ha)	44	108	95	109	96
Margin over Materials	(£/ha)	490	866	535	739	488
Other variable costs	(£/ha)	64	52	44	49	44
Gross Margin	(£/ha)	426	815	492	691	444
Labour	(£/ha)	46	34	46	43	29
Machinery	(£/ha)	109	188	122	125	106
Storage	(£/ha)	0	0	19	5	6
Rent	(£/ha)	134	157	135	142	151
Overheads	(£/ha)	94	63	122	115	80
Net Margin†	(£/ha)	44	373	48	261	72
Average production cost	(£/tonne)	378	256	245	190	196

Note: values adjusted to 2004 using agricultural price indices.

† excludes environmental payments.

Spring sown

Survey results for the spring sown crop are not available for 1975 and 1982, and the sample for 1990 is small. Notwithstanding, some comparisons can be made. Value of output was higher in 1996 than in 1990, with the area payment more than compensating for the fall in price (Table 3.12). With costs being similar, net margin per hectare, in 2004 prices, was £146 in 1996 compared with only £35 in 1990. In contrast, value of output was considerably lower in 2004, due to a combination of lower yield, lower price and lower area payment. Most costs in this year were also higher, leading to the negative net margin per hectare of -£51.

Table 3.12 Comparison between means for spring oilseed rape, 1975 to 2004

Year		1975	1982	1990	1996	2004
Sample size		n.a	2	13	54	30
Yield	(tonnes/ha)	n.a	n.a	2.4	2.3	2.0
Price	(£/tonne)	n.a	n.a	258	163	142
Area payment	(£/ha)				369	237
Oilseed output	(£/ha)			627	364	284
Total Output	(£/ha)	n.a	n.a	627	734	521
Seed	(£/ha)	n.a	n.a	43	40	28
Fertiliser	(£/ha)	n.a	n.a	86	70	72
Crop protection materials	(£/ha)	n.a	n.a	38	42	50
Margin over Materials	(£/ha)	n.a	n.a	460	582	370
Other variable costs	(£/ha)	n.a	n.a	41	40	37
Gross Margin	(£/ha)	n.a	n.a	419	542	333
Labour	(£/ha)	n.a	n.a	33	35	30
Machinery	(£/ha)	n.a	n.a	94	99	91
Storage	(£/ha)	n.a	n.a	24	4	4
Rent	(£/ha)	n.a	n.a	123	148	137
Overheads	(£/ha)	n.a	n.a	111	111	127
Net Margin†	(£/ha)	n.a	n.a	35	146	-51
Average production cost	(£/tonne)	n.a	n.a	249	256	289

Note: values adjusted to 2004 using agricultural price indices.
n.a. not available. † excludes environmental payments.

3.4 Economies of size

The 1996 oilseed rape study contained a note on economies of scale.[3] This notion is concerned with what happens to unit costs of production as the level of output is varied. The earlier report of 1991 indicated that there was evidence of correlation between net margin and size of enterprise or farm, due to a combination of lower yields on the smaller farms and lower costs per hectare on the larger farms. In cereal and sugar reports from the University of Cambridge there is also some evidence, albeit slight, of higher unit costs on smaller enterprises. As various reports have noted, some of the costs recorded in these surveys are imputed and therefore mask possible differences between small and large enterprises. The 1996 oilseed rape report concluded that "… there is no relationship between size of farm or enterprise and levels of output or margins as far as oilseed rape is concerned", although "… there is scope here for further research and analysis" (p.34).

[3] Economies of scale is a special case of economies of size. The former relates to the effect on production of a proportionate change in all inputs, whereas the latter is less restrictive and relates to variation in some or all inputs. In this section we focus on economies of size.

In this section we take the opportunity to explore further the possibility of economies of size in oilseed rape production. We estimate a long-run average cost (LAC) curve, which relates average (unit) cost of production per tonne to size of enterprise or farm. Economic theory postulates that the LAC curve shows the minimum unit cost of producing every feasible level of output. Traditionally, the curve is assumed to be U-shaped, reflecting economies of size (falling unit costs) up to a certain level of production and then diseconomies of size (rising unit costs) at higher levels of output. However, empirical studies have often failed to detect diseconomies of size even at very high levels of output. This causes the LAC curve to be more of an L-shape, i.e. unit costs initially falling as level of output increases, but then remaining fairly constant.

As a starting point, recall the results for winter oilseed rape presented by size of enterprise in section 3.3 and Tables 3.5 and 3.6. The averages for the four sub-samples showed that cost per tonne decreased as enterprise size increased. However, these differences were not statistically significant, which means we cannot be confident that such differences actually exist amongst all farms growing the crop. A scatter plot of average cost per tonne (i.e., total cost divided by total output in terms of oilseed rape) against level of output is shown in Figure 3.1. This scatter plot shows that the costs on some smaller enterprises are indeed higher, but that diseconomies of size (i.e., rising average costs) are not discernible at higher levels of output. This suggests that an L-shaped curve would seem more appropriate than the traditional U-shaped curve.

We use an econometric approach[4] to estimate the line (LAC) that best represents the relationship between average cost and level of output, as depicted in the scatter plot. This could be done by relating average cost to *actual* output (as in Figure 3.1), but previous research in this area has argued that it is better to relate average cost to *planned* output, on the basis that costs are more likely to reflect what the farmer plans or expects his output to be. With this in mind, a two-step procedure is adopted. In the first step, the farmer's planned output is determined by estimating a production function based on the farmer's actual use of inputs (seed, fertiliser, labour, land, etc.). In the second step, the LAC curve is estimated using this planned output rather than the farmer's actual output; thus, average cost is calculated as total cost divided by planned output and then related to the level of planned output. The resulting LAC curve is shown in Figure 3.2, superimposed on the scatter plot of average cost against planned output. It would seem that any economies of size are quickly exhausted at a fairly low level of output, around 75 tonnes, or 25 hectares.

[4] We would like to thank Phil Dawson for undertaking the econometrics in this part of the report.

Figure 3.1 Actual Average Costs

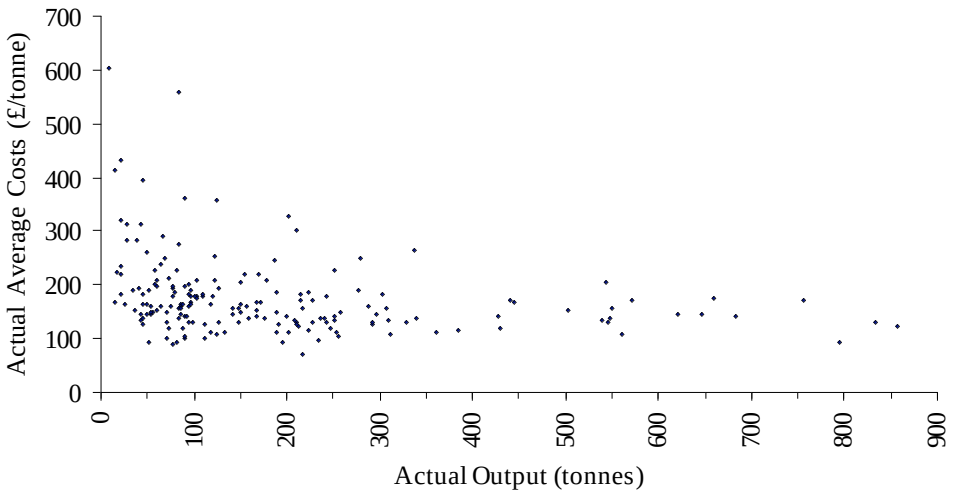
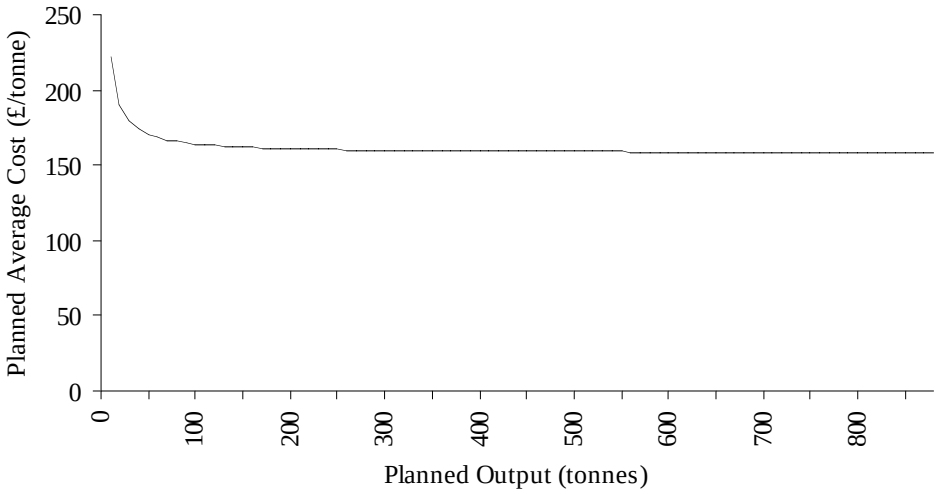


Figure 3.2 Long-run average cost curve



Chapter 4

Management practices

4.1 Introduction

This chapter presents some results from the sampled farms relating to the use of seed, fertilisers and chemicals, and to performance measures of different management practices. As in the previous chapter, any differences reported are significant at the 10% level, which means we can be fairly confident (90%) that a difference exists between the corresponding groups of *all* farms growing oilseed rape.

4.2 Seed

The most popular rate of seeding for the winter sown crop is around 5.5 kilograms per hectare (see Table 4.1 and Figure 4.1) and the most usual cost of seed is around £40 per hectare (see Table 4.2 and Figure 4.2). In terms of performance, yield per hectare in this survey falls as seed rate increases, although statistically this is only significant at seed rates of up to 6 kilograms per hectare (Table 4.3). Margin-over-materials is also significantly higher at a seed rate of up to 5 kilograms per hectare.

Table 4.1 Seed rate, winter sown

Seed Rate (kg/ha)	Number of growers	% of growers
3	6	3
3.5	3	2
4	5	3
4.5	15	8
5	15	8
5.5	34	17
6	27	14
6.5	28	14
7	15	8
7.5	12	6
8	10	5
8.5	5	3
9	4	2
9.5	1	1
>9.5	15	8
All	195	100

Figure 4.1 Seed rate, winter sown

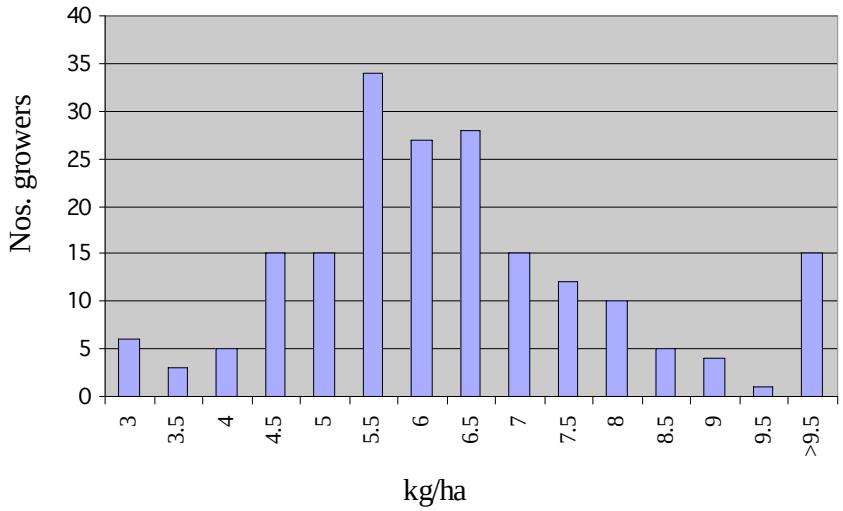


Table 4.2 Seed cost, winter sown

£/ha	Number of growers	% of growers
5	9	5
10	8	4
15	8	4
20	10	5
25	19	10
30	24	13
35	33	17
40	37	19
45	24	13
50	13	7
55	4	2
60	3	2
All	192	100

Figure 4.2 Seed cost, winter sown

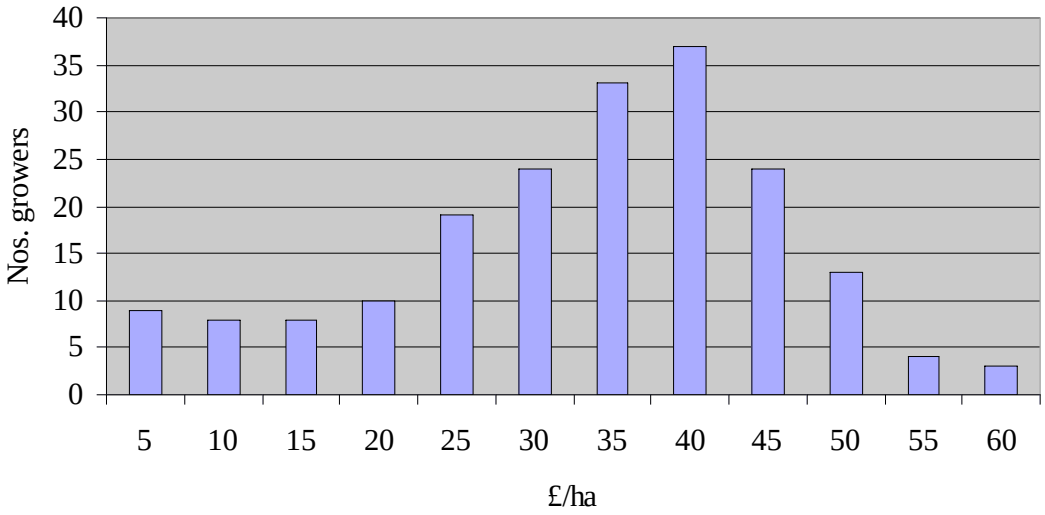


Table 4.3 Seed rate, yield & profitability - winter sown

Category	1	2	3	4	5	Significant
Seed rate (kg/ha)	<5	5-6	6-7	7-8	>8	
Nos. of observations	44	61	43	22	25	
Total area (ha)	2,525	3,350	2,894	1,419	1,463	
Average seed rate (kg/ha)	4.0	5.4	6.4	7.4	12.8	
Average seed cost (£/ha)	28	33	35	33	27	1<3, 3>5
Average area grown (ha/farm)	57	55	67	64	59	
Yield (tonnes/ha)	3.4	3.3	3.1	3.1	2.9	1>4,5; 2>5
Margin over materials (£/ha)	507	487	444	473	447	1>3,5
Gross margin (£/ha)	446	421	415	387	399	

In this survey, the three most popular varieties of winter oilseed rape were Winner, accounting for 25% of the tonnage harvested, Recital (7%) and Canberra (6%) (Table 4.4 and Figure 4.3). For the spring crop, the three most popular varieties were Senator (28% of tonnage harvested), Mozart (22%) and Tambora (19%) (Table 4.5 and Figure 4.4).

Table 4.4 Winter rape varieties

Variety	tonnes	%	£/t
Mixture	15,608	42	145
Winner	9,151	25	144
Recital	2,505	7	147
Canberra	2,094	6	144
Pollen	1,386	4	151
Unknown	1,574	4	149
Fortis	998	3	155
Courage	581	2	145
Escort	732	2	147
Others	2,583	7	150
Total	37,212	100	146

Figure 4.3 Winter rape varieties

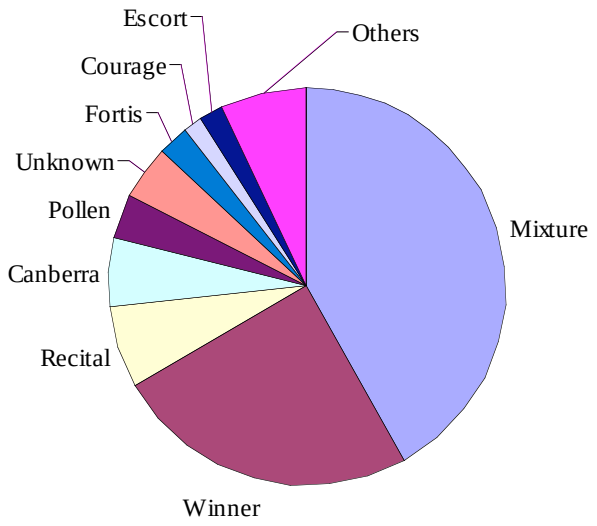
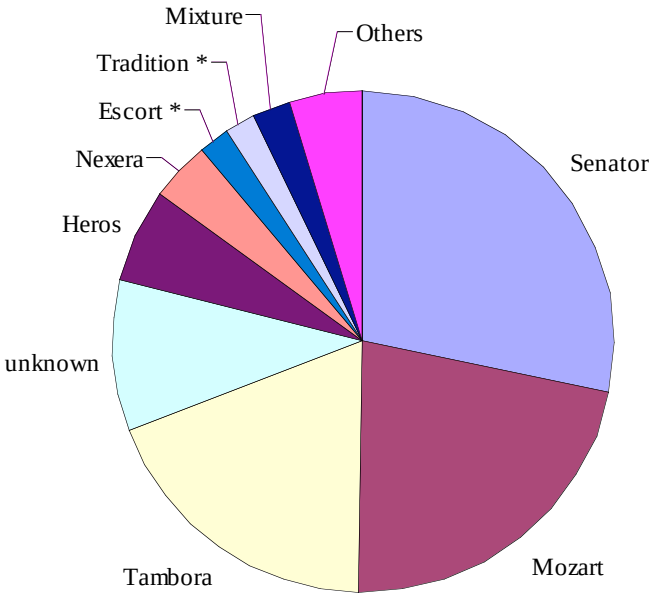


Table 4.5 Spring oilseed rape varieties

Variety	tonnes	%	£/t
Senator	540	28	150
Mozart	421	22	140
Tambora	366	19	152
unknown	185	10	103
Heros	116	6	140
Nexera	78	4	152
Escort *	37	2	128
Tradition *	36	2	140
Mixture	44	2	150
Others	93	5	
Total	1,916	100	-

* winter varieties grown as spring crops.

Figure 4.4 Spring varieties



* winter varieties grown as spring crops.

Performance by the three most popular winter oilseed rape varieties is summarised in Table 4.6. Although there are differences in margin-over-materials, gross margin and net margin across the three varieties, none are statistically significant. The size of the sub-samples for Recital and Canberra is small and the associated standard errors are correspondingly large, making the estimates unreliable.

Table 4.6 Performance by main winter rape varieties

Variety	Winner	Recital	Canberra
Nos. of observations	44	17	15
Area Oilseeds (ha)	55	38	34
Yield (t/ha)	3.2	3.2	3.0
Margin over Materials (£/ha)	475	441	476
Gross Margin (£/ha)	421	380	398
Net margin (£/ha)	37	7	51

4.3 Fertiliser

Nitrogen – winter sown

The most common rates of application for nitrogen fertiliser on those farms sampled were between 200 and 250 kilograms per hectare (Table 4.7 and Figure 4.5). In terms of performance, these rates produced statistically significant higher yields than on those farms applying lower rates (Table 4.8). However, these higher yields were not translated into a higher margin-over-materials or gross margin.

Table 4.7 Fertiliser rates, nitrogen, winter sown

Nitrogen rate(kg/ha)	Number of growers	% of growers
50	10	5
75	4	2
100	7	4
125	10	5
150	12	6
175	14	7
200	30	15
225	42	22
250	31	16
275	21	11
300	10	5
325	1	1
350	1	1
375	1	1
>375	1	1

Note: percentage total sums to more than 100 due to rounding.

Figure 4.5 Nitrogen rates, winter sown

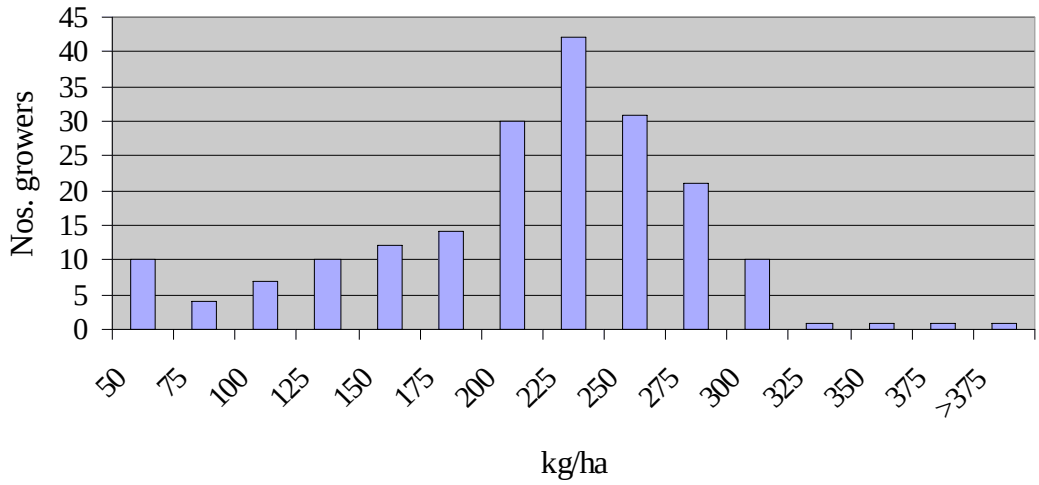


Table 4.8 Nitrogen rate, yield and profitability - winter sown

Category	1	2	3	4	5	Significant
Application rate (kg/ha)	<150	150-200	200-225	225-250	>250	
Nos. of observations	43	44	42	31	35	
Average area grown (ha)	62	70	49	46	69	3,4<5
Yield (tonnes/ha)	3.0	3.1	3.4	3.3	3.2	1<3,4; 2<3
Margin over materials (£/ha)	479	465	483	485	466	
Gross margin (£/ha)	429	400	427	426	412	

Phosphate – winter sown

Of the 195 farms surveyed, 50 did not apply any phosphates. Of the remainder, the most popular rates of application were between 50 and 80 kilograms per hectare (Table 4.9 and Figure 4.6). There were no significant differences in terms of performance by rate of phosphate application, including those growers who applied none (Table 4.10).

Table 4.9 Fertiliser rates, phosphate, winter sown

Phosphate (kg/ha)	Number of growers	% of growers
0	50	26
10	2	1
20	8	4
30	10	5
40	9	5
50	27	14
60	25	13
70	22	11
80	20	10
90	11	6
100	4	2
110	3	2
120	2	1
130	1	1
140	1	1

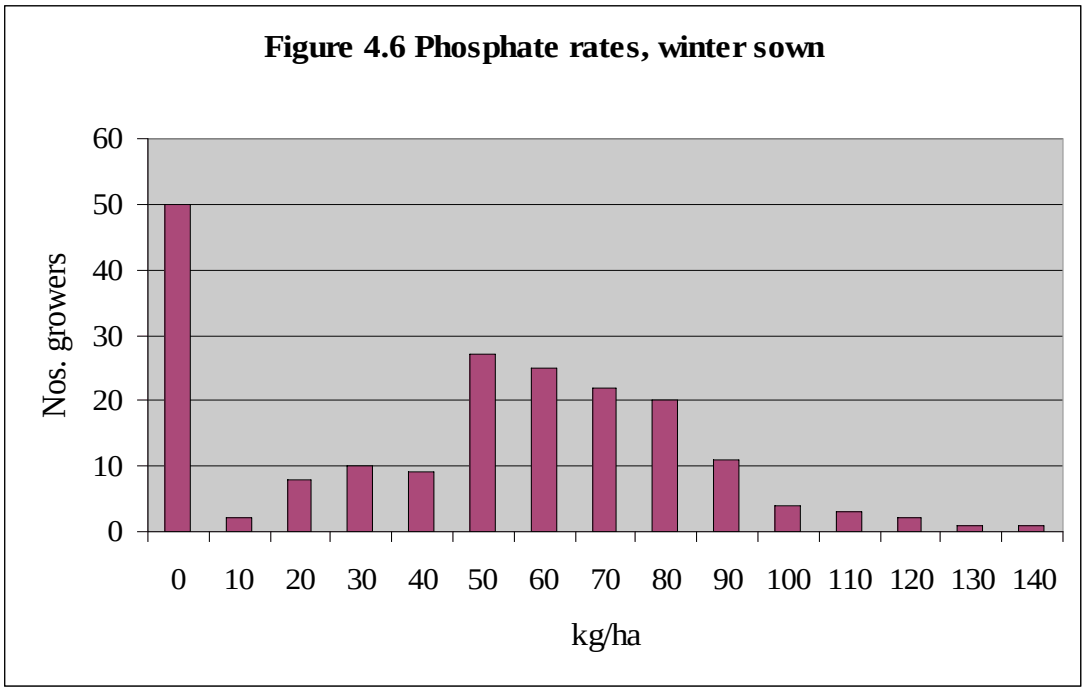


Table 4.10 Phosphate rate, yield and profitability - winter sown

Category	1	2	3	4	5	Significant
Application rate (kg/ha)	Zero	<30	30-50	50-70	>70	
Nos. observations	43	44	42	31	35	
Average area grown (ha)	65	57	67	57	52	
Yield (tonnes/ha)	3.1	3.1	3.2	3.2	3.4	
Margin over materials (£/ha)	484	494	483	457	470	
Gross margin (£/ha)	410	426	417	427	418	

Potassium – winter sown

The pattern for potassium applications is similar to that for phosphates. Fifty-three growers applied none at all. Of those that did, the most common rates of application were between 50 and 90 kilograms (Table 4.11 and Figure 4.7). These rates of application produced significantly higher yields than those farms that used lower rates or no potassium at all (Table 4.12).

Table 4.11 Fertiliser rates, potash, winter sown

Potash (kg/ha)	Number of growers	% of growers
0	53	27
10	4	2
20	6	3
30	8	4
40	7	4
50	17	9
60	16	8
70	17	9
80	19	10
90	15	8
100	9	5
110	4	2
120	9	5
130	2	1
140	3	2
150	2	1
160	0	0
170	3	2

Figure 4.7 Potash rates, winter sown

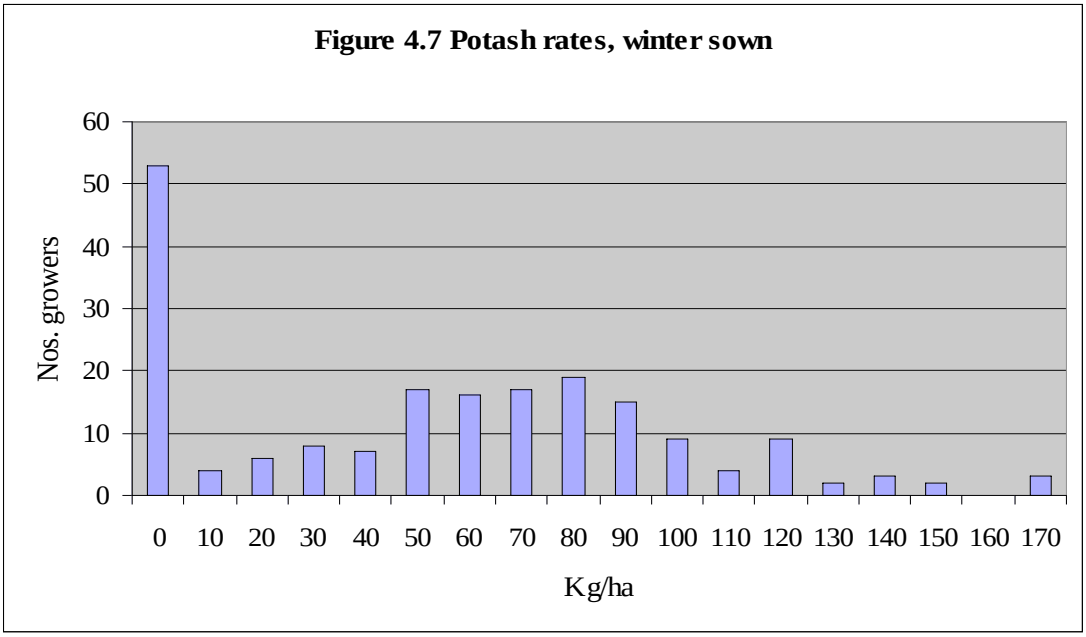


Table 4.12 Potash rate, yield and profitability - winter sown

Category	1	2	3	4	5	Significant
Application rate (kg/ha)	zero	<40	40-60	60-80	>80	
Nos. observations	43	44	42	31	35	
Average area grown (ha)	63	71	67	52	52	
Yield (tonnes/ha)	2.9	2.9	3.3	3.3	3.5	1<3,4,5; 2<5
Margin over materials (£/ha)	461	454	485	489	484	
Gross margin (£/ha)	401	398	419	436	435	

All fertilisers – winter sown

Performance by the total amount spent on all fertilisers is summarised in Table 4.13. Yield per hectare increases with the amount spent on fertilisers, but while this is significant in this survey, it does not translate into a significantly higher margin-over-materials or gross margin.

Table 4.13 All fertilisers, yield and profitability - winter sown

Category	1	2	3	4	5	Significant
Expenditure (£/ha)	<60	60-80	80-100	100-120	>120	
Nos. observations	43	44	42	31	35	
Average area grown (ha)	71	43	70	58	44	1>2,5; 3>5
Yield (tonnes/ha)	2.8	3.2	3.2	3.3	3.6	1<3,4,5; 2,3<5
Margin over materials (£/ha)	471	485	475	472	477	
Gross margin (£/ha)	407	427	413	426	425	

A similar pattern applies to the use of trace elements (Table 4.14).

Table 4.14 Trace elements, yield & profitability - winter sown

Category	1	2	3	4	Significant
Expenditure (£/ha)	0	0-5	5-10	>10	
Nos. of observations	143	22	18	12	
Average area grown (ha)	54	98	50	67	
Yield (tonnes/ha)	3.2	2.9	3.5	3.5	1,2<3; 2<4
Margin over materials (£/ha)	476	445	505	482	
Gross margin (£/ha)	414	414	453	436	

4.4 Chemicals

The use of various chemicals on the winter sown crop is summarised in Figures 4.8 to 4.13. All growers in the sample used herbicides, with £60 per hectare being the most usual cost (Figure 4.8). A considerable number of growers, 38, used no insecticide at all, and for the majority of the rest the cost was between £5 -10 per hectare (Figure 4.9). Slug pellets were used by less than a third of growers (Figure 4.10) and dessicants by less than half (Figure 4.11). Although 24 growers used no fungicides, most of the rest were using up to £50 per hectare (Figure 4.12). On all chemicals, the majority of growers were spending between £75 and £125 per hectare (Figure 4.13).

Figure 4.8 Herbicide use, winter sown

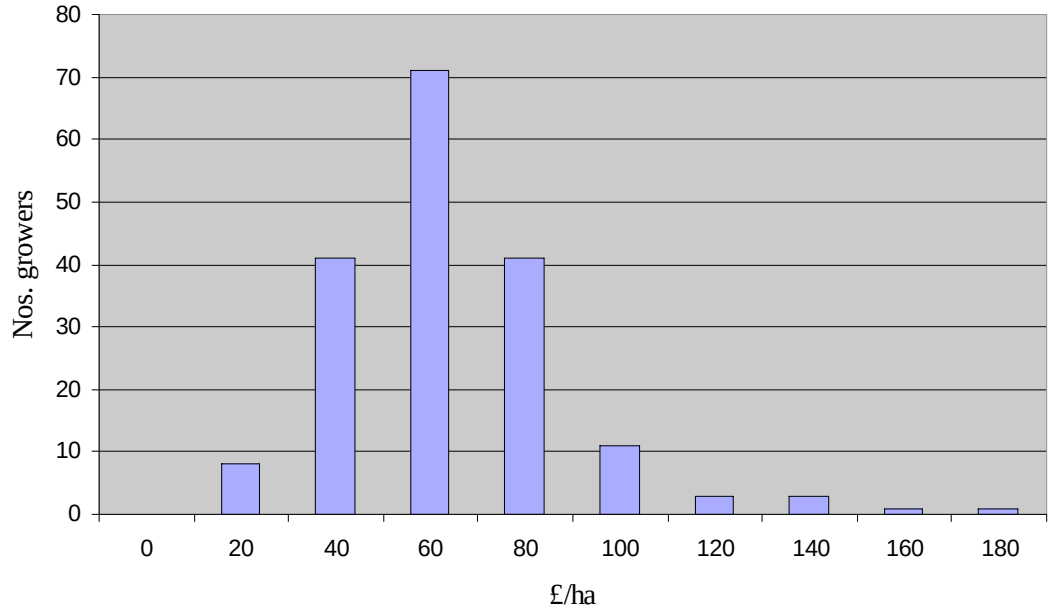


Figure 4.9 Insecticide use, winter sown

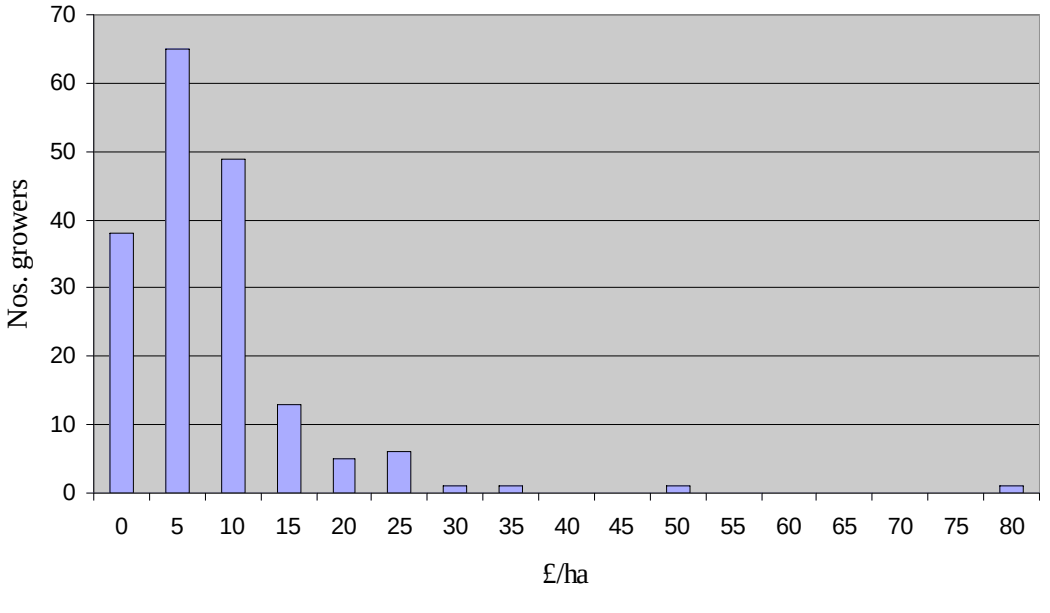


Figure 4.10 Slug pellets, winter sown

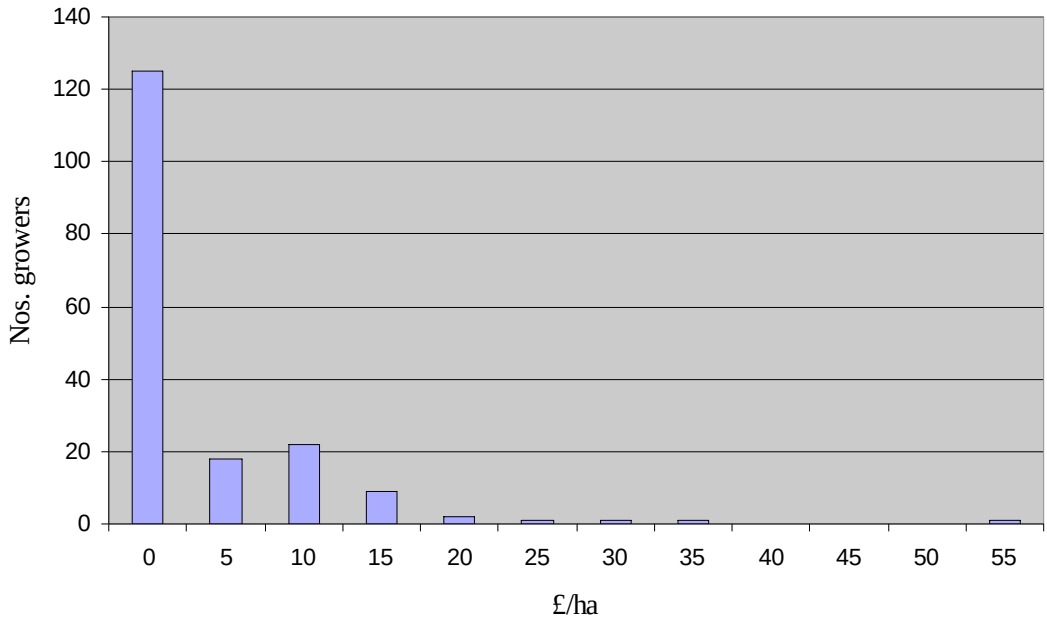


Figure 4.11 Dessicant use, winter sown

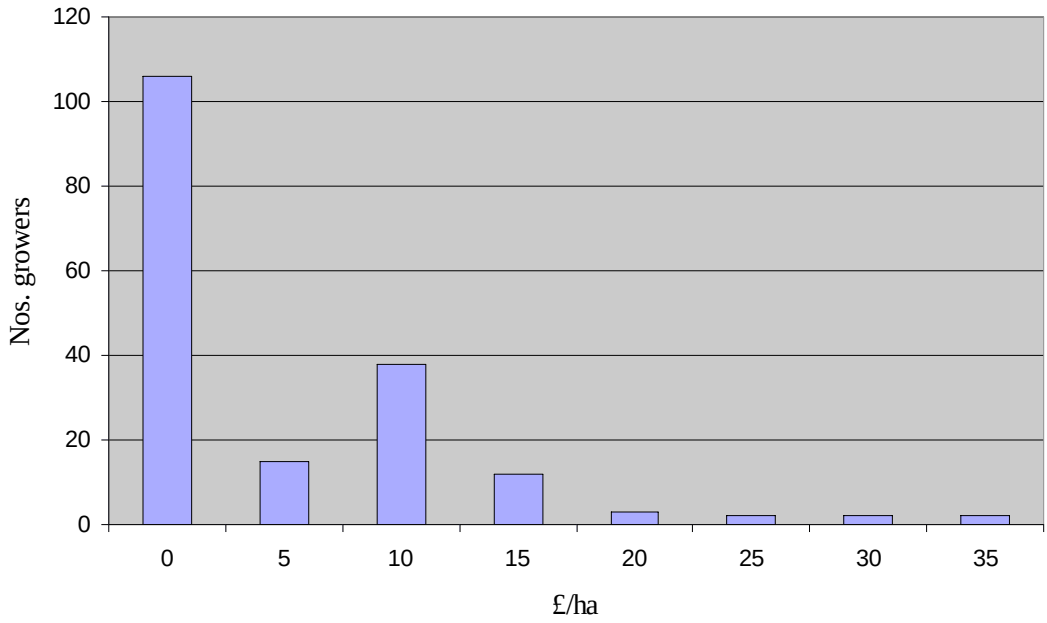


Figure 4.12 Fungicide use, winter sown

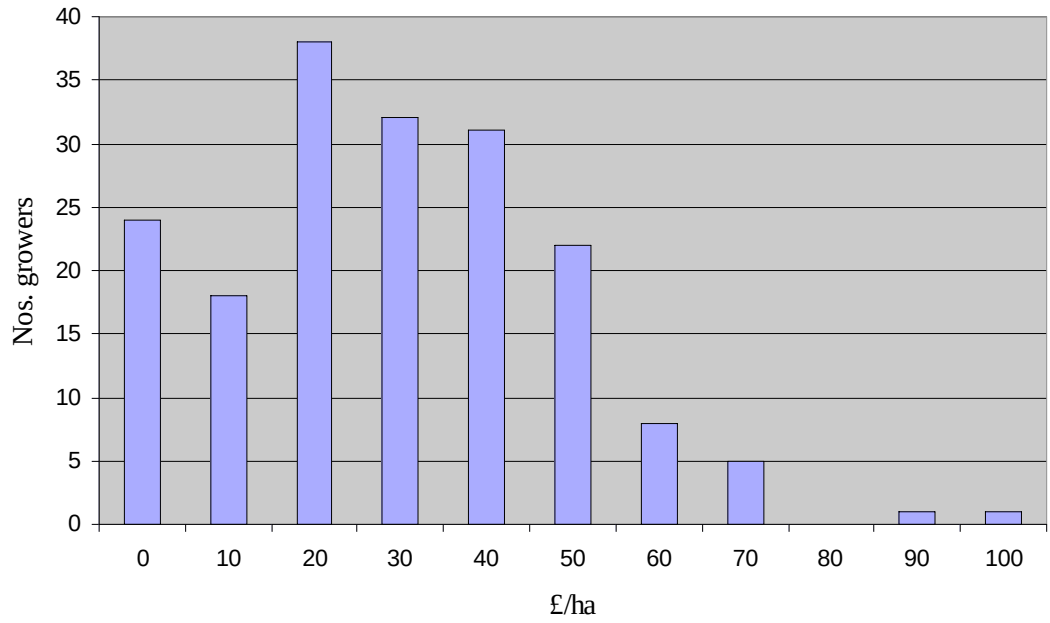
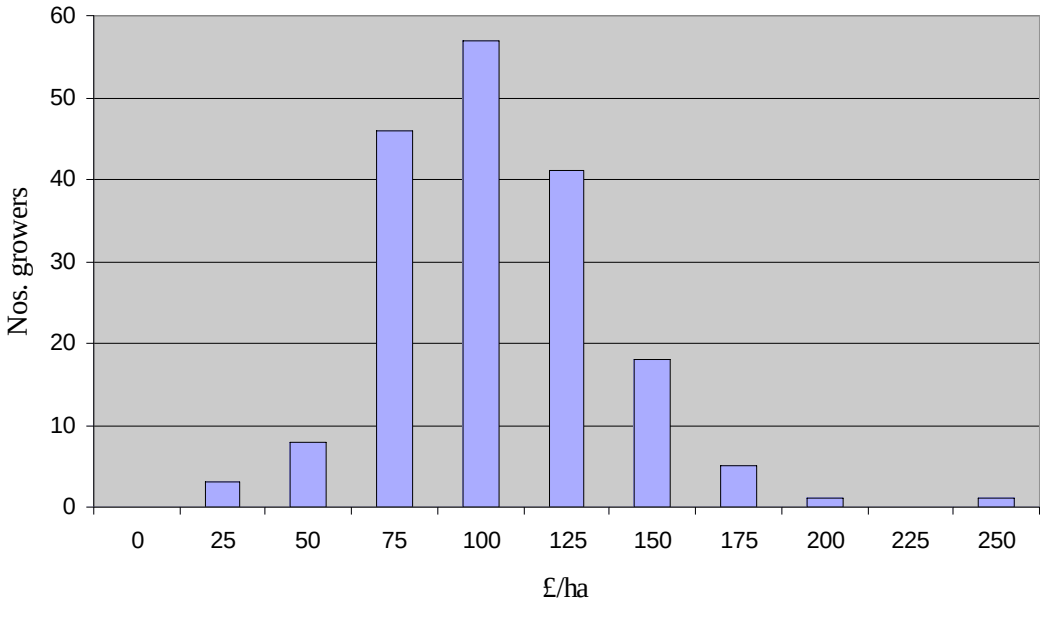


Figure 4.13 All chemical use, winter sown



4.5 Marketing

Winter sown

A breakdown of the winter sown crop by quality, buyer, contract type and date of sale is summarised in Table 4.15 and Figures 4.14-4.17. The majority of the crop is sold for crushing (93% of harvest tonnage) to merchants (87%). Spot and forward sales account for almost 70%, with 44% of the crop sold in August.

Table 4.15 Marketing - winter sown

	tonnes	%	£/t
Quality			
Crushing	34,441	93	145
Biofuel	1,341	4	148
unallocated	629	2	150
Other	802	2	
Total	37,212	100	
Buyer			
Merchant	32,195	87	146
Farmer Controlled Business	4,584	12	148
Other	433	1	
Total	37,212	100	
Contract type			
Spot /intervention	16,655	45	144
Forward Sale	8,902	24	153
January to June Pool	3,176	9	141
unallocated	2,205	6	148
July to September Pool	1,791	5	145
January to March Pool	1,538	4	141
Managed Fund	648	2	149
October to December Pool	885	2	145
April to June Pool	881	2	138
Other	532	1	
Total	37,212	100	
Date of Sale			
Aug 04	16,428	44	150
Sept 04	2,839	8	145
Oct 04	2,075	6	154
Nov 04	3,553	10	144
Dec 04	1,971	5	142
Jan 05	1,497	4	142
Feb 05	2,617	7	137
Mar 05	1,504	4	138
Apr 05	1,519	4	138
May 05	855	2	139
June 05	1,249	3	137
July 05	371	1	146
Aug 05	76	0	144
unknown	158	0	145
unallocated	501	1	169
Total	37,212	100	

Figure 4.14 Quality - winter sown

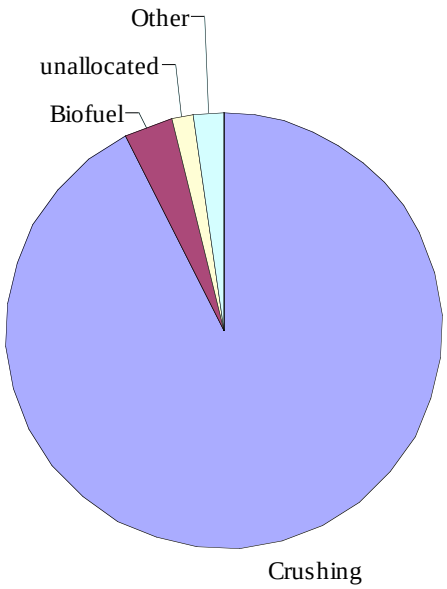


Figure 4.15 Buyer - winter sown

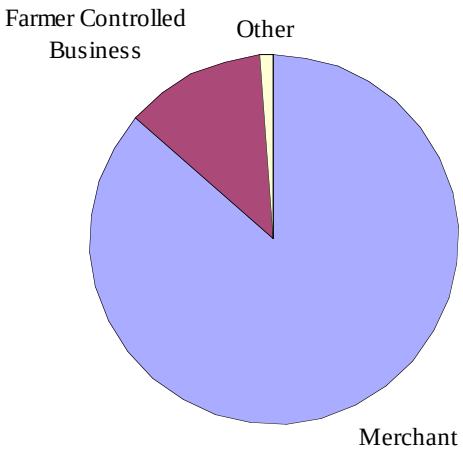


Figure 4.16 Contract type - winter sown

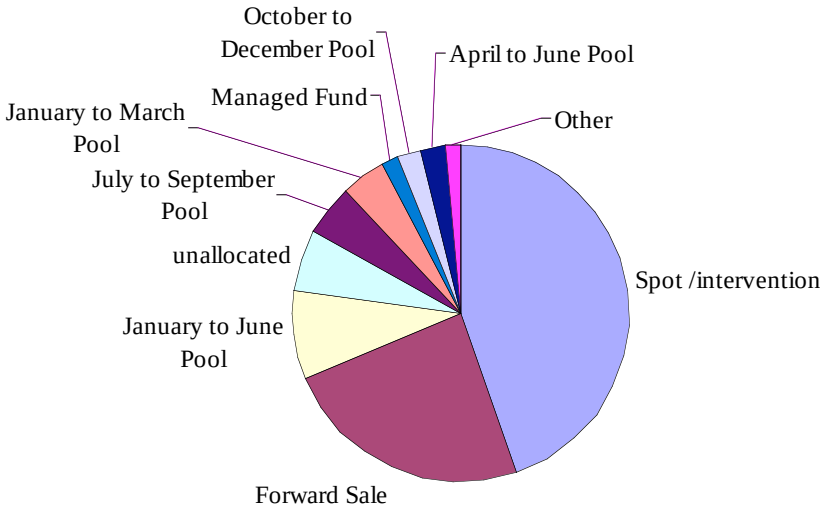
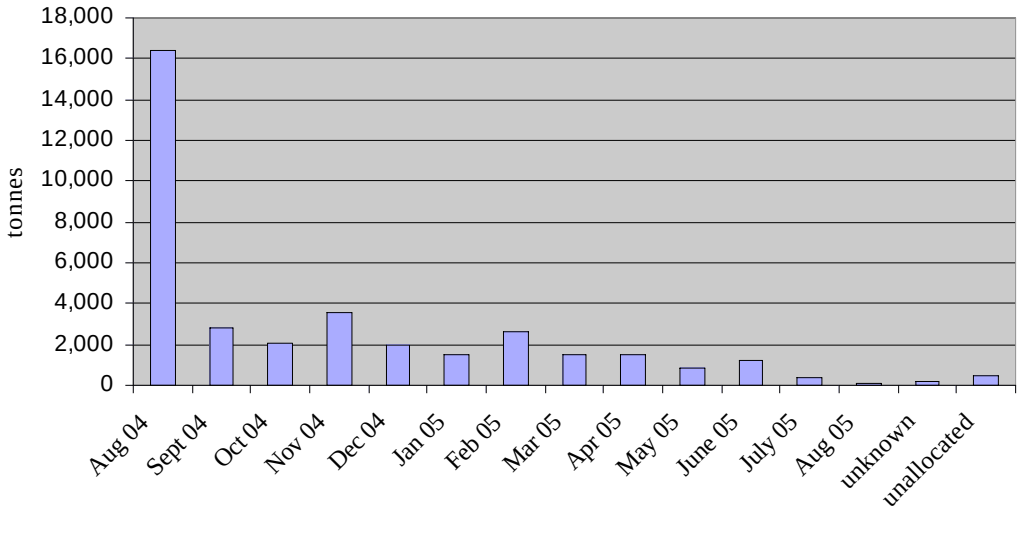


Figure 4.17 Date of sale - winter sown



Spring

The situation for the spring sown crop is similar (Table 4.16 and Figures 4.18 to 4.21).

Table 4.16 Marketing - spring sown

	tonnes	%	£/t
Quality			
Crushing	1,839	96	142
Other	1	0	147
Seed	1	0	140
Feed	48	3	128
Industrial	28	1	171
Total	1,916	100	-
Buyer			
Merchant	1,488	78	141
Farmer Controlled Business	362	19	146
End User	65	3	147
Home Use	1	0	144
Total	1,916	100	
Contract type			
Spot /intervention	766	40	136
Forward Sale	617	32	147
July to September Pool	112	6	140
January to March Pool	236	12	150
January to June Pool	183	10	144
Consumer-Grower	1	0	144
Total	1,916	100	
Date of Sale			
Aug 04	550	29	149
Sept 04	378	20	144
Oct 04	303	16	121
Nov 04	10	1	155
Dec 04	172	9	160
Jan 05	219	11	139
Feb 05	19	1	125
Mar 05	49	3	144
Apr 05	22	1	146
May 05	156	8	143
June 05	0	0	-
July 05	0	0	-
Aug 05	0	0	-
unknown	38	2	135
unallocated	0	0	-
Total	1,916	100	

Figure 4.18 Quality - spring sown

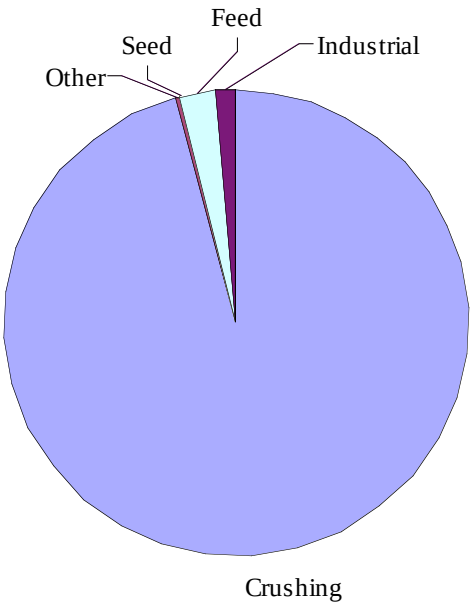


Figure 4.19 Buyer - spring sown

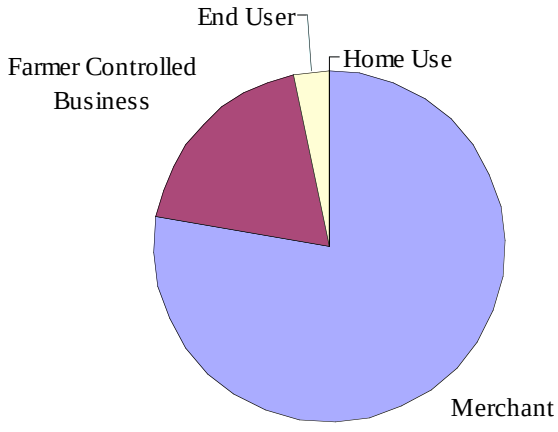


Figure 4.20 Contract type - spring sown

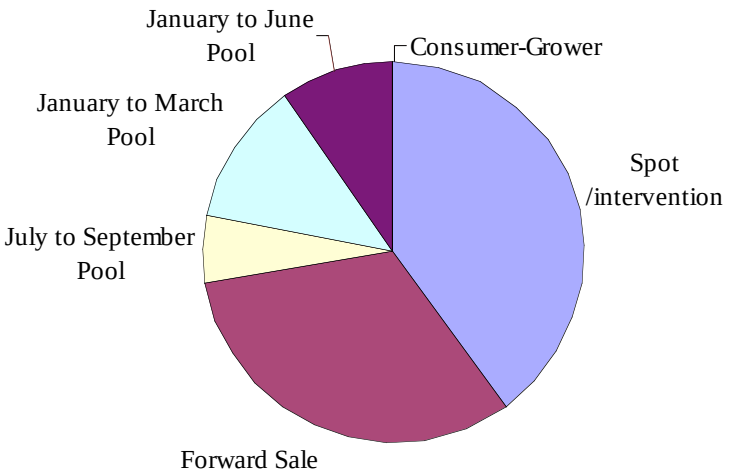
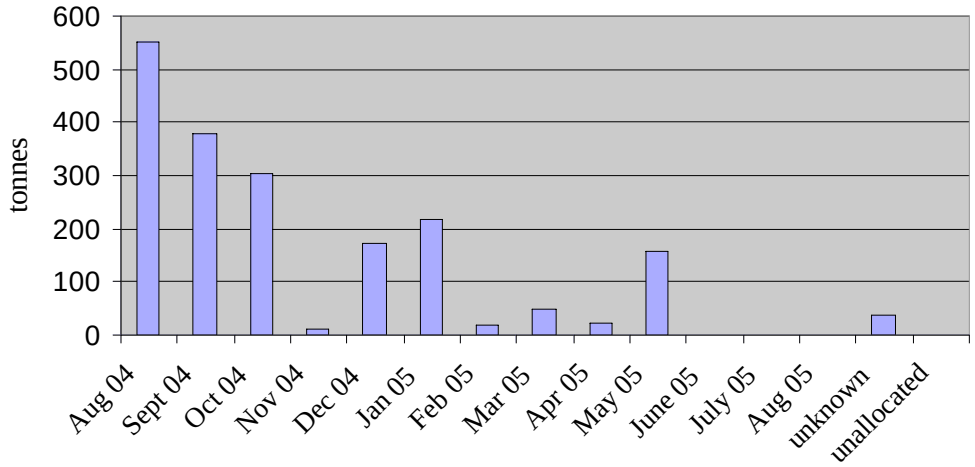


Figure 4.21 Date of sale - spring sown



Chapter 5

Supplementary questionnaire results

This chapter reports the results of a supplementary questionnaire that sought to explore farmers' reasons for growing oilseed rape in 2004 and their intentions for the 2005 harvest year.

Q1. Why did you grow oilseed rape in 2004?

Farmers were asked their reasons for growing oilseed rape in the current harvest year. They were offered a choice of selecting and ranking up to five specified reasons, plus 'other' to allow for reasons not otherwise specified.

Winter sown

The responses of the 201 growers that planted the winter sown crop are given in Table 5.1. The five specified reasons and 'other' are listed in approximate order of importance, based on farmers' responses. One hundred and fifty-seven farmers chose 'break crop' as the most important reason. This was followed in importance by profit-generation, spreading the workload, weed control, area payment and other.

Table 5.1 Reasons for growing winter sown oilseed rape

	Most important					Least important
Score	1	2	3	4	5	6
Reason:						
Break crop	157	29	5	1	3	
Profit generating crop	51	67	20	12	6	2
Spread workload	18	46	52	19	3	
Weed control	15	17	37	32	9	
Area payment	9	12	11	11	32	
Other*	3					

* cash flow; spread harvest.

Spring sown

The pattern of responses from the 31 growers of the spring sown crop was similar to that for the winter sown crop, with 'break crop' as the most important reason (Table 5.2).

Table 5.2 Reasons for growing spring sown oilseed rape

	Most important					Least important
Score	1	2	3	4	5	6
Reason:						
Break crop	20	1	2		1	
Profit generating crop	1	6	2	2	4	
Spread workload	2	7	6		4	
Weed control	2	2	3	8	1	
Area payment		1	4	2	5	1
Other*	3					

* replaced failed winter sown crop; use of former set-aside land.

Q2. Will you grow oilseed rape in 2005?

A large majority of farmers said that they intended to grow winter sown oilseed rape in 2005, and a large majority said that they did not intend to grow the spring sown crop (Table 5.3). When the latter group were asked why, the most important reasons given were greater profitability of other crops, and planting and establishment problems (Table 5.4).

Table 5.3 Intentions for 2005

	Winter sown	Spring sown
Yes	192	6
No	11	65

Table 5.4 Reasons for not growing spring sown oilseed rape in 2005

	Most important					Least important
Score	1	2	3	4	5	6
Reason:						
Greater profitability of other crops	43	9	3		1	
Planting & establishment problems	14	6	3	2		1
Harvesting difficulties	2	3	5	3	2	
Oilseed rape price too low	8	4	2	4	2	1
Marketing difficulties	1		2	2	7	1
Other*	12	1				

* poor yield; doesn't suit rotation; prefers winter crop; workload conflict; doesn't like crop.

Q3. What is the minimum price that oilseed rape must achieve in order that you continue to grow the crop?

The minimum price necessary to satisfy at least 50% of growers is £140 per tonne (Table 5.5). A minimum price of £150 per tonne would satisfy 80% of growers.

Table 5.5 Minimum price

£/t	Nos. growers	%
130	44	21
140	63	30
150	62	30
>160	40	19
All	209	100

Q4. If an energy crop area payment supplement is paid on top of the Single Farm Payment, and assuming £140/t for oilseed rape and current local yields, at what level must the payment be for you to grow the crop?

An energy crop area payment of £20 per hectare would be sufficient for almost 50% of growers, whilst a payment of £30 per hectare would be sufficient for almost 80% of growers (Table 5.6).

Table 5.6 Energy crop area payment

£/ha	Nos. growers	%
10	37	19
20	59	30
30	54	28
40	21	11
>50	25	13
All	196	100

Q5. Have you grown on set-aside land in the past? If not, why not?

Of 214 growers of oilseed rape, 96 said that they had not grown the winter sown crop on set-aside land in the past. Of the same growers, 190 had not grown the spring sown crop on set-aside land (Table 5.7). In the supplementary question as to why not, the most important reasons, for both winter and spring sown crops, were that the oilseed rape price was too low and the greater profitability of other crops (Tables 5.8 and 5.9).

Table 5.7 Growing on set-aside land

	Winter sown	Spring sown
Yes	118	24
No	96	190

Table 5.8 Reasons for not growing winter sown oilseed rape on set-aside land

	Most important					Least important
Score	1	2	3	4	5	6
Reason:						
Oilseed rape price too low	20	10	5	1		
Greater profitability of other crops	16	8	1	1		
Planting & establishment problems	14	4	4	4		1
Harvesting difficulties	5	3	2	2	4	1
Marketing difficulties	12	3	3	1	1	1
Other*	24					

* rotation difficulties; workload difficulties; conservation schemes; unsuitable land; fallow requirement.

Table 5.9 Reasons for not growing spring sown oilseed rape on set-aside land

	Most important					Least important
Score	1	2	3	4	5	6
Reason:						
Greater profitability of other crops	33	10	2	1		
Oilseed rape price too low	13	6	5	1	3	
Planting & establishment problems	8	9	8	1		
Marketing difficulties	9	5	4	3	3	1
Harvesting difficulties	4	1	1	6	4	1
Other*	31	1				

* poor yields; rotation difficulties; workload difficulties; don't like crop; conservation schemes.

Q6. Are you growing/will you grow oilseed rape on set-aside land in 2005?

Farmers' intentions regarding the growing of oilseed rape on set-aside land in 2005 are summarised in Table 5.10. In general, farmers that have not used set-aside land in the past for oilseed rape intended to maintain that position in 2005, whilst of those that have used set-aside land in the past, the majority did not plan to use it again for oilseed rape in 2005.

Table 5.10 Intention of growing oilseed rape on set-aside land in 2005

	Winter sown	Spring sown
Never grown it and will not this year	94	189
Have grown it before and will again this year	51	1
Have grown it before and will not this year	67	23
Have not grown it before but will this year	2	1

References

Askham Bryan (1996). The Economics of Oilseed Rape 1996, Askham Bryan College, York.

Baker, G.E.A., Gay, D.J.M. and Lewis, M.R. (1991). Oilseed Rape: 1990, Special Studies in Agricultural Economics Report No. 17, Farm Management Survey Unit, Askham Bryan College, York.

Appendix 1

Standard Costs and Coefficients used in the 2004 Oilseed Rape Study

Tractors lookup table DEFRA 26.3.04

Code		HP		Annual Use	hrs/yr	£/hr
1	TRACTOR (2WD)	2	<60	low use	<500	6.15
2	TRACTOR (2WD)	2	<60	med use	500-700	5.40
3	TRACTOR (2WD)	2	<60	high use	>700	4.62
4	TRACTOR (2WD)	2	60-79.9	low use	<500	7.15
5	TRACTOR (2WD)	2	60-79.9	med use	500-700	6.30
6	TRACTOR (2WD)	2	60-79.9	high use	>700	5.41
7	TRACTOR (2WD)	2	80-106.9	low use	<500	9.09
8	TRACTOR (2WD)	2	80-106.9	med use	500-700	8.08
9	TRACTOR (2WD)	2	80-106.9	high use	>700	7.00
10	TRACTOR (4WD)	4	< 100	low use	<500	9.53
11	TRACTOR (4WD)	4	< 100	med use	500-700	8.33
12	TRACTOR (4WD)	4	< 100	high use	>700	7.46
13	TRACTOR (Fastrac 4WD)	4	100-140	low use	<500	15.86
14	TRACTOR (Fastrac 4WD)	4	100-140	med use	500-700	13.59
15	TRACTOR (Fastrac 4WD)	4	100-140	high use	>700	11.95
16	TRACTOR (4WD)	4	100-140	low use	<500	16.73
17	TRACTOR (4WD)	4	100-140	med use	500-700	14.35
18	TRACTOR (4WD)	4	100-140	high use	>700	12.62
19	TRACTOR (4WD)	4	140-180	low use	<500	18.12
20	TRACTOR (4WD)	4	140-180	med use	500-700	15.63
21	TRACTOR (4WD)	4	140-180	high use	>700	13.84
22	TRACTOR (4WD)	4	180 - 200	low use	<500	22.87
23	TRACTOR (4WD)	4	180 - 200	med use	500-700	19.72
24	TRACTOR (4WD)	4	180 - 200	high use	>700	17.44
25	TRACTOR (4WD)	4	200+	low use	<500	25.52
26	TRACTOR (4WD)	4	200+	med use	500-700	22.15
27	TRACTOR (4WD)	4	200+	high use	>700	19.70
28	TRACK LAYER/CRAWLER	crawler	80 - 100	low use	<500	7.09
29	TRACK LAYER/CRAWLER	crawler	80 - 100	med use	500-700	6.22
30	TRACK LAYER/CRAWLER	crawler	80 - 100	high use	>700	5.60
31	TRACK LAYER/CRAWLER	crawler	100 - 140	low use	<500	16.13
32	TRACK LAYER/CRAWLER	crawler	100 - 140	med use	500-700	13.79
33	TRACK LAYER/CRAWLER	crawler	100 - 140	high use	>700	12.08
34	TRACK LAYER/CRAWLER	crawler	200 +	low use	<500	35.15
35	TRACK LAYER/CRAWLER	crawler	200 +	med use	500-700	30.25
36	TRACK LAYER/CRAWLER	crawler	200 +	high use	>700	26.59
37	A.T.V.	A.T.V.	300cc (2 WD)		600	1.66
38	A.T.V.	A.T.V.	400cc (4 WD)		600	2.31
39	MATERIALS HANDLING MACHINES	handler	70hp, Mast type, 2.6t lift, (eg JCB 926 F)		800	6.13
40	MATERIALS HANDLING MACHINES	handler	65hp, 4 wheel steer loader 1.7 t lift		800	6.78
41	MATERIALS HANDLING MACHINES	handler	106hp, Loading Shovel, up to 3 t lift (eg TM 300)		800	8.85
42	MATERIALS HANDLING MACHINES	handler	71hp, Telescopic handler, 2.0 t lift (eg JCB 520 - 50)		800	6.21
43	MATERIALS HANDLING MACHINES	handler	101hp, Telescopic handler, 2.6 t lift (eg Manitou MLT 526)		800	8.04
44	MATERIALS HANDLING MACHINES	handler	100hp, Telescopic handler, 3 t lift (eg JCB 530-FS)		800	8.35
45	MATERIALS HANDLING MACHINES	handler	100hp, Telescopic handler, 4 t lift (eg JCB 540 -FS)		800	8.86
46	MATERIALS HANDLING MACHINES	handler	16hp, Skid steer loader, 272 kg lift (eg Bobcat 450)		800	1.99
47	MATERIALS HANDLING MACHINES	handler	19hp, Skid steer loader, 415kg lift, (eg Bobcat 553)		800	2.52
48	MATERIALS HANDLING MACHINES	handler	47hp, Skid steer loader, 600 kg lift, (eg JCB 160 robot)		800	3.76
49	MATERIALS HANDLING MACHINES	handler	73hp, Skid steer loader, 1043 kg lift (eg Bobcat 873)		800	5.50
o1	old TRACTOR (2WD)	2	<60	low use	<500	4.73
o10	old TRACTOR (4WD)	4	< 100	low use	<500	7.03
o11	old TRACTOR (4WD)	4	< 100	med use	500-700	6.41
o12	old TRACTOR (4WD)	4	< 100	high use	>700	6.00
o13	old TRACTOR (Fastrac 4WD)	4	100-140	low use	<500	11.24
o14	old TRACTOR (Fastrac 4WD)	4	100-140	med use	500-700	10.03
o15	old TRACTOR (Fastrac 4WD)	4	100-140	high use	>700	9.24
o16	old TRACTOR (4WD)	4	100-140	low use	<500	11.88
o17	old TRACTOR (4WD)	4	100-140	med use	500-700	10.62
o18	old TRACTOR (4WD)	4	100-140	high use	>700	9.78
o19	old TRACTOR (4WD)	4	140-180	low use	<500	13.06
o2	old TRACTOR (2WD)	2	<60	med use	500-700	4.28
o20	old TRACTOR (4WD)	4	140-180	med use	500-700	11.74
o21	old TRACTOR (4WD)	4	140-180	high use	>700	10.88
o22	old TRACTOR (4WD)	4	180 - 200	low use	<500	16.37
o23	old TRACTOR (4WD)	4	180 - 200	med use	500-700	14.72
o24	old TRACTOR (4WD)	4	180 - 200	high use	>700	13.63
o25	old TRACTOR (4WD)	4	200+	low use	<500	18.47
o26	old TRACTOR (4WD)	4	200+	med use	500-700	16.74

o27	old TRACTOR (4WD)		4	200+	high use	>700	15.58
o28	old TRACK LAYER/CRAWLER	crawler		80 - 100	low use	<500	5.35
o29	old TRACK LAYER/CRAWLER	crawler		80 - 100	med use	500-700	4.88
o3	old TRACTOR (2WD)		2	<60	high use	>700	3.69
o30	old TRACK LAYER/CRAWLER	crawler		80 - 100	high use	>700	4.58
o31	old TRACK LAYER/CRAWLER	crawler		100 - 140	low use	<500	10.96
o32	old TRACK LAYER/CRAWLER	crawler		100 - 140	med use	500-700	9.83
o33	old TRACK LAYER/CRAWLER	crawler		100 - 140	high use	>700	9.06
o34	old TRACK LAYER/CRAWLER	crawler		200 +	low use	<500	23.79
o35	old TRACK LAYER/CRAWLER	crawler		200 +	med use	500-700	21.51
o36	old TRACK LAYER/CRAWLER	crawler		200 +	high use	>700	19.95
o37	old A.T.V.	A.T.V.		300cc (2 WD)		600	1.45
o38	old A.T.V.	A.T.V.		400cc (4 WD)		600	2.00
o39	old MATERIALS HANDLING MACHINES	handler		70hp, Mast type, 2.6t lift, (eg JCB 926 F)		800	5.25
o4	old TRACTOR (2WD)		2	60-79.9	low use	<500	5.53
o40	old MATERIALS HANDLING MACHINES	handler		65hp, 4 wheel steer loader 1.7 t lift		800	5.73
o41	old MATERIALS HANDLING MACHINES	handler		106hp, Loading Shovel, up to 3 t lift (eg TM 300)		800	7.56
o42	old MATERIALS HANDLING MACHINES	handler		71hp, Telescopic handler, 2.0 t lift (eg JCB 520 - 50)		800	5.32
o43	old MATERIALS HANDLING MACHINES	handler		101hp, Telescopic handler, 2.6 t lift (eg Manitou MLT 526)		800	6.91
o44	old MATERIALS HANDLING MACHINES	handler		100hp, Telescopic handler, 3 t lift (eg JCB 530-FS)		800	7.14
o45	old MATERIALS HANDLING MACHINES	handler		100hp, Telescopic handler, 4 t lift (eg JCB 540 -FS)		800	7.54
o46	old MATERIALS HANDLING MACHINES	handler		16hp, Skid steer loader, 272 kg lift (eg Bobcat 450)		800	1.71
o47	old MATERIALS HANDLING MACHINES	handler		19hp, Skid steer loader, 415kg lift, (eg Bobcat 553)		800	2.13
o48	old MATERIALS HANDLING MACHINES	handler		47hp, Skid steer loader, 600 kg lift, (eg JCB 160 robot)		800	3.26
o49	old MATERIALS HANDLING MACHINES	handler		73hp, Skid steer loader, 1043 kg lift (eg Bobcat 873)		800	4.75
o5	old TRACTOR (2WD)		2	60-79.9	med use	500-700	5.02
o6	old TRACTOR (2WD)		2	60-79.9	high use	>700	4.34
o7	old TRACTOR (2WD)		2	80-106.9	low use	<500	7.10
o8	old TRACTOR (2WD)		2	80-106.9	med use	500-700	6.50
o9	old TRACTOR (2WD)		2	80-106.9	high use	>700	5.69

Non-specific machinery costs lookup table

Code	Machine	New/Old	Annual Use	hrs/yr	£/ha	£/hr
20	Plough (mounted 3 - 4 furrow)	new	low use	<40	9.33	
21	Plough (mounted 3 - 4 furrow)	new	med use	40-80	6.59	
22	Plough (mounted 3 - 4 furrow)	new	high use	>80	5.61	
23	Plough (mounted 3 - 4 furrow)	old	low use	<40	6.03	
24	Plough (mounted 3 - 4 furrow)	old	med use	40-80	4.97	
25	Plough (mounted 3 - 4 furrow)	old	high use	>80	4.01	
26	Plough (mounted 4 furrow)	new	low use	<70	6.47	
27	Plough (mounted 4 furrow)	new	med use	70-150	4.45	
28	Plough (mounted 4 furrow)	new	high use	>150	3.75	
29	Plough (mounted 4 furrow)	old	low use	<70	4.18	
30	Plough (mounted 4 furrow)	old	med use	70-150	3.36	
31	Plough (mounted 4 furrow)	old	high use	>150	2.68	
32	Plough (reversible 3 - 4 furrow)	new	low use	<100	7.79	
33	Plough (reversible 3 - 4 furrow)	new	med use	100-150	5.19	
34	Plough (reversible 3 - 4 furrow)	new	high use	>150	4.42	
35	Plough (reversible 3 - 4 furrow)	old	low use	<100	5.03	
36	Plough (reversible 3 - 4 furrow)	old	med use	100-150	3.91	
37	Plough (reversible 3 - 4 furrow)	old	high use	>150	3.15	
38	Plough (reversible 6 furrow)	new	low use	<100	8.38	
39	Plough (reversible 6 furrow)	new	med use	100-250	6.16	
40	Plough (reversible 6 furrow)	new	high use	>250	5.08	
41	Plough (reversible 6 furrow)	old	low use	<100	5.42	
42	Plough (reversible 6 furrow)	old	med use	100-250	4.65	
43	Plough (reversible 6 furrow)	old	high use	>250	3.63	
44	Plough (reversible 8 furrow)	new	low use	<150	8.74	
45	Plough (reversible 8 furrow)	new	med use	150-250	6.61	
46	Plough (reversible 8 furrow)	new	high use	>250	5.07	
47	Plough (reversible 8 furrow)	old	low use	<150	5.65	
48	Plough (reversible 8 furrow)	old	med use	150-250	4.99	
49	Plough (reversible 8 furrow)	old	high use	>250	3.62	
50	Furrow press (1.3 - 2.0m, double row)	new	low use	<70	5.42	
51	Furrow press (1.3 - 2.0m, double row)	new	med use	70-150	3.73	
52	Furrow press (1.3 - 2.0m, double row)	new	high use	>150	3.14	
53	Furrow press (1.3 - 2.0m, double row)	old	low use	<70	3.50	
54	Furrow press (1.3 - 2.0m, double row)	old	med use	70-150	2.81	
55	Furrow press (1.3 - 2.0m, double row)	old	high use	>150	2.24	
56	Furrow press (3.2 - 3.6 m, double row)	new	low use	<70	5.06	
57	Furrow press (3.2 - 3.6 m, double row)	new	med use	70-150	3.48	

58	Furrow press (3.2 - 3.6 m, double row)	new	high use	>150	2.93
59	Furrow press (3.2 - 3.6 m, double row)	old	low use	<70	3.27
60	Furrow press (3.2 - 3.6 m, double row)	old	med use	70-150	2.62
61	Furrow press (3.2 - 3.6 m, double row)	old	high use	>150	2.09
62	Front press (1.5 - 3.0 m, single row)	new	low use	<70	3.85
63	Front press (1.5 - 3.0 m, single row)	new	med use	70-150	2.65
64	Front press (1.5 - 3.0 m, single row)	new	high use	>150	2.23
65	Front press (1.5 - 3.0 m, single row)	old	low use	<70	2.49
66	Front press (1.5 - 3.0 m, single row)	old	med use	70-150	2.00
67	Front press (1.5 - 3.0 m, single row)	old	high use	>150	1.59
68	Front press (4.0 m, single row, folding)	new	low use	<70	3.79
69	Front press (4.0 m, single row, folding)	new	med use	70-150	2.61
70	Front press (4.0 m, single row, folding)	new	high use	>150	2.20
71	Front press (4.0 m, single row, folding)	old	low use	<70	2.45
72	Front press (4.0 m, single row, folding)	old	med use	70-150	1.97
73	Front press (4.0 m, single row, folding)	old	high use	>150	1.57
74	spring tine cultivator, 5-6 m	new	low use	<40	2.89
75	spring tine cultivator, 5-6 m	new	med use	40-80	2.12
76	spring tine cultivator, 5-6 m	new	high use	>80	1.83
77	spring tine cultivator, 5-6 m	old	low use	<40	1.87
78	spring tine cultivator, 5-6 m	old	med use	40-80	1.60
79	spring tine cultivator, 5-6 m	old	high use	>80	1.30
80	Straw incorporating cultivator	new	low use	<70	6.07
81	Straw incorporating cultivator	new	med use	70-130	4.59
82	Straw incorporating cultivator	new	high use	>130	3.84
83	Straw incorporating cultivator	old	low use	<70	3.92
84	Straw incorporating cultivator	old	med use	70-130	3.46
85	Straw incorporating cultivator	old	high use	>130	2.74
86	Stubble cultivator 2.5 - 3 m	new	low use	<70	3.57
87	Stubble cultivator 2.5 - 3 m	new	med use	70-130	2.70
88	Stubble cultivator 2.5 - 3 m	new	high use	>130	2.21
89	Stubble cultivator 2.5 - 3 m	old	low use	<70	2.31
90	Stubble cultivator 2.5 - 3 m	old	med use	70-130	2.04
91	Stubble cultivator 2.5 - 3 m	old	high use	>130	1.58
92	disc harrows (2.7-3.6m trailed)	new	low use	<40	13.10
93	disc harrows (2.7-3.6m trailed)	new	med use	40-70	7.93
94	disc harrows (2.7-3.6m trailed)	new	high use	>70	6.75
95	disc harrows (2.7-3.6m trailed)	old	low use	<40	8.47
96	disc harrows (2.7-3.6m trailed)	old	med use	40-70	5.98
97	disc harrows (2.7-3.6m trailed)	old	high use	>70	4.82
98	disc harrows (4.5 - 6.0m trailed)	new	low use	<70	9.33
99	disc harrows (4.5 - 6.0m trailed)	new	med use	70 -130	6.28
100	disc harrows (4.5 - 6.0m trailed)	new	high use	>130	5.41
101	disc harrows (4.5 - 6.0m trailed)	old	low use	<70	6.03
102	disc harrows (4.5 - 6.0m trailed)	old	med use	70 -130	4.74
103	disc harrows (4.5 - 6.0m trailed)	old	high use	>130	3.86
104	combination harrows (2.5-4m)	new	low use	<70	4.33
105	combination harrows (2.5-4m)	new	med use	70-130	2.92
106	combination harrows (2.5-4m)	new	high use	>130	2.51
107	combination harrows (2.5-4m)	old	low use	<70	2.80
108	combination harrows (2.5-4m)	old	med use	70-130	2.20
109	combination harrows (2.5-4m)	old	high use	>130	1.79
110	Power harrow or rotavator 2-3 m	new	low use	<70	6.07
111	Power harrow or rotavator 2-3 m	new	med use	70-130	4.59
112	Power harrow or rotavator 2-3 m	new	high use	>130	3.91
113	Power harrow or rotavator 2-3 m	old	low use	<70	3.92
114	Power harrow or rotavator 2-3 m	old	med use	70-130	3.46
115	Power harrow or rotavator 2-3 m	old	high use	>130	2.79
116	Power harrow or rotavator 3 - 4 m	new	low use	<70	6.80
117	Power harrow or rotavator 3 - 4 m	new	med use	70-130	4.67
118	Power harrow or rotavator 3 - 4 m	new	high use	>130	4.64
119	Power harrow or rotavator 3 - 4 m	old	low use	<70	4.39
120	Power harrow or rotavator 3 - 4 m	old	med use	70-130	3.53
121	Power harrow or rotavator 3 - 4 m	old	high use	>130	3.31
122	Power harrow or rotavator 4-5 m with crumbler roller	new	low use	<70	7.35
123	Power harrow or rotavator 4-5 m with crumbler roller	new	med use	70-130	6.12
124	Power harrow or rotavator 4-5 m with crumbler roller	new	high use	>130	5.52
125	Power harrow or rotavator 4-5 m with crumbler roller	old	low use	<70	4.75
126	Power harrow or rotavator 4-5 m with crumbler roller	old	med use	70-130	4.62
127	Power harrow or rotavator 4-5 m with crumbler roller	old	high use	>130	3.94
128	Subsoiler (2-3 leg)	new	low use	<50	4.27
129	Subsoiler (2-3 leg)	new	med use	50-100	3.23
130	Subsoiler (2-3 leg)	new	high use	>100	2.64
131	Subsoiler (2-3 leg)	old	low use	<50	2.76
132	Subsoiler (2-3 leg)	old	med use	50-100	2.44

133	Subsoiler (2-3 leg)	old	high use	>100	1.88	
134	Vibrating compaction breakers/soil looseners	new	low use	<50	6.42	
135	Vibrating compaction breakers/soil looseners	new	med use	50-100	4.86	
136	Vibrating compaction breakers/soil looseners	new	high use	>100	3.97	
137	Vibrating compaction breakers/soil looseners	old	low use	<50	4.15	
138	Vibrating compaction breakers/soil looseners	old	med use	50-100	3.66	
139	Vibrating compaction breakers/soil looseners	old	high use	>100	2.83	
140	FYM Spreaders (4 - 6 cu m)	new	low use	<70		3.65
141	FYM Spreaders (4 - 6 cu m)	new	med use	70-150		3.11
142	FYM Spreaders (4 - 6 cu m)	new	high use	>150		2.33
143	FYM Spreaders (4 - 6 cu m)	old	low use	<70		1.98
144	FYM Spreaders (4 - 6 cu m)	old	med use	70-150		1.84
145	FYM Spreaders (4 - 6 cu m)	old	high use	>150		1.30
146	FYM Spreaders (6 - 8 cu m)	new	low use	<70		5.05
147	FYM Spreaders (6 - 8 cu m)	new	med use	70-150		4.31
148	FYM Spreaders (6 - 8 cu m)	new	high use	>150		3.22
149	FYM Spreaders (6 - 8 cu m)	old	low use	<70		2.74
150	FYM Spreaders (6 - 8 cu m)	old	med use	70-150		2.54
151	FYM Spreaders (6 - 8 cu m)	old	high use	>150		1.80
152	Tanker-Spreaders 4000-5000 litres	new	low use	<100		3.53
153	Tanker-Spreaders 4000-5000 litres	new	med use	100-200		2.76
154	Tanker-Spreaders 4000-5000 litres	new	high use	>200		2.44
155	Tanker-Spreaders 4000-5000 litres	old	low use	<100		1.91
156	Tanker-Spreaders 4000-5000 litres	old	med use	100-200		1.63
157	Tanker-Spreaders 4000-5000 litres	old	high use	>200		1.36
158	Tanker-Spreaders 6000-10000 litres	new	low use	<100		6.62
159	Tanker-Spreaders 6000-10000 litres	new	med use	100-200		5.17
160	Tanker-Spreaders 6000-10000 litres	new	high use	>200		4.57
161	Tanker-Spreaders 6000-10000 litres	old	low use	<100		3.59
162	Tanker-Spreaders 6000-10000 litres	old	med use	100-200		3.05
163	Tanker-Spreaders 6000-10000 litres	old	high use	>200		2.55
164	Slurry Stirrer (PTO driven)	new	low use	<100		1.85
165	Slurry Stirrer (PTO driven)	new	med use	100-200		1.45
166	Slurry Stirrer (PTO driven)	new	high use	>200		1.28
167	Slurry Stirrer (PTO driven)	old	low use	<100		1.01
168	Slurry Stirrer (PTO driven)	old	med use	100-200		0.85
169	Slurry Stirrer (PTO driven)	old	high use	>200		0.71
170	Bale Trailer 5-8 tonne,	new	low use	<100		2.09
171	Bale Trailer 5-8 tonne,	new	med use	100-150		1.70
172	Bale Trailer 5-8 tonne,	new	high use	>150		1.49
173	Bale Trailer 5-8 tonne,	old	low use	<100		1.19
174	Bale Trailer 5-8 tonne,	old	med use	100-150		0.90
175	Bale Trailer 5-8 tonne,	old	high use	>150		0.71
176	Trailer: 4 tonne, tipping, grain	new	low use	<100		1.25
177	Trailer: 4 tonne, tipping, grain	new	med use	100-150		1.02
178	Trailer: 4 tonne, tipping, grain	new	high use	>150		0.89
179	Trailer: 4 tonne, tipping, grain	old	low use	<100		0.71
180	Trailer: 4 tonne, tipping, grain	old	med use	100-150		0.54
181	Trailer: 4 tonne, tipping, grain	old	high use	>150		0.42
182	Trailer: 6 tonne, tipping, grain	new	low use	<150		1.62
183	Trailer: 6 tonne, tipping, grain	new	med use	150-200		1.19
184	Trailer: 6 tonne, tipping, grain	new	high use	>200		1.15
185	Trailer: 6 tonne, tipping, grain	old	low use	<150		0.92
186	Trailer: 6 tonne, tipping, grain	old	med use	150-200		0.63
187	Trailer: 6 tonne, tipping, grain	old	high use	>200		0.55
188	Fore-end loader (fitted to front of conventional tractor)	new	low use	<600		0.85
189	Fore-end loader (fitted to front of conventional tractor)	new	med use	600-800		0.63
190	Fore-end loader (fitted to front of conventional tractor)	new	high use	>800		0.53
191	Fore-end loader (fitted to front of conventional tractor)	old	low use	<600		0.64
192	Fore-end loader (fitted to front of conventional tractor)	old	med use	600-800		0.42
193	Fore-end loader (fitted to front of conventional tractor)	old	high use	>800		0.32
195	Balers (small rectangular bales)	new	low use	<40	10.15	
196	Balers (small rectangular bales)	new	med use	40-80	7.67	
197	Balers (small rectangular bales)	new	high use	>80	6.23	
198	Balers (small rectangular bales)	old	low use	<40	6.33	
199	Balers (small rectangular bales)	old	med use	40-80	4.51	
200	Balers (small rectangular bales)	old	high use	>80	4.35	
201	Balers (big round bales)	new	low use	<60	9.95	
202	Balers (big round bales)	new	med use	60-100	7.25	
203	Balers (big round bales)	new	high use	>100	5.76	
204	Balers (big round bales)	old	low use	<60	6.21	
205	Balers (big round bales)	old	med use	60-100	4.27	
206	Balers (big round bales)	old	high use	>100	4.02	
207	Balers high density rectangular bales	new	low use	<125	8.91	
208	Balers high density rectangular bales	new	med use	125-250	6.34	

209	Balers high density rectangular bales	new		high use	>250	5.04	
210	Balers high density rectangular bales	old		low use	<125	5.55	
211	Balers high density rectangular bales	old		med use	125-250	3.73	
212	Balers high density rectangular bales	old		high use	>250	3.52	
	Farm vehicles					p/mile	
214	Toyota Hi Lux 250 2.5 litre diesel (4 WD)					34.64	
215	Land Defender 90 Hard Top 2.5 litre diesel (4 WD)					34.89	
	ATV equipment						£/hr
217	ATV sprayer 1.5m boom	new		low use	<50		1.52
218	ATV sprayer 1.5m boom	new		med use	50-100		1.07
219	ATV sprayer 1.5m boom	new		high use	>100		0.86
220	ATV sprayer 1.5m boom	old		low use	<50		1.07
221	ATV sprayer 1.5m boom	old		med use	50-100		0.67
222	ATV sprayer 1.5m boom	old		high use	>100		0.49
223	ATV sprayer 3.0m boom	new		low use	<50		2.18
224	ATV sprayer 3.0m boom	new		med use	50-100		1.53
225	ATV sprayer 3.0m boom	new		high use	>100		1.23
226	ATV sprayer 3.0m boom	old		low use	<50		1.53
227	ATV sprayer 3.0m boom	old		med use	50-100		0.95
228	ATV sprayer 3.0m boom	old		high use	>100		0.70
229	ATV elecrobroadcaster	new		low use	<50		1.09
230	ATV elecrobroadcaster	new		med use	50-100		0.76
231	ATV elecrobroadcaster	new		high use	>100		0.61
232	ATV elecrobroadcaster	old		low use	<50		0.76
233	ATV elecrobroadcaster	old		med use	50-100		0.48
234	ATV elecrobroadcaster	old		high use	>100		0.35
235	ATV mini drill	new		low use	<50		4.18
236	ATV mini drill	new		med use	50-100		2.94
237	ATV mini drill	new		high use	>100		2.36
238	ATV mini drill	old		low use	<50		2.98
239	ATV mini drill	old		med use	50-100		1.86
240	ATV mini drill	old		high use	>100		1.37
242	Rollers triple gang, hydraulic folding 6m	new		low use	40		9.1
243	Rollers triple gang, hydraulic folding 6m	new		med use	80		6.89
244	Rollers triple gang, hydraulic folding 6m	new		high use	130		6.5
245	Rollers triple gang, hydraulic folding 6m	old		low use	40		5.88
246	Rollers triple gang, hydraulic folding 6m	old		med use	80		5.2
247	Rollers triple gang, hydraulic folding 6m	old		high use	130		4.64
248	Rollers five gang, hydraulic folding, 12m	new		low use	50		15.17
249	Rollers five gang, hydraulic folding, 12m	new		med use	90		12.75
250	Rollers five gang, hydraulic folding, 12m	new		high use	150		11.73
251	Rollers five gang, hydraulic folding, 12m	old		low use	50		9.8
252	Rollers five gang, hydraulic folding, 12m	old		med use	90		9.62
253	Rollers five gang, hydraulic folding, 12m	old		high use	150		8.37
254	Pasture topper (2-3m)	new		low use	60		2.13
255	Pasture topper (2-3m)	new		med use	80		1.99
256	Pasture topper (2-3m)	new		high use	100		1.91
257	Pasture topper (2-3m)	old		low use	60		1.18
258	Pasture topper (2-3m)	old		med use	80		0.94
259	Pasture topper (2-3m)	old		high use	100		0.63
260	Trailer: 10 tonne, tipping, grain	new		low use	<150		1.92
261	Trailer: 10 tonne, tipping, grain	new		med use	150-250		1.65
262	Trailer: 10 tonne, tipping, grain	new		high use	>250		1.48
263	Trailer: 10 tonne, tipping, grain	old		low use	<150		1.10
264	Trailer: 10 tonne, tipping, grain	old		med use	150-250		0.87
265	Trailer: 10 tonne, tipping, grain	old		high use	>250		0.70

2004 Cereal and Oilseed Drying costs by Drier Category and Fuel Source

Drying cost (fuel cost only) per 1% moisture content removal per tonne of grain

	Fuel Source			
Drier Category	Electric Fan Only	Electric Fan and Propane Burner for relative humidity control	Diesel	Propane
Bulk - i.e. ventilated floors/bins	£0.89	£0.82 in bottles	-	-
Heated Air - i.e. oil/propane burning batch/continuous flow drier	-	-	£0.55	£0.50 in bulk £0.78 in bottles

Notes
Electricity has been taken as an average of 8p/unit.
Diesel at 25p/litre
Propane at 28.1p/kg in bulk
at 50.66p/kg in bottles

2004 Fuel Costs for Self-Propelled Machinery
(data source: ADAS for 1998, thereafter revised using observed annual movements in fuel prices)

Machine	**Fuel costs (£ per ha pass)**
Combine harvester	4.44
Self propelled sprayer	0.36
Self propelled fertiliser spreader	0.44
Diesel prices	26.08

Overhead Coefficients

ESU	0 - 39.99	40 - 99.99	100 +
Buildings	0.239	0.217	0.124
Labour	0.297	0.318	0.280
Machinery	0.287	0.140	0.103

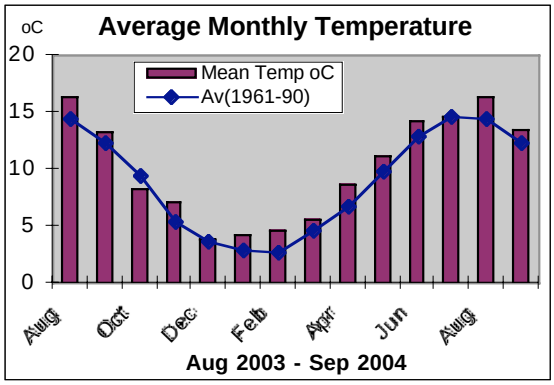
General Overhead Coefficients

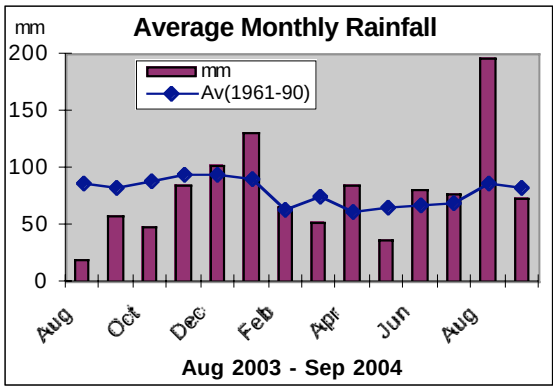
ESU	0 - 39.99	40 - 99.99	100 +
North	79	67	53
East	87	60	53
West	97	76	58

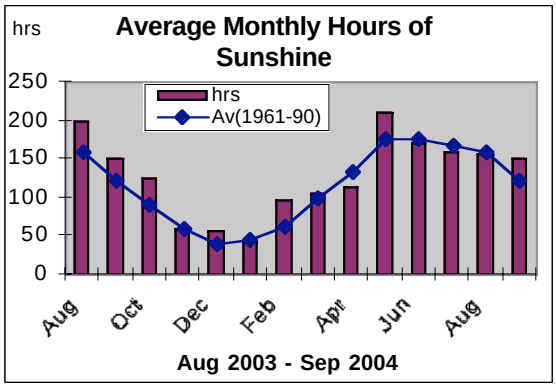
Appendix 2

The Weather

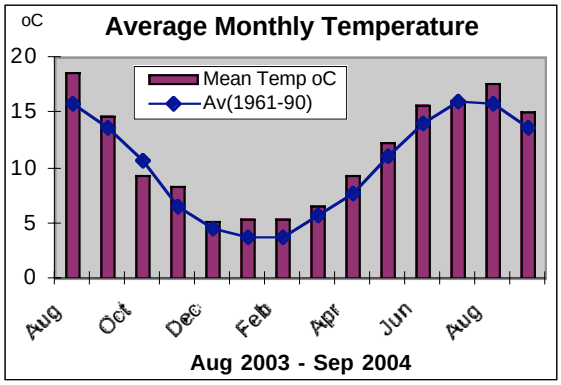
England North

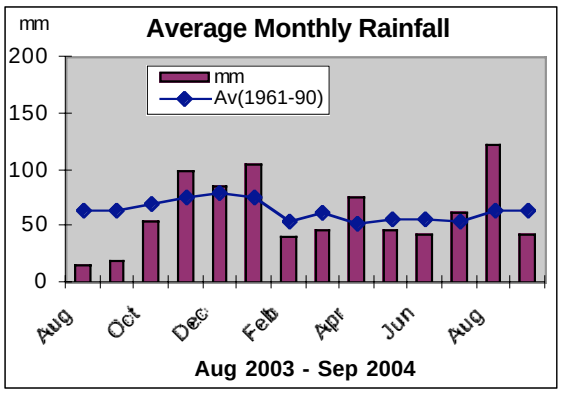


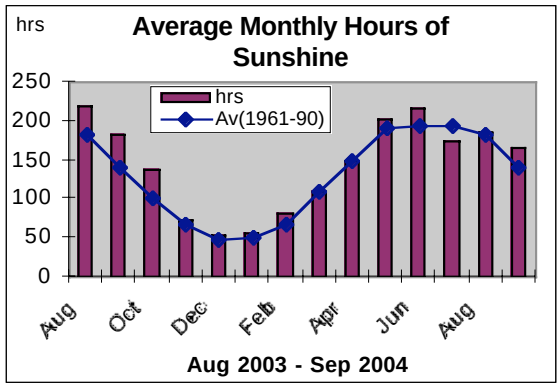




England South







* Source the Met Office

Appendix 3

Recent reports: Special Studies in Agricultural Economics

No. 1 **Very Small Farms: An Economic Study** by D J Ansell, A K Giles and J R Rendell, University of Reading, May 1988, £6.00

No. 2 **Pig Management Scheme Results for 1988** by R F Ridgeon, University of Cambridge, January 1989, £4.00

No. 3 **Profits and Losses from Beef Production 1986/87: An Economic Survey of Lowland Beef Enterprises** by J Farrar, D R Colman and W W Richardson, University of Manchester, February 1989, £7.50

No. 4 **Pig Production in South -West England 1987/88** by A Sheppard, University of Exeter, February 1989, £4.00

No. 5 **Very Small Farms**: A Neglected Component? by D J Ansell, A K Giles and J R Rendell, University of Reading, May 1989, £6.00

No. 6 **UK Cereals, 1985/86: Part II - Marketing and Further Analysis of Production Economics** by J G Davidson, University of Cambridge, May 1989, £6.00

No. 7 **Pig Management Scheme Results 1989** by R F Ridgeon, University of Cambridge, December 1989, £5.00

No. 8 **Pig Production in South West England 1988/89** by A Sheppard, University of Exeter, February 1990, £5.00

No. 9 **The Economics of Very Small Farms: A Further Look** by D J Ansell, A K Giles and J R Rendell, University of Reading, May 1990, £6.00

No. 10 **The Economics of Beef Production: A Survey of Lowland Beef Enterprises 1987/88** by J Farrar, University of Manchester, May 1990, £7.50

No. 11 **Lowland Sheep Production 1988: An Economic Perspective** by M Turner with M W Fogerty, University of Exeter, September 1990, £5.00

No. 12 **The Economics of Harvested Peas and Field Beans** by J G Davidson and I M Sturgess, University of Cambridge, December 1990, £6.00

No. 13 **Pig Management Scheme Results 1990** by R F Ridgeon, University of Cambridge, January 1991, £6.00

No. 14 **Marketing and Processing Activities on Farms in England and Wales** by N P Russell, D R Colman and W W Richardson, University of Manchester, April 1991, £7.50

No. 15 **Pig Production in South West England 1989/90** by A Sheppard, University of Exeter, February 1991, £5.00

No. 16 **Very Small Farms: A Distinctive Role?** by D J Ansell, A K Giles and J R Rendell, University of Reading, May 1991, £6.00

No. 17 **Oilseed Rape 1990** by G E A Baker, D J M Gay and M R Lewis, Askham Bryan College, York, September 1991, £6.00

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No. 19 **Pig Production in South West England 1990/91** by A Sheppard, University of Exeter, February 1992, £6.00

No. 20 **Pig Production 1991/92** by A Sheppard, University of Exeter, March 1993, £7.00

No. 21 **Agricultural Contracting in the United Kingdom** by J Wright and R Bennett, University of Reading, August 1993, £8.00

No. 22 **The Economics of Egg Production** by Deborah Roberts and John Farrar, University of Manchester, September 1993, £10.00

No. 23 **Hardy Nursery Stock Production in England and Wales** by R Crane, A Errington and P Woodlock, University of Reading, October 1993, £9.50

No. 24 **Labour Use on UK Farms: a Pilot Study** by Martin Turner and Mark Fogerty, University of Exeter, March 94, £8.00

No. 25 **Pig Production - 1992/93** by A Sheppard, University of Exeter, March 1994, £8.00

No. 26 **Field Scale Vegetables: A Survey of Large-scale Vegetable Production on General Cropping Farms 1990-1992** by N Williams, Wye College, University of London, December 1994, £15.00

No. 27 **The Economics of Potato Production in the United Kingdom (1991 and 1992 Crops)** by Kim Claydon, University of Nottingham, July 1995, £10.00

No. 28 **UK Cereals, 1993/94 - The Impact of the CAP Reform on Production Economics and Marketing** by G Davidson and Carol Asby, University of Cambridge, July 1995, £12.00

No. 29 **Wheat and Barley Production in Great Britain: 1994/95 -Year Two of the CAP Reform** by G Davidson, University of Cambridge, March 1996, £12.00

No. 30 **Linseed** by M R Lewis, Askham Bryan College of Agriculture and Horticulture, April 1996, £10.00

No. 31 **Lowland Sheep 1994: Production Economics and Management** by Mark Fogerty and Martin Turner, University of Exeter, April 1996, £10.00

No. 32 **Hardy Nursery Stock Production in England and Wales** by R Crane and C Barahona, University of Reading, March 1996, £12.50

No. 33 **The Structure of Pig Production in England and Wales: The results of the National survey of Pig Production Systems,** February 1996 by Andrew Sheppard, University of Exeter, June 1996, £8.00

No. 34 **Economics of Wheat and Barley Production in Great Britain: 1995/96** by Carol Asby and Ian Sturgess, University of Cambridge, January 1997, £13.00

No. 35 **Economics of the UK Sugar Beet Industry** by Alan Renwick, University of Cambridge, June 1997, £15.00

No. 36 **The Economics of Lowland Beef Production: 1995 and 1996** by Tim Jenkins, Euryn Jones, Iain McDougall and Huw Williams, University of Wales, Aberystwyth, May 1998, £13.00

No. 37 **Economics of Wheat and Barley Production in Great Britain: 1996/97** by Carol Asby, University of Cambridge, January 1998, £13.00

No. 38 **Economics of Oilseed Rape 1996** by M R Lewis, Askham Bryan College of Agriculture and Horticulture, February 1998, £12.00

No. 39 **Pig Production 1996/97** by Andrew Sheppard, University of Exeter, June 1998, £8.00

No. 40 **The Structure of Pig Production in England and Wales: The Results of the National Survey of Pig Production Systems, 1 February 1998** by Andrew Sheppard, University of Exeter, June 1998, £8.00

No. 41 **Economics of Milk Production, England and Wales 1996/97** by John Farrar and Jeremy Franks, University of Manchester, July 1998, £18.00

No. 42 **Economics of Wheat and Barley Production in Great Britain, 1997/98** by Carol Asby, University of Cambridge, January 1999, £13.50

No. 43 **Economics of Mushroom Production Crop Year 1997** by Jeremy Franks and John Farrar, University of Manchester, January 1999, £15.00

No. 44 **Pig Production 1997/98** by Andrew Sheppard, University of Exeter, July 1999, £8.00

No. 45 **Dairy Enterprise Cost Survey: A Review of the Structure and Economics of Milk Production 1987/88 to 1996/97** by Jeremy Franks, University of Manchester, August 1999, £15.00

No. 46 **The Economics of Combinable Peas and Field Beans 1998** by Paul Wilson and Philip Robertson, University of Nottingham, March 2000, £18.00

No. 47 **Farmers' Intentions Survey, 1994 - 1997: Final Report** by David Harvey, University of Newcastle upon Tyne, April 2000, at cost[5]

No. 48 **Economics of Cereal Production, 1998/99** by Carol Asby and Alan Renwick, University of Cambridge, April 2000, £15.00

No. 49 **Hill Cattle and Sheep Farming in England and Wales: An Economic Review 1989/90 to 1997/98** by Martin Turner, Donald Barr and Mark Fogerty, University of Exeter, April 2000, £10.00

No. 50 **Pig Production, 1998-99** by Andrew Sheppard, University of Exeter, August 2000, £8.00

[5] Available on the Provincial Web Site; hard copies available from the Provincial Centres at cost of copying and postage.

No. 51 **What's the Damage? A study of the farm level costs of managing and maintaining the countryside** by John McInerney, Donald Barr, Greg MacQueen and Martin Turner, University of Exeter, December 2000, £10.00

No. 52 **Lowland Sheep 1999: The economics and management of lamb production** by Mark Fogerty, Martin Turner and Donald Barr, University of Exeter, January 2001, £10.00

No. 53 **The Economics of Potato Production in England and Wales (1999 crop)** by Paul Wilson and Philip Robertson, University of Nottingham, January 2001, £25.00

No. 54 **Machinery, Buildings and Overhead costs and Agricultural Contracting on farms in England and Wales, 2000/01** by Abigail Tifffin, University of Reading, August 2002, £15.00

No. 55 **The Structure of Pig Production in England: The Results of the National Survey of Pig Production Systems, 1 March 2002** by Andrew Sheppard, University of Exeter, December 2002, £8.00

No. 56 **The Structure of the Egg Industry:** by Noel Russell and Yaqin Zhuang, University of Manchester, April 2003, £10.00

No. 57 Economics of **Horticulture Production under glass 2000-2002:** by Alan Renwick, Sarah Wilshin, and Sheryl Coombe, University of Cambridge, September 2003, £15.00
ISBN 186190 129 1

No. 58 Economics of **Milk Production: England and Wales 2002/03** by John Farrar, David Coleman and Yaqin Zhuang, University of Manchester, January 2004, £25.00
ISBN 1871542 44 8

No. 59 The Structure and Economics of **Broiler Production** in England by Andrew Sheppard, University of Exeter, June 2004, £15.00
ISBN 187055878 2

No. 60 **Pig Production** 2002-03 by Andrew Sheppard, University of Exeter, October 2004, £15.00
ISBN 187055878 3

No. 61 The **Pig Production** Sector in England and Wales by Andrew Sheppard, University of Exeter, October 2004, £15.00
ISBN 187055881 2

No. 62 The Economics of **Lowland Beef** Production in England, 2003 by Huw Williams, Nick Reeves, Dylan Jones and Wyn Morris, University of Wales, Aberystwyth, February 2005, £10.00

ISBN 090212495 1

No. 63 The Economics of **Egg Production** in England, 2003 by John Farrar, Noel Russell, Marie Clare and Yaqin Zhuang, University of Manchester, February 2005, £25.00

ISBN 1871542 47 2

Appendix 4

Centres involved in Special Studies

Northern (Newcastle)
School of Agriculture Food & Rural Development
University of Newcastle upon Tyne
NE1 7RU
Telephone: 0191 2226902
http://www.ncl.ac.uk/afrd/research/fbs/

North Eastern (Askham Bryan)
Rural Business Research Unit
Askham Bryan College
North Yorkshire
YO23 3FR
Telephone: 01904 772219
http://www.askham-bryan.ac.uk/rbru

East Midland (Nottingham)
Rural Business Research Unit
University of Nottingham
The School of Biosciences
Sutton Bonington Campus
Leicestershire
LE12 5RD
Telephone: 0115 951 6070
http://www.nottingham.ac.uk/rbru/

Eastern (Cambridge)
The Rural Business Unit
Department of Land Economy
University of Cambridge
19 Silver Street
Cambridge CB3 9EP
Telephone: 01223 337166
http://www.landecon.cam.ac.uk/environ_econ_grp/rbu/rbu_farm.htm

South Eastern (Wye)
Farm Survey Section
Department of Agricultural Sciences
Imperial College at Wye
Ashford, Kent TN25 5AH
Telephone: 020 7594 2687
http://www.imperial.ac.uk/ agriculturalsciences/research/sections/aebm/themes/fbm/survey.htm

Southern (Reading)
Dept. of Agriculture & Food Economics
University of Reading
PO Box 237
Reading RG6 6AR
Telephone: 01189 314037
http://www.apd.rdg.ac.uk/AgEcon/research/afit/index.htm

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http://www.centres.ex.ac.uk/crr/