Rape seed

University of Reading
Department of
Agricultural Economics & Management



# OILSEED RAPE : 1975

SUSAN M. FLETCHER
WITH
J. A. L. DENCH & R. L. VAUGHAN

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UNIVERSITY OF READING

DEPARTMENT OF

AGRICULTURAL ECONOMICS AND MANAGEMENT

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# FOREWORD

## AGRICULTURAL ENTERPRISE STUDIES IN ENGLAND AND WALES

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

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

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

## PREFACE AND ACKNOWLEDGEMENTS

For a number of years this Department has concentrated its study of individual farm enterprises in the general area of breakcrops This latest report contains the first results of a two year study (1975 and 1976) of the economics of oilseed rape production in Southern England. It follows a similar report published in 1970 covering the 1967, 1968 and 1969 harvests.

The Department is indebted to the farmers who have given us their time and information and to numerous producers' and other commercial organisations who have also helped us to collect together the necessary data.

Within the Department Miss S.M. Fletcher has written the main section of the report (2) which presents the results compiled from field work shared between herself, Mr. R.L. Vaughan and Mr. J. Wright. Mr. Vaughan also assisted in assembling the data for Section 2 and Mr. J.A.L. Dench has written Section 1. Analysis of the basic data has been carried out by Mrs. J.M. Massey, Mrs. E.M. Tayler, Mrs. L. Turner and Mrs. M.M.J. Cook, and the report typed and reproduced by Mrs. H.B. Davis. A further report will be published in 1977 on the results from the 1976 harvest.

## SECTION 1: THE OUTLOOK FOR OILSEED RAPE

### I FACTORS INFLUENCING THE UK ACREAGE OF OILSEED RAPE

Fluctuations in the UK acreage of oilseed rape during the last ten years can be related to the influence of two main factors.

(1) The average output per acre from oilseed rape - the price obtained for the rapeseed and the yield.

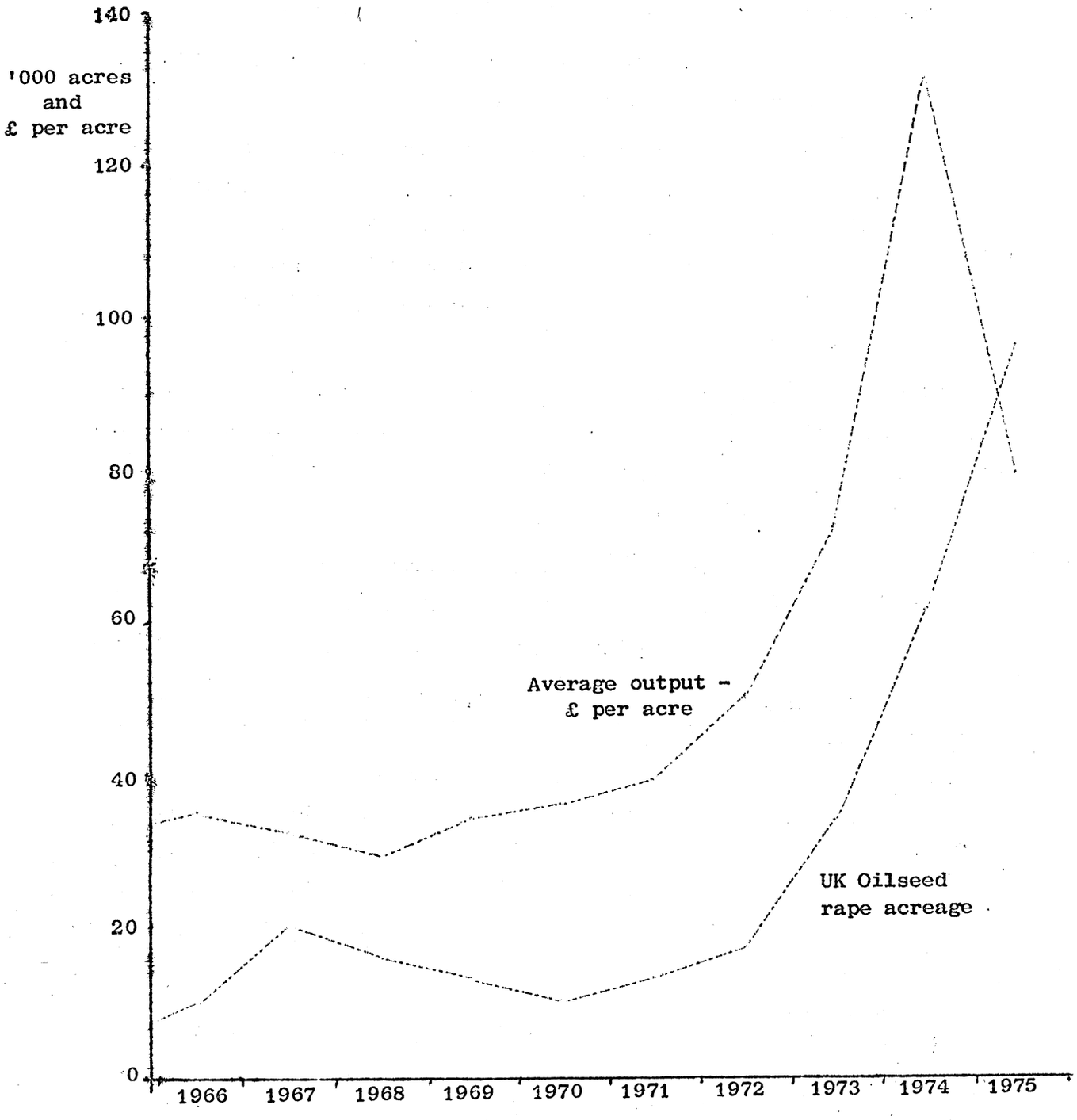
(2) The extent to which cereal growers have felt they needed a break crop, particularly a wheat entry crop. This factor in turn has hinged to some extent on the differential between wheat and barley prices and to a lesser degree on the profitability of other cash break crops, e.g. process peas, field beans, grain maize, etc.

Without attempting to quantify the effect of these factors, Table 1 compares the UK acreage of oilseed rape with the average value of output from oilseed rape, wheat and barley i.e. taking both price per ton and yield per acre into account.

TABLE 1 THE UK RAPESEED ACREAGE AND THE RELATIVE OUTPUTS OF RAPE AND CEREALS

| Harvest | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 |
|---|---|---|---|---|---|---|---|---|---|---|
| Area of oilseed rape in the UK | Thousand acres | | | | | | | | | |
| | 10 | 20 | 16 | 13 | 10 | 13 | 17 | 34 | 61 | 96 |
| Average output | £ per acre | | | | | | | | | |
| Oilseed rape | 35 | 32 | 29 | 34 | 36 | 39 | 50 | 72 | 131 | 79 |
| Wheat | 38 | 43 | 39 | 41 | 52 | 57 | 59 | 103 | 142 | 111 |
| Barley | 36 | 37 | 34 | 36 | 38 | 43 | 50 | 84 | 100 | 89 |
| | % | % | % | % | % | % | % | % | % | % |
| Oilseed rape output as a % of barley output | 97 | 86 | 85 | 94 | 95 | 91 | 100 | 86 | 130 | 89 |
| Wheat output as a % of barley output | 105 | 116 | 115 | 114 | 137 | 132 | 118 | 127 | 124 | 125 |
| UK rapeseed production as % of total new supply | 12 | 27 | 11 | 14 | 13 | 10 | 12 | 25 | 37 | 69 |

TABLE 2 THE UK RAPESEED ACREAGE AND ITS AVERAGE OUTPUT PER ACRE




Note: The depressed output per acre in 1975 was largely due to poor yields

Not unexpectedly an improving ratio: in the value of oilseed rape output per acre to that of barley encourages an expansion in the rape acreage. A widening differential between the value of wheat and barley outputs per acre, as for example in 1970 and 1971, may also have a similar influence and may have been partly responsible for the slow recovery in the oilseed rape acreage in 1971 and 1972. In other words it seems that many cereal growers are prepared to accept a slightly reduced return from a break crop grown in place of repeated barley cropping if it enables them to grow wheat crops afterwards which more than compensate for the reduction.

Clearly however, the output per acre from oilseed rape has been the main influence leading to the rapid increase in the oilseed rape acreage in recent years. The graph Table 2 demonstrates how closely the UK acreage has followed changes in average output with a lag of about one year.

## II THE UK MARKET FOR RAPESEED

With the 1975 harvest the UK reached a position of being nearly 70% self-sufficient in rape oil, producing approximately 25 thousand tons of oil from about 60 thousand tons of home produced seed. A further increase in the acreage of oilseed rape is forecast for 1976. This level of self-sufficiency must, however, be seen in the context of the UK's total consumption of edible oils of about a quarter million tons of vegetable oils plus a similar quantity of marine (fish) oils. Thus although 69% self-sufficiency from 96 thousand acres implies that 100% self-sufficiency would be achieved from about 140 thousand acres (i.e. 87 thousand tons of rapeseed) it is likely that the UK market could absorb considerably more than this. Estimates of 200 to 250 thousand tons have been put forward. The limit, if ever it is reached, would depend on the many complex factors dictating the extent to which the margarine, cooking fat and cooking oil manufacturers would be prepared to use rape oil as a substitute for other vegetable oils. It is also dependant on the capacity of crushing plant in the UK to handle rapeseed.

Factors favourable to expansion in the market for home produced rapeseed are that:

(1) the present world consumption of vegetable oils has been depressed by the economic recession and is likely to recover as economic activity recovers;

(2) the success of plant breeders in producing low and "zero" erucic acid varieties is likely to make the oil more acceptable for human consumption;

(3) the relatively high oil content of rapeseed (40% as against soya for example which contains about 18% oil) makes the economics of its "crush" less influenced by the price of protein cakes and meals. This has, in recent years, been a beneficial influence on the UK crushers' returns and therefore on their willingness to use rapeseed.

(4) The "double zero" varieties now becoming available (zero erucic acid and zero glucosinalates) may well make rapeseed cake more acceptable to compounders and therefore improve its price.

Substitution of rapeseed oil for other vegetable oils will, however, encounter fairly definite limitations for technical reasons dictated, among other things, by its chemical composition. Among these, the recent publicity given to the desirability, for health reasons, of polyunsaturated fatty acids may tend to boost the consumption of sunflower oil at the expense of other vegetable oils including rape oil. Since rape oil is a secondary constituent in most blends of oils and fats for human consumption the extent of substitution is unlikely to be affected beyond a certain point by changes in the price differential between rape oil and the major constituent soya bean oil. Beyond a certain point blenders are likely to use their preferred oil whatever its price.

The quantity of rape oil put to technical rather than edible uses in the UK is relatively small, varying between 4000 and 6000 tons per year, and has tended to decline with the introduction of synthetic substitutes. This sector of the market is therefore unlikely to offer very much scope for expansion and, because most technical uses require oils with a high erucic acid content, its requirements tend to conflict with those of the edible market.*

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* See also section 2, V page 27 high and low erucic acid varieties.

## III WORLD SUPPLY AND PRICE TRENDS

The price for rapeseed is largely dependent on the balance of world supply and demand for rape oil and for vegetable oils in general. Unfortunately, future prospects for vegetable oils appear to be the subject of almost as many conflicting reports as does the world cereal outlook. 1975 was distinguished by a record production of vegetable oils which coincided with depressed consumption due to the world wide economic recession. There are signs, however, that consumption is recovering, helped by an underlying trend of the developing countries to increase their vegetable oil imports. Against this the prospects for oil harvests in 1976 appear to be good, especially for soya, groundnut, coconut and palm oil so that current output appears likely to exceed demand with the result that prices will continue to be under downward pressure. Fortunately for oilseed rape producers, much of the increase in world rapeseed production in 1975 was destined for domestic consumption in the country of origin, e.g. India. In Canada, the main exporting country, favourable conditions for planting alternative crops, especially wheat, has resulted in a substantial reduction in the area of oilseed rape planted for 1976. The carry-over of stocks from 1975 is, however, anticipated to be greater than usual. Longer term prospects for vegetable oils are hedged with even greater uncertainties but small imbalances between supply and demand can have disproportionate effects on world prices. One factor which is tending to create an over-supply situation is the increasing production of palm kernel and coconut oil from new plantations in South America. These plantations have a long productive life so that supplies from them cannot easily be "turned off" and may serve to aggravate any downward pressure on vegetable oilseed prices.

## IV OILSEED RAPE IN THE UNITED KINGDOM

Although oilseed rape is grown in almost all parts of the UK about 90% of the acreage has, fairly consistantly over the last ten years, been grown to the East of an arc extending from Poole on the South coast through Gloucester and Birmingham to Hull in the North. Counties in which the crop is of greatest significance are Northamptonshire, where rape accounted for 5·2% of the total tillage area in 1975, and Wiltshire where it accounted for 3·2%.

TABLE 3 1975 ACREAGE OF OILSEED RAPE IN THE NINE COUNTIES WITH THE GREATEST RAPE AREA

| | Acres | Rape as % of tillage area | Rape as % of barley area |
|---|---|---|---|
| Cambridgeshire | 7744 | 1·3 | 4·4 |
| Bedfordshire | 3305 | 2·0 | 4·3 |
| Berkshire | 2720 | 2·9 | 5·6 |
| Buckinghamshire | 3815 | 2·7 | 5·3 |
| Hampshire | 9074 | 3·2 | 5·9 |
| Oxfordshire | 6207 | 2·3 | 4·3 |
| Lincolnshire | 6281 | 0·6 | 1·9 |
| Northamptonshire | 12716 | 5·2 | 11·9 |
| Wiltshire | 5397 | 2·0 | 3·7 |
| Total | 57259 | Average 1·9 | Average 2·5 |

With the possible exception of Northamptonshire there was no area, on a county basis, in which the oilseed rape crop accounted for more than a small proportion of the total tillage. Thus a doubling or trebling of the 1975 acreage is not likely to give rise to serious rotational problems even in the main rape growing counties although pest and disease control may become more costly. Such an increase in area combined with relatively small increases elsewhere in the UK could result in a total rape crop of around 200 thousand acres.

## V OTHER OILSEED CROPS IN THE UNITED KINGDOM

If a note of cautious optimism can be sounded on the scope for increased oilseed production in this country the question arises, 'what are the prospects for other oilseed crops besides rape?' In the immediate future only linseed appears to offer anything approaching a worth-while alternative to rape. With the encouragement of an EEC acreage payment, the introduction of new improved varieties and a certain amount of publicity, the area of this crop in the UK expanded from about 200 acres in 1974 to 6300 acres in 1975. Average yields were disappointing (as were oilseed rape yields in 1975) at just over 12 cwt. per acre, but given the potential average yield of 15 cwt. per acre, which is claimed for the crop in a normal season, gross margins could equal winter rape. Unlike rape oil, linseed oil is mainly put to technical rather than edible uses and the market for it is likely to be limited. The protein cake however has a higher value than rape cake and a limited further expansion in home production of linseed appears to be feasible.

Other oilseed crops attracting interest at the present time are sunflower and soya beans. Yields obtained from soya in Europe and the UK have so far been disappointing but forecasts are made that by the 1980's plant breeders may have produced suitable varieties for Western Europe which are capable of producing the high yields (by world standards) which will enable them to give gross margins comparable to those obtained from cereals in this country. Similar comments apply to sunflowers except that the main problem is susceptibility to fungal disease and bird damage under UK conditions rather than low yield..

## VI CONCLUSIONS

Oilseed rape is likely to be the main UK oil crop for some years. Although steps have been taken to check the expansion in EEC rapeseed production in recent years, it is likely that its production will continue to receive EEC support in view of the CAP objective of greater self-sufficiency in oils and protein. Expansion of the UK acreage to between 200,000 and 300,000 acres need not pose any serious rotational or pest and disease problems for UK farmers and, provided rape oil can take full advantage of its substitutability for soya oil, uptake of the production from this acreage should not present problems either. The main uncertainty hangs over the crucial factor of price for the crop. On present indications rape appears unlikely to regain the economic ascendancy it had over barley in 1972 and 1974 but in view of the ease with which it can be incorporated into a cereal growing system it is likely to remain an attractive alternative crop to the cereal grower.*

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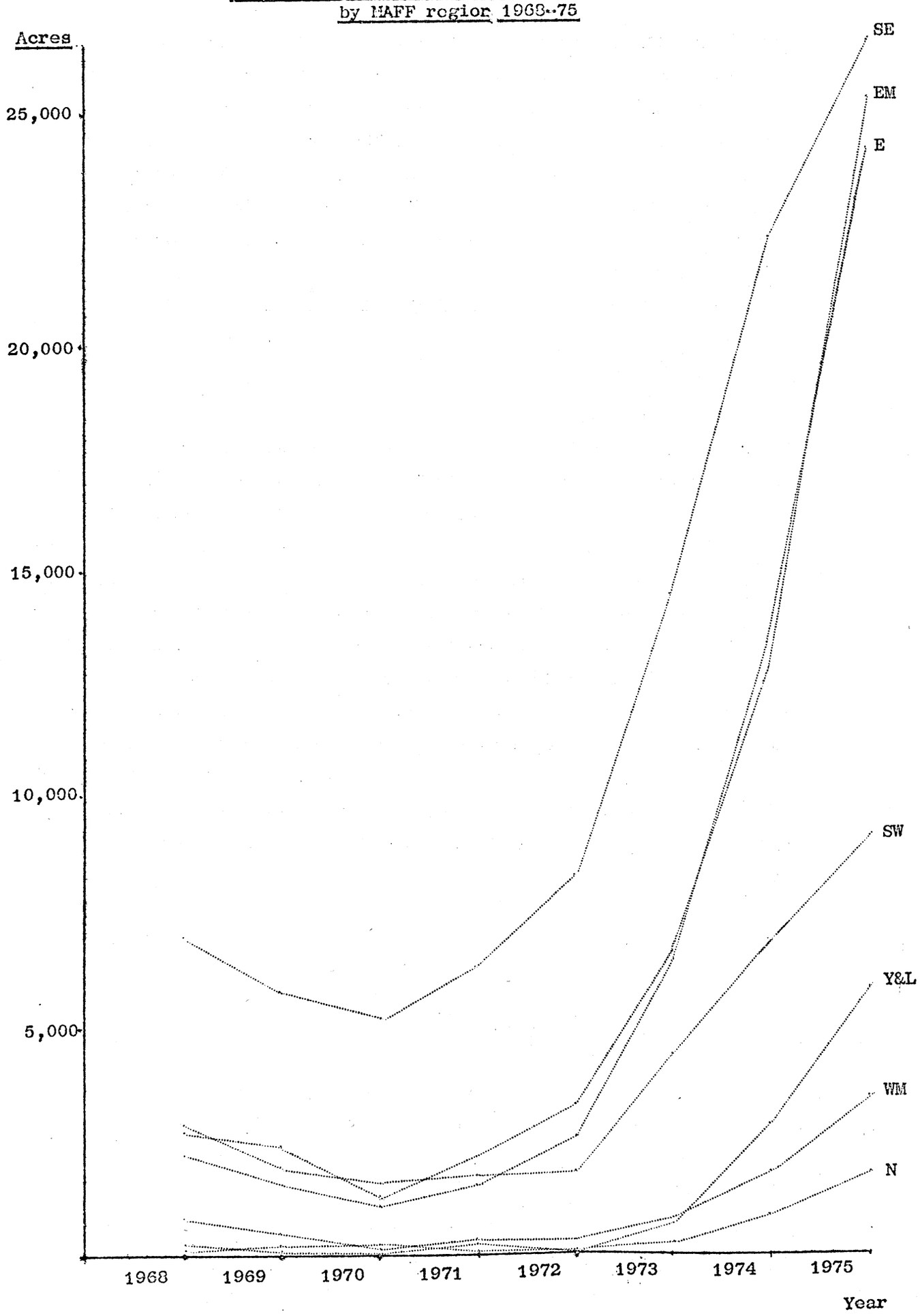
*See also Section 2 V page 27

Fig.1. Graph showing acreage of oilseed rape by MAFF region 1968-75



## SECTION 2: THE SURVEY

### I INTRODUCTION

The decision to carry out the Survey was based on available National Statistics of oilseed rape acreages, which are detailed subsequently. The accurate acreage of oilseed rape, or what is being called the 'European Soya Bean', are available only since 1968 - 16,020 acres falling in 1969 and 1970, but thereafter increasing until a figure of 96,299 acres was attained in 1975. (Table 1).

TABLE 1 ACREAGE OF OILSEED RAPE BY REGION 1968-1975

| MAFF REGION | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 |
|---|---|---|---|---|---|---|---|---|
| Eastern | 2,217 | 1,471 | 1,075 | 1,482 | 2,564 | 6,377 | 13,355 | 24,190 |
| South Eastern | 6,971 | 5,765 | 5,180 | 6,352 | 8,297 | 14,453 | 22,160 | 26,567 |
| East Midlands | 2,688 | 2,331 | 1,271 | 2,126 | 3,267 | 6,514 | 12,590 | 25,220 |
| West Midlands | 815 | 516 | 215 | 303 | 255 | 733 | 1,771 | 3,417 |
| South Western | 2,840 | 1,946 | 1,506 | 1,721 | 1,762 | 4,297 | 6,730 | 9,068 |
| Northern | 143 | 194 | 223 | 120 | 156 | 228 | 851 | 1,740 |
| Yorks & Lancs. | 221 | 114 | 55 | 199 | 127 | 702 | 2,769 | 5,800 |
| Wales | 126 | 540 | 369 | 366 | 738 | 486 | 412 | 299 |
| TOTAL ENGLAND AND WALES | 16,020 | 12,877 | 9,894 | 12,669 | 17,164 | 33,789 | 60,636 | 96,299 |

Some areas have shown larger increases in their rape acreage than others (Fig.1), the South East always way ahead until 1975, when both the Eastern and East Midlands regions narrowed the lead down to a short head.

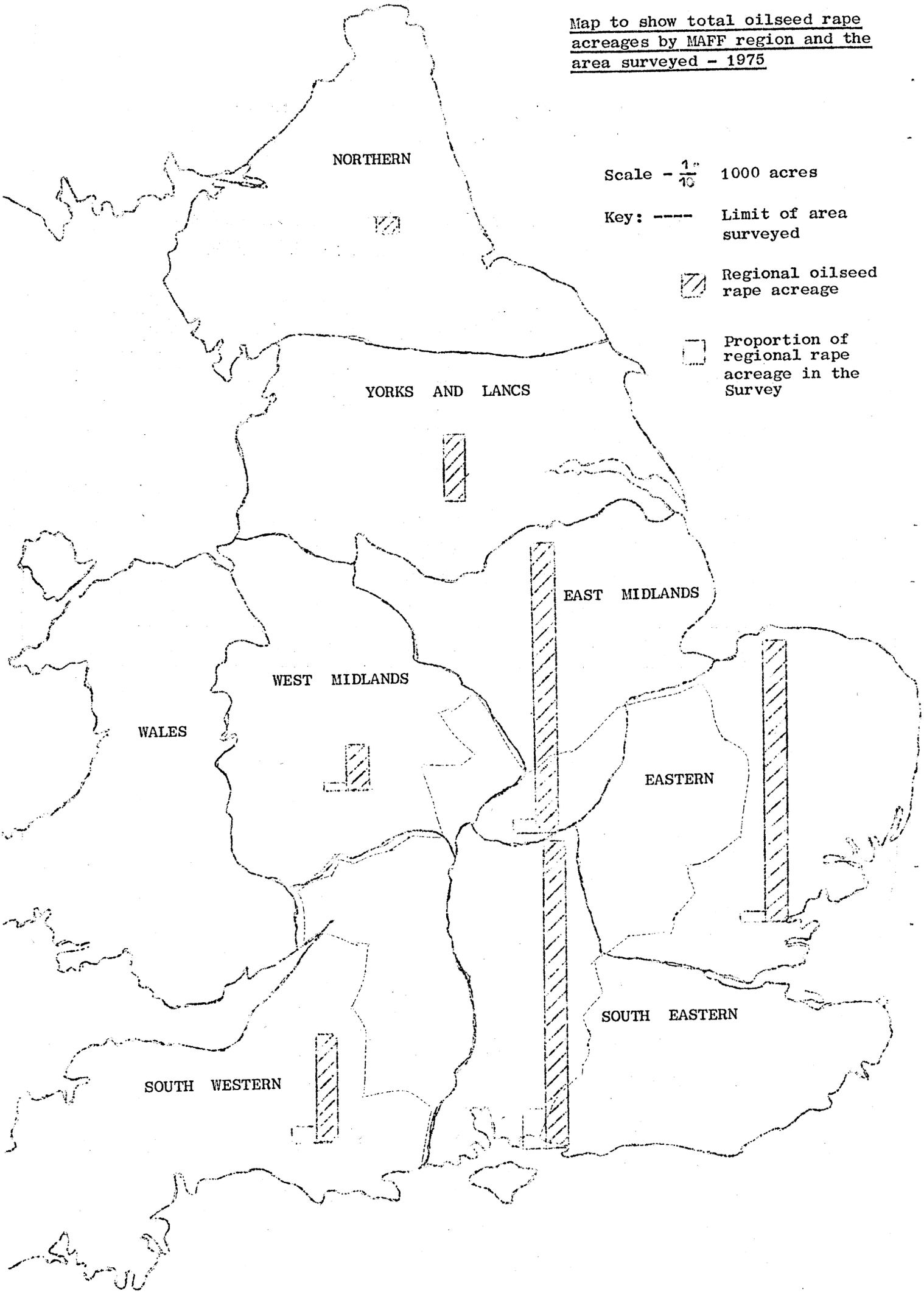
Yorkshire and Lancashire had a surprising acreage in 1975, 26 times as large as that grown in 1968, when the crop was first recorded. This reflects the ability of the winter varieties to be grown virtually throughout the whole of England and well into Scotland.

Table 2 details oilseed rape acreages as a percentage of total crops and grass in 1968 and 1975.

TABLE 2 PROPORTION OF CROPS AND GRASS ACREAGE OCCUPIED BY OILSEED RAPE: 1968 AND 1975 BY REGION

| | TOTAL CROPS AND GRASS ACREAGE | | TOTAL OILSEED RAPE ACREAGE | | OILSEED RAPE AS % OF TOTAL CROPS & GRASS ACREAGE | |
|---|---|---|---|---|---|---|
| MAFF REGION | 1968 | 1975 | 1968 | 1975 | 1968 | 1975 |
| Eastern | 3,851,048 | 3,513,043 | 2,217 | 24,190 | 0.058 | 0.690 |
| South Eastern | 3,004,958 | 2,906,105 | 6,971 | 26,567 | 0.232 | 0.910 |
| East Midlands | 2,990,136 | 2,966,307 | 2,688 | 25,220 | 0.090 | 0.850 |
| West Midlands | 2,834,842 | 2,738,959 | 815 | 3,417 | 0.029 | 0.130 |
| South Western | 4,230,718 | 4,187,730 | 2,840 | 9,068 | 0.067 | 0.220 |
| Northern | 2,416,358 | 2,520,577 | 143 | 1,740 | 0.006 | 0.070 |
| Yorks & Lancs | 2,161,588 | 2,167,177 | 221 | 5,800 | 0.010 | 0.270 |
| Wales | 2,600,176 | 2,577,782 | 126 | 299 | 0.005 | 0.010 |
| TOTAL ENGLAND AND WALES | 24,089,824 | 23,577,679 | 16,020 | 96,299 | 0.067 | 0.410 |

Map to show total oilseed rape acreages by MAFF region and the area surveyed - 1975



## II THE SURVEY

### II (i) THE SAMPLE

The farms were selected from a list of known oilseed rape growers supplied by the Ministry of Agriculture. The aim was to investigate an acreage comprising approximately 60% winter rape and 40% spring rape as being representative of the surveyed areas.

The proportion of the total regional oilseed rape acreages and the actual areas covered are shown in Figs. 2 and 3.

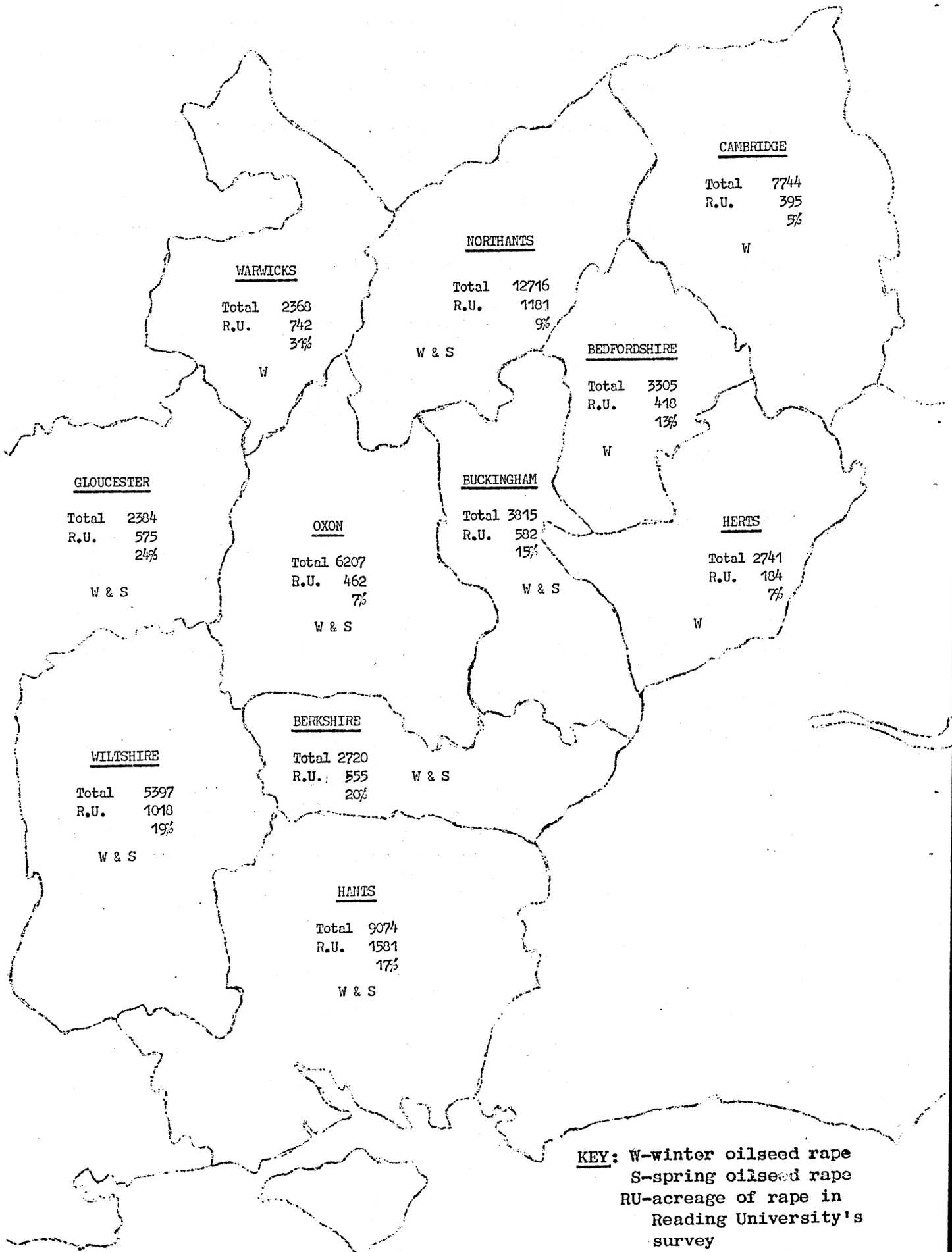
93 farms growing a total of 62 winter rape and 41 spring rape crops were distributed by county, farm size group and crop size group as shown in Tables 3, 4 and 5 respectively.

TABLE 3 GEOGRAPHICAL DISTRIBUTION OF THE CROPS SURVEYED

| COUNTY | No. of farms | No. of Oilseed Rape Crops | | Oilseed Rape Acreage | |
|---|---|---|---|---|---|
| | | Winter | Spring | Winter | Spring |
| Bedfordshire | 5 | 5 | - | 418 | - |
| Berkshire | 8 | 2 | 6 | 151 | 404 |
| Buckinghamshire | 7 | 4 | 3 | 400 | 182 |
| Gloucestershire | 3 | 3 | 1 | 255 | 320 |
| Hampshire | 17 | 5 | 16 | 242 | 1339 |
| Hertfordshire | 2 | 2 | - | 184 | - |
| Huntingdon (now a part of Cambridgeshire) | 7 | 7 | - | 395 | - |
| Northamptonshire | 16 | 15 | 3 | 1052 | 129 |
| Oxfordshire | 7 | 6 | 2 | 349 | 113 |
| Warwickshire | 9 | 9 | - | 742 | - |
| Wiltshire | 12 | 4 | 10 | 228 | 790 |
| | 93 | 62 | 41 | 4416 | 3277 |
| | | | | 57% | 43% |
| | | 103 crops | | 7693 acres | |

NOTE: 10 farmers grew both winter and spring rape crops: 52 grew winter only and 31 grew spring only.

Fig.3. Map to show oilseed rape acreages by county and proportion included in the Survey - 1975




KEY: W-winter oilseed rape
S-spring oilseed rape
RU-acreage of rape in Reading University's survey

TABLE 4 SIZE DISTRIBUTION OF THE FARMS IN THE SAMPLE

| Size Group | No. of Farms |
|---|---|
| Under 249·9 acres | 5 |
| 250 - 499·9 acres | 25 |
| 500 - 749·9 acres | 34 |
| 750 - 999·9 acres | 11 |
| 1000 - 1499·9 acres | 6 |
| 1500 acres and over | 12 |
| | 93 |

TABLE 5 SIZE DISTRIBUTION OF THE OILSEED RAPE CROPS IN THE SAMPLE

| Size Group | No. of Crops | |
|---|---|---|
| | Winter | Spring |
| Under 25 acres | 2 | 1 |
| 25 - 49 acres | 17 | 17 |
| 50 - 74 acres | 18 | 10 |
| 75 - 99 acres | 16 | 2 |
| 100 - 149 acres | 6 | 8 |
| 150 acres and over | 3 | 3 |
| | 62 | 41 |

In the most southerly counties spring oilseed rape predominated, whilst the reverse became true as one moved northwards in the area.

Previous experience of growers with this particular crop (including the 1975 crop) varied a great deal, the minimum period of 2 years (40 growers) extending to over 10 years (2 growers) at the other end of the scale.

## II (ii) ENTERPRISE BREAKDOWN

The average farm size (crops and grass) was 794 acres, 181 acres of this accounted for by temporary and permanent grassland, whilst the remainder was arable. Barley, although occupying almost 30% of the total acreage, was, unlike wheat, not present on every holding.

Turning to the livestock enterprises 19 farms were purely arable and carried no livestock whatsoever (6 in Northamptonshire, 3 in Berkshire and 3 in Huntingdon). Beef animals were evident on 50 holdings, (21 with beef cows) 18 of which supported no other livestock. On the remaining 22 farms dairy and sheep enterprises were present. Sheep came 2nd to beef in the popularity poll and appeared in 27 cases, with dairy cows a close 3rd (23 farms).

Full details of the average cropping and stocking are shown in Tables 6 and 7.

TABLE 6 THE FARMS IN THE SURVEY - AVERAGE CROPPING

| CROPS | Acres per Farm | % of Total Acreage |
|---|---|---|
| Barley | 233 | 29•3 |
| Wheat | 227 | 28•6 |
| Temporary Grass | 101 | 12•7 |
| Permanent Grass | 81 | 10•2 |
| Oilseed Rape - Winter | 47 | 6•0 |
| - Spring | 35 | 4•4 |
| Oats | 14 | 1•7 |
| Herbage Seeds | 13 | 1•6 |
| Potatoes | 9 | 1•2 |
| Beans | 4 | 0•6 |
| Peas | 4 | 0•5 |
| Sugar Beet | 2 | 0•2 |
| Horticultural Crops | 3 | 0•3 |
| Other Cash Crops | 2 | 0•2 |
| Other Forage Crops | 12 | 1•5 |
| Fallow | 7 | 0•9 |
| TOTAL CROPS AND GRASS | 794 | 100•0 |

TABLE 7 THE FARMS IN THE SURVEY - DISTRIBUTION OF LIVESTOCK ENTERPRISES

| | No. of Farms | % of Total |
|---|---|---|
| No Livestock | 19 | 21·0 |
| Beef Enterprises only | 18 | 19·0 |
| Dairy & Beef Enterprises | 11 | 12·0 |
| Beef & Sheep Enterprises | 11 | 12·0 |
| Sheep Enterprises only | 6 | 6·5 |
| Pig Enterprises only | 6 | 6·5 |
| Dairy Herds only | 5 | 5·0 |
| Combination of 3 or more Enterprises | 17 | 18·0 |
| TOTAL | 93 | 100·0 |

| | | |
|---|---|---|
| Farms having | Beef Enterprises | 50 |
| " | Sheep Enterprises | 27 |
| " | Dairy Herds | 23 |
| " | Pig Enterprises | 16 |
| " | Poultry Enterprises | 7 |

## II (iii) SOIL TYPE

Because soil types varied so widely a broad classification with just 3 categories - light, medium and heavy, was used to simplify this part of the analysis.

Winter oilseed rape was most frequently found on heavy soils, 50%, with 35% on medium and 15% on light soil. However, the medium category accounted for just under half (49%) of the spring crop, most of the remaining spring acreage being grown on light soils.

## II (iv) ROTATIONS

Once again the rotations used were very varied but one or two similarities emerged.

As expected with this crop 83% of the winter and 78% of the spring crops provided an entry for wheat, but in only 7 cases (4 winter, 3 spring) was the crop preceded by grass. 6 growers used an additional break crop either directly before or after oilseed rape to give a 2 year break in the rotation before returning to cereals. With the increase in acreage of oilseed rape which is resulting in a build up of pests and diseases it is now not advisable to grow rape closer than 1 in 4 in the rotation, but preferably to widen the gap to 1 in 6.

## III OUTPUT, COSTS AND MARGINS - 1975 HARVEST

Output from both the winter and spring crops in 1975 proved to be exceptionally variable. This was almost entirely due to variations in yield which ranged from 6·0 to 24·1 cwts. for winter and 0·9 to 14·8 cwts. for spring rape (harvested crops only). The wide variations were a direct consequence of the abnormal weather conditions suffered throughout the season, with emphasis on the warm, exceptionally dry summer, although the very wet spring and consequently late sowing dates, particularly affected the spring crops, disastrously so in some cases. Because of the untypical season and its effect on output and yields it was felt that no worthwhile conclusions could be drawn from relating yields to other factors, e.g. drilling and harvesting dates, top dressing etc.

On the input side fertiliser was by far the largest, accounting for 58% of the winter and 62% of the spring variable costs.

A study of the results for individual crops showed that there was nowhere near as much farm to farm variation in the variable and fixed costs as in output. This is also illustrated by a comparison of the top 25% of the results with the average, shown on the following page, the differences in yield and therefore output, being responsible for the very wide variations in net margin - -£29·27 to £79·82 per acre for winter rape and -£81·37 to £11·72 per acre for spring rape.

Crop failures have been included in the costs shown opposite since omission would, it was thought, give a false impression of the economics of the crop in the year in question. Four crops failed completely - 2 winter, 1 winter drilled as spring, 1 spring - with 9 additional crops showing partial failure - 5 spring, 4 winter. The total failed acreage amounted to 256 acres - 109 winter (2·5% of the total) 147 spring (4·5% of the total). Reasons for failure were attributed to the following - drought, pests and disease problems, pigeon damage, varieties and waterlogging.

Marketing methods were discussed and most farmers favoured selling by means of a contract of some sort (69 growers) with 20 using the open market as their outlet.

## RESULTS OF THE 1975 HARVEST

| | OILSEED RAPE | | | |
|---|---|---|---|---|
| | Winter | | Spring | |
| | Average | Premium* | Average | Premium* |
| Number of farms | 61 | 15 | 41 | 10 |
| Total acreage | 4386 | 1383 | 3277 | 1060 |
| of which failed | 109 | 5 | 147 | - |
| Yield cwt. per acre | 15·66 | 20·80 | 6·97 | 11·61 |
| OUTPUT | £ per acre | | £ per acre | |
| Sales of rape seed | 99·22 | 131·77 | 43·28 | 73·48 |
| TOTAL | 99·22 | 131·77 | 43·28 | 73·48 |
| LESS Variable Costs | | | | |
| Seed | 3·55 | 3·22 | 4·10 | 4·36 |
| Fertilisers | 19·97 | 19·16 | 17·74 | 15·61 |
| Spray materials | 4·33 | 3·08 | 4·88 | 5·49 |
| Contract | 6·01 | 4·82 | 1·54 | 2·35 |
| Miscellaneous | 0·28 | 0·28 | 0·13 | 0·25 |
| TOTAL | 34·14 | 30·55 | 28·39 | 28·06 |
| = GROSS MARGIN | 65·08 | 101·22 | 14·89 | 45·42 |
| LESS Fixed Costs | | | | |
| Labour | 4·50 | 4·62 | 5·65 | 6·03 |
| Power & Machinery | 10·79 | 11·41 | 13·33 | 13·85 |
| Rent | 13·20 | 14·74 | 12·38 | 14·82 |
| General farm overheads | 9·23 | 8·65 | 9·04 | 9·41 |
| TOTAL | 37·72 | 39·42 | 40·40 | 44·11 |
| = NET MARGIN | 27·36 | 61·80 | -25·51 | 1·31 |
| Range** | cwt per acre | | | |
| Yield | 6·00 to 24·06 | | 0·90 to 14·80 | |
| | £ per acre | | | |
| Output | 36·24 to 149·59 | | 4·35 to 97·88 | |
| Variable Costs | 23·77 to 64·38 | | 17·82 to 43·78 | |
| Gross Margin | 3·70 to 114·93 | | -47·35 to 67·38 | |
| Total Fixed Costs | 25·18 to 53·84 | | 25·40 to 55·66 | |
| Net Margin | -29·27 to 79·82 | | -81·37 to 11·72 | |
| DISTRIBUTION OF HOURS | Tractor % | Labour % | Tractor % | Labour % |
| Seedbed preparation | 15 | 10 | 49 | 38 |
| Drilling | 17 | 11 | 17 | 13 |
| Spraying & post drilling operations | 25 | 18 | 13 | 10 |
| Harvesting | 37 | 42 | 20 | 31 |
| Drying & storage | 6 | 19 | 1 | 8 |
| | 100 | 100 | 100 | 100 |
| Per acre hours | 2·21 | 3·55 | 3·54 | 4·57 |

*Premium - The best 25% of crops taking net margin as the criterion
**Harvested crops only

## IV MANAGEMENT PRACTICES

### IV (i) REASONS FOR GROWING OILSEED RAPE

Farmers were asked to give their reasons for growing rape and their replies are listed in Table 8.

TABLE 8 A SUMMARY OF REASONS FOR GROWING OILSEED RAPE

| | Winter Rape Growers(60) | | Spring Rape Growers(41) | |
|---|---|---|---|---|
| | No. | % | No. | % |
| Provides a good entry for wheat | 56 | 93 | 29 | 71 |
| Helps to spread the work load | 46 | 77 | 23 | 56 |
| To control persistent weeds | 25 | 42 | 22 | 54 |
| A cash crop in its own right | 32 | 53 | 14 | 34 |
| Can be grown using existing equipment | 23 | 38 | 20 | 49 |
| Ease of inclusion in the system | 22 | 37 | 20 | 49 |
| To control pests and diseases | 13 | 22 | 14 | 34 |
| Residual value to the soil and its structure | 4 | 7 | - | - |
| An aid to the cash flow | 4 | 7 | - | - |
| Other reasons | 6 | 10 | 1 | 2 |

Out of 91 growers whose opinions were available the majority, 84, grew oilseed rape specifically as a break crop.

The most obvious advantage of this crop was considered to be the excellent entry it provided for wheat, the yield of which is increased by the fertility and improvement to soil structure found after growth of oilseed rape. 69 growers liked the way the crop assisted in the spread of the work load, whilst 32 growers of winter rape considered it as a cash crop in its own right, although, not surprisingly for last season, only 14 spring rape growers included this in their list of advantages.

Turning to the difficulties and disadvantages of the crop (Table 9) the most stated problem here was the build up of pests and diseases which with the increasing acreage and therefore large neighbouring areas, have become quite a problem and may be more so in the future. Pigeon damage was a difficulty for 32 growers, the majority of whom (27), expectedly were producing winter rape.

TABLE 9 DIFFICULTIES AND DISADVANTAGES OF THE CROP

| | Winter Rape Growers(60) | | Spring Rape Growers(41) | |
|---|---|---|---|---|
| | No. | % | No. | % |
| Control of pests and diseases | 35 | 58 | 18 | 44 |
| Pigeon control | 27 | 45 | 8 | 20 |
| Drying and storage | 11 | 18 | 6 | 15 |
| Timeliness of harvesting | 8 | 13 | 3 | 7 |
| Haulm disposal | 6 | 10 | 3 | 7 |
| Financial returns too low | 5 | 8 | 11 | 27 |
| Harvesting - setting the combine | 5 | 8 | 2 | 5 |
| No problems | 4 | 7 | 3 | 7 |

## IV (ii) SEED VARIETIES

Table 10 details the varieties of winter and spring oilseed rape grown, by acreage and number of crops.

TABLE 10 SEED VARIETIES SOWN IN THE 1975 CROP

| Winter Oilseed Rape Varieties | No. of Crops | Acreage | % of Total |
|---|---|---|---|
| Victor | 21 | 1580 | 36 |
| Un-named low erucic acid variety (from United Oilseeds - now known to be Primor) | 25 | 1455 | 33 |
| Rapol | 7 | 601 | 13 |
| Sonnengold | 3 | 225 | 5 |
| Mogul | 3 | 219 | 5 |
| Lesira | 5 | 205 | 5 |
| Eurora | 1 | 91 | 2 |
| Rapora | 1 | 40 | 1 |
| TOTAL * | 66 | 4416 | 100 |
| **Spring Oilseed Rape Varieties** | | | |
| Gulle | 32 | 2521 | 77 |
| Maris Haplona | 6 | 415 | 13 |
| Erglu | 4 | 170 | 5 |
| Oro | 1 | 71 | 2 |
| Lesira(winter variety drilled in the spring) | 2 | 100 | 3 |
| TOTAL * | 45 | 3277 | 100 |

*The total number of crops shown here is not the same as the total of spring and winter crops at the beginning of the report because some farmers grew more than 1 variety.

In the winter crops, Victor, which accounted for 90% of the crops in our 1968/69 study, was grown on only 36% of the 1975 surveyed acreage, with Primor - United Oilseeds' un-named low erucic acid variety - a very close 2nd with 33% of the area. Gulle was the firm favourite in the spring crops (77%) (high erucic acid content) with Maris Haplona (low erucic acid) as an also ran with 13% of the acreage surveyed. Two farmers drilled Lesira, a winter variety, in the spring and for the purposes of this analysis they were both classified as spring crops.

## IV (iii) DRILLING METHODS

TABLE 11

WINTER OILSEED RAPE

| | 7" Row Width | No. of Growers | Acreage | % of Total |
|---|---|---|---|---|
| Direct Drill | 28 | 34 | 2322 | 53 |
| Combine Drill | 8 | 12 | 870 | 20 |
| Broadcast | - | 13 | 633 | 14 |
| Plain Drill | 4 | 7 | 420 | 9 |
| Grass Box | - | 1 | 101 | 2 |
| Not Available | - | 1 | 70 | 2 |
| TOTAL | 40 | 68* | 4416 | 100 |

SPRING OILSEED RAPE

| | 7" Row Width | No. of Growers | Acreage | % of Total |
|---|---|---|---|---|
| Combine Drill | 11 | 16 | 1084 | 33 |
| Plain Drill | 3 | 10 | 725 | 22 |
| Broadcast | - | 12 | 602 | 18 |
| Direct Drill | 2 | 2 | 78 | 3 |
| Seed Drill | - | 1 | 421 | 13 |
| Not available | - | 2 | 367 | 11 |
| TOTAL | 16 | 43** | 3277 | 100 |

* 6 Growers used two methods of drilling
** 2 Growers used two methods of drilling

As one would expect with the winter crops, direct drilling was the most popular means of planting the seed. This method, utilised by half the growers (53% winter acreage) assists in attaining even germination of the seed by avoidance of loss of moisture at a time of year when there can be very little moisture in the soil, and in addition the use of a contractor can overcome a seasonal labour peak. In 55% of the spring rape crop the seed bed was prepared in a conventional manner and a plain or combine drill planted the seed. The broadcast method of sowing accounted for 602 acres (18%) although a larger number of farmers preferred this means to the plain drill.

Turning to row width, 7" proved to be the most popular and 40 winter and 16 spring rape growers drilled their seed at this spacing, whilst 11 (6 winter, 5 spring) used a $4\frac{1}{2}$" row width.

## IV (iv) FERTILISER USAGE

The average number of units of N, P and K used on both the winter and spring crops were as follows:

| | N | P | K |
|---|---|---|---|
| Spring oilseed rape | 129(48) | 47 | 48 |
| Winter oilseed rape | 178(43) | 45 | 43 |

The figures in brackets denote the units of nitrogen applied to the seed bed. As a result of the late wet spring in 1975, many winter crops were top dressed in one application at a later date rather than receiving split applications of nitrogen (24 only).

## IV (v) SPRAYS

Many farmers use rape as a crop which permits a good clean-up in conjunction with spray usage and for this reason it has been felt fair to set the total cost of any autumn sprays against the rape crop. 27 of the growers (29%) took the opportunity to spray for wild oats and couch, whilst 66 growers (8 spring) found it necessary to use herbicides to combat cereal volunteers, grass weeds and broadleaved weeds.

With the increase in acreage of rape the proximity of crops tends to encourage the build up of insect populations damaging to the crops and consequently use of chemicals for the eradication of these 'bugs and beasties' was resorted to by 57 of the 93 growers.

## IV (vi) CONTRACT WORK

Charges for contract work amounted to an average of £6·01/acre for the winter rape crop and £1·54/acre for the spring crop. Tables 12 and 13 detail the work carried out on contract for the 1975 rape crops.

TABLE 12 NUMBER OF GROWERS USING A CONTRACTOR

| Growers of: | Winter Rape | Spring Rape | Winter & Spring Rape |
|---|---|---|---|
| Total | 52 | 31 | 10 |
| No. using contractors | 47 | 16 | 9 |

TABLE 13 TYPES OF WORK CARRIED OUT BY THE CONTRACTORS

| | Total | Winter Crops | Spring Crops |
|---|---|---|---|
| Windrowing | 43 | 36 | 7 |
| Drilled - direct | 31 | 29 | 2 |
| - other | 3 | 1 | 2 |
| Spraying | 23 | 13 | 10 |
| - of which aerial | 10 | 7 | 3 |
| Fertiliser application | 14 | 10 | 4 |
| - of which aerial | 7 | 7 | 0 |
| Combining (after windrowing) | 5 | 4 | 1 |
| Drying | 3 | 1 | 2 |
| Straw chopping | 1 | 1 | 0 |
| Drying and storage | 1 | 0 | 1 |

As highlighted by the costs contract work was not a large input in the spring crops and a contractor was brought in on only 52% of these farms - contract spraying (aerial 3) and windrowing were the two operations most frequently hired out. Of the 56 winter rape crops being totally or partially windrowed prior to combining, 36 of these were swathed by a contractor's machine. Similarly with direct drilling, 29 of the 34 winter crops were sown in this fashion using a hired drill.

## IV (vii) METHODS OF HARVESTING AND HAULM DISPOSAL

TABLE 14 COMBINING METHODS

| | Total | Winter Crops | Spring Crops |
|---|---|---|---|
| Direct combined | 33 | 4 | 29 |
| Windrowed and combined | 63 | 54 | 9 |
| Windrowed and combined, direct combined and desiccated | 1 | 1 | 0 |
| Direct combined and windrowed and combined | 2 | 1 | 1 |
| Crops failed | 4 | 2 | 2 |
| TOTAL | 103 | 62 | 41 |

The majority of winter (54) and a few spring crops (9) were cut with some type of swather, allowed to ripen for between 7-10 days, then combined out of the swath. Windrowing is usually advocated for winter rape to facilitate more even ripening of a thickish crop.

Spring rape, generally speaking, is allowed to ripen standing - less straw is present and the shorter seed head ripens more evenly than on the winter crop - then combined direct (29 spring rape crops). Desiccation of the oilseed rape crop, which, it has been claimed, enables earlier combining with the potential of a higher oil yield together with pods more resistant to shattering, was used on a part of his total acreage by one grower only.

TABLE 15 METHODS OF HAULM DISPOSAL

| | Total | Winter Crops | Spring Crops |
|---|---|---|---|
| Chop | 46 | 22 | 24 |
| Burn | 47 | 34 | 13 |
| Both methods | 2 | 2 | 0 |
| Baled | 4 | 2 | 2 |
| Failed crops | 4 | 2 | 2 |
| TOTAL | 103 | 62 | 41 |

Disposal of the rape haulm by rowing it up or buck-raking it into heaps and subsequently setting fire to it had only a slight margin in popularity over chopping the straw and ploughing it in. Haulm on only four farms was baled for future use.

## IV (viii) DRYING AND STORAGE METHODS USED FOR RAPESEED

Details of the types of dryer and methods of storage used in the survey are shown in Tables 16, 17 and 18.

TABLE 16 DRYING METHODS FOR RAPESEED

| | No. of Growers | % of total |
|---|---|---|
| Continuous flow | 43 | 46 |
| On floor | 20 | 22 |
| In bin | 16 | 17 |
| Not dried | 7 | 8 |
| Contract | 3 | 3 |
| Failed | 3 | 3 |
| Not available | 1 | 1 |
| TOTAL | 93 | 100 |

TABLE 17 STORAGE FACILITIES FOR RAPESEED

| | No. of Growers | % of total |
|---|---|---|
| In bins | 45 | 49 |
| On floor | 37 | 40 |
| Not stored | 4 | 4 |
| Sacks | 2 | 2 |
| Contract | 1 | 1 |
| Failed | 3 | 3 |
| Not available | 1 | 1 |
| TOTAL | 93 | 100 |

TABLE 18 COMBINATION OF DRYER AND STORAGE USED FOR RAPESEED

| Dryer | Continuous flow | On floor | In bin | Continuous flow | Other |
|---|---|---|---|---|---|
| Storage | In bins | On floor | In bins | On floor | Other |
| No. of growers | 27 | 19 | 13 | 11 | 23 |

Continuous flow dryers and in-bin storage, in addition to being the most used categories when analysed separately, also proved to be the most popular combination (27 growers) with on floor drying and storage used by 19 growers. As a result of rapeseed's small size and ability to flow freely the precaution of checking dryers and storage facilities for leaks was taken by almost all growers. Cleaning (Table 19) prior to drying was practised by 74 growers but not performed by 13.

TABLE 19 USE OF PRE-CLEANING FOR RAPESEED

| | No. of Growers | % of total |
|---|---|---|
| Crop pre-cleaned | 74 | 80 |
| Crop not pre-cleaned | 13 | 14 |
| Crop cleaned after drying | 1 | 1 |
| Failed | 3 | 3 |
| Not available | 2 | 2 |
| TOTAL | 93 | 100 |

## V FUTURE PLANS OF THE OILSEED RAPE GROWERS CO-OPERATING IN THE 1975 SURVEY

Farmers were questioned as to their plans concerning the rape crop for the 1976 harvest and their intentions are summarised in Table 20.

TABLE 20 CROPS GROWN IN 1975 AND GROWERS' INTENTIONS FOR 1976

| Intentions for 1976 | Winter Rape Growers | Spring Rape Growers | Winter & Spring Rape Growers |
|---|---|---|---|
| Not growing oilseed rape | 4 | 8 | 2 |
| Decrease oilseed rape acreage | 4 | 2 | 0 |
| Increase oilseed rape acreage | 7 | 0 | 0 |
| Change from winter & spring to all spring | 0 | 0 | 1 |
| Change from winter & spring to all winter | 0 | 0 | 5 |
| Change from spring to winter | 0 | 4 | 0 |
| No change | 34 | 17 | 2 |
| Not available | 3 | 0 | 0 |
| TOTAL = 93 growers | 52 | 31 | 10 |

A total of 14 farms from the sample, all of whom had grown the crop for at least 2 years, decided not to include rape in their cropping for the 1976 season. The most stated reasons were disease and pest problems, and low yields and price which resulted in financial returns too low to make the crop a viable proposition. Crops to be introduced instead of oilseed rape by these growers and those decreasing their acreage were cereals (5), linseed (2), grass (3) other forage crops (2) and other break crops (1).

A number of growers (9) decided to change over to winter rape whilst 53 were not augmenting any changes for the 1976 harvest.

The choice of variety in the 1975 survey reflects the increasing move towards the new low erucic acid varieties as opposed to the traditional higher yielding varieties high in erucic acid content (40%+ of the fatty acids present). Concern has been expressed that very high levels of this acid in rape oil for human consumption (inclusion in cooking oils and margarine) may constitute a health hazard in respect of heart troubles. EEC regulations governing the erucic acid content of rape have been laid down and from 1st July, 1976, the maximum erucic acid allowed in fats, oils and margarines must not

exceed 15%. From 1st July, 1977 this drops to 10%. However, oil with an erucic acid content of +45% of the total, because of its high temperature resistant qualities, has use as a lubricant and is also incorporated in detergents as a foam depressant - thus a limited market for high erucic acid varieties of rape will still be available and there is nothing to stop an individual growing a variety of this sort provided he has an outlet for it.

Another possible complication of moving over to low erucic acid varieties could be the contamination by high erucic acid sorts if the two were grown in too close proximity to each other, the fear was that this could render the seed unacceptable for intervention. Measures such as zoning areas have been suggested to overcome such a problem, but as the crop is mainly self pollinating it is now thought there is little cause for concern - a 50 yard isolation belt has been found sufficient to safeguard the crop.

A far greater problem is likely to be high erucic acid variety rapeseeds shed at harvest appearing in subsequent crops as a new weed for as long as 6 years afterwards (their period of dormancy is up to 6 years). Thus, the possibility arises of a low erucic acid crop contaminated by high erucic acid volunteer plants and consequently, experts now strongly recommend not growing a low erucic acid variety in a field where a high erucic acid variety has been grown during the previous 5 years.

The new varieties low in erucic acid are able to be drilled later - winter as late as mid September - than their high erucic acid predecessors in order to prevent the crop flowering too early in the spring which follows a mild winter.

A similar costing will be carried out by this Department for the 1976 crops and those farmers from the 1975 survey still growing oilseed rape have agreed to assist us once again. However, as a result of the changes mentioned above the breakdown of the 1976 crops we hope to include in our sample will be as follows:

| | Total | Growers of Winter Rape | Growers of Spring Rape | Growers of both Winter & Spring Rape |
|---|---|---|---|---|
| 1975 Harvest | 93 | 52 | 31 | 10 |
| 1976 Harvest | 79 | 57 | 20 | 2 |

## VI DEFINITIONS OF TERMS USED

(i) Output The revenue from sales includes any storage allowances and trading bonuses payable but is net of buyers' deductions, transport charges, membership subscriptions to marketing groups, etc.

(ii) Variable Costs Charged at the cost recorded by the growers.
Fertilisers The cost shown is the actual value of fertilisers applied for the 1975 crop. No residual values have been taken into account.
Sprays This figure represents the cost of materials only.
Contract The actual cost of hiring machines, tractors and operators.
Miscellaneous This includes such items as sack hire, bird scaring materials, etc.

(iii) Fixed Costs
Labour Hours recorded have been charged at a fixed rate of £1·25 per hour.
Power and Machinery Tractors, lorries, fore loaders and elevators have been charged at standard hourly rates according to size and type, other machines at standard per acre rates according to type of machine. Charges for machinery purchased specifically for oilseed rape were composed of depreciation, annual repairs and fuel cost.
Dryer and storage costs have been based on the tonnage of rapeseed dried/stored and the type of plant used.
Rent Rents per acre were actual. Where the farm was owner-occupied, a rental value comparable with local tenanted farms was assessed.
Share of General Farm Overheads is 15% of all other costs.

(iv) Margin
Gross Margin Total returns less variable costs
Net Margin Total returns less total costs

(v) Input of Labour and Machinery by type of Operation
Seed bed preparation - all cultivation work after removal of the previous crop up to the stage immediately before sowing
Drilling and covering - drilling and broadcasting seed and fertilisers onto the seed bed and rolling or harrowing in.
Spraying, top dressing and post drilling operations - Includes hauling seeds from the field and straw disposal but not stubble cultivation. If a crop failed and was ploughed in then half the hours taken to do so were charged to the rape crop.
Drying and Storage - all barn work, including pre-cleaning the crop and labour loading lorries at time of sale.

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