

Oilseed Rape : its development and importance in Scotland

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Introduction

The principle arable areas in Scotland account for 16% of the total land area and are situated along the relatively dry eastern strip, receiving an annual average rainfall of 800 mm. Arable cropping in Scotland can be very successful : within the last 10 years the world wheat and barley yield records have been broken in Scotland. Cropping in Scotland benefits from a number of distinct advantages. Firstly, the high latitude means that from late March to late September, the country enjoys longer daylengths than its southern neighbours. For many other countries at this latitude, e.g. Norway and Sweden, the severity of the winter prevents winter cropping, but in Scotland the Gulf stream maintains mild temperatures along the coastal strip. Furthermore, the moist climate of Scotland ensures that summer droughts rarely interrupt growth -in fact, the long slow maturation process towards harvest contributes to high yields. In physiological terms, these advantages for cropping have been recognised only relatively recently.

Early Development of Oilseed Rape.

Production of oilseed rape in the UK increased dramatically in the 1970s, from 7,000 ha in 1972 to 125,00 ha in 1981 (Table 1), but the crop was mainly confined to England. Scotland was the last country in the EC to move into oilseed rape and did not begin growing oilseed rape until 1981, when 120 ha (only 0,01 % of the UK total) was harvested. Varieties grown at this time were all single low types (low erucic and high glucosinolate) and were mostly the varieties Rafal and Bienvenu. By 1987, the area harvested in Scotland had risen to 45,000 ha, making oilseed rape Scotland's most important non-cereal crop, as it has continued to the present day. Scotland has since grown 12% of the UK area and now varieties are virtually all double low (low erucic and low glucosinolate) types.

There are several reasons for the late uptake of the crop in Scotland. When the UK entered the

Table 1. Expansion of oilseed rape crop in the UK and Scotland (ha)

| year | area UK excluding Scotland | Scotland |
|----------|----------------------------|----------|
| 1972 | 7,000 | - |
| 1974 | | |
| - 79 av. | 51,000 | |
| 1981 | 125,000 | 120 |
| 1985 | 273,000 | 23,000 |
| 1990 | 345,000 | 45,000 |
| 1991 | 394,000* | 51,000* |

* Provisional figure
Source : Department of Agriculture and Fisheries for Scotland and Ministry of Agriculture, Fisheries and Food.

EC in 1973, trials were conducted in Scotland to evaluate the potential for the crop. However, the spring varieties tested at that time did not mature until October with the result that harvest losses were high and yields unacceptably low at 1,1-1,7 t ha⁻¹. The earlier harvesting of the winter rape was a more attractive possibility, but crops overwintered poorly when sown in September after spring barley and yields were still only 1,7 - 2,2 t ha⁻¹. It was not until the new generation of winter barleys arrived in the late 1970s and early 80s (e.g. Igri) that the early harvest associated with these crops allowed sowing dates for rape, which were more conducive to high yields.

The Problems

In the early 1980s, Scotland went through a honeymoon period with rape. Yields were high (some in excess of 5 t ha⁻¹), inputs were low and

profits were good. By 1985, the area grown had risen to 23,000 ha. An intensive survey in 1981/82 of 90% of crops grown in the north of Scotland showed that no insecticide or fungicide was applied to any of the crops. All the major diseases of oilseed rape were found, but exclusively at very low levels.

Over the following years, problems gradually appeared. Leaf distortion was often seen - sometimes severe - right across fields. Initially this was diagnosed as hormone damage either through inadequate tank washing or drift. Trials where carbendazim fungicide was applied in the autumn dramatically improved the appearance of the crop and revealed that disease was responsible for the distortions.

It had already been noted that light leaf spot (*Pyrenopeziza brassicae* anamorph *Cylindrosporium concentricum*) could always be isolated from oilseed rape plants as could downy mildew (*Perenospora parasitica*), but it was not until then that the degree of damage was realised. It has since been recognised that light leaf spot is more of a problem in Scotland than England (Brokenshire and Prasanna, 1984), the cool, damp conditions in Scotland being conducive to the disease. A series of trials conducted throughout Scotland over a number of years examining the control of light leaf spot indicated that the mean yield response to fungicide application was 0,64 t ha⁻¹ (Wale et al., 1990). On average, expenditure on fungicides by Scottish growers in 1990 was twice as much as that by their English counterparts (Anon, 1991). Diseases other than light leaf spot continue to be of lesser importance.

The Present Situation

Oilseed rape has since proved to be a very successful crop in Scotland and in 1991 the greatest area ever (51,000 ha) was harvested. Yields achieved are often higher than those in other parts of the UK (Table 2); usually 3-4 t ha⁻¹, which is due to the more favourable conditions in Scotland, as described earlier. Another advantage

is that the oil content of rapeseed grown in Scotland is generally higher than that grown further south, the effect of latitude being known to influence the oil content of several crops (Jellum and Marion, 1966).

Table 2. Average Yields of Oilseed Rape Grown in Scotland and the U.K.

| year | average yield (t/ha) UK excluding Scotland | Scotland |
|------|--|----------|
| 1989 | 3,2 | 3,4 |
| 1990 | 3,0 | 3,6 |

N.B. Yields are not differentiated for winter and spring sown rape as figures were not available.

Source : Home Grown Cereals Authority, weekly Bulletins.

Spring Rape

Throughout the early 1980s almost all oilseed rape grown in Scotland was autumn sown. 1986 was the first year that spring rape was widely grown and roughly 1,000 ha were harvested. Interest in spring sown rape has increased and in 1990, it accounted for 7,500 ha (16%) of the total crop area in Scotland. The crop is generally sown in March as soon as soil conditions are suitable and harvested in September, usually 5-6 weeks after the winter crop. The late harvest means that it is more vulnerable to yield loss due to unfavourable weather.

Yields are lower than winter rape at around 2-3 t ha⁻¹. However, inputs are also lower and the gross margin for spring rape compares well to alternatives, even spring barley for malting. It is anticipated that the area of spring sown rape may well increase, though this may to a certain extent be at the expense of winter oilseed rape.

References

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