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THE EFFECT OF SEED TREATMENT ON WINTER OILSEED RAPE, 1993-95

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Summary

Studies of crop establishment and yield of a limited range of seed stocks did not show significant improvements from standard seed treatments over untreated seed in a three year period. Seed treatments had no effect on the rate of emergence in any year except in 1994 when emergence was improved but there was no yield effect.

Introduction

Oilseed rape is subject to a range of infections from seed borne as well as soil borne sources. Loss of seedlings and poor vigour owing to soil borne pathogens such as *Pythium* spp. and *Rhizoctonia solani* can occur in a wide range of situations and early seedling infection by *Phoma lingam* (stem canker), *Pyrenopeziza brassicae* (light leaf spot) and *Alternaria* spp. (dark leaf and pod spot) can result from seed borne infections. All commercial seed is chemically treated to promote good crop establishment with an insecticide to minimise flea beetle (*Phyllotreta* spp.) attack (mainly confined to spring rape) and one or more fungicides.

The possibility of lowering production costs by saving home grown seed is an attractive proposition where large crop areas are involved, especially if the crop can be grown satisfactorily using untreated seed. This paper reports on three years of experiences using untreated seed on a farm with a long history of rape growing.

Method

In each year single cleaned stocks of two winter oilseed rape varieties were divided into two lots, one of which was treated with a standard seed treatment as shown in Table 1. Plots were established in the field on a site at Little Stonham, Suffolk, (sandy clay loam, Beccles series) by sowing known seed numbers using an Oyjord plot drill. Assessments of seedling vigour were made and established plant populations were assessed on random quadrats in each plot. In all years the plots received normal farm crop management which included good pest and disease control routines. All experiments were taken through to harvest for yield determination with a Claas Compact combine harvester modified for plot work and fitted with a Novatech M964 weigh meter.

Table 1. *Variety and seed treatments used for comparison of oilseed rape establishment*

	1992-93	1993-94	1994-95
Variety	Apache Inca	Rocket Bristol	Rocket Bristol
Seed treatment	Untreated Lindex Plus FS	Untreated Hydraguard	Untreated Hydraguard

Table 2. *Details of active ingredients*

Product	Dose (ml product/kg seed)	Active ingredient (g ai/l)
Lindex Plus FS	22	fenpropimorph + gamma-HCH + thiram (43 + 545 + 73)
Hydraguard	15	gamma-HCH + thiram (615 + 230)

The trials were sown on 9 September 1992, 7 September 1993 and 7 September 1994 at seedrates of 170, 115 and 140 seeds/m^2 respectively in a randomised block design with four replicates.

Results

Seedling vigour and plant establishment

The rate of crop emergence was assessed in all years by early vigour scores. No differences between treatments were seen in 1993 and 1995, however in 1994 there was a significant improvement from treated seed - the vigour score (on a scale of 1-10 where 10=good vigour) increasing from 6.8 to 7.6.

Plant counts made after full crop emergence each year showed a consistent trend for slightly higher populations following seed treatment (including a significant increase from 70 to 80 plants/m^2 in 1994) but overall this was not statistically significant. Table 3 gives the three year means for the number of plants established expressed both as plant density and as % of seeds sown.

Disease and yield

Disease levels were low in all years and no treatment effects were seen. Similarly, over the three years there was no significant effect of seed treatment on yield (Table 3).

Table 3. *Crop assessments, 1993-95*

	Seed treatment		
	Untreated	Treated	LSD
Plant population (no./m²)	100	105	NS
Plant establishment (% seed sown)	70	74	NS
Yield (t/ha @ 91% dm)	5.28	5.25	NS

LSD = least significant difference at 95% probability level
NS = no significant difference

Discussion

These results suggest that the rewards from seed treatment may be very small. However, because there are so many combinations of different levels of disease on seed stocks and of different field situations, this experiment cannot properly attempt to reflect the benefits from seed treatment generally.

As far as practical advice is concerned, the limited evidence from this experiment does not appear to justify a great expense for chemical seed treatment. Growers who wish to take advantage of the cost savings from home saved seed should note that there will be many situations where treatment is worthwhile (Bartlett, 1994). Disease levels in the seed crop need to be low to avoid seed contamination, so some extra fungicide may be necessary against phoma stem canker, light leaf spot and alternaria leaf and pod spot in the seed crop. Also prompt action against flea beetle may be required where seed treatment is not used. Any doubts about seed vigour can be checked by a simple germination test and the seedrates adjusted if necessary.

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Reference

Bartlett, D H (1994). Review of current and future seed treatment in oilseed rape. *Brighton Crop Protection Conference Monograph No. 57.* Thornton Heath: BCPC Publications, 159-168.