

MORLEY RESEARCH CENTRE

Winter oilseed rape

Seed treatment observation plots

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Summary

Seedling vigour and plant establishment were improved following the use of a gamma-HCH/thiram seed treatment. However, these benefits in early growth were not carried through to yield.

Object

To evaluate the effects of seed treatment on seedling emergence, crop growth and yield.

Method

Treatments

All combinations of:

Varieties

Rocket
Bristol

Seed treatment

Nil
Hydraguard (HCH + thiram; 615 + 130 g ai/l)
applied at the recommended dose.

A single cleaned and untreated seed lot of each variety was split into two parts, one part was left untreated and the other part was treated with a combined fungicide and insecticide material.

*Not for publication without the Director's consent. This report deals primarily with only one year's work, so any conclusions given are provisional.

Seed was sown on 7 September, 1993, at a rate of 115 seeds/m² through an Oyjord plot drill in conventional small plots on a heavy land site in Suffolk. Observations were made of crop emergence and establishment in the autumn. The trial was harvested by combine on 2 August 1994.

The treatments were arranged in randomised blocks with 6 replicates.

Results and discussion

Seedbed moisture was quickly boosted by a substantial amount of rainfall almost immediately following drilling at the start of what proved to be an exceptionally wet period. At Morley the recorded rainfall for the first 14 days after drilling was 48.3 mm which was followed by a further 144.1 mm over the next 21 days.

Despite the fact that crop emergence was rapid and fairly even across the trial site there were differences in initial seedling vigour and in the plant densities achieved, apparently as the result of seed treatment as shown in Table 1. There were significant improvements in early vigour where the gamma-HCH + thiram seed treatment was applied with both rape varieties tested, also there was a significant increase in final plant population with Bristol but not Rocket. Final yields were not influenced by seed treatment.

Table 1. *Plant vigour score, 8 October, and plant population, 12 November (/m²)*

Variety	Seed treatment		Mean
	Untreated	Treated	
Plant vigour score*			
Rocket	6.7	7.2	6.9
Bristol	7.0	8.0	7.5
LSD	0.67		0.48
Mean	6.8	7.6	
LSD	0.48		
SE per plot(15 df)	±0.55		
CV(%)	7.6		
Plant population/m²			
Rocket	75.3	75.2	75.3
Bristol	65.1	84.3	74.7
LSD	9.10		NS
Mean	70.2	79.7	
LSD	6.44		
SE per plot(15 df)	±7.40		
CV(%)	9.9		

*Vigour score 0-9; 0=dead, 9=strong, healthy seedlings

Table 2. Yield, t/ha at 91% dm

Variety	Seed treatment		Mean
	Untreated	Treated	
Rocket	4.62	4.70	4.66
Bristol	4.73	4.80	4.76
LSD	NS		NS
Mean	4.67	4.75	
LSD	NS		
SE per plot(15 df)	±0.226		
CV(%)	4.8		

The effect of the seed treatment on early seedling growth in the wet conditions which prevailed during the establishment of this crop is consistent with the expected results for seed germinating in the presence of soil or seed-borne parasitic fungi such as *Pythium* spp., which could have been encouraged by the wet conditions.

Acknowledgements

The authors wish to express their thanks for the help received from the host farmer, W. Hamilton, from the NIAB and from colleagues at Morley in carrying out this trial.

Appendix

The following information is available on request:

Field details

Method and Experiment diary

Results

Table A1. Emergence score, 8 October

Field details

Site: W. Hamilton, Rosery Farm, Little Stonham, Suffolk

Field reference: TM121605

Crop: Winter oilseed rape, cv as treatments

Previous crop: 1993 Fallow
1992 W. wheat
1991 W. Wheat

Soil type and series: Sandy clay loam (Beccles series)

Soil analysis:

	pH	P	K	Mg
(11 Feb 94)	8.0	23(2)	203(2)	46(1)

Seed: As supplied (commercial)

Seedrate: 115 seeds/m²

Date sown: 7 September

Nutrients applied:	Date	Rate (kg/ha)	
	November	K ₂ O	80
	10 February	N	58 (s/amm)
	18 March	N	73 (amm/nit+urea)
	31 March	N	70
		Total N	201

Cultivations:	Late August	Ploughed and pressed, rolled
	3 September	Power harrow (x1)
	7 September	Drilled

Applications to crop: Confidential - normal farm inputs for a high yielding crop.

Method

These are an abbreviated version of the Standard Operating Procedures used at Morley Research Centre.

Plot layout

Plots were sown at 115 seeds/m² with an Oyjord drill. The drilled plots were 12 m long and 1.66 m wide from outside row to outside row (14 rows at 12.8 cm spacing). Plots were separated by a buffer of the same size with a 59 cm gap between successive plots and buffers. This gave an effective plot width of 2.25 m, which was used for harvest yield calculations. Trial treatments were applied to the plot and to part of the buffer at each side.

Common treatments such as fertiliser, fungicides, insecticides, and herbicides were applied across all plots with farm machinery using wheelings, 12 m apart. For harvest purposes, plot length was reduced to 9.5 m.

Seed treatment details

The seed treatment was applied at NIAB at the approved rate using a standard dresser

Agronomic factors

Overall plant population was determined by making 10 counts of 30.48 cm x 30.48 cm square quadrat at random across each plot.

Harvest details

Plots were harvested using a Sampo 2010 combine which was modified for plot work and used electronic weighing (Novatech M864 Loadmeter). Trials were harvested by replicate.

Post harvest determinations

Moisture content was determined by taking a 200 g subsample, oven drying for 40 hours at 100 -102° C and weighing at ambient temperature.

Experiment diary

Date	Operation
7 September 1993	Trial drilled
8 October	Rape vigour scores
12 November	Plant population counts made
14 July	Desiccant (Roundup) applied
2 August	Trial harvested

Results

Table A1. Emergence score, 8 October 1993

Variety	Seed treatment		Mean
	Untreated	Treated	
Rocket	6.7	6.8	6.8
Bristol	6.3	8.0	7.2
LSD		1.09	NS
Mean	6.5	7.4	
LSD		0.77	
SE per plot(15 df)		±0.89	
CV(%)		12.7	

Emergence score key: 0 = nil seedlings
9 = full braird