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84/R/RA/6 Spring Nitrogen Inhibitors - W. Oilseed Rape

Rothamsted Research

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84/R/RA/6

WINTER OILSEED RAPE

SPRING NITROGEN INHIBITORS

Object: To study the effects of adding nitrification inhibitors to prilled urea, applied in spring, on the yield and nitrogen uptake of w. oilseed rape - Whittlocks.

Sponsors: G.A. Rodgers, A. Penny, M.V.Hewitt.

Design: 2 randomised blocks of 9 plots.

Whole plot dimensions: 4.0 x 20.0.

Treatments: All combinations of:-

1. N INHIB Forms of nitrogen and nitrification inhibitors:

AN O	Ammonium nitrate (as 'Nitro-Chalk'), no inhibitor
PU O	Prilled urea, no inhibitor
PU DIC	Prilled urea and dicyandiamide at 33 kg
PU HYD	Prilled urea and hydroquinone at 13 kg

2. SPRING N Nitrogen rates (kg N) and times:

75E+75L	75 on 10 Feb and 75 on 21 Mar, 1984
150M	150 on 5 Mar

plus one extra treatment

EXTRA

NONE No spring nitrogen fertilizer or inhibitor

Basal applications: Manures: 'Nitro-Chalk' at 220 kg. Weedkillers: TCA at 11 kg in 250 l. Propyzamide with 3, 6-dichloropicolinic acid (as 'Matrikerb' at 1.6 kg) in 500 l. Fungicide: Prochloraz at 0.50 kg in 250 l. Desiccant: Diquat at 0.6 kg ion with 'Agral', a wetting agent, at 0.5 l, in 500 l.

Seed: Jet Neuf, dressed thiram, fenpropimorph and iprodione, sown at 9.0 kg.

Cultivations, etc.: - Discd: 17 Aug, 1983. N applied: 22 Aug. TCA applied: 23 Aug. Spring-tine cultivated: 24 Aug. Seed direct drilled: 25 Aug. 'Matrikerb' applied: 25 Oct. Fungicide applied: 18 Apr, 1984. Desiccant applied: 25 July. Combine harvested: 30 July. Previous crops: W. wheat 1982, w. barley 1983.

NOTES: 1) Ammonia volatilisation was measured after application of N dressings.
2) Soil samples were taken from February to June for N analyses.
3) Oil and protein contents of grain were measured.

84/R/RA/6

GRAIN (AT 90% DRY MATTER) TONNES/HECTARE

***** TABLES OF MEANS *****

SPRING N N INHIB	75E+75L	150M	MEAN
AN 0	3.09	3.41	3.25
PU 0	3.17	3.11	3.14
PU DIC	2.96	3.16	3.06
PU HYD	3.33	3.29	3.31
MEAN	3.14	3.24	3.19

NONE 1.77

GRAND MEAN 3.03

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

TABLE	N INHIB	SPRING N	N INHIB SPRING N & NONE
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SED	0.109	0.077	0.155

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

STRATUM	DF	SE	CV%
BLOCK.WP	8	0.155	5.1

GRAIN MEAN DM% 88.9

PLOT AREA HARVESTED 0.00465