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85/R/RA/2 Urea and Inhibitors - W. Oilseed Rape

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85/R/RA/2

WINTER OILSEED RAPE

UREA AND INHIBITORS

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

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

Design: 2 randomised blocks of 18 plots.

Whole plot dimensions: 4.0 x 20.0.

Treatments: All combinations of:-

1. N INHIB Forms of nitrogen and nitrification inhibitor used for seedbed and spring nitrogen applications:

AN 0	Ammonium nitrate (as 'Nitro-Chalk' (26% N)), no inhibitor
PU 0	Prilled urea, no inhibitor
PU DIC	Prilled urea and dicyandiamide
PU HYD	Prilled urea and hydroquinone

2. SEEDBD N Nitrogen rates (kg N) to seedbed (on 3 September, 1984):

0
50

3. SPRING N Nitrogen rates (kg N) and times in spring:

75E+75L	75 on 6 Feb, 1985 and 75 on 21 Mar.
150M	150 on 8 Mar.

plus two extra treatments:

EXTRA

SBD ONLY	50 kg N to seedbed only as 'Nitro-Chalk' (26% N), no inhibitor, no N in spring
NONE	No nitrogen fertilizer or inhibitor

NOTE: Dicyandiamide and hydroquinone were applied at 12.5 kg and 10 kg respectively in combination with SEEDBD N 0 and at 18 kg and 13 kg with SEEDBD N 50.

Basal applications: Manures: (0:24:24) at 200 kg. Weedkillers: Propyzamide with clopyralid (as 'Matrikerb' at 1.6 kg) in 500 l; benazolin ethyl ester at 0.30 kg with clopyralid at 0.05 kg in 200 l. Desiccant: Diquat at 0.60 kg ion with a wetting agent ('Agral' at 0.5 l) in 500 l.

Seed: Jet Neuf, seed dressed gamma HCH, thiram and fenpropimorph sown at 8 kg.

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Cultivations, etc.:— Disced twice: 31 July, 1984. PK applied: 8 Aug.
Heavy spring-tine cultivated: 5 Sept. Seed sown: 6 Sept.
'Matrikerb' applied: 30 Oct. Benazolin ethyl ester with clopyralid
applied: 6 Mar, 1985. Desiccant applied: 25 July. Combine
harvested: 12 Aug. Previous crops: W. barley 1983 and 1984.

NOTE: Dry matter and N contents of plants were measured in February, May
and June. Oil and protein contents of grain were measured.
Nitrate and ammonium levels in the soil, ammonium losses from main
dressings and soil pH measurements were taken during the season.
Disease incidence and severity was assessed once in April.

GRAIN (AT 90% DRY MATTER) TONNES/HECTARE

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

SEEDBD N	0	50	MEAN
N INHIB			
AN O	2.51	2.71	2.61
PU O	2.10	2.19	2.14
PU DIC	2.17	2.34	2.25
PU HYD	2.25	2.52	2.38
MEAN	2.26	2.44	2.35
SPRING N	75E+75L	150M	MEAN
N INHIB			
AN O	2.66	2.56	2.61
PU O	2.36	1.93	2.14
PU DIC	2.33	2.18	2.25
PU HYD	2.58	2.19	2.38
MEAN	2.48	2.21	2.35
SPRING N	75E+75L	150M	MEAN
SEEDBD N			
0	2.44	2.07	2.26
50	2.52	2.36	2.44
MEAN	2.48	2.21	2.35

85/R/RA/2

GRAIN (AT 90% DRY MATTER) TONNES/HECTARE

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

SEEDBD N	0		50	
SPRING N	75E+75L	150M	75E+75L	150M
N INHIB				
AN 0	2.58	2.43	2.73	2.69
PU 0	2.49	1.70	2.23	2.15
PU DIC	2.25	2.08	2.40	2.28
PU HYD	2.44	2.06	2.72	2.31

EXTRA	SBD ONLY	NONE	MEAN
	1.57	1.27	1.42

GRAND MEAN 2.24

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

TABLE	EXTRA	N INHIB	SEEDBD N	SPRING N
SED	0.190	0.095	0.067	0.067
TABLE	N INHIB SEEDBD N	N INHIB SPRING N	SEEDBD N SPRING N	N INHIB SEEDBD N SPRING N
SED	0.135	0.135	0.095	0.190

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

STRATUM	DF	SE	CV%
BLOCK.WP	17	0.190	8.5

MEAN DM% 82.1

PLOT AREA HARVESTED 0.00472