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86/W/CS/293 Nitrification Inhibitors - W. Wheat

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86/W/CS/293

NITRIFICATION INHIBITORS

Object: To study the effects of nitrification inhibitors on the yield and nitrogen uptake of w. wheat - Woburn The Pightle.

Sponsor: A. Penny.

The fifth year, w. wheat.

For previous years see 82/W/WW/3 and 83-85/W/CS/293.

Design: 2 randomised blocks of 21 plots.

Whole plot dimensions: 4.0 x 12.0.

Treatments, applied cumulatively to 1982, 1983, 1984 and 1985:

All combinations of:-

1. I FORM Nitrification inhibitors applied just before final seedbed cultivations:

 DICYANDI Dicyandiamide
 ETRIDIAZ Etridiazole
 NITRAPYR Nitrapyrin
 2. I RATE Rates of inhibitors:

 SINGLE Single (1.0 kg for etridiazole and nitrapyrin; 10.0 kg for dicyandiamide)
 DOUBLE Double (2.0 kg for etridiazole and nitrapyrin; 20.0 kg for dicyandiamide)
 3. N RATE Rates of nitrogen fertilizer in spring (kg N) as 'Nitro-Chalk':

 0
 70
 140
- plus 3 extra treatments given nitrogen fertilizer in spring only (kg N) as 'Nitro-Chalk':
- N RATE X
0
70
140

NOTE: Nitrification inhibitors were applied on 15 Oct, 1985.

86/W/CS/293

Basal applications: Weedkillers: Clopyralid with ioxynil and mecoprop (as 'Harrier' at 5.0 l) in 250 l. Fungicides: Propiconazole at 0.12 kg in 240 l, fenpropimorph at 0.75 kg in 240 l.

Seed: Avalon, sown at 170 kg.

Cultivations, etc.: - Discd: 23 Sept, 1985. Ploughed: 25 Sept. Rolled: 10 Oct. Discd: 11 Oct. Rotary harrowed, inhibitors applied, harrowed, seed sown, harrowed: 15 Oct. N applied: 2 Apr, 1986. Weedkillers applied: 6 May. Propiconazole applied: 25 June. Fenpropimorph applied: 16 July. Combine harvested: 1 Sept.

- NOTES: (1) Soil samples were taken in March for ammonia and nitrate analyses.
 (2) Plant samples were taken in spring, July and at harvest for estimates of total N and dry matter.

GRAIN TONNES/HECTARE

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

I FORM N RATE	DICYANDI	ETRIDIAZ	NITRAPYR	MEAN
0	6.78	6.59	6.60	6.66
70	7.53	7.27	7.73	7.51
140	7.32	7.29	7.35	7.32
MEAN	7.21	7.05	7.23	7.16

I RATE N RATE	SINGLE	DOUBLE	MEAN
0	6.87	6.44	6.66
70	7.89	7.13	7.51
140	7.32	7.32	7.32
MEAN	7.36	6.96	7.16

I RATE I FORM	SINGLE	DOUBLE	MEAN
DICYANDI	7.14	7.29	7.21
ETRIDIAZ	7.34	6.76	7.05
NITRAPYR	7.60	6.85	7.23
MEAN	7.36	6.96	7.16

86/W/CS/293

GRAIN TONNES/HECTARE

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

	I FORM I RATE N RATE	DICYANDI SINGLE	DOUBLE	ETRIDIAZ SINGLE	DOUBLE	NITRAPYR SINGLE	DOUBLE
	0	7.09	6.48	6.80	6.37	6.73	6.47
	70	7.36	7.71	8.24	6.30	8.06	7.39
	140	6.98	7.67	6.98	7.60	8.02	6.69
N RATE X	0	70	140	MEAN			
	6.28	6.83	8.01	7.04			
GRAND MEAN	7.14						

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

TABLE	N RATE X	N RATE	I FORM	I RATE
SED	0.594	0.242	0.242	0.198
TABLE	N RATE I FORM	N RATE I RATE	I FORM I RATE	N RATE I FORM I RATE
SED	0.420	0.343	0.343	0.594

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

STRATUM	DF	SE	CV%
BLOCK.WP	20	0.594	8.3
GRAIN MEAN DM%	81.6		

86/W/CS/293

STRAW TONNES/HECTARE

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

I FORM N RATE	DICYANDI	ETRIDIAZ	NITRAPYR	MEAN
0	3.31	3.19	3.40	3.30
70	4.83	3.90	4.15	4.30
140	4.46	3.92	4.46	4.28
MEAN	4.20	3.67	4.00	3.96

I RATE N RATE	SINGLE	DOUBLE	MEAN
0	3.89	2.71	3.30
70	4.52	4.07	4.30
140	4.17	4.38	4.28
MEAN	4.19	3.72	3.96

I RATE I FORM	SINGLE	DOUBLE	MEAN
DICYANDI	4.24	4.16	4.20
ETRIDIAZ	3.89	3.45	3.67
NITRAPYR	4.46	3.55	4.00
MEAN	4.19	3.72	3.96

I FORM I RATE N RATE	DICYANDI SINGLE	ETRIDIAZ DOUBLE	ETRIDIAZ SINGLE	NITRAPYR DOUBLE	NITRAPYR SINGLE	DOUBLE
0	3.91	2.70	3.68	2.71	4.07	2.73
70	4.71	4.96	4.50	3.30	4.36	3.94
140	4.09	4.82	3.47	4.36	4.95	3.96

N RATE X	0	70	140	MEAN
	2.03	3.89	4.95	3.62

GRAND MEAN 3.91

STRAW MEAN DM% 90.4

PLOT AREA HARVESTED 0.00244