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ROTHAMSTED
RESEARCH

Yields of the Field Experiments 1986

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Rothamsted Experimental Station
Harpenden
West Yorkshire
England
MK45 0EF
United Kingdom

This report is intended to supply the Rothamsted Experiment and
Station of Harpenden, West Yorkshire, with information on the
results of the experiments conducted during the year 1986.

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

Rothamsted Research

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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	DOUBLE	ETRIDIAZ SINGLE	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