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86/R/WW/6 N and Dcd - W. Wheat

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86/R/WW/6

WINTER WHEAT

N AND DCD

Object: To study the effects of a nitrification inhibitor in combination with different rates and timings of N on yield - New Zealand.

Sponsors: G.A. Rodgers, F.V. Widdowson.

Design: 2 randomised blocks of 26 plots.

Whole plot dimensions: 3.0 x 11.0.

Treatments: All combinations of:-

1. N INHIB Nitrification inhibitor added to nitrogen fertilizer:

| | |
|----------|--|
| NONE | None |
| DICYANDI | Dicyandiamide at 16 kg, divided equally between applications |

2. N TIME Time and division of nitrogen fertilizer:

| | |
|------|---|
| 1111 | Quarter of N on each of 13 Mar, 1986, 4 Apr, 28 Apr, 16 May |
| 22-- | Half of N on each of 13 Mar, 4 Apr |
| 2-2- | Half of N on each of 13 Mar, 28 Apr |
| -22- | Half of N on each of 4 Apr, 28 Apr |
| 4--- | All of N on 13 Mar |
| --4- | All of N on 28 Apr |

3. N RATE Amount of nitrogen fertilizer applied (kg N):

| | |
|-----|-----|
| 160 | 160 |
| 240 | 240 |

plus one extra treatment

EXTRA

NONE No nitrogen fertilizer or inhibitor (duplicated)

NOTE: Nitrogen was applied as a mixture of urea and ammonium nitrate (28% N).

Basal applications: Weedkillers: Paraquat at 0.60 kg ion in 200 l. Clopyralid at 0.07 kg, bromoxynil octanoate at 0.34 kg, mecoprop at 2.5 kg and isoproturon at 2.1 kg in 200 l applied with the prochloraz and carbendazim. Fungicides: Prochloraz at 0.40 kg and carbendazim at 0.15 kg. Propiconazole at 0.12 kg in 200 l.

Seed: Avalon, sown at 190 kg.

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Cultivations, etc.: - Heavy spring-tine cultivated: 30 Aug, 1985.
 Paraquat applied: 24 Sept. Heavy spring-tine cultivated, rotary harrowed, seed sown: 1 Oct. Remaining weedkillers with prochloraz and carbendazim applied: 30 Apr, 1986. Propiconazole applied: 26 June. Combine harvested: 22 Aug. Previous crops: W. wheat 1984, w. oats 1985.

NOTE: A green crop sample was taken at the end of June to measure dry matter, ear numbers and N content. The N content of grain was determined.

GRAIN TONNES/HECTARE

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

| | | | | | | | |
|------------|--------|------|------|------|------|------|------|
| N TIME | 1111 | 22-- | 2-2- | -22- | 4--- | --4- | MEAN |
| N INHIB | | | | | | | |
| NONE | 9.26 | 9.14 | 8.90 | 9.35 | 8.73 | 9.34 | 9.12 |
| DICYANDI | 8.89 | 9.01 | 9.16 | 9.16 | 8.94 | 9.19 | 9.06 |
| MEAN | 9.08 | 9.08 | 9.03 | 9.26 | 8.83 | 9.27 | 9.09 |
| N RATE | 160 | 240 | MEAN | | | | |
| N INHIB | | | | | | | |
| NONE | 9.00 | 9.24 | 9.12 | | | | |
| DICYANDI | 8.89 | 9.24 | 9.06 | | | | |
| MEAN | 8.94 | 9.24 | 9.09 | | | | |
| N RATE | 160 | 240 | MEAN | | | | |
| N TIME | | | | | | | |
| 1111 | 8.96 | 9.20 | 9.08 | | | | |
| 22-- | 8.94 | 9.21 | 9.08 | | | | |
| 2-2- | 8.82 | 9.23 | 9.03 | | | | |
| -22- | 9.03 | 9.48 | 9.26 | | | | |
| 4--- | 8.71 | 8.96 | 8.83 | | | | |
| --4- | 9.18 | 9.35 | 9.27 | | | | |
| MEAN | 8.94 | 9.24 | 9.09 | | | | |
| N INHIB | N RATE | 160 | 240 | | | | |
| NONE | N TIME | | | | | | |
| | 1111 | 9.11 | 9.41 | | | | |
| | 22-- | 8.99 | 9.30 | | | | |
| | 2-2- | 8.96 | 8.83 | | | | |
| | -22- | 9.19 | 9.51 | | | | |
| | 4--- | 8.57 | 8.88 | | | | |
| | --4- | 9.16 | 9.53 | | | | |
| DICYANDI | 1111 | 8.80 | 8.98 | | | | |
| | 22-- | 8.89 | 9.13 | | | | |
| | 2-2- | 8.69 | 9.64 | | | | |
| | -22- | 8.87 | 9.45 | | | | |
| | 4--- | 8.84 | 9.04 | | | | |
| | --4- | 9.21 | 9.18 | | | | |
| NONE | 6.04 | | | | | | |
| GRAND MEAN | 8.86 | | | | | | |

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GRAIN TONNES/HECTARE

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

| TABLE | N INHIB | N TIME | N RATE | N INHIB N TIME |
|-------|-------------------|------------------|-----------------------------|-------------------|
| SED | 0.097 | 0.168 | 0.097 | 0.238 |
| TABLE | N INHIB N RATE | N TIME N RATE | N INHIB N TIME N RATE | |
| SED | 0.137 | 0.238 | 0.336 | |

SED FOR COMPARING NONE WITH ANY ITEM IN
N INHIB.N TIME.N RATE TABLE IS 0.291

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

| STRATUM | DF | SE | CV% |
|----------|----|-------|-----|
| BLOCK.WP | 26 | 0.336 | 3.8 |

GRAIN MEAN DM% 76.3

PLOT AREA HARVESTED 0.00251