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77/S/WW/1 Rates and Times of N and Fungicide - W. Wheat

Rothamsted Research

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77/S/WW/1

WINTER WHEAT

RATES AND TIMES OF N AND FUNGICIDE

Object: To study the effects of fungicide and rates and times of applying nitrogen fertiliser on the incidence of foliar diseases and on yield - Saxmundham.

Sponsors: F.V. Widdowson, A. Penny.

Design: Single replicate of 4 x 2 x 2 x 2 fully randomised plus 4 extra plots.

Whole plot dimensions: 2.74 x 6.10.

Treatments: All combinations of:-

1. S N RATE Rates of solid nitrogen fertiliser (kg N):

0
50
100
150

2. S N TIME Times of applying solid nitrogen fertiliser:

APRIL 28 April
MAY 19 May

3. L N RATE Rates of applying liquid nitrogen fertiliser, half on 16 June, half on 6 July (kg N):

0
50

4. FUNGICIDE Foliar spray to control fungi:

NONE None
B+MB+MZ Benomyl + maneb + mancozeb

plus four extra plots not given liquid fertiliser but given benomyl + maneb + mancozeb as above, and testing solid nitrogen as follows (kg N):-

| XTRA S N | G.S.3(16 Mar) | | G.S.5(28 Apr) | | G.S.8(25 May) | |
|----------|---------------|---|---------------|---|---------------|--------------|
| 20+60+20 | 20 | + | 60 | + | 20 | (duplicated) |
| 30+90+30 | 30 | + | 90 | + | 30 | (duplicated) |

NOTE: Benomyl applied at 0.28 kg with mancozeb plus maneb ('Kascade' at 2.24 kg) in 340 l on 19 May, 16 June, 6 July.

Basal applications: Manures: K20 at 150 kg as muriate of potash. (30:13:0) at 190 kg. Weedkillers: Ioxynil at 0.53 kg with mecoprop at 1.6 kg in 340 l. Growth regulator: Chlormequat at 1.7 kg in 340 l.

Seed: Maris Huntsman, broadcast at 200 kg.

Cultivations, etc.:- K applied: 17 Aug, 1976. Ploughed 3 Sept. Seed broadcast, NP applied: 23 Nov. Spring-tine cultivated: 24 Nov. Weedkillers applied: 14 May, 1977. Growth regulator applied: 19 May. Combine harvested: 1 Sept. Previous crops: Beans 1975, wheat 1976.

77/S/WW/1

GRAIN TONNES/HECTARE

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

INCLUDING S N RATE 0

| S N RATE | 0 | 50 | 100 | 150 | MEAN |
|----------|------|------|------|------|------|
| L N RATE | | | | | |
| 0 | 3.20 | 4.72 | 5.29 | 5.76 | 4.74 |
| 50 | 3.61 | 4.64 | 4.77 | 5.71 | 4.68 |
| MEAN | 3.40 | 4.68 | 5.03 | 5.74 | 4.71 |

| S N RATE | 0 | 50 | 100 | 150 | MEAN |
|----------|------|------|------|------|------|
| FUNGCIDE | | | | | |
| NONE | 3.38 | 4.80 | 4.78 | 5.43 | 4.60 |
| B+MB+MZ | 3.42 | 4.56 | 5.28 | 6.04 | 4.83 |
| MEAN | 3.40 | 4.68 | 5.03 | 5.74 | 4.71 |

| FUNGCIDE | NONE | B+MB+MZ | MEAN |
|----------|------|---------|------|
| L N RATE | | | |
| 0 | 4.65 | 4.84 | 4.74 |
| 50 | 4.55 | 4.82 | 4.68 |
| MEAN | 4.60 | 4.83 | 4.71 |

EXCLUDING S N RATE 0

| S N RATE | 50 | 100 | 150 | MEAN |
|----------|------|------|------|------|
| S N TIME | | | | |
| APRIL | 5.49 | 5.84 | 6.53 | 5.95 |
| MAY | 3.88 | 4.22 | 4.94 | 4.35 |
| MEAN | 4.68 | 5.03 | 5.74 | 5.15 |

| L N RATE | 0 | 50 | MEAN |
|----------|------|------|------|
| S N TIME | | | |
| APRIL | 6.06 | 5.85 | 5.95 |
| MAY | 4.46 | 4.24 | 4.35 |
| MEAN | 5.26 | 5.04 | 5.15 |

| FUNGTIME | NONE | B+MB+MZ | MEAN |
|----------|------|---------|------|
| S N TIME | | | |
| APRIL | 5.63 | 6.27 | 5.95 |
| MAY | 4.38 | 6.38 | 4.35 |
| MEAN | 5.01 | 5.29 | 5.15 |

| XTRA S N | 20+60+20 | 30+90+30 | MEAN |
|----------|----------|----------|------|
| | 6.19 | 6.69 | 6.44 |

GRAND MEAN 4.91

77/S/WW/1

GRAIN TONNES/HECTARE

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

| TABLE | XTRA S N | L N RATE | FUNGCIDE | S N RATE |
|-------|----------|-----------------|-----------------|----------|
| SED | 0.369 | 0.131 0.151* | 0.131 0.151* | 0.185 |

| TABLE | S N TIME | L N RATE FUNGCIDE | S N RATE S N TIME | S N RATE L N RATE |
|-------|----------|----------------------|----------------------|----------------------|
| SED | 0.151 | 0.185 | 0.261 | 0.261 |

| TABLE | S N TIME L N RATE | S N RATE FUNGCIDE | S N TIME FUNGCIDE |
|-------|----------------------|----------------------|----------------------|
| SED | 0.213 | 0.261 | 0.213 |

* USE ONLY WITH TABLES EXCLUDING S N RATE 0

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

| STRATUM | DF | SE | CV% |
|---------|----|-------|-----|
| WP | 15 | 0.369 | 7.5 |

GRAIN MEAN DM% 76.8

PLOT AREA HARVESTED 0.00089