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79/R/WW/1 and 79/W/WW/1 Varieties and N - W. Wheat

Rothamsted Research

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79/R/WW/1 and 79/W/WW/1

WINTER WHEAT

VARIETIES AND N

Object: To study the yields and flour quality of a selection of the newer varieties of winter wheat and the effects of nitrogen on them on land in rotation (pathogen free) and after cereal (pathogen infected) - Rothamsted Fosters Corner (pathogen free RH) and Pastures (pathogen infected RD), Woburn Horsepool Lane Close East (pathogen free WH).

Sponsors: R. Moffitt, R.J. Gutteridge.

Design: 3 randomised blocks of 8 plots split into 4 (except Woburn 4 blocks).

Whole plot dimensions: 4.27 x 27.1.

Treatments: All combinations of:-

Whole plots

| 1. VARIETY | Varieties: |
|------------|----------------|
| ARMADA | Armada |
| COPAIN | Copain |
| FLANDERS | Flanders |
| HUSTLER | Hustler |
| MARDLER | Mardler |
| HUNTSMAN | Maris Huntsman |
| SENTRY | Sentry |
| SPORTSMN | Sportsman |

Sub plots

| 2. N | Nitrogen fertiliser (kg N): |
|--------------|--|
| (RH) (RD&WH) | Fosters Corner (RH) Pastures (RD) & Horsepool Lane Close East (WH) |
| 0 63 | 0 63 in spring |
| 63 126 | 63 in spring 126 in spring |
| 126 189 | 126 in spring 189 in spring |
| 63+63 126+63 | 63 in spring + 126 in spring + 63 at flowering 63 at flowering |

NOTE: Spring N was applied as 'Nitro-Chalk'. N at flowering was applied as aqueous urea (6% N) in two equal applications at 31.5 kg on 19 June, 12 July to Fosters Corner (RH) and Pastures (RD) and as 'Nitro-Chalk' in one application on 25 June, to Horsepool Lane Close East (WH).

Basal applications: Manures: Fosters Corner (RH), Pastures (RD) and Horsepool Lane Close East (WH): (0:20:20) at 310 kg (RH) and (RD) combine drilled, (WH) broadcast. Weedkillers: Fosters Corner (RH): Bromoxynil and ioxynil (as 'Oxytril CM' at 2.1 kg in 220 l). Pastures (RD): Mecoprop at 2.5 kg in 220 l. Horsepool Lane Close East (WH): Mecoprop, bromoxynil and ioxynil ('Brittox' at 2.5 kg in 250 l).

79/R/WW/1 and 79/W/WW/1

Seed: Fosters Corner (RH) and Pastures (RD): Varieties sown at 190 kg.
Horsepool Lane Close East (WH): Varieties sown at 180 kg.

Cultivations, etc.:-

Fosters Corner (RH): Heavy spring-tine cultivated twice, seed sown: 23 Oct, 1978. N applied: 3 May, 1979. Weedkillers applied: 14 May. Combine harvested: 31 Aug. Previous cropping: Beans 1977, potatoes 1978.

Pastures (RD): Ploughed: 17 Oct, 1978. Rotary harrowed, seed sown: 23 Oct. N and weedkiller applied: 8 May, 1979. Combine harvested: 31 Aug. Previous cropping: Beans 1977, wheat 1978.

Horsepool Lane Close East (WH): Heavy spring-tine cultivated twice: 11 Oct, 1978, 13 Oct. PK applied, spring-tine cultivated with crumbler attached: 17 Oct. Seed sown: 20 Oct. N applied: 26 Apr, 1979. Weedkillers applied: 15 May. Combine harvested: 31 Aug. Previous crops: Winter oats 1977, potatoes 1978.

NOTE: Samples were taken in July on Pastures (RD) for estimates of eyespot (*Pseudocercospora herpotrichoides*) and take-all (*Gaeumannomyces graminis*).

79/R/WW/1 FOSTERS CORNER (RH) PATHOGEN FREE

GRAIN TONNES/HECTARE

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

| N | 0 | 63 | 126 | 63+63 | MEAN |
|----------|------|------|------|-------|------|
| VARIETY | | | | | |
| ARMADA | 4.14 | 6.49 | 6.82 | 6.65 | 6.03 |
| COPAIN | 3.32 | 6.12 | 7.08 | 6.35 | 5.72 |
| FLANDERS | 3.91 | 6.42 | 6.84 | 6.64 | 5.96 |
| HUSTLER | 3.68 | 6.48 | 6.39 | 6.68 | 5.81 |
| MARDLER | 4.04 | 6.27 | 6.05 | 6.30 | 5.67 |
| HUNTSMAN | 3.82 | 6.53 | 7.09 | 6.61 | 6.01 |
| SENTRY | 3.72 | 6.09 | 5.95 | 5.94 | 5.42 |
| SPORTSMN | 4.44 | 5.63 | 6.07 | 6.50 | 5.66 |
| MEAN | 3.88 | 6.25 | 6.54 | 6.46 | 5.78 |

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

| TABLE | VARIETY | N | VARIETY |
|--|---------|-------|---------|
| | | | N |
| SED | 0.143 | 0.103 | 0.290 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | | | |
| VARIETY | | | 0.292 |

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

| STRATUM | DF | SE | CV% |
|-------------|----|-------|-----|
| BLOCK.WP | 14 | 0.175 | 3.0 |
| BLOCK.WP.SP | 48 | 0.358 | 6.2 |

GRAIN MEAN DM% 83.9

SUB PLOT AREA HARVESTED 0.00173

79/R/WW/1 PASTURES (RD) PATHOGEN INFECTED

GRAIN TONNES/HECTARE

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

| N | 63 | 126 | 189 | 126+63 | MEAN |
|----------|------|------|------|--------|------|
| VARIETY | | | | | |
| ARMADA | 5.13 | 6.03 | 5.06 | 5.31 | 5.38 |
| COPAIN | 4.95 | 6.30 | 6.63 | 6.26 | 6.03 |
| FLANDERS | 5.22 | 5.80 | 6.00 | 5.91 | 5.73 |
| HUSTLER | 5.34 | 6.22 | 5.49 | 5.87 | 5.73 |
| MARDLER | 5.32 | 5.87 | 5.37 | 5.34 | 5.48 |
| HUNTSMAN | 5.66 | 6.47 | 6.56 | 6.43 | 6.28 |
| SENTRY | 5.15 | 5.78 | 5.99 | 5.72 | 5.66 |
| SPORTSMN | 5.65 | 5.76 | 5.19 | 5.40 | 5.50 |
| MEAN | 5.30 | 6.03 | 5.79 | 5.78 | 5.72 |

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

| TABLE | VARIETY | N | VARIETY N |
|---|---------|-------|--------------|
| SED | 0.191 | 0.112 | 0.334 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: VARIETY | | | 0.316 |

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

| STRATUM | DF | SE | CV% |
|-------------|----|-------|-----|
| BLOCK.WP | 14 | 0.234 | 4.1 |
| BLOCK.WP.SP | 48 | 0.387 | 6.8 |

GRAIN MEAN DM% 85.5

SUB PLOT AREA HARVESTED 0.00172

79/W/WW/1 HORSEPOOL LANE CLOSE EAST (WH) PATHOGEN FREE

GRAIN TONNES/HECTARE

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

| N | 63 | 126 | 189 | 126+63 | MEAN |
|----------|------|------|------|--------|------|
| VARIETY | | | | | |
| ARMADA | 4.93 | 4.78 | 4.45 | 4.82 | 4.75 |
| COPAIN | 4.17 | 4.56 | 4.21 | 4.13 | 4.27 |
| FLANDERS | 4.75 | 4.53 | 4.10 | 4.39 | 4.44 |
| HUSTLER | 4.57 | 4.25 | 3.76 | 4.02 | 4.15 |
| MARDLER | 4.36 | 4.27 | 3.36 | 3.37 | 3.84 |
| HUNTSMAN | 4.63 | 4.51 | 4.15 | 4.08 | 4.34 |
| SENTRY | 4.14 | 4.08 | 3.19 | 3.60 | 3.75 |
| SPORTSMN | 3.64 | 3.05 | 2.64 | 3.03 | 3.09 |
| MEAN | 4.40 | 4.25 | 3.73 | 3.93 | 4.08 |

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

| TABLE | VARIETY | N | VARIETY |
|--|---------|-------|---------|
| | | | N |
| SED | 0.168 | 0.095 | 0.286 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: | | | |
| VARIETY | | | 0.267 |

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

| STRATUM | DF | SE | CV% |
|-------------|----|-------|-----|
| BLOCK.WP | 14 | 0.206 | 5.1 |
| BLOCK.WP.SP | 48 | 0.328 | 8.0 |

GRAIN MEAN DM% 82.8

SUB PLOT AREA HARVESTED 0.00173