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# Yields of the Field Experiments 1979

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## 79/S/CS/1 Fungicides, N and Growth Regulator - W. Barley

### Rothamsted Research

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79/S/CS/1

FUNGICIDES, N AND GROWTH REGULATOR

Object: To study the effects of fungicides, and rates and times of applying nitrogen fertiliser and a growth regulator on the incidence of foliar diseases and on the yield of barley - Saxmundham, Oldershaw's and Garner's plots.

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The 14th year, winter barley.

For previous years see 66/C/30(t), 67/C/23(t), 68/C/39, 69-70/S/CS/1, 71/S/CS/1(t), 72/S/CS/1(t) and 73-78/S/CS/1.

Design: A single replicate of 2<sup>6</sup> in 4 blocks of 4 plots each split into half and quarter plots, plus one additional plot per block similarly split. Most treatments to wheat 1966-1976 and to barley 1977-1978 have been ignored.

Whole plot dimensions: 5.49 x 40.2.

Treatments: All combinations of:-

Whole plots

- |             |   |
|-------------|---|
| 1. EYESFUNG | Fungicide to control eyespot: Carbendazim (as 'Bavistin' at 0.51 kg) in 220 l |
| NONE        | None  |
| SPRAYED     | Sprayed 15 May, 1979  |
| 2. MILDFUNG | Fungicide to control mildew: Tridemorph at 0.53 kg in 220 l                   |
| NONE        | None  |
| SPRAYED     | Sprayed 15 May  |

Half plots

- |             |   |
|-------------|---|
| 3. APRIL N  | Nitrogen fertiliser (kg N) applied on 2 May, 1979:          |
| 0           |   |
| 40          |   |
| 4. GRTH REG | Growth regulator: applied on 16 May                         |
| NONE        | None  |
| MEP+ETH     | Mepiquat chloride + ethephon ('Terpal' at 2.46 kg) in 280 l |

Quarter plots

- |             |   |
|-------------|---|
| 5. E N RATE | Rates of early spring nitrogen fertiliser (kg N total): |
| 80          |   |
| 120         |   |

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6. E N TIME            Times of applying early spring nitrogen fertiliser:
- FEB+MAR            Half on 6 Mar, half on 10 Apr  
    MAR                All on 10 Apr
- XTRA EMR             Plus one additional whole plot per block sprayed with fungicides to control eyespot and mildew and given growth regulator, testing all combinations of:

Half plots

1. SEEDBD N           Nitrogen fertiliser (kg N) applied to seedbed on 26 Sept, 1978:
- 0  
    50
2. APRIL N            Nitrogen fertiliser (kg N) applied on 2 May, 1979
- 0  
    40

Quarter plots

3. E N RATE           Rates of early spring nitrogen fertiliser (kg N total):
- 80  
    120
4. E N TIME            Times of applying early spring nitrogen fertiliser:
- FEB+MAR            Half on 6 Mar, half on 10 Apr  
    MAR                All on 10 Apr

NOTE: Plots not receiving test of seedbed N received 50 kg N after drilling.

Basal applications: (0:14:28) at 290 kg. Autumn weedkiller: Chlortoluron at 4.5 kg in 220 l. Spring weedkiller: 'Wheatclene', 2.5 kg of solid (metoxuron and simazine) 2.5 l of liquid (barban) in 220 l.

Seed: Sonja, sown at 160 kg.

Cultivations, etc.:— PK applied: 19 Sept, 1978. Seed sown, chlortoluron applied: 26 Sept. Spring weedkillers applied: 10 Apr, 1979. Combine harvested: 8 Aug.

- NOTES: (1) Soils were sampled and assessed for mineral N in March and April, leaf diseases were assessed in May and June and N content of grain was assessed at harvest.
- (2) Because of a design error, in the main analysis many interactions are identified with each other and therefore only the main effects are presented.
- (3) Because of bird damage the yields from two XTRA EMR sub plots were lost, the treatment combinations are marked with \* in the table.

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GRAIN TONNES/HECTARE

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

EYESFUNG	NONE	SPRAYED	MEAN
	6.40	6.70	6.55
MILDFUNG	NONE	SPRAYED	MEAN
	6.53	6.57	6.55
APRIL N	0	40	MEAN
	6.29	6.81	6.55
GRTH REG	NONE	MEP+ETH	MEAN
	6.45	6.65	6.55
E N RATE	80	120	MEAN
	6.28	6.82	6.55
E N TIME	FEB+MAR	MAR	MEAN
	6.64	6.46	6.55

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

TABLE	EYESFUNG	MILDFUNG	APRIL N	GRTH REG
SED	0.123	0.123	0.199	0.199

TABLE	E N RATE	E N TIME
SED	0.071	0.071

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

STRATUM	DF	SE	CV%
BLOCK.WP	4	0.247	3.8
BLOCK.WP.HP	5	0.563	8.6
BLOCK.WP.HP.QP	12	0.282	4.3

GRAIN MEAN DM % 84.1

XTRA EMR

GRAIN TONNES/HECTARE

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

SEEDBD N	APRIL N	E N TIME E N RATE	FEB+MAR	MAR
0	0	80	2.76	*
		120	6.59	3.78
	40	80	6.07	5.96
		120	6.72	6.80
50	0	80	5.11	5.75
		120	6.73	6.93
	40	80	*	5.03
		120	5.34	6.69

GRAIN MEAN DM % 84.2 SUB PLOT AREA HARVESTED 0.00466