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83/R/B/1 Factors Limiting Yield - W. Barley

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WINTER BARLEY

FACTORS LIMITING YIELD

Object: To study the effects of a range of factors on the incidence of pests and diseases and on the growth and yield of w. barley - Long Hoos I/II.

Sponsors: F.V. Widdowson, J.F. Jenkyn, B.R. Kerry, R.T. Plumb, D.W. Lawlor, G.J.S. Ross, G.C. Scott.

Design: Half replicate of 2^7 in 2 blocks of 32 plots + 2 extra plots in each block.

Whole plot dimensions: 3.0 x 15.2.

Treatments: Combinations of:-

- | | |
|-------------|---|
| 1. SOWDATE | Dates of sowing: |
| 15 SEP | 15 September, 1982 |
| 26 OCT | 26 October |
| 2. N RATE | Rates of nitrogen fertilizer (kg N) as 'Nitro-Chalk': |
| 100 | |
| 150 | |
| 3. N TIME | Times of applying nitrogen fertilizer: |
| 10 MAR | 10 March, 1983 |
| 12 APR | 12 April |
| 4. AUT PEST | Autumn pesticide to seedbed: |
| NONE | None |
| ALDICARB | Aldicarb at 7.1 kg |
| 5. E FUNG | Early fungicides: |
| NONE | None |
| TFSD | Triadimenol and fuberidazole seed dressing |
| 6. L FUNG | Late fungicides: |
| NONE | None |
| TR+CA+MA | Tridemorph at 0.70 kg in 450 l on 21 Jan 1983, and at 0.70 kg in 220 l on 18 Mar. Carbendazim at 0.15 kg, maneb at 1.6 kg and tridemorph at 0.38 kg in 220 l on 26 Apr and 23 May |
| 7. GRTH REG | Growth regulator: |
| NONE | None |
| MEP+ETH | Mepiquat chloride + ethephon (as 'Terpal' at 2.8 l) in 220 l |

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plus two extra treatments given no nitrogen fertilizer, pesticides, fungicides or growth regulator:

EXTRA

15 SEP 0	Sown 15 September
26 OCT 0	Sown 26 October

- NOTE: (1) Aldicarb was applied before sowing on each occasion, and worked in by a rotary harrow seed drill combination.
(2) The growth regulator was applied at the recommended growth stage (Zadoks 31/32) which occurred on 27 April for the first sowing, and 11 May for the second.

Basal applications: Manures: (0:18:36) at 280 kg. Weedkillers: Mecoprop, bromoxynil and ioxynil (as 'Brittox' at 3.5 l) in 450 l on SOWDATE 15 SEP plots and again (as 'Brittox' at 1.76 l) with mecoprop (as 'Farmon CMPP' at 2.1 l) in 220 l on SOWDATE 26 OCT plots.

Seed: Igri, sown at 130 kg.

Cultivations, etc.: PK applied: 10 Sept, 1982. Heavy spring-tine cultivated twice: 13 Sept. Aldicarb applied to SOWDATE 15 SEP, rotary harrowed, seed sown: 15 Sept. Aldicarb applied to SOWDATE 26 OCT: 20 Oct. These plots rotary harrowed, seed sown: 26 Oct. 'Brittox' applied to SOWDATE 15 SEP plots: 26 Nov. 'Brittox' with 'Farmon CMPP' applied to SOWDATE 26 OCT: 28 Mar, 1983. Combine harvested: 26 July. Previous crops: W. oats 1981, potatoes 1982.

- NOTES: (1) Stem nitrate and nitrate in the soil were measured on several occasions during the season. Plant counts were taken and leaf diseases were assessed periodically. Crop height and ear numbers were measured in June and blind spikelets were assessed during the season.
(2) A cage was erected over the crop from late May to maturity to prevent damage by birds.

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GRAIN TONNES/HECTARE

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

N RATE	100	150	MEAN
SOWDATE			
15 SEPT	7.92	7.84	7.88
26 OCT	7.64	7.75	7.70
MEAN	7.78	7.79	7.79
N TIME	10 MAR	12 APR	MEAN
SOWDATE			
15 SEPT	7.73	8.03	7.88
26 OCT	7.67	7.73	7.70
MEAN	7.70	7.88	7.79
N TIME	10 MAR	12 APR	MEAN
N RATE			
100	7.76	7.81	7.78
150	7.64	7.94	7.79
MEAN	7.70	7.88	7.79
AUT PEST	NONE	ALDICARB	MEAN
SOWDATE			
15 SEPT	7.72	8.04	7.88
26 OCT	7.66	7.74	7.70
MEAN	7.69	7.89	7.79
AUT PEST	NONE	ALDICARB	MEAN
N RATE			
100	7.68	7.89	7.78
150	7.71	7.88	7.79
MEAN	7.69	7.89	7.79
AUT PEST	NONE	ALDICARB	MEAN
N TIME			
10 MAR	7.62	7.78	7.70
12 APR	7.76	7.99	7.88
MEAN	7.69	7.89	7.79
E FUNG	NONE	TFSD	MEAN
SOWDATE			
15 SEPT	7.71	8.05	7.88
26 OCT	7.68	7.71	7.70
MEAN	7.70	7.88	7.79

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GRAIN TONNES/HECTARE

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

E FUNG	NONE	TFSD	MEAN
N RATE			
100	7.65	7.92	7.78
150	7.74	7.85	7.79
MEAN	7.70	7.88	7.79
E FUNG	NONE	TFSD	MEAN
N TIME			
10 MAR	7.59	7.81	7.70
12 APR	7.80	7.95	7.88
MEAN	7.70	7.88	7.79
E FUNG	NONE	TFSD	MEAN
AUT PEST			
NONE	7.56	7.82	7.69
ALDICARB	7.83	7.94	7.89
MEAN	7.70	7.88	7.79
L FUNG	NONE	TR+CA+MA	MEAN
SOWDATE			
15 SEPT	7.37	8.39	7.88
26 OCT	7.32	8.07	7.70
MEAN	7.35	8.23	7.79
L FUNG	NONE	TR+CA+MA	MEAN
N RATE			
100	7.41	8.16	7.78
150	7.28	8.31	7.79
MEAN	7.35	8.23	7.79
L FUNG	NONE	TR+CA+MA	MEAN
N TIME			
10 MAR	7.22	8.18	7.70
12 APR	7.47	8.29	7.88
MEAN	7.35	8.23	7.79
L FUNG	NONE	TR+CA+MA	MEAN
AUT PEST			
NONE	7.31	8.07	7.69
ALDICARB	7.38	8.39	7.89
MEAN	7.35	8.23	7.79

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GRAIN TONNES/HECTARE

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

L FUNG	NONE	TR+CA+MA	MEAN
E FUNG			
NONE	7.28	8.11	7.70
TFSD	7.41	8.35	7.88
MEAN	7.35	8.23	7.79
GRTH REG	NONE	MEP+ETH	MEAN
SOWDATE			
15 SEPT	7.78	7.98	7.88
26 OCT	7.41	7.98	7.70
MEAN	7.60	7.98	7.79
GRTH REG	NONE	MEP+ETH	MEAN
N RATE			
100	7.71	7.86	7.78
150	7.48	8.10	7.79
MEAN	7.60	7.98	7.79
GRTH REG	NONE	MEP+ETH	MEAN
N TIME			
10 MAR	7.54	7.86	7.70
12 APR	7.65	8.10	7.88
MEAN	7.60	7.98	7.79
GRTH REG	NONE	MEP+ETH	MEAN
AUT PEST			
NONE	7.52	7.86	7.69
ALDICARB	7.67	8.10	7.89
MEAN	7.60	7.98	7.79
GRTH REG	NONE	MEP+ETH	MEAN
E FUNG			
NONE	7.59	7.81	7.70
TFSD	7.60	8.16	7.88
MEAN	7.60	7.98	7.79
GRTH REG	NONE	MEP+ETH	MEAN
L FUNG			
NONE	7.18	7.51	7.35
TR+CA+MA	8.01	8.45	8.23
MEAN	7.60	7.98	7.79

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GRAIN TONNES/HECTARE

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

EXTRA	15 SEP 0	26 OCT 0	MEAN
	4.98	4.10	4.54
GRAND MEAN	7.60		

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

(NOT INCLUDING EXTRA PLOTS)
 MARGIN OF TWO FACTOR TABLES 0.072
 TWO FACTOR TABLES 0.102

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

STRATUM	DF	SE	CV%
BLOCK.WP	34	0.290	3.7
GRAIN MEAN DM%	86.2		

STRAW TONNES/HECTARE

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

N RATE	100	150	MEAN
SOWDATE			
15 SEPT	5.54	6.27	5.91
26 OCT	4.93	5.89	5.41
MEAN	5.24	6.08	5.66
N TIME	10 MAR	12 APR	MEAN
SOWDATE			
15 SEPT	6.20	5.62	5.91
26 OCT	5.62	5.21	5.41
MEAN	5.91	5.41	5.66
N TIME	10 MAR	12 APR	MEAN
N RATE			
100	5.49	4.99	5.24
150	6.33	5.84	6.08
MEAN	5.91	5.41	5.66
AUT PEST	NONE	ALDICARB	MEAN
SOWDATE			
15 SEPT	5.80	6.01	5.91
26 OCT	5.49	5.34	5.41
MEAN	5.64	5.68	5.66

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STRAW TONNES/HECTARE

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

AUT PEST	NONE	ALDICARB	MEAN
N RATE			
100	5.17	5.31	5.24
150	6.12	6.04	6.08
MEAN	5.64	5.68	5.66
AUT PEST	NONE	ALDICARB	MEAN
N TIME			
10 MAR	5.93	5.89	5.91
12 APR	5.36	5.47	5.41
MEAN	5.64	5.68	5.66
E FUNG	NONE	TFSD	MEAN
SOWDATE			
15 SEPT	5.69	6.12	5.91
26 OCT	5.42	5.40	5.41
MEAN	5.56	5.76	5.66
E FUNG	NONE	TFSD	MEAN
N RATE			
100	5.12	5.35	5.24
150	5.99	6.17	6.08
MEAN	5.56	5.76	5.66
E FUNG	NONE	TFSD	MEAN
N TIME			
10 MAR	5.82	6.00	5.91
12 APR	5.30	5.53	5.41
MEAN	5.56	5.76	5.66
E FUNG	NONE	TFSD	MEAN
AUT PEST			
NONE	5.56	5.73	5.64
ALDICARB	5.56	5.79	5.68
MEAN	5.56	5.76	5.66
L FUNG	NONE	TR+CA+MA	MEAN
SOWDATE			
15 SEPT	5.74	6.07	5.91
26 OCT	5.19	5.64	5.41
MEAN	5.46	5.85	5.66

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STRAW TONNES/HECTARE

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

L FUNG	NONE	TR+CA+MA	MEAN
N RATE			
100	4.98	5.49	5.24
150	5.95	6.22	6.08
MEAN	5.46	5.85	5.66
L FUNG	NONE	TR+CA+MA	MEAN
N TIME			
10 MAR	5.73	6.08	5.91
12 APR	5.20	5.63	5.41
MEAN	5.46	5.85	5.66
L FUNG	NONE	TR+CA+MA	MEAN
AUT PEST			
NONE	5.50	5.79	5.64
ALDICARB	5.43	5.92	5.68
MEAN	5.46	5.85	5.66
L FUNG	NONE	TR+CA+MA	MEAN
E FUNG			
NONE	5.32	5.80	5.56
TFSD	5.61	5.91	5.76
MEAN	5.46	5.85	5.66
GRTH REG	NONE	MEP+ETH	MEAN
SOWDATE			
15 SEPT	6.12	5.70	5.91
26 OCT	5.75	5.08	5.41
MEAN	5.93	5.39	5.66
GRTH REG	NONE	MEP+ETH	MEAN
N RATE			
100	5.46	5.01	5.24
150	6.41	5.76	6.08
MEAN	5.93	5.39	5.66
GRTH REG	NONE	MEP+ETH	MEAN
N TIME			
10 MAR	6.18	5.63	5.91
12 APR	5.68	5.14	5.41
MEAN	5.93	5.39	5.66

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STRAW TONNES/HECTARE

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

GRTH REG	NONE	MEP+ETH	MEAN
AUT PEST			
NONE	5.89	5.39	5.64
ALDICARB	5.97	5.38	5.68
MEAN	5.93	5.39	5.66

GRTH REG	NONE	MEP+ETH	MEAN
E FUNG			
NONE	5.90	5.21	5.56
TFSD	5.96	5.56	5.76
MEAN	5.93	5.39	5.66

GRTH REG	NONE	MEP+ETH	MEAN
L FUNG			
NONE	5.73	5.20	5.46
TR+CA+MA	6.14	5.57	5.85
MEAN	5.93	5.39	5.66

EXTRA	15 SEP 0	26 OCT 0	MEAN
	3.15	2.05	2.60

GRAND MEAN 5.48

STRAW MEAN DM% 86.1

PLOT AREA HARVESTED 0.00341