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# Yields of the Field Experiments 1983

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## 83/R/WW/2 Growth and Yield on a Contrasted Site - W. Wheat

### Rothamsted Research

Rothamsted Research (1984) *83/R/WW/2 Growth and Yield on a Contrasted Site - W. Wheat* ; Yields Of The Field Experiments 1983, pp 202 - 204 - DOI: <https://doi.org/10.23637/ERADOC-1-44>

83/R/WW/2

WINTER WHEAT

GROWTH AND YIELD ON A CONTRASTED SITE

Object: To compare the effects of some of the factors tested in 83/W/WW/2 on the growth and yield of w. wheat on a contrasted site - Long Hoos I/II.

Sponsors: F.V. Widdowson, P.J. Welbank, A.H. Weir.

Design: Half replicate of  $2^5$  + 16 extra plots.

Whole plot dimensions: 3.0 x 15.2.

Treatment: Combinations of:-

- |             |   |
|-------------|---|
| 1. SOWDATE  | Dates of sowing:  |
| 15 SEPT     | 15 September, 1982  |
| 20 OCT      | 20 October  |
| 2. TOTAL N  | Total amount of N fertilizer (kg N) as 'Nitro-Chalk':     |
| 140         | 100 on the first date, 40 on the second                   |
| 210         | 170 on the first date, 40 on the second                   |
| 3. N TIME   | Timing of fertilizer application:                         |
| EARLY       | 7 Mar, 1983, 4 May  |
| LATE        | 7 Apr, 17 May   |
| 4. IRRIGATN | Irrigation:   |
| NONE        | None  |
| FULL        | Full (112.5 mm) to lessen a deficit of 37.5 mm to 12.5 mm |
| 5. AUT PEST | Autumn pesticide:   |
| NONE        | None  |
| ALDICARB    | Aldicarb at 7.0 kg worked into seedbed                    |

Plus all combinations of the following (all unirrigated, given aldicarb):

- |             |   |
|-------------|---|
| 1. TOTAL NX | Total amount of N fertilizer (kg N) as 'Nitro-Chalk': |
| 0           | None  |
| 105         | 65 on the first date, 40 on the second                |
| 140         | 100 on the first date, 40 on the second               |
| 175         | 135 on the first date, 40 on the second               |
| 210         | 170 on the first date, 40 on the second               |
| 245         | 205 on the first date, 40 on the second               |
| 2. S DATE N | Dates of sowing and timing of N application:          |
| 15 SEP NE   | Sown 15 Sept 1982, N applied as N TIME EARLY          |
| 20 OCT NL   | Sown 20 Oct, N applied as N TIME LATE                 |

83/R/WW/2

Plus 4 extra plots for root sampling:

EXTRA

SE 210EX            Sown 15 Sept with 210 kg N applied as N TIME EARLY,  
unirrigated and given aldicarb

NOTE: The irrigation treatment was as follows (mm water):-

24 June	25
28 June	25
14 July	37.5
21 July	25
Total	112.5

Basal applications: Manures: (0:18:36) at 280 kg. Weedkillers: Mecoprop, bromoxynil and ioxynil (as 'Brittox' at 2.0 l in 450 l on the first occasion, at 1.8 l in 220 l with the mecoprop on the second, and at 2.5 l with the benomyl in 225 l on the third). Mecoprop (as 'Farmon CMPP' at 2.1 l). Fungicides: Benomyl at 0.56 kg. Captafol at 1.4 kg with propiconazole at 0.12 kg in 220 l. Carbendazim at 0.25 kg with maneb at 1.6 kg and propiconazole at 0.12 kg and the insecticide in 220 l. Insecticide: Pirimicarb at 0.14 kg. Growth regulator: Chlormequat at 1.1 kg in 220 l.

Seed: Avalon, dressed chlorfenvinphos, sown at 180 kg.

Cultivations, etc.: PK applied: 10 Sept, 1982. Heavy spring-tine cultivated twice: 13 Sept. Aldicarb applied for SOWDATE 15 SEPT, rotary harrowed, seed sown: 15 Sept. Aldicarb applied for SOWDATE 20 OCT, rotary harrowed, seed sown: 20 Oct. 'Brittox' applied: 25 Jan, 1983. Growth regulator applied to SOWDATE 15 SEPT plots: 8 Mar. 'Brittox' with mecoprop applied: 28 Mar. Growth regulator applied to SOWDATE 20 OCT plots: 14 Apr. 'Brittox' with benomyl applied: 27 Apr. Captafol with propiconazole applied: 24 May. Carbendazim, maneb, propiconazole and the insecticide applied: 23 June. Combine harvested: 10 Aug. Previous crops: W. oats 1981, potatoes 1982.

- NOTES: (1) Light interception, dry weight, leaf area and N content of the above-ground crop were measured on several occasions. Stem nitrate was measured on three occasions during spring.  
(2) Soil samples, to measure mineral N content, were taken on several occasions during winter and spring.

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GRAIN TONNES HECTARE

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

SOWDATE	15 SEPT	20 OCT	MEAN				
	10.16	9.96	10.06				
TOTAL N	140	210	MEAN				
	9.76	10.36	10.06				
N TIME	EARLY	LATE	MEAN				
	10.05	10.07	10.06				
IRRIGATN	NONE	FULL	MEAN				
	10.13	9.99	10.06				
AUT PEST	NONE	ALDICARB	MEAN				
	10.03	10.09	10.06				
TOTAL NX	0	105	140	175	210	245	MEAN
S DATE N							
15 SEPT NE	5.59	9.08	9.70	10.55	10.94	10.92	9.46
20 OCT NL	4.58	8.68	9.92	9.99	10.38	10.31	8.98
MEAN	5.09	8.88	9.81	10.27	10.66	10.61	9.22

EXTRA SE 210EX 10.71

GRAND MEAN 9.83

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

TABLE	SOWDATE	TOTAL N	N TIME	IRRIGATN
SED	0.113	0.113	0.113	0.113

TABLE	AUT PEST
SED	0.113

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

STRATUM	DF	SE	CV%
WP	10	0.226	2.2

GRAIN MEAN DM% 86.5

PLOT AREA HARVESTED 0.00209