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## Yields of the Field Experiments 1992

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### 92/R/WW/3 N and Crop Physiology - W. Wheat

#### Rothamsted Research

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92/R/WW/3

WINTER WHEAT

N AND CROP PHYSIOLOGY

**Object:** To study the relationship between N supply to crops of different size and their nitrate contents, N uptakes, growth rates and yield - Fosters West.

**Sponsor:** R.J. Darby.

**Design:** 3 randomised blocks of 16 plots.

**Whole plot dimensions:** 3.0 x 17.0.

**Treatments:** All combinations of:-

1. **SOW DATE**                    Dates of sowing:
  - EARLY                             Second week in September
  - LATE                                Third week in October
  
2. **AUT N**                        Autumn nitrogen:
  - NONE                                None
  - 50                                    50 kg N
  
3. **SPRING N**                    Spring nitrogen:
  - NONE                                None
  - N1                                    Half optimum N
  - N2                                    Optimum N
  - N2L                                  Optimum N three weeks later

**Experimental diary:**

06-Sep-91 : B : Ploughed and furrow pressed.  
 12-Sep-91 : B : Rotary harrowed.  
 12-Sep-91 : T : **SOW DATE EARLY:** Rotary harrowed, Mercia, drilled at 160 kg. Rolled.  
 14-Oct-91 : T : **SOW DATE LATE:** Rotary harrowed, Mercia, drilled at 160 kg.  
 15-Oct-91 : B : Rolled.  
 29-Oct-91 : T : **AUT N 50:** 46% N (as urea) at 109 kg.  
 27-Nov-91 : B : Stefes IPU at 2.5 l and Stomp 400 at 3.3 l in 300 l.  
 16-Mar-92 : T : **SPRING N N1:** 27% N at 111 kg.  
                       N2: 27% N at 222 kg.  
 09-Apr-92 : T : **SPRING N N1:** 27% N at 304 kg.  
                       N2: 27% N at 607 kg.  
                       N2L: 27% N at 222 kg.  
 29-Apr-92 : T : **SPRING N N2L:** 27% N at 607 kg.  
 19-May-92 : B : Dorin at 1.0 l and Chiltern Olé at 1.5 l in 300 l.  
 22-Jun-92 : B : Mistral at 0.50 l and Radar at 0.50 l in 300 l.  
 04-Aug-92 : B : Combine harvested.

Previous crops: Potatoes 1990, s. wheat 1991.

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**NOTE:** Soils were sampled to 90 cm depth for ammonium and nitrate contents on three occasions between mid-October and late February. Stem nitrate concentrations were measured at fortnightly intervals from November to April. Lodging was assessed in June and July. Components of yield were measured after hand harvesting in late July.

**GRAIN TONNES/HECTARE**

\*\*\*\*\* Tables of means \*\*\*\*\*

<b>AUT N</b>	NONE	50	Mean			
<b>SOW DATE</b>						
EARLY	7.24	7.35	7.29			
LATE	6.96	6.47	6.72			
Mean	7.10	6.91	7.01			
<b>SPRING N</b>	NONE	N1	N2	N2L	Mean	
<b>SOW DATE</b>						
EARLY	6.07	7.79	6.99	8.31	7.29	
LATE	5.54	7.44	6.40	7.51	6.72	
Mean	5.80	7.62	6.69	7.91	7.01	
<b>SPRING N</b>	NONE	N1	N2	N2L	Mean	
<b>AUT N</b>						
NONE	5.10	7.76	7.22	8.32	7.10	
50	6.51	7.47	6.17	7.49	6.91	
Mean	5.80	7.62	6.69	7.91	7.01	
<b>SOW DATE</b>	<b>AUT N</b>	<b>SPRING N</b>	NONE	N1	N2	N2L
EARLY	NONE		5.12	7.77	7.56	8.50
	50		7.03	7.82	6.42	8.12
LATE	NONE		5.08	7.76	6.88	8.14
	50		6.00	7.11	5.92	6.87

\*\*\* Standard errors of differences of means \*\*\*

<b>SOW DATE</b>	<b>AUT N</b>	<b>SPRING N</b>	<b>SOW DATE</b>
			<b>AUT N</b>
0.095	0.095	0.134	0.134
<b>SOW DATE</b>	<b>AUT N</b>	<b>SOW DATE</b>	
<b>SPRING N</b>	<b>SPRING N</b>	<b>AUT N</b>	<b>SPRING N</b>
0.189	0.189	0.268	

\*\*\*\*\* Stratum standard errors and coefficients of variation \*\*\*\*\*

Stratum	d.f.	s.e.	cv%
BLOCK.WP	30	0.328	4.7

GRAIN MEAN DM% 86.1

92/R/WW/3

STRAW TONNES/HECTARE

\*\*\*\*\* Tables of means \*\*\*\*\*

<b>AUT N</b>	NONE	50				Mean
<b>SOW DATE</b>						
EARLY	6.91	8.40				7.66
LATE	6.66	7.46				7.06
Mean	6.78	7.93				7.36
<b>SPRING N</b>	NONE	N1	N2	N2L	Mean	
<b>SOW DATE</b>						
EARLY	5.70	8.28	8.78	7.87	7.66	
LATE	4.70	7.64	7.97	7.93	7.06	
Mean	5.20	7.96	8.37	7.90	7.36	
<b>SPRING N</b>	NONE	N1	N2	N2L	Mean	
<b>AUT N</b>						
NONE	3.88	7.58	8.39	7.28	6.78	
50	6.51	8.35	8.35	8.52	7.93	
Mean	5.20	7.96	8.37	7.90	7.36	
<b>SOW DATE</b>	<b>AUT N</b>	<b>SPRING N</b>	NONE	N1	N2	N2L
EARLY	NONE		3.95	7.66	8.69	7.34
	50		7.44	8.91	8.87	8.40
LATE	NONE		3.81	7.50	8.10	7.23
	50		5.58	7.78	7.84	8.64

STRAW MEAN DM% 81.9

PLOT AREA HARVESTED 0.00322