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## Yields of the Field Experiments 1989

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### 89/R/WW/4 Factors Affecting Take-all - W. Wheat

#### Rothamsted Research

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89/R/WW/4

WINTER WHEAT

FACTORS AFFECTING TAKE-ALL

**Object:** To study the effects of a range of factors on the incidence of take-all and on the yield of w. wheat - White Horse II.

**Sponsors:** D. Hornby, G.L. Bateman, R.J. Gutteridge.

**Design:** A single replicate of 2 x 2 x 2 x 2 x 4.

**Whole plot dimensions:** 3.0 x 10.0.

**Treatments:** All combinations of:-

1. **SOWDATE**                      Dates of sowing:  
    22 SEPT                      22 September, 1988  
    28 OCT                        28 October
2. **SOILFUNG**                    Application of fungicide to the seedbed:  
    NONE                         None  
    NUARIMOL                    Nuarimol at 1.1 kg in 375 l
3. **SEEDRATE**                    Seed rates:  
    100 KG  
    200 KG
4. **AUTUMN N**                    N application to the seedbed:  
    0                              None  
    60                             60 kg N as 'Nitro-Chalk' on 21 Sept, 1988 or 27 Oct  
                                      for successive SOWDATES
5. **SPRING N**                    Nitrogen fertilizer (kg N) in spring, as 'Nitro-Chalk', applied 20 Apr, 1989:  
    100  
    150  
    200  
    250

**Basal applications:** Manures: (0:18:36) at 920 kg. Weedkillers: Chlortoluron at 3.5 kg in 200 l. Fluroxypyr at 0.20 kg in 200 l. Fungicide: Fenpropimorph at 0.75 kg in 200 l.

**Cultivations, etc.:-** Heavy spring-tine cultivated: 17 Sept, 1988. PK applied: 19 Sept. Rotary harrowed: 20 Sept. Chlortoluron applied: 16 Nov. Fluroxypyr applied: 8 May 1989. Fungicide applied: 23 May. Combine harvested: 8 Aug. Previous crops: W. wheat 1987 and 1988.

**NOTE:** Plant samples were taken in mid-April and June to assess take-all, eyespot, sharp eyespot, damage by stem-boring larvae (April only) and brown foot rot (June only). Grain quality was measured.

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GRAIN TONNES/HECTARE

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

<b>SOILFUNG</b>	NONE	NUARIMOL	Mean		
<b>SOWDATE</b>					
22 SEPT	6.58	6.81	6.69		
28 OCT	6.91	6.99	6.95		
Mean	6.74	6.90	6.82		
<b>SEEDRATE</b>	100 KG	200 KG	Mean		
<b>SOWDATE</b>					
22 SEPT	6.68	6.70	6.69		
28 OCT	6.86	7.03	6.95		
Mean	6.77	6.87	6.82		
<b>SEEDRATE</b>	100 KG	200 KG	Mean		
<b>SOILFUNG</b>					
NONE	6.68	6.81	6.74		
NUARIMOL	6.86	6.93	6.90		
Mean	6.77	6.87	6.82		
<b>AUTUMN N</b>	0	60	Mean		
<b>SOWDATE</b>					
22 SEPT	6.55	6.84	6.69		
28 OCT	6.86	7.04	6.95		
Mean	6.70	6.94	6.82		
<b>AUTUMN N</b>	0	60	Mean		
<b>SOILFUNG</b>					
NONE	6.58	6.91	6.74		
NUARIMOL	6.82	6.97	6.90		
Mean	6.70	6.94	6.82		
<b>AUTUMN N</b>	0	60	Mean		
<b>SEEDRATE</b>					
100 KG	6.68	6.86	6.77		
200 KG	6.72	7.01	6.87		
Mean	6.70	6.94	6.82		
<b>SPRING N</b>	100	150	200	250	Mean
<b>SOWDATE</b>					
22 SEPT	6.52	6.79	6.76	6.71	6.69
28 OCT	6.88	7.01	6.99	6.92	6.95
Mean	6.70	6.90	6.87	6.81	6.82

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GRAIN TONNES/HECTARE

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

<b>SPRING N</b>	100	150	200	250	Mean
<b>SOILFUNG</b>					
NONE	6.51	6.88	6.93	6.66	6.74
NUARIMOL	6.89	6.92	6.82	6.97	6.90
Mean	6.70	6.90	6.87	6.81	6.82
<b>SPRING N</b>	100	150	200	250	Mean
<b>SEEDRATE</b>					
100 KG	6.70	6.83	6.85	6.70	6.77
200 KG	6.70	6.96	6.90	6.93	6.87
Mean	6.70	6.90	6.87	6.81	6.82
<b>SPRING N</b>	100	150	200	250	Mean
<b>AUTUMN N</b>					
0	6.49	6.74	6.84	6.74	6.70
60	6.91	7.06	6.90	6.89	6.94
Mean	6.70	6.90	6.87	6.81	6.82
	<b>SEEDRATE</b>	100 KG	200 KG		
<b>SOWDATE</b>	<b>SOILFUNG</b>				
22 SEPT	NONE	6.53	6.63		
	NUARIMOL	6.83	6.78		
28 OCT	NONE	6.83	6.98		
	NUARIMOL	6.89	7.09		
	<b>AUTUMN N</b>	0	60		
<b>SOWDATE</b>	<b>SOILFUNG</b>				
22 SEPT	NONE	6.41	6.75		
	NUARIMOL	6.68	6.93		
28 OCT	NONE	6.76	7.06		
	NUARIMOL	6.96	7.02		
	<b>AUTUMN N</b>	0	60		
<b>SOWDATE</b>	<b>SEEDRATE</b>				
22 SEPT	100 KG	6.49	6.87		
	200 KG	6.60	6.81		
28 OCT	100 KG	6.87	6.85		
	200 KG	6.85	7.22		
	<b>AUTUMN N</b>	0	60		
<b>SOILFUNG</b>	<b>SEEDRATE</b>				
NONE	100 KG	6.50	6.87		
	200 KG	6.67	6.95		
NUARIMOL	100 KG	6.86	6.86		
	200 KG	6.78	7.08		

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GRAIN TONNES/HECTARE

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

	<b>SPRING N</b>	100	150	200	250
<b>SOWDATE</b>	<b>SOILFUNG</b>				
22 SEPT	NONE	6.18	6.76	6.94	6.44
	NUARIMOL	6.87	6.81	6.57	6.98
28 OCT	NONE	6.85	6.99	6.91	6.88
	NUARIMOL	6.90	7.03	7.06	6.96
	<b>SPRING N</b>	100	150	200	250
<b>SOWDATE</b>	<b>SEEDRATE</b>				
22 SEPT	100 KG	6.56	6.71	6.87	6.58
	200 KG	6.48	6.86	6.64	6.83
28 OCT	100 KG	6.84	6.95	6.83	6.81
	200 KG	6.91	7.06	7.15	7.02
	<b>SPRING N</b>	100	150	200	250
<b>SOILFUNG</b>	<b>SEEDRATE</b>				
NONE	100 KG	6.48	6.92	6.81	6.52
	200 KG	6.55	6.83	7.05	6.79
NUARIMOL	100 KG	6.93	6.74	6.89	6.88
	200 KG	6.84	7.09	6.74	7.06
	<b>SPRING N</b>	100	150	200	250
<b>SOWDATE</b>	<b>AUTUMN N</b>				
22 SEPT	0	6.39	6.66	6.60	6.54
	60	6.66	6.91	6.91	6.88
28 OCT	0	6.58	6.82	7.08	6.94
	60	7.17	7.20	6.89	6.89
	<b>SPRING N</b>	100	150	200	250
<b>SOILFUNG</b>	<b>AUTUMN N</b>				
NONE	0	6.36	6.66	6.86	6.44
	60	6.67	7.09	6.99	6.88
NUARIMOL	0	6.61	6.81	6.82	7.04
	60	7.16	7.02	6.81	6.90
	<b>SPRING N</b>	100	150	200	250
<b>SEEDRATE</b>	<b>AUTUMN N</b>				
100 KG	0	6.44	6.72	6.88	6.67
	60	6.97	6.95	6.81	6.72
200 KG	0	6.53	6.76	6.80	6.81
	60	6.86	7.17	6.99	7.05

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GRAIN TONNES/HECTARE

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

SOWDATE	SOILFUNG	SEEDRATE	AUTUMN N
0.064	0.064	0.064	0.064
SPRING N	SOWDATE	SOWDATE	SOILFUNG
	SOILFUNG	SEEDRATE	SEEDRATE
0.090	0.090	0.090	0.090
SOWDATE	SOILFUNG	SEEDRATE	SOWDATE
AUTUMN N	AUTUMN N	AUTUMN N	SPRING N
0.090	0.090	0.090	0.128
SOILFUNG	SEEDRATE	AUTUMN N	SOWDATE
SPRING N	SPRING N	SPRING N	SOILFUNG
			SEEDRATE
0.128	0.128	0.128	0.128
SOWDATE	SOWDATE	SOILFUNG	SOWDATE*
SOILFUNG	SEEDRATE	SEEDRATE	SOILFUNG
AUTUMN N	AUTUMN N	AUTUMN N	SPRING N
0.128	0.128	0.128	0.180
SOWDATE	SOILFUNG	SOWDATE	SOILFUNG
SEEDRATE	SEEDRATE	AUTUMN N	AUTUMN N
SPRING N	SPRING N	SPRING N	SPRING N
0.180	0.180	0.180	0.180
SEEDRATE			
AUTUMN N			
SPRING N			
0.180			

\* Only when comparing means with the same level of SOWDATE.SOILFUNG.NIT, where NIT has 2 levels. The first corresponding to levels 100, 250 of SPRING N and the second to the other 2 levels.

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	14	0.255	3.7
GRAIN MEAN DM%	89.1		
PLOT AREA HARVESTED	0.00226		