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# Yields of the Field Experiments 1984

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## 84/S/CS/1 Factors Affecting Yield - W. Wheat

### Rothamsted Research

Rothamsted Research (1985) *84/S/CS/1 Factors Affecting Yield - W. Wheat* ; Yields Of The Field Experiments 1984, pp 191 - 195 - DOI: <https://doi.org/10.23637/ERADOC-1-32>

84/S/CS/1

FACTORS AFFECTING YIELD

Object: To study the effects of a range of factors on the yield of w. wheat  
- Saxmundham.

Sponsors: F.V. Widdowson, A. Penny.

The 19th year, w. wheat.

For previous years see 66/C/30(t), 67/C/23(t), 68/C/39, 69-83/S/CS/1.

Design: The experiment was on two sites, one after beans and one after wheat. On each site the design was a single replicate of 8 whole plots split into 5 sub-plots.

Whole plot dimensions: Wheat after beans: 8.53 x 18.3.  
Wheat after wheat: 6.30 x 30.0.

Treatments: On each site, combinations of:-

Whole plots

1. VARIETY                      Varieties:  
  
    GALAHAD  
    MOULIN
2. WINTER N                    Nitrogen fertilizer (kg N) as urea on 14 Feb, 1984  
                                  in addition to a basal application of 50 kg N as urea  
                                  to the seedbed:  
  
    0  
    60
3. PATHCONT                    Pest and pathogen control:  
  
    NONE                        None  
    FULL                        Prochloraz at 0.40 kg in 220 l on 10 Apr, 1984.  
                                  Propiconazole at 0.13 kg with captafol at 1.1 kg in 220 l  
                                  on 23 May.  
                                  Carbendazim at 0.15 kg, maneb at 1.6 kg and tridemorph  
                                  at 0.37 kg plus captafol at 1.1 kg and pirimicarb at  
                                  0.14 kg in 220 l on 27 June.

Sub plots

- 4 N RATE                        Total nitrogen fertilizer applied in spring (kg N) as  
                                  'Nitro-Chalk':

After beans	After wheat
0	0
120	150
150	180
180	210
210	240

84/S/CS/1

Basal applications: Manures: (0:20:20) at 630 kg (after wheat) and 310 kg (after beans). Weedkillers: Isoproturon at 2.5 kg with mecoprop, bromoxynil and ioxynil (as 'Brittox' at 3.5 l) applied with the insecticide in 220 l. Mecoprop, bromoxynil and ioxynil (as 'Brittox' at 2.1 l) in 220 l. Insecticide: Permethrin at 0.06 kg.

Seed: Varieties sown at 400 seeds per m<sup>2</sup>.

Cultivations, etc.: - PK applied: 18 Aug, 1983 (after wheat), 30 Aug (after beans). Ploughed: 9 Sept. Power harrowed, seed sown: 27 Sept. Isoproturon, 'Brittox' and permethrin applied: 19 Oct. Spring N applied: 10 Apr, 1984. 'Brittox' applied: 17 Apr. Combine harvested: 21 Aug.

NOTE: Mineral N content of soil to 90 cm depth and the nitrate content of the crop were assessed in autumn and spring. N content of grain was measured.

WHEAT AFTER BEANS

GRAIN TONNES/HECTARE

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

WINTER N VARIETY	0	60	MEAN			
GALAHAD	11.77	12.30	12.03			
MOULIN	10.90	11.08	10.99			
MEAN	11.33	11.69	11.51			
PATHCONT VARIETY	NONE	FULL	MEAN			
GALAHAD	11.73	12.33	12.03			
MOULIN	10.67	11.30	10.99			
MEAN	11.20	11.82	11.51			
PATHCONT WINTER N	NONE	FULL	MEAN			
0	10.95	11.71	11.33			
60	11.45	11.92	11.69			
MEAN	11.20	11.82	11.51			
N RATE VARIETY	0	120	150	180	210	MEAN
GALAHAD	9.29	12.50	12.76	12.82	12.80	12.03
MOULIN	8.32	11.72	12.00	11.48	11.41	10.99
MEAN	8.81	12.11	12.38	12.15	12.10	11.51

84/S/CS/1 WHEAT AFTER BEANS

GRAIN TONNES/HECTARE

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

N RATE	0	120	150	180	210	MEAN
WINTER N						
0	7.83	11.85	12.17	12.36	12.45	11.33
60	9.78	12.37	12.58	11.94	11.75	11.69
MEAN	8.81	12.11	12.38	12.15	12.10	11.51
N RATE	0	120	150	180	210	MEAN
PATHCONT						
NONE	8.51	11.68	11.96	11.90	11.95	11.20
FULL	9.11	12.54	12.79	12.40	12.25	11.82
MEAN	8.81	12.11	12.38	12.15	12.10	11.51

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

TABLE	N RATE	N RATE*	N RATE*	N RATE*
		VARIETY	WINTER N	PATHCONT
SED	0.285	0.404	0.404	0.404

\* WITHIN THE SAME LEVEL OF VARIETY, WINTER N OR PATHCONT ONLY

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

STRATUM	DF	SE	CV%
WP.SP	16	0.571	5.0
GRAIN MEAN DM%	85.5		

84/S/CS/1 WHEAT AFTER WHEAT

GRAIN TONNES/HECTARE

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

WINTER N	0	60	MEAN			
VARIETY						
GALAHAD	8.49	10.08	9.29			
MOULIN	6.95	9.70	8.33			
MEAN	7.72	9.89	8.81			
PATHCONT	NONE	FULL	MEAN			
VARIETY						
GALAHAD	8.85	9.72	9.29			
MOULIN	7.44	9.21	8.33			
MEAN	8.15	9.47	8.81			
PATHCONT	NONE	FULL	MEAN			
WINTER N						
0	7.01	8.43	7.72			
60	9.28	10.50	9.89			
MEAN	8.15	9.47	8.81			
N RATE	0	150	180	210	240	MEAN
VARIETY						
GALAHAD	5.29	9.78	10.13	10.55	10.68	9.29
MOULIN	4.16	8.74	9.20	9.50	10.02	8.33
MEAN	4.72	9.26	9.67	10.02	10.35	8.81
N RATE	0	150	180	210	240	MEAN
WINTER N						
0	2.93	8.26	8.70	9.20	9.52	7.72
60	6.52	10.27	10.63	10.85	11.18	9.89
MEAN	4.72	9.26	9.67	10.02	10.35	8.81
N RATE	0	150	180	210	240	MEAN
PATHCONT						
NONE	4.50	8.48	8.92	9.27	9.56	8.15
FULL	4.95	10.05	10.42	10.78	11.14	9.47
MEAN	4.72	9.26	9.67	10.02	10.35	8.81

84/S/CS/1 WHEAT AFTER WHEAT

GRAIN TONNES/HECTARE

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

TABLE	N RATE	N RATE* VARIETY	N RATE* WINTER N	N RATE* PATHCONT
SED	0.201	0.284	0.284	0.284

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

STRATUM	DF	SE	CV%
WP.SP	16	0.401	4.6

GRAIN MEAN DM% 86.1

SUB PLOT AREA HARVESTED 0.00189