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# Yields of the Field Experiments 1979

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## 79/R/CS/24 P K and Take-all - Wheat

### Rothamsted Research

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79/R/CS/24

PK AND TAKE-ALL

Object: To study the effects of different amounts of phosphate and potassium fertiliser on the yields and incidence of take-all (*Gaeumannomyces graminis*) in continuous wheat - West Barnfield II.

Sponsors: G.E.G. Mattingly, D.B. Slope.

The 12th year, continuous winter wheat (after continuous barley 1968-1973).

For previous years see 'Details' 1973 and 74-78/R/CS/24.

Design: 4 randomised blocks of 10 plots, split into 2.

Whole plot dimensions: 5.33 x 20.1.

Treatments: All combinations of:-

Whole plots

1. P Phosphate (kg P) as superphosphate:

0	None
15 A	15 annually
60 A	60 annually
90 S	90 six-yearly, last applied autumn 1973
360 S	360 six-yearly, last applied autumn 1973

2. K Potassium (kg K) annually as muriate of potash:

30  
120

Sub plots

3. N Nitrogen fertiliser, applied cumulatively to test applications 1970-1973 and 1978 (basal application only in 1974-1977) (kg N):

50  
100  
150  
200

Basal applications: Autumn weedkiller: Glyphosate at 1.5 kg in 220 l. Spring weedkiller: Mecoprop at 2.5 kg in 220 l.

Seed: Cappelle, sown at 200 kg.

Cultivations, etc.:- Autumn weedkiller applied: 2 Oct, 1978. Ploughed: 17 Oct. Heavy spring-tine cultivated: 23 Oct. P and K applied: 24 Oct. Disc harrowed, rotary harrowed, seed sown: 25 Oct. N applied: 4 May, 1979. Spring weedkiller applied: 10 May. Combine harvested: 1 Sept.

NOTE: The crop was sampled in July for take-all and eyespot assessments.

79/R/CS/24

GRAIN TONNES/HECTARE

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

P N	0	15 A	60 A	90 S	360 S	MEAN
50	3.55	3.98	4.24	3.96	4.24	3.99
100	3.51	4.67	4.87	4.56	5.07	4.54
150	3.82	4.17	5.34	4.42	5.15	4.58
200	3.82	4.44	5.44	4.03	5.03	4.55
MEAN	3.68	4.32	4.98	4.24	4.87	4.42

N K	50	100	150	200	MEAN
30	3.85	4.23	4.12	4.23	4.11
120	4.14	4.84	5.04	4.88	4.73
MEAN	3.99	4.54	4.58	4.55	4.42

P K	0	15 A	60 A	90 S	360 S	MEAN
30	3.49	3.75	4.60	4.07	4.62	4.11
120	3.86	4.88	5.35	4.42	5.12	4.73
MEAN	3.68	4.32	4.98	4.24	4.87	4.42

P K	N	50	100	150	200
0	30	3.57	3.27	3.59	3.53
	120	3.54	3.75	4.05	4.12
15 A	30	3.69	4.32	3.25	3.73
	120	4.26	5.03	5.09	5.15
60 A	30	3.97	4.36	4.82	5.27
	120	4.51	5.39	5.87	5.62
90 S	30	3.69	4.54	4.03	4.03
	120	4.24	4.57	4.82	4.04
360 S	30	4.31	4.67	4.92	4.57
	120	4.16	5.47	5.38	5.48

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

TABLE	P	K	N	P K
SED	0.139	0.088	0.125	0.197

TABLE	P N	K N	P K N
SED	0.279	0.177	0.415

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

STRATUM	DF	SE	CV%
BLOCK.WP+BLOCK.WP.SP	37	0.394	8.9
GRAIN MEAN DM%	85.0		

79/R/CS/24

STRAW TONNES/HECTARE

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

P	0	15 A	60 A	90 S	360 S	MEAN
N						
50	3.13	3.38	3.80	3.45	3.67	3.49
100	3.08	4.15	4.54	4.23	4.48	4.10
150	3.60	4.03	4.79	4.48	4.96	4.37
200	3.34	4.03	4.94	3.73	4.52	4.11
MEAN	3.29	3.90	4.52	3.97	4.41	4.02

N	50	100	150	200	MEAN
K					
30	3.27	3.62	3.85	3.62	3.59
120	3.70	4.58	4.89	4.60	4.44
MEAN	3.49	4.10	4.37	4.11	4.02

P	0	15 A	60 A	90 S	360 S	MEAN
K						
30	3.12	3.20	3.92	3.72	4.00	3.59
120	3.46	4.59	5.12	4.23	4.82	4.44
MEAN	3.29	3.90	4.52	3.97	4.41	4.02

P	N	50	100	150	200
K <td></td> <td></td> <td></td> <td></td> <td></td>					
0	30	3.21	2.76	3.50	3.01
	120	3.06	3.41	3.70	3.67
15 A	30	2.84	3.64	3.16	3.16
	120	3.92	4.65	4.90	4.90
60 A	30	3.38	3.80	3.98	4.51
	120	4.22	5.28	5.59	5.38
90 S	30	3.13	4.07	3.96	3.71
	120	3.77	4.40	4.99	3.76
360 S	30	3.79	3.82	4.65	3.73
	120	3.55	5.14	5.27	5.30

STRAW MEAN DM% 87.7

PLOT AREA HARVESTED 0.00270