ROTHAMSTED RESEARCH

Yields of the Field Experiments 1974

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74/R/CS/24 P K and Take-all - Wheat

74/R/CS/24 P K and Take-all - Wheat , Rothamsted Research (1975) Yields Of The Field Experiments 1974, pp 175 - 180 **- DOI: https://doi.org/10.23637/ERADOC-1-119**

74/R/CS/24

PK AND TAKE-ALL

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

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The seventh year, winter wheat (after continuous barley 1968-73).

For previous years see 68/C/16(t), 69/R/CS/24, 70/R/CS/24(t) and 71-73/R/CS/24.

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

Whole plot dimensions: 5.33 x 20.1. Sub-plot area harvested: 0.00265.

Treatments: All combinations of:-

Whole plots: 1. Phosphate (kg P) as superphosphate:

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

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

	K
30	30
120	120

Sub plots: 3. Residues of nitrogen fertiliser applied annually 1970-73 (kg N) as 'Nitro-Chalk':

	N RESID
(37.5)	(37.5)
(75.0)	(75.0)
(113)	(113)
(150)	(150)

Basal applications: Manures: 'Nitro-Chalk' at 500 kg. Weedkillers: Amitrotriazole ('Weedazol' at 22.5 l in 220 l), and Dicamba with mecoprop and MCPA ('Banlene Plus' at 5.6 l in 370 l).

Seed: Cappelle, sown at 200 kg.

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Cultivations, etc.:- Six-yearly dressing of P applied: 10 Sept, 1973. Aminotriazole applied: 12 Sept. Ploughed: 10 Oct. Spring-tine cultivated and annual P and K applied: 15 Oct. Power harrowed: 20 Oct. Seed sown: 22 Oct. N applied: 16 Apr, 1974. 'Banlene Plus' applied: 7 May. Combine harvested: 30 Aug.

NOTE: Samples were taken in May and July for estimation of root-rotting diseases. Soil samples were taken in autumn for P and K analyses.

Standard error per plot.
Grain, tonnes/hectare: 0.558 or 9.0% (37 d.f.)

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TABLES OF MEANS

GRAIN: TONNES/HECTARE

	P 0	15 A	60 A	90 S	360 S	Mean
K						
30	4.90	5.96	6.34	6.28	6.47	5.99
120	5.28	6.11	6.75	6.92	6.99	6.41
N RESID						
(37.5)	5.44	5.47	6.26	6.70	6.64	6.10
(75.0)	4.45	5.86	6.27	6.62	6.59	5.96
(113)	5.93	6.39	6.61	6.80	6.93	6.53
(150)	4.54	6.43	7.03	6.28	6.77	6.21
Mean	5.09	6.04	6.54	6.60	6.73	6.20

N RESID

	(37.5)	(75.0)	(113)	(150)
K				
30	5.69	5.95	6.13	6.19
120	6.52	5.97	6.94	6.22

STANDARD ERRORS OF DIFFERENCES

K	N RESID	P	K N RESID	K P	N RESID P	K N RESID P
0.125	0.176	0.197	0.251	0.279	0.395	0.586

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GRAIN: TONNES/HECTARE

K	30					120				
P	0	15 A	60 A	90 S	360 S	0	15 A	60 A	90 S	360 S
N RESID										
(37.5)	4.80	5.31	6.07	6.23	6.02	6.08	5.62	6.46	7.16	7.25
(75.0)	4.95	5.68	5.95	6.63	6.54	3.95	6.04	6.60	6.61	6.64
(113)	4.89	6.29	6.43	6.35	6.69	6.98	6.49	6.80	7.26	7.17
(150)	4.98	6.56	6.90	5.89	6.63	4.10	6.29	7.15	6.66	6.90

Mean D.M. % 83.0

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STRAW: TONNES/HECTARE

	P 0	15 A	60 A	90 S	360 S	Mean
K						
30	3.99	4.23	4.11	4.28	4.43	4.21
120	4.73	4.91	4.95	5.09	4.65	4.87
N RESID						
(37.5)	4.14	4.57	4.32	4.82	4.44	4.46
(75.0)	4.40	4.30	4.51	4.64	4.25	4.42
(113)	4.95	4.68	4.45	4.76	4.70	4.71
(150)	3.96	4.72	4.83	4.52	4.77	4.56
Mean	4.36	4.57	4.53	4.69	4.54	4.54

N RESID

	(37.5)	(75.0)	(113)	(150)
K				
30	4.07	4.00	4.48	4.29
120	4.84	4.85	4.94	4.83

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STRAW: TONNES/HECTARE

K	30					120				
P	0	15 A	60 A	90 S	360 S	0	15 A	60 A	90 S	360 S
N RESID										
(37.5)	3.65	3.96	4.22	4.26	4.24	4.62	5.17	4.42	5.37	4.64
(75.0)	3.92	3.98	3.65	4.26	4.16	4.87	4.62	5.37	5.03	4.35
(113)	4.89	4.30	4.11	4.12	4.95	5.01	5.06	4.79	5.39	4.45
(150)	3.50	4.67	4.44	4.47	4.39	4.42	4.78	5.21	4.58	5.15

Mean D.M. % 85.6