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# Yields of the Field Experiments 1975

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## 75/ R/BK/1 - Broadbalk - Potatoes, Beans, Wheat

### Rothamsted Research

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ERADOC-1

Object: To study the effects of organic and inorganic manures on continuous winter wheat. Since 1968 two three-year rotations have been included: potatoes, beans, wheat and fallow, wheat, wheat.

The 13<sup>th</sup> year, wheat, potatoes, beans. The eighth year of the revised scheme.

For previous years see 'Details' 1967, Station Report for 1966, pp.229-231, Station Report for 1968, Part 2, 68/A/1(t) and 69-74/R/BK/1.

Areas harvested:

Wheat:	Section	
	0	0.00434
	1	0.00798
	2,3 and 6	0.00659
	8 and 9	0.00694
Potatoes:	4	0.00659
Beans:	7	0.00741

Treatments:

Whole plots: Fertilisers and organic manures:-

Plot	Treatments till 1967	Treatments from 1968	PLOT
01	-	D N2 P K	01DN2PK
21	D	D N2	21LN2
22	D	D	22D
03	None	None	030
05	P K Na Mg	P K (Na) Mg	05MIN
06	N1 P K Na Mg	N1 P K (Na) Mg	06N1MIN
07	N2 P K Na Mg	N2 P K (Na) Mg	07N2MIN
08	N3 P K Na Mg	N3 P K (Na) Mg	08N3MIN
09	N*1 P K Na Mg	N4 P K (Na) Mg	09N4MIN
10	N2	N2	10N2
11	N2 P	N2 P	11N2P
12	N2 P Na	N2 P Na	12N2PNA
13	N2 P K	N2 P K	13N2PK
14	N2 P Mg	N2 P K Mg	14N2PKMG
15	N2 P K Na Mg	N3 P K (Na) Mg	15N3MIN
16	N*2 P K Na Mg	N2 P K (Na) Mg	16N2MIN
17	+N2	N2 1/2 (P K (Na) Mg)	17N2MINE
18	+ P K Na Mg	N2 1/2 (P K (Na) Mg)	18N2MINE
19	C	C	19C
20	N2 K Na Mg	N2 K (Na) Mg	20NKMG

+ Alternating

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- N1, N2, N3, N4: 48, 96, 144, 192 kg N (as sulphate of ammonia until 1967, except N\* which was nitrate of soda. All as 'Nitro-Chalk' from 1968).  
 P: 35 kg P as single superphosphate (triple superphosphate in 1974)  
 K: 90 kg K as sulphate of potash  
 Na: 55 kg Na as sulphate of soda  
 (Na): 16 kg Na as sulphate of soda until 1973  
 Mg: 30 kg Mg annually to Plot 14, 35 kg Mg every third year to other plots since 1974. All as kieserite since 1974, previously as sulphate of magnesia  
 D: Farmyard manure at 35 tonnes  
 C: Castor meal to supply 96 kg N  
 MIN: P K (Na) Mg

Strips of sub-plots: Until 1967 wheat alone was grown on the experiment, with some bare fallowing on strips of sub-plots. From 1968, ten sub-plots were started with the following cropping:-

		1968	1969	1970	1971	1972	1973	1974	1975	SECTION
Section 0	W (last fallowed 1951)	W	W	W	W	W	W	W	W	SC0/W24
Section 1	W (last fallowed 1966)	W	W	W	W	W	W	W	W	SC1/W9
Section 2	BE	W	P	BE	W	P	BE	W	W	SC2/W1
Section 3	W (fallowed 1967)	W	F	W	W	F	W	W	W	SC3/W2F
Section 4	W (fallowed 1965)	P	BE	W	P	BE	W	P	P	POTATOES
Section 5	W (fallowed 1965)	F	W	W	F	W	W	F	F	-
Section 6	F	W	W	F	W	W	F	W	W	SC6/W1F
Section 7	P	BE	W	P	BE	W	P	BE	BE	BEANS
Section 8*	W (fallowed 1963)	W	W	W	F	W	W	W	W	SC8/W3F
Section 9	W (last fallowed 1958)	W	W	W	W	W	W	W	W	SC9/W17

W = wheat, P = potatoes, BE = beans, F = fallow

\* No weedkillers

NOTE: For a fuller record of treatments see 'Details' etc.

Standard applications:-

Winter wheat: Weedkillers: Ioxynil with mecoprop ('Actril C' at 7.7 l in 220 l) except Section 8.

Potatoes: Weedkillers: Linuron at 1.1 kg plus paraquat at 0.42 kg ion in 450 l. Fungicide: Mancozeb at 1.3 kg applied with demeton-s-methyl on second occasion. Insecticide: Demeton-s-methyl at 0.25 kg in 450 l on two occasions.

Beans: Insecticide: Demeton-s-methyl at 0.25 kg in 450 l.

Seed: Winter wheat: Cappelle, dressed with dieldrin, sown at 200 kg.

Potatoes: King Edward, once grown Rothamsted seed.

Spring beans: Minor, sown at 220 kg.

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Cultivations, etc.:-

ALL SECTIONS: Superphosphate applied: 21 Oct, 1975. Other autumn fertilisers and castor meal applied: 24 Oct. Ploughed, plots 3-20: 25 Oct. FYM applied: 4 Nov. Ploughed, plots 01, 21, 22: 5 Nov.

CROPPED SECTIONS:

Winter wheat: Rotary harrowed: 6 Nov, 1975. Seed sown: 7 Nov.

N applied: 22 Apr, 1975. Weedkiller applied: 9 May. Combine harvested: 13 Aug.

Potatoes: Spring-tine cultivated: 1 May. N applied: 5 May. Spike rotary cultivated, planted: 7 May. Grubbed: 12 May. Linuron plus paraquat applied: 4 June. Insecticide applied and grubbed:

27 June. Rotary cultivated: 18 July. Insecticide with fungicide applied: 21 July. Haulm mechanically destroyed: plot 014 only: 16 Sept, on remaining plots: 19 Sept. Lifted: 19 Sept.

Spring beans: N applied: 4 Mar, 1975. Rotary cultivated, seed sown and spring-tine cultivated: 25 Mar. Tractor hoed twice: 21 May. once: 24 June. Insecticide applied: 9 July. Combine harvested: 29 Aug.

FALLOW SECTION: Spring-tine cultivated: 1 May, 1975. Ploughed: 16 May. Spring-tine cultivated: 27 May. Ploughed: 15 July.

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

PLOT	POTATOES		SPRING BEANS	
	TOTAL TUBERS: TONNES/ HECTARE	% WARE: 3.81 CM (1.5 INCH) RIDDLE	GRAIN: TONNES/ HECTARE	STRAW: TONNES/ HECTARE
01DN2PK	11.9	73.7	0.91	0.47
21DN2	16.0	76.4	1.99	1.01
22D	13.2	72.8	1.51	0.69
03O	5.0	70.9	1.09	0.46
05MIN	4.5	65.8	1.31	0.77
06N1MIN	6.4	64.3	1.47	1.07
07N2MIN	9.4	64.5	1.45	1.37
08N3MIN	11.2	66.7	1.60	1.58
09N4MIN	15.5	79.2	2.19	1.39
10N2	5.3	60.6	0.80	0.39
11N2P	5.8	68.7	0.59	0.65
12N2PNA	6.4	64.1	0.31	0.86
13N2PK	9.6	77.3	0.96	1.34
14N2PKMG	12.4	74.9	1.02	1.11
15N3MIN	13.6	82.0	1.19	1.06
16N2MIN	12.3	79.7	1.59	1.23
17N2MINH	8.8	78.7	1.82	0.85
18N2MINH	11.0	77.3	1.96	1.33
19	8.0	72.4	1.03	0.83
MEAN D.M. %			86.9	88.1

POTATOES PLOT AREA HARVESTED 0.00659

BEANS PLOT AREA HARVESTED 0.00618

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WHEAT

GRAIN TONNES/HECTARE

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

SECTION PLOT	SC2/W1BE	SC6/W1F	SC3W2F	SC1/W9	SC9/W17	SC0/W24	SC8/W3F	MEAN
01DN2PK	6.04	5.88	5.89	-	-	-	-	5.94
21DN2	7.10	5.77	5.75	6.00	5.08	4.21	5.55	5.64
22D	6.69	5.09	4.02	3.79	3.94	3.63	4.58	4.53
030	3.06	2.31	1.10	1.21	1.10	1.22	2.37	1.77
05MIN	3.56	2.54	1.03	1.49	1.24	1.57	2.37	1.97
06N1MIN	5.42	3.07	3.16	3.02	2.61	3.26	2.90	3.35
07N2MIN	6.47	3.29	4.65	3.72	3.41	4.40	3.56	4.21
08N3MIN	6.71	2.87	5.67	4.88	4.51	4.50	4.37	4.79
09N4MIN	6.47	3.66	6.03	5.75	5.22	5.19	5.01	5.33
10N2	5.65	1.36	3.44	3.25	1.98	2.70	2.59	3.00
11N2P	5.62	1.22	4.18	3.65	1.73	3.67	2.47	3.22
12N2P NA	5.65	0.78	4.28	3.69	1.81	3.68	2.53	3.20
13N2PK	6.35	1.58	4.96	4.29	1.68	3.88	2.80	3.65
14N2PKMG	6.46	2.79	4.85	4.39	3.18	4.06	3.20	4.13
15N3MIN	6.42	3.51	5.75	4.70	4.34	4.50	4.02	4.75
16N2MIN	6.22	3.68	4.66	3.82	3.73	3.57	3.03	4.10
17N2MINH	6.39	4.83	4.64	3.54	3.33	3.71	3.13	4.23
18N2MIN	6.27	5.06	4.63	3.61	3.75	3.41	3.04	4.25
19C	3.96	4.08	3.18	3.71	2.09	3.23	3.05	3.33
20NKMG	-	-	-	2.77	-	2.98	-	2.87

GRAIN MEAN DM% 87.1

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WHEAT

STRAW TONNES/HECTARE

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

SECTION PLOT	SC2/W1BE	SC6/W1F	SC3W2F	SC1/W9	SC9/W17	SC0/W24	SC8/W3F	MEAN
01DN2PK	6.52	4.79	6.16	-	-	-	-	5.82
21DN2	7.77	5.29	6.95	6.91	5.69	5.06	5.55	6.17
22D	5.70	3.36	4.21	3.99	3.45	4.28	3.83	4.12
03O	1.89	1.07	0.71	0.94	0.71	0.86	1.24	1.06
05MIN	2.16	0.84	0.56	1.21	0.73	1.28	1.38	1.17
06N1MIN	4.43	2.24	2.33	2.02	2.32	2.35	2.32	2.57
07N2MIN	5.32	2.99	3.61	3.30	2.94	3.79	3.89	3.69
08N3MIN	6.41	2.98	5.12	3.81	4.30	4.58	4.25	4.49
09N4MIN	6.54	2.96	5.55	4.97	4.63	5.11	5.12	4.98
10N2	3.72	1.70	2.19	1.98	2.56	1.99	2.02	2.31
11N2P	3.74	2.35	3.04	2.80	2.39	3.33	2.93	2.94
12N2PNA	3.70	2.13	3.36	3.03	2.44	2.90	2.48	2.86
13N2PK	5.01	2.17	3.93	3.34	3.19	3.23	3.92	3.54
14N2PKMG	4.82	3.15	3.59	3.14	3.31	3.28	3.46	3.54
15N3MIN	4.36	3.29	5.10	3.57	4.05	4.19	4.16	4.10
16N2MIN	4.49	3.35	3.55	2.58	3.57	2.98	3.57	3.44
17N2MINH	4.49	3.95	3.39	2.12	3.17	2.51	4.16	3.40
18N2MIN	4.65	4.42	3.35	2.23	4.24	1.72	4.05	3.52
19C	2.64	2.80	1.95	1.55	2.59	1.73	2.68	2.28
20NKMG	-	-	-	1.52	-	1.59	-	1.56

STRAW MEAN DM% 92.0

PLOT AREA HARVESTED 0.00009