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Yields of the Field Experiments 1974

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74/R/BK/1 Broadbalk - Potatoes, Beans, Wheat

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BROADBALK

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 131st year, wheat, potatoes, beans. The seventh 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 69-73/R/BK/1.

Areas harvested:

Wheat:	Section	
	0	0.00434
	1	0.00798
	3, 4 and 5	0.00659
	8 and 9	0.00694
Potatoes:	7	0.00659
Beans:	2	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	21DN2
22	D	D	22D
03	None	None	03D
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)	17N2MINH
18	+ P K Na Mg	N2 1/2(P K (Na) Mg)	18N2MINH
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 triple superphosphate (single superphosphate until 1973)
 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	SECTION
Section 0	W (last fallowed 1951)	W	W	W	W	W	W	W	SC0/W23
Section 1	W (last fallowed 1966)	W	W	W	W	W	W	W	SC1/W8
Section 2	BE	W	P	BE	W	P	BE	BE	BEANS
Section 3	W (fallowed 1967)	W	F	W	W	F	W	W	SC3/W1F
Section 4	W (fallowed 1965)	P	BE	W	P	BE	W	W	SC4/W1BE
Section 5	W (fallowed 1965)	F	W	W	F	W	W	W	SC5/W2F
Section 6	F	W	W	F	W	W	F	F	-
Section 7	P	BE	W	P	BE	W	P	P	POTATOES
Section 8*	W (fallowed 1963)	W	W	W	F	W	W	W	SC8/W2F
Section 9	W (last fallowed 1958)	W	W	W	W	W	W	W	SC9/W16

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: Sections 0 and 9: Aminotriazole plus ammonium thiocyanate ('Weedazol' at 22.5 l in 220 l). Sections 0, 1, 3, 4, 5 and 9: Terbutryne and related triazines ('Prebane' at 4.5 kg in 220 l). Dicamba with mecoprop and MCPA ('Banlene Plus' at 5.6 l in 220 l).

Potatoes: Weedkillers: Linuron at 1.2 kg plus paraquat at 0.42 kg ion in 450 l. Fungicide: Mancozeb at 1.3 kg in 450 l on two occasions. Insecticide: Demeton-s-methyl at 0.25 kg applied with mancozeb on first occasion.

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

ERRATUM: to 'Yields' 1973: Linuron for potatoes should read 1.2 kg not 3.8 kg.

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Seed: Winter wheat: Cappelle, dressed with dieldrin, sown at 200 kg.
Potatoes: King Edward.
Spring beans: Maris Bead, sown at 220 kg.

Cultivations, etc.:-

ALL SECTIONS: Autumn fertilisers applied: 4 Oct, 1973. Castor meal applied: 5 Oct. FYM applied: 9 Oct. Ploughed: 10 Oct.

CROPPED SECTIONS:

Winter wheat: 'Weedazol' applied: 12 Sept, 1973. Discd: 13 Oct.
Power harrowed and seed sown: 18 Oct. 'Prebane' applied: 22 Oct.
N applied: 11 Apr, 1974. 'Banlene Plus' applied: 18 Apr. Combine harvested: 29 Aug.

Potatoes: Spring-time cultivated: 11 Apr, 1974. N applied: 16 Apr.
Rotary cultivated and potatoes machine planted: 17 Apr. Linuron plus paraquat applied: 17 May. Grubbed: 19 June. Rotary ridged: Plots 01, 21, 22: 22 June, plots 6-9 and 13-19: 24 June, plots 3, 5, 10, 11, 12: 10 July. Insecticide with fungicide applied: 11 July. Fungicide applied: 2 Aug. Haulm mechanically destroyed: 10 Sept. Sprayed with undiluted BOV at 220 l: 16 Sept. Lifted: 10 and 14 Oct.

Spring beans: Spring-time cultivated: 27 Sept, 1973. N applied: 8 Mar, 1974. Spring-time cultivated: 9 Mar. Power harrowed, seed sown and spring-time cultivated: 27 Mar. Insecticide applied: 13 June. Combine harvested: 26 Sept.

FALLOW SECTION: Spring-time cultivated: 11 Apr, 1974, 9 July and 8 Aug. Ploughed: 7 May and 22 July.

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TABLES OF MEANS

WHEAT

GRAIN: TONNES/HECTARE

SECTION

	SC4/W1BE	SC3/W1F	SC5/W2F	SC1/W8	SC9/W16	SC0/W23	SC8/W2F	Mean
PLOT								
01DN2PK	7.29	6.73	7.00					
21DN2	7.34	6.24	6.13	6.57	7.02	5.68	4.12	6.16
22D	7.38	7.39	7.44	6.43	6.86	6.12	5.06	6.67
03U	2.36	3.58	1.38	1.95	1.91	2.14	1.44	2.11
05M1N	2.94	4.12	1.45	1.70	2.16	2.54	2.26	2.45
06N1MIN	5.36	5.58	3.84	3.93	4.06	4.40	2.22	4.20
07N2MIN	6.34	6.42	5.74	5.37	5.70	5.57	3.36	5.50
08N3MIN	6.56	6.66	6.25	5.65	6.27	5.16	4.86	5.91
09N4MIN	6.37	5.96	7.10	6.25	6.48	5.26	5.30	6.10
10N2	5.90	4.89	3.62	4.33	2.96	2.98	3.31	4.00
11N2P	6.07	4.51	5.70	4.44	3.11	3.18	2.47	4.21
12N2PNa	6.25	5.65	5.80	5.51	4.91	5.12	2.52	5.11
13N2PK	6.51	6.14	5.72	5.90	5.89	5.42	2.78	5.48
14N2PKMg	6.88	6.36	5.61	6.09	6.01	5.51	3.46	5.70
15N3MIN	6.28	6.18	6.28	6.21	6.28	5.32	4.40	5.85
16N2MIN	6.16	6.24	5.35	5.64	5.69	5.17	2.91	5.31
17N2MINH	6.48	6.19	5.58	5.26	5.41	5.54	3.03	5.36
18N2MINH	6.34	6.18	5.73	5.62	5.83	5.24	3.55	5.50
19C	5.77	6.34	4.27	4.27	3.86	4.82	3.02	4.62
20NKMg				4.29		4.27		

Mean D.M. % 83.6

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WHEAT

STRAW: TONNES/HECTARE

SECTION

	SC4/W1BE	SC3/W1F	SC5/W2F	SC1/W8	SC9/W16	SC0/W23	SC8/W2F	Mean
PLOT								
01DN2PK	5.12	4.68	5.04					
21DN2	6.43	6.64	6.19	6.37	5.67	4.91	5.77	6.00
22D	5.87	6.61	6.96	6.37	5.36	5.75	5.77	6.10
030	1.57	2.05	0.80	1.44	1.10	1.74	1.09	1.40
05MIN	2.00	3.12	1.02	1.31	1.57	1.82	1.92	1.82
06N1MIN	4.08	5.34	2.43	2.96	2.45	3.18	2.65	3.30
07N2MIN	4.42	4.78	4.47	3.51	4.03	3.89	4.16	4.18
08N3MIN	5.56	5.47	4.84	3.93	4.03	3.60	4.77	4.60
09N4MIN	4.44	4.93	4.91	4.22	4.35	4.05	6.31	4.74
10N2	3.10	2.40	2.59	2.85	2.74	2.00	2.68	2.62
11N2P	2.91	2.29	3.79	2.58	2.22	2.38	3.17	2.76
12N2PNa	3.56	3.64	3.78	3.45	3.20	3.61	2.82	3.44
13N2PK	4.57	4.92	4.40	3.89	4.47	3.83	4.37	4.35
14N2PKMg	4.60	4.92	3.64	4.17	4.18	3.77	3.32	4.09
15M3MIN	4.46	4.36	5.29	3.91	4.09	3.31	4.82	4.32
16N2MIN	4.73	5.39	3.96	3.73	3.99	3.40	3.87	4.15
17N2MINH	4.53	5.02	4.40	3.05	3.78	3.84	4.06	4.10
18N2MINH	5.14	4.95	3.99	3.57	3.58	3.13	4.22	4.08
19C	4.29	4.56	3.52	3.29	3.61	3.29	4.17	3.82
20NKMg				3.08		2.83		

Mean D.M. % 88.6

PLOT	74/R/BK/1		POTATOES		SPRING BEANS	
	TOTAL TUBERS:		% WARE:		GRAIN:	
	TONNES/ HECTARE		3.81 CM (1.5 INCH) RIDDLE		TONNES/ HECTARE	STRAW: TONNES/ HECTARE
01DN2PK	58.5		91.5		3.09	1.79
21DN2	67.3		94.7		3.87	2.46
22D	57.7		92.4		3.99	2.82
03D	12.6		78.0		3.20	0.91
05MIN	20.2		88.9		4.48	2.45
06N1MIN	50.1		96.6		4.33	2.51
07N2MIN	59.1		96.7		3.97	2.42
08N3MIN	58.7		96.9		3.97	2.66
09N4MIN	57.3		95.8		3.97	2.72
10N2	12.8		84.3		2.22	0.67
11N2P	11.0		53.8		1.18	0.55
12N2PNa	16.2		74.2		0.38	0.10
13N2PK	39.4		95.8		3.28	2.56
14N2PKMg	35.0		94.1		3.74	1.60
15N3MIN	48.5		97.9		3.59	1.80
16N2MIN	49.5		96.2		3.80	2.79
17N2MINH	44.7		96.8		3.69	2.18
18N2MINH	46.8		96.0		4.14	2.23
19C	26.4		92.3		2.75	0.93
Mean D.M. %					69.9	41.8