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Yields of the Field Experiments 1974

Full Table of Content

Experiments - Classicals

Experiments - Classicals, Rothamsted Research (1975) Yields Of The Field Experiments 1974, pp 9 - 56 **- DOI: https://doi.org/10.23637/ERADOC-1-119**

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74/R/BK/1

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:

	Section	
Wheat:	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	03O
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	SC0/W23
Section 1	W (last fallowed 1966)	W	W	W	W	W	W	SC1/W8
Section 2	BE	W	P	BE	W	P	BE	BEANS
Section 3	W (fallowed 1967)	W	F	W	W	F	W	SC3/W1F
Section 4	W (fallowed 1965)	P	BE	W	P	BE	W	SC4/W1BE
Section 5	W (fallowed 1965)	F	W	W	F	W	W	SC5/W2F
Section 6	F	W	W	F	W	W	F	-
Section 7	P	BE	W	P	BE	W	P	POTATOES
Section 8*	W (fallowed 1963)	W	W	W	F	W	W	SC8/W2F
Section 9	W (last fallowed 1958)	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. Disced: 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-tine 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-tine cultivated: 27 Sept, 1973. N applied: 8 Mar, 1974. Spring-tine cultivated: 9 Mar. Power harrowed, seed sown and spring-tine cultivated: 27 Mar. Insecticide applied: 13 June. Combine harvested: 26 Sept.

FALLOW SECTION: Spring-tine 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

PLOT	SC4/W1BE	SC3/W1F	SC5/W2F	SC1/W8	SC9/W16	SC0/W23	SC8/W2F	Mean
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

PLOT	SC4/W1BE	SC3/W1F	SC5/W2F	SC1/W8	SC9/W16	SC0/W23	SC8/W2F	Mean
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

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PLOT	POTATOES TOTAL TUBERS: TONNES/ HECTARE	POTATOES % WARE: 3.81 CM (1.5 INCH) RIDDLE	SPRING BEANS GRAIN: TONNES/ HECTARE	SPRING BEANS 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
030	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

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74/R/HB/2

HOOSFIELD

Object: To study the effects of organic and inorganic manures on continous spring barley. Since 1968 a rotation of potatoes, beans and barley has been included.

The 123rd year, potatoes, beans and barley. The 7th year of revised scheme.

For previous years see 'Details' 1967, Station Report for 1966, 68/A/2(t), 69/R/HB/2(t) and 70-73/R/HB/2.

Treatments to barley: All combinations of:-

1. Fertilisers, organic manures and frequency of barley cropping:-

Form of N 1852-1966	Additional treatments 1852-1974		MANURE
None	-	Continuous	---CON
None	P	Continuous	-P-CON
None	K (Na) Mg	Continuous	--KCON
None	P K (Na) Mg	Continuous	-PKCON
A	-	Continuous	A--CON
A	P	Continuous	AP-CON
A	K (Na) Mg	Continuous	A-KCON
A	P K (Na) Mg	Continuous	APKCON
N	-	Continuous	N--CON
N	- Si	Continuous	N--SiCON
N	P	Continuous	NP-CON
N	P Si	Continuous	NP-SiCON
N	K (Na) Mg	Continuous	N-KCON
N	K (Na) Mg Si	Continuous	N-KSiCON
N	P K (Na) Mg	Continuous	NPKCON
N	P K (Na) Mg Si	Continuous	NPKSiCON
C	-	Continuous	C--CON
C	-	In rotation (P,BE,B)	C--RTN
C	P	Continuous	CP-CON
C	P	In rotation (P,BE,B)	CP-RTN
C	K (Na) Mg	Continuous	C-KCON
C	K (Na) Mg	In rotation (P,BE,B)	C-KRTN
C	P K (Na) Mg	Continuous	CPKCON
C	P K (Na) Mg	In rotation (P,BE,B)	CPKRTN
None	D	Continuous	DCON
(D)	-	Continuous	(D)CON
(Ashes)	-	Continuous	(A)CON
None	-	Continuous	-CON

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Form of N: A, sulphate of ammonia: N, nitrate of soda - each to supply 48 kg N.
C, castor meal to supply 96 kg N.
P: 35 kg P as triple superphosphate (single superphosphate until 1973).
K: 90 kg K as sulphate of potash.
(Na): 16 kg Na as sulphate of soda until 1973.
Mg: 35 kg Mg, as kieserite every third year, since 1974, (sulphate of magnesia until 1973).
Si: Silicate of soda at 450 kg.
D: Farmyard manure at 35 tonnes, (D): until 1871 only.
(Ashes): Weed ash 1852-1916, furnace ash 1917-1932. None since.

2. Nitrogen fertiliser (kg N), as 'Nitro-Chalk', since 1968 (cumulative N applications until 1973, on a cyclic system since 1974):

	N
None	0
48	48
96	96
144	144

There are four extra plots testing all combinations of:-

1. Fertilisers other than magnesium:

			MANURE
Plot 551	A N2 P K	Continuous	551AN2PK
Plot 561	- P K	Continuous	561--PK
Plot 571	N N2	Continuous	571NN2--
Plot 581	N N2	Continuous	581NN2--

N2: 96 kg N as 'Nitro-Chalk' since 1968. Other symbols as above.

2. Magnesium fertiliser (kg Mg) as kieserite every third year since 1974:

	MAGNESIUM
None	0
35	35

Treatments to potatoes and beans:- All combinations of:-

1. Fertiliser and organic manures:

To potatoes and beans:

1852-1966	1852-1974	MANURE
C	-	C---
C	P	CP--
C	K (Na) Mg	C-KMg
C	P K (Na) Mg	CPKMg

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To potatoes only: 1852-1966	1852-1974	MANURE
N	-	N----
N	Si	N---Si
N	P	NP---
N	P Si	NP--Si
N	K (Na) Mg	N-KMg-
N	K (Na) Mg Si	N-KMgSi
N	P K (Na) Mg	NPKMg-
N	P K (Na) Mg Si	NPKMgSi

2. Nitrogen fertiliser (kg N), as 'Nitro-Chalk':

Beans (residual effects, applied to previous potatoes)	Potatoes (applied 1974)	NRESID Beans	N Potatoes
None	None	(0)	0
96	96	(96)	96
192	192	(192)	192
288	288	(288)	288

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

Standard applications:
Potatoes: Weedkillers: Paraquat at 0.56 kg ion in 220 l, linuron at 1.2 kg plus paraquat at 0.42 kg ion in 450 l. Fungicide: Mancozeb at 1.35 kg in 450 l on two occasions. Insecticide: Demeton-s-methyl at 0.25 kg applied with mancozeb on the first occasion.
Spring beans: Insecticide: Demeton-s-methyl at 0.25 kg in 220 l.
Barley: Weedkillers: Paraquat at 0.56 kg ion in 220 l, dicamba with mecoprop and MCPA ('Tetralex Plus' at 7.0 l in 220 l).

Seed: Potatoes: King Edward.
Spring beans: Maris Bead, sown at 220 kg.
Barley: Julia, seed dressed with ethirimol, sown at 160 kg.

Cultivations, etc.:- P applied: 2 Oct, 1973. K and Mg applied: 24 Oct. Silicate of soda applied: 29 Oct. FYM applied: 19 Nov. Ploughed: 21 Nov. N applied: 8 Apr, 1974.
Potatoes: Paraquat applied: 17 Sept, 1973. Spring-tine cultivated twice: 8 Mar, 1974. Rotary cultivated and seed machine planted: 17 Apr. Linuron and paraquat applied: 17 May. Grubbed: 19 June. Fungicide and insecticide applied: 11 July. Fungicide applied: 2 Aug. Haulm mechanically destroyed: 10 Sept. Sprayed with undiluted BOV at 200 l: 16 Sept. Lifted: 4 Nov.
Spring beans: Spring-tine cultivated twice: 8 Mar, 1974. Seed sown and spring-tine cultivated: 27 Mar. Insecticide applied: 13 June. Combine harvested: 24 Sept.
Barley: Paraquat applied: 17 Sept, 1973. Ploughed: 21 Nov. Spring-tine cultivated twice: 8 Mar, 1974. Spring-tine cultivated and seed sown: 26 Mar. Weedkiller applied: 21 May. Combine harvested: 31 Aug.

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TABLES OF MEANS

BARLEY

GRAIN: TONNES/HECTARE

	N				
	0	48	96	144	Mean
MANURE					
---CON	1.57	2.28	2.43	2.60	2.22
-P-CON	2.26	3.08	3.06	4.25	3.16
--KCON	1.70	2.91	3.82	3.33	2.94
-PKCON	2.47	4.45	5.43	4.56	4.23
A--CON	1.54	1.55	1.59	2.48	1.79
AP-CON	2.35	2.72	1.47	1.96	2.13
A-KCON	1.90	2.11	2.36	2.29	2.17
APKCON	2.87	4.21	5.62	5.28	4.50
N--CON	1.67	2.03	1.91	2.91	2.13
N--SiCON	3.02	4.83	4.05	4.32	4.05
NP-CON	2.74	3.75	4.26	3.51	3.57
NP-SiCON	3.58	4.59	5.14	5.74	4.76
N-KCON	2.20	2.93	2.76	3.10	2.75
N-KSiCON	2.74	3.67	5.02	5.53	4.24
NPKCON	2.85	4.30	5.62	5.08	4.46
NPKSiCON	3.37	4.67	5.87	5.33	4.81
C--CON	3.05	4.21	4.99	4.87	4.28
C--RTN	4.30	5.21	5.44	5.67	5.15
CP-CON	3.30	4.13	4.73	5.25	4.35
CP-RTN	4.31	5.14	4.80	5.20	4.86
C-KCON	2.85	4.37	4.61	4.81	4.16
C-KRTN	3.13	4.75	5.07	5.62	4.64
CPKCON	3.18	4.64	5.84	5.80	4.87
CPKRTN	4.66	5.36	5.97	5.98	5.49
DCON	5.84	5.64	4.76	5.44	5.42
(D)CON	2.54	4.76	4.14	3.84	3.82
(A)CON	2.33	2.80	3.53	3.12	2.94
-CON	1.75	2.60	2.53	3.23	2.53

Mean D.M. % 81.8

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BARLEY

STRAW: TONNES/HECTARE

MANURE	N 0	48	96	144	Mean
---CON	0.93	1.12	0.93	1.30	1.07
-P-CON	0.38	1.32	1.51	1.50	1.18
--KCON	0.73	1.51	1.87	2.01	1.53
-PKCON	1.13	1.68	2.83	2.64	2.07
A--CON	0.76	0.92	0.92	1.10	0.92
AP-CON	0.95	1.34	0.56	0.97	0.95
A-KCON	0.93	1.46	1.66	1.59	1.41
APKCON	1.13	1.93	2.68	2.65	2.10
N--CON	1.30	0.99	1.30	1.96	1.39
N--SiCON	1.98	2.16	1.89	2.62	2.16
NP-CON	1.30	1.58	2.23	1.31	1.61
NP-SiCON	1.95	2.29	2.43	3.33	2.50
N-KCON	1.50	1.63	1.80	1.88	1.70
N-KSiCON	1.26	2.79	2.89	2.86	2.45
NPKCON	1.56	2.29	3.54	2.63	2.51
NPKSiCON	1.93	2.35	3.28	2.80	2.59
C--CON	1.66	2.32	2.58	1.60	2.04
C--RTN	2.31	2.11	2.67	3.47	2.64
CP-CON	1.35	1.67	2.36	2.69	2.02
CP-RTN	2.00	2:04	2.68	2.56	2.32
C-KCON	1.94	2.69	2.60	2.89	2.53
C-KRTN	1.29	2.38	2.26	3.29	2.31
CPKCON	1.93	2.46	2.99	2.96	2.59
CPKRTN	2.60	2.38	3.12	2.64	2.68
DCON	3.32	3.56	3.29	3.06	3.31
(D)CON	1.47	2.26	2.24	2.29	2.07
(A)CON	1.01	1.51	2.04	1.50	1.51
-CON	0.49	1.73	1.49	1.72	1.36

Mean D.M. % 87.6

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BARLEY

MANURE

	551AN2PK	561--PK	571NN2--	581NN2--	Mean
	GRAIN: TONNES/HECTARE				
MGNESIUM					
0	4.56	1.61	4.01	2.05	3.06
35	5.21	1.82	3.55	2.22	3.20
Mean	4.89	1.72	3.78	2.13	3.13
	STRAW: TONNES/HECTARE				
MGNESIUM					
0	2.42	0.63	1.75	0.94	1.43
35	2.72	0.62	1.73	1.09	1.54
Mean	2.57	0.62	1.74	1.02	1.49

Mean D.M. % Grain: 79.8
Straw: 90.2

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74/R/HB/2

POTATOES

MANURE	N 0	96	192	288	Mean
	TOTAL TUBERS: TONNES/HECTARE				
C---	14.7	15.7	21.6	16.5	17.1
CP--	14.9	11.7	18.1	14.6	14.8
C-KMg	18.6	37.5	44.5	49.3	37.5
CPKMg	28.7	48.1	44.2	57.4	44.6
N----	6.7	6.3	7.7	6.1	6.7
N---Si	7.3	7.7	7.5	7.2	7.4
NP---	7.8	9.4	9.1	11.0	9.3
NP--Si	8.8	8.3	11.1	8.1	9.1
N-KMg-	19.7	21.0	27.9	32.7	25.3
N-KMgSi	20.2	34.6	31.9	34.4	30.3
NPKMg-	27.4	50.5	56.0	59.2	48.3
NPKMgSi	29.0	51.5	50.2	49.7	45.1
Mean	17.0	25.2	27.5	28.9	24.6

PERCENTAGE WARE: 3.81 CM (1.5 INCH) RIDDLE

MANURE					
C---	93.2	90.7	94.7	91.4	92.5
CP--	86.3	77.7	91.0	88.9	86.0
C-KMg	94.6	97.4	97.2	97.3	96.6
CPKMg	93.6	95.3	93.8	93.2	94.0
N----	68.5	76.0	78.2	65.0	71.9
N---Si	77.1	76.7	81.2	71.7	76.7
NP---	67.1	60.6	69.5	76.2	68.4
NP--Si	70.1	67.9	69.8	66.5	68.6
N-KMg-	92.3	91.0	94.6	95.8	93.4
N-KMgSi	92.5	95.8	96.8	96.8	95.5
NPKMg-	95.8	97.0	96.4	94.7	96.0
NPKMgSi	92.9	94.0	93.5	95.5	94.0
Mean	85.3	85.0	88.1	86.1	86.1

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74/R/RB/2

BEANS

	NRESID (0)	(96)	(192)	(288)	Mean
	GRAIN: TONNES/HECTARE				
MANURE					
C--	3.28	2.62	2.63	3.06	2.90
CP-	2.23	2.05	2.16	2.36	2.20
C-K	2.70	2.92	2.61	3.35	2.89
CPK	3.95	4.07	4.07	3.99	4.02
Mean	3.04	2.92	2.87	3.19	3.00
	STRAW: TONNES/HECTARE				
MANURE					
C--	1.50	0.93	1.24	1.52	1.30
CP-	1.28	1.19	1.53	1.46	1.36
C-K	1.48	1.75	1.70	1.85	1.70
CPK	2.83	2.57	3.05	2.77	2.81
Mean	1.77	1.61	1.88	1.90	1.79

Mean D.M. % Grain: 75.0
Straw: 42.0

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74/R/WF/3

WHEAT AND FALLOW

Object: To study the effects of fallowing for one or three years on unmanured winter wheat - Hoosfield.

The 119th year, winter wheat.

For previous years see 'Details' 1967, 68/A/3(t), 69-73/R/WF/3.

Whole plot dimensions: 9.61 x 52.1. Area harvested: 0.01483.

Treatments: Phase of fallowing cycle (up to 1974):-

		PLOT
Plot 1	F W F W F F F W	1/Fall 3
Plot 2	W F F F W F W F	-
Plot 3	F W F W F W F F	-
Plot 4	W F W F F F W F	-
Plot 5	F F F W F W F W	5/Fall 1
Plot 6	W F W F W F F F	-
Plot 7	F W F F F W F W	7/Fall 1
Plot 8	F F W F W F W F	-

W = wheat, F = fallow.

Basal applications: Weedkiller: Dicamba with mecoprop and MCPA ('Banlene Plus' at 5.6 l in 220 l).

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

Cultivations, etc.:-
Wheat plots: Ploughed: 3 Oct, 1973. Disced and seed sown: 18 Oct.
Weedkiller applied: 18 Apr, 1974. Combine harvested: 29 Aug.
Fallow plots: Ploughed: 3 Oct, 1973, 7 May, 1974 and 22 July.
Spring-tine cultivated: 8 Mar, 11 Apr, 10 July and 8 Aug.

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74/R/WF/3

TABLES OF MEANS

PLOT			
5/Fall 1	7/Fall 1	1/Fall 3	Mean
GRAIN: TONNES/HECTARE			
2.24	1.87	3.14	2.42
STRAW: TONNES/HECTARE			
1.37	1.04	1.55	1.32

Mean D.M. % Grain: 83.5
Straw: 86.9

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74/R/EX/4

EXHAUSTION LAND

Object: To study the residual effects of manures, applied 1856-1901, on the yield of continuous barley - Hoosfield.

The 119th year, barley.

For previous years see 'Details' 1967, 68/A/7 and 69-73/R/EX/4.

Area harvested: 0.03000.

Treatments: Fertiliser and farmyard manure 1876-1901 (now all given 88 kg N):-

	PLOTFERT(01)
Plot 1 None	1-
Plot 2 None	2-
Plot 3 D	3D
Plot 4 D	4D
Plot 5 N	5N
Plot 6 N*	6N*
Plot 7 N P K Na Mg	7NMIN
Plot 8 N* P K Na Mg	8N*MIN
Plot 9 P	9P
Plot 10 P K Na Mg	10MIN

N - 96 kg N as ammonium salts
N* - 96 kg N as nitrate of soda
P - 34 kg P as superphosphate
K - 137 kg K as sulphate of potash
Na - 16 kg Na as sulphate of soda
Mg - 11 kg Mg as sulphate of magnesia
D - Farmyard manure at 35 tonnes
MIN - P K Na Mg

NOTE: For a fuller record of treatments see 'Details' 1967 etc.

Basal applications: Manures: 88 kg N as 'Nitro-Chalk', combine drilled. Weedkillers: 4.5 kg aminotriazole + 4.1 kg ammonium thiocyanate in 220 l in autumn. Dicamba, mecoprop and MCPA ('Tetralex Plus' at 7.0 l in 220 l) in spring.

Seed: Julia, dressed with ethirimol, sown at 160 kg.

Cultivations, etc.:- Autumn weedkiller applied: 12 Sept, 1973. Ploughed: 4 Oct. Seed sown: 26 Mar, 1974. Spring weedkiller applied: 21 May. Harvested: 20 Aug.

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74/R/EX/4

TABLE OF MEANS

	TONNES/HECTARE	
	GRAIN	STRAW
PLOTFERT(01)		
1-	1.65	0.92
2-	1.74	1.66
3D	4.48	1.80
4D	4.46	1.84
5N	1.91	1.14
6N*	1.39	1.52
7NMIN	4.12	1.61
8N*MIN	3.61	1.88
9P	3.02	1.19
10MIN	4.71	2.30
Mean D.M. %	78.1	89.8

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74/R/PG/5

PARK GRASS

Object: To study the effects of organic and inorganic manures on old grass (for hay). The effects of liming are also studied.

The 119th year, hay.

For previous years see 'Details' 1967, 68/A/6(t), 69-71/R/PG/5, 72/R/PG/5(t) and 73/R/PG/5.

Treatments:

Whole plots: Fertilisers and organic manures:-

		MANURE
Plot 1	N1	N1
Plot 2	None (D until 1863)	O(D)
Plot 3	None	O/PLOT3
Plot 4-1	P	P
Plot 4-2	N2 P	N2P
Plot 6	N1 P K Na Mg	N1MIN
Plot 7	P K Na Mg	MIN
Plot 8	P Na Mg	PNaMg
Plot 9	N2 P K Na Mg	N2MIN
Plot 10	N2 P Na Mg	N2PNaMg
Plot 11-1	N3 P K Na Mg	N3MIN
Plot 11-2	N3 P K Na Mg Si	N3MINSi
Plot 12	None	O/PLOT12
Plot 13	D/F	D/F
Plot 14	N2* P K Na Mg	N2*MIN
Plot 15	P K Na Mg (N2* until 1875)	MIN(N2*)
Plot 16	N1* P K Na Mg	N1*MIN
Plot 17	N1*	N1*
Plot 18	N2 K Na Mg	N2KNaMg
Plot 19	D	D
Plot 20	D/N*P K	D/N*PK

N1, N2, N3:	48, 96, 144 kg N as sulphate of ammonia
N1*, N2*:	48, 96 kg N as nitrate of soda (30 kg N to Plot 20 in years with no farmyard manure)
P:	35 kg P (15 kg P to Plot 20 in years with no farmyard manure) as triple superphosphate (single superphosphate until 1973)
K:	225 kg K (45 kg K to Plot 20 in years with no farmyard manure) as sulphate of potash
Na:	15 kg Na as sulphate of soda
Mg:	10 kg Mg as sulphate of magnesia
Si:	Silicate of soda at 450 kg
D:	Farmyard manure at 35 tonnes every fourth year
F:	Fish meal every fourth year to supply 63 kg N
MIN:	P K Na Mg

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Sub plots: Liming (none to Plot 12):- LIME

a	Ground chalk applied as necessary to maintain pH found in 1965	a
b	Ground chalk applied as necessary to achieve pH6	b
c	Ground chalk applied as necessary to achieve pH5	c
d	None	d

Additional sub plots (Plots 18, 19 and 20 only) (tonnes CaCO3 applied every fourth year 1920-1964):-

18-1	None	N2KNaMg0
18-2	13.5	N2KNaMg2
18-3	7.9	N2KNaMg1
19-1	None	D0
19-2	6.3	D2
19-3	1.1	D1
20-1	None	D/N*PK0
20-2	5.6	D/N*PK2
20-3	1.1	D/N*PK1

since 1965 Plot 18-1 has been split into two for treatments 'c' and 'd' above and Plot 18-3 split into two for treatments 'a' and 'b'. The remaining sub-plots of Plots 18, 19 and 20 are treated as 'a'.

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

Cultivations, etc.:- Mineral fertilisers applied: 19 Dec, 1973. N applied: 1st dressing - 5 Apr, 1974, 2nd dressing - 30 Apr. Cut twice: 21 June, 13 Dec.

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74/R/PG/5

TABLES OF MEANS

DRY MATTER: TONNES/HECTARE

	1st cut LIME					2nd cut LIME				
	a	b	c	d	Mean	a	b	c	d	Mean
MANURE										
N1	2.12	2.38	1.60	0.45	1.64	1.05	1.01	1.01	0.55	0.90
O(D)	1.60	1.61	1.25	1.25	1.43	0.94	0.79	0.89	1.18	0.95
O/PLOT3	1.43	1.52	1.10	1.18	1.31	0.62	0.46	0.78	1.25	0.78
P	1.75	1.73	1.82	1.97	1.82	0.65	0.58	1.50	1.65	1.10
N2P	2.79	2.87	2.94	2.56	2.79	1.80	1.94	1.84	1.77	1.84
N1MIN	5.67	5.58			5.62	3.02	2.08			2.55
MIN	5.02	5.14	3.06	2.83	4.01	1.84	1.84	1.82	1.86	1.84
PNaMg	2.18	2.20	2.90	2.70	2.50	1.21	1.16	1.67	1.94	1.50
N2MIN	6.59	6.33	6.55	4.56	6.01	2.37	2.09	1.73	1.93	2.03
N2PNaMg	3.72	3.40	3.34	2.56	3.25	1.54	1.43	1.68	1.24	1.47
N3MIN	6.68	6.03	6.71	6.04	6.36	2.20	1.86	2.15	3.22	2.36
N3MINSi	7.29	7.81	6.60	6.77	7.12	3.06	3.18	2.46	4.70	3.35
O/PLOT12	1.60		1.25		1.43	+		+		+
D/F	4.20	4.57	4.29	3.67	4.18	+	+	+	+	+
N2*MIN	5.56	5.67	6.51	6.35	6.02	1.91	1.67	1.94	2.48	2.00
MIN(N2*)	4.48		2.54		3.51	2.27		1.69		1.98
N1*MIN	5.32	5.33	5.35	4.79	5.20	2.10	1.79	2.23	2.35	2.12
N1*	2.83	2.32	3.10	2.47	2.68	1.55	1.35	2.28	1.97	1.79
N2KNaMg0			2.69	1.01	1.85			0.84	0.27	0.56
N2KNaMg2	2.79				2.79	0.89				0.89
N2KNaMg1	2.63	3.01			2.82	0.71	0.76			0.74
D0	4.76				4.76	2.36				2.36
D2	5.34				5.34	2.02				2.02
D1	4.82				4.82	1.91				1.91
D/N*PK0	5.58				5.58	2.78				2.78
D/N*PK2	6.35				6.35	3.12				3.12
D/N*PK1	5.61				5.61	2.01				2.01
Mean D.M. %					28.4					32.6

+ Yield not presented because of contamination of produce by mole hills

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74/R/PG/5

DRY MATTER: TONNES/HECTARE

Total of 2 cuts

	LIME a	b	c	d	Mean
MANURE					
N1	3.17	3.38	2.61	1.00	2.54
O(D)	2.55	2.41	2.13	2.42	2.38
O/PLOT3	2.05	1.98	1.89	2.43	2.09
P	2.40	2.31	3.32	3.62	2.91
N2P	4.59	4.81	4.78	4.33	4.63
N1MIN	8.69	7.66			8.17
MIN	6.86	6.97	4.88	4.69	5.85
PNaMg	3.40	3.37	4.57	4.63	3.99
N2MIN	8.96	8.42	8.28	6.49	8.04
N2PNaMg	5.25	4.83	5.02	3.80	4.72
N3MIN	8.88	7.89	8.87	9.25	8.72
N3MINSi	10.35	10.99	9.06	11.47	10.47
O/PLOT12	+		+		+
D/F	+	+	+	+	+
N2*MIN	7.46	7.35	8.44	8.83	8.02
MIN(N2*)	6.75		4.23		5.49
N1*MIN	7.42	7.12	7.58	7.14	7.32
N1*	4.38	3.67	5.38	4.44	4.47
N2KNaMg0			3.52	1.28	2.40
N2KMaMg2	3.68				3.68
N2KNaMg1	3.34	3.77			3.56
D0	7.12				7.12
D2	7.37				7.37
D1	6.73				6.73
D/N*PK0	8.36				8.36
D/N*PK2	9.47				9.47
D/N*PK1	7.61				7.61
Mean D.M. %					30.5

+ Yield not presented because of contamination of produce by mole hills

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74/R/AG/6

AGDELL

Object: To study, by crop yields and soil analyses, the residual values of phosphate and potash applied in the period 1848-1951 and further dressings since 1964.

The fifth year of revised scheme potatoes and barley.

For previous years see 'Details' 1967, 68/A/4, 69/R/AG/6, 70/R/AG/6(t), 71/R/AG/6(t), 72/R/AG/6(t) and 73/R/AG/6.

Treatments: All combinations of:-

Whole plots: 1. Fertilisers and organic manures applied to roots every fourth year, in the period 1848-1948 — OLDRESD

None	None
P K Na Mg	PKNaMg
N P K Na Mg C	NPKNaMgC

N: 48 kg N as sulphate of ammonia
P: 41 kg P as superphosphate
K: 224 kg K as sulphate of potash
Na: 16 kg Na as sulphate of soda
Mg: 11 kg Mg as sulphate of magnesia
C: Castor meal at 2240 kg supplying about 112 kg N

2. Rotation 1848-1951 — OLDROTN

With fallow: Roots (turnips or swedes), barley, fallow, wheat	Fallow
With legume: Roots, barley, legume (clover or beans), wheat	Legume

Half plots: 3. Residues of 1964 treatments — 1964RESD

P	P
K	K

Quarter plots: 4. Previous cropping 1958-69 on P-test half plots, 1958-70 on K-test half plots — PREVCROP

Arable or fallow	Arable
Grass	Grass

Sixteenth plots: 5. Rates of 1964 treatments (kg) — P20564 K2064

P205 to P-test half plots	K20 to K-test half plots	P20564	K2064
None	None	0	0
500	315	500	315
1000	630	1000	630
2000	1260	2000	1260

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Sixty fourth plots:

6. On P-test half plots: Residuals of P2O5 applied 1970-72 (total, kg) To barley	On K-test half plots: K2O applied 1974 (kg) (cumulative to dressings in 1973) To barley	To potatoes	P2O5(70-2) Barley	K2O74 Barley	Potatoes
None	None	None	0	0	0
375	60	250	375	60	250

Strips of sixty fourth plots:

7. On P-test half plots: N (kg) to barley 1974	On K-test half plots: Crops in 1974	N74	CROP
63	Barley	63	Barley
94	Potatoes	94	Potatoes

Sub plot dimensions: Plots 1, 2, 3 and 4 - 6.04 x 3.02. Plots 5, 6 - 5.43 x 3.02. Area harvested: Barley: P-test plots: 0.00085, K-test plots: 0.00074, potatoes: 0.00009.

Standard applications:

Barley: Manures: K2O at 120 kg as muriate of potash on P-test half plots. (30:13:0) at 320 kg on K-test half plots. Weedkillers: Ioxynil with mecoprop ('Actril C' at 5.6 l in 340 l).

Potatoes: Manures: N at 250 kg as 'Nitro-Chalk'. P2O5 at 190 kg as superphosphate. MgO at 100 kg as Kieserite. Weedkiller: Linuron at 1.2 kg in 340 l. Insecticide: Menazon ('Saphicol' at 0.7 l in 280 l). Fungicide: Mancozeb at 1.3 kg in 280 l.

Seed: Barley: Julia, dressed with ethirimol, sown at 170 kg.
Potatoes: King Edward.

Cultivations, etc.:-

Barley stubble deep-tine cultivated: 21 Aug, 1973. All plots ploughed: 8 Nov. All plots power harrowed: 1 Apr, 1974.

Barley: Standard K applied to P-test half plots: 31 Oct, 1973. Treatment K applied to K-test half plots: 2 Apr, 1974. Seed sown and NP applied: 3 Apr. Weedkiller applied: 21 May. Combine harvested: 23 Aug.

Potatoes: Standard N, P, Mg and treatment K applied: 3 Apr, 1974. Rotary cultivated: 9 Apr. Potatoes planted: 10 Apr. Weedkiller applied: 14 May. Insecticide applied: 14 June. Fungicide applied: 8, 23 July, 16 Aug. Haulm cut off: 16 Sept. Sprayed with undiluted BOV at 220 l: 19 Sept. Lifted: 26 Sept.

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74/R/AG/6

TABLES OF MEANS

BARLEY

P-TEST HALF PLOTS

GRAIN: TONNES/HECTARE

	OLDRESD OLDROTN		None Fallow	None Legume	PKNaMg Fallow	PKNaMg Legume	NPKNaMgC Fallow	NPKNaMgC Legume	Mean
PREVCROP	Arable								
P20570-2	P20564	N74							
0	0	63	4.49	5.02	5.08	4.59	3.99	4.72	4.65
0	0	94	4.40	5.98	5.87	5.61	5.15	5.05	5.34
0	500	63	4.96	4.69	4.75	4.93	4.20	4.67	4.70
0	500	94	5.68	5.64	5.69	5.56	5.76	4.96	5.55
0	1000	63	5.12	5.06	5.28	5.14	3.89	4.46	4.83
0	1000	94	6.00	6.23	5.86	5.77	5.18	5.08	5.68
0	2000	63	5.07	4.81	5.29	4.88	4.60	4.26	4.82
0	2000	94	5.30	6.48	5.68	5.91	6.22	5.48	5.85
375	0	63	5.10	4.95	5.03	4.67	4.45	5.36	4.93
375	0	94	5.21	6.28	6.16	5.89	5.25	5.03	5.64
375	500	63	4.80	4.86	5.30	5.00	4.69	4.70	4.89
375	500	94	5.89	5.79	5.81	5.79	5.89	5.31	5.75
375	1000	63	5.27	5.05	5.41	5.22	4.31	5.38	5.11
375	1000	94	6.32	6.03	6.03	5.96	5.51	5.82	5.94
375	2000	63	4.79	5.11	5.28	5.36	4.44	4.56	4.92
375	2000	94	5.84	6.18	5.76	6.13	5.88	5.60	5.90
Mean			5.27	5.51	5.52	5.40	4.96	5.03	5.28

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74/R/AG/6

BARLEY

P-TEST HALF PLOTS

GRAIN: TONNES/HECTARE

	OLDRESD OLDROTN		None		PKNaMg		NPKNaMgC		Mean
			Fallow	Legume	Fallow	Legume	Fallow	Legume	
PREVCROP Grass									
P20570-2	P20564	N74							
0	0	63	4.55	3.22	3.97	5.32	5.09	4.54	4.45
0	0	94	4.46	3.58	5.39	5.01	5.98	5.23	4.94
0	500	63	5.62	6.41	5.58	5.39	5.29	5.35	5.61
0	500	94	5.86	6.06	5.56	5.40	5.98	6.31	5.86
0	1000	63	6.14	6.26	5.59	5.88	5.42	5.71	5.83
0	1000	94	6.33	6.12	6.03	6.19	5.81	6.43	6.15
0	2000	63	6.11	6.44	6.22	6.13	5.60	5.76	6.04
0	2000	94	6.67	6.67	6.18	6.05	6.03	6.09	6.28
375	0	63	5.72	5.80	5.19	5.64	5.32	5.33	5.50
375	0	94	5.97	5.52	5.98	6.12	6.07	5.68	5.89
375	500	63	5.86	6.70	5.82	5.28	5.42	5.64	5.79
375	500	94	6.29	5.97	6.02	5.85	6.10	5.40	5.94
375	1000	63	5.67	6.12	5.11	5.84	5.50	5.70	5.66
375	1000	94	6.57	6.74	5.86	6.39	6.25	6.18	6.33
375	2000	63	5.96	6.59	5.99	5.76	5.39	5.71	5.90
375	2000	94	6.57	6.33	6.15	6.05	6.24	6.56	6.32
Mean			5.90	5.91	5.66	5.77	5.72	5.73	5.78

Mean D.M. % 84.1

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74/R/AG/6

BARLEY

K-TEST HALF PLOTS

GRAIN: TONNES/HECTARE

	OLDRES OLDROTN	None Fallow	None Legume	PKNaMg Fallow	PKNaMg Legume	NPKNaMgC Fallow	NPKNaMgC Legume	Mean
PREVCROP Arable								
K2074	K2064							
0	0	4.93	5.28	5.75	5.84	5.83	5.88	5.58
	315	4.95	4.90	6.06	6.01	5.82	5.55	5.55
	630	5.03	4.75	5.93	6.39	6.07	5.81	5.66
	1260	4.93	5.36	5.85	6.51	5.57	5.89	5.69
60	0	4.38	5.30	5.44	6.02	5.68	5.80	5.44
	315	5.14	4.73	5.44	6.16	5.57	5.57	5.43
	630	5.20	4.96	5.72	5.92	5.43	5.90	5.52
	1260	4.81	5.22	5.94	6.02	5.42	5.94	5.56
Mean		4.92	5.06	5.77	6.11	5.68	5.79	5.55
PREVCROP Grass								
K2074	K2064							
0	0	4.61	3.68	5.43	5.02	4.07	4.33	4.52
	315	5.30	5.47	6.26	6.19	5.72	6.05	5.83
	630	5.11	5.29	6.24	6.25	5.77	5.57	5.71
	1260	5.45	5.78	6.34	6.05	6.29	4.59	5.75
60	0	5.36	5.60	6.20	6.06	5.99	6.37	5.93
	315	5.19	5.36	6.19	5.84	6.06	6.44	5.85
	630	5.12	5.42	6.53	6.77	5.99	6.01	5.97
	1260	5.60	4.99	6.27	6.46	5.98	6.36	5.94
Mean		5.22	5.20	6.18	6.08	5.73	5.71	5.69

Mean D.M. % 84.4

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74/R/AG/6

BARLEY

K-TEST HALF PLOTS

STRAW: TONNES/HECTARE

	OLDRESD OLDROTN	None Fallow	None Legume	PKNaMg Fallow	PKNaMg Legume	NPKNaMgC Fallow	NPKNaMgC Legume	Mean
PREVCROP Arable								
K2074	K2064							
0	0	2.18	3.09	3.45	2.77	2.30	2.40	2.70
	315	2.38	2.29	2.57	2.51	2.60	2.64	2.50
	630	3.26	2.02	3.23	2.81	2.71	2.70	2.79
	1260	3.28	2.61	2.57	2.88	2.26	2.92	2.75
60	0	1.84	3.24	2.86	3.39	3.03	2.83	2.86
	315	2.57	2.34	2.54	2.63	2.03	2.97	2.51
	630	3.14	2.07	3.13	2.70	2.42	2.95	2.74
	1260	3.01	3.22	3.18	2.95	2.35	2.88	2.93
Mean		2.71	2.61	2.94	2.83	2.46	2.79	2.72
PREVCROP Grass								
K2074	K2064							
0	0	2.31	1.33	2.61	1.96	1.64	1.90	1.96
	315	3.01	3.19	2.46	3.24	2.27	2.06	2.70
	630	2.19	3.03	2.67	2.91	1.88	3.01	2.62
	1260	2.04	2.68	3.45	2.92	2.54	2.49	2.69
60	0	2.57	3.04	3.33	2.72	2.68	2.75	2.85
	315	2.16	2.65	3.14	2.95	2.37	3.05	2.72
	630	2.71	2.88	4.15	3.20	2.79	2.47	3.03
	1260	4.00	2.73	4.18	3.58	2.50	3.17	3.36
Mean		2.62	2.69	3.25	2.93	2.34	2.62	2.74

Mean D.M. % 66.8

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74/R/AG/6

POTATOES

TOTAL TUBERS: TONNES/HECTARE

	OLDRESD OLDROTN	None Fallow	None Legume	PKNaMg Fallow	PKNaMg Legume	NPKNaMgC Fallow	NPKNaMgC Legume	Mean
PREVCROP Arable								
K2074	K2064							
0	0	34.6	34.6	53.4	54.8	49.7	52.7	46.6
	315	40.3	37.4	51.8	50.7	55.8	56.4	48.7
	630	46.6	50.8	56.8	56.9	53.9	49.8	52.5
	1260	41.8	46.3	48.6	55.2	56.8	53.7	50.4
250	0	38.6	52.8	56.4	60.0	55.3	60.1	53.9
	315	54.8	48.4	58.4	61.6	72.5	55.6	58.6
	630	48.9	56.6	53.6	57.1	59.1	55.8	55.2
	1260	55.7	47.4	54.2	60.3	56.2	55.3	54.9
Mean		45.2	46.8	54.2	57.1	57.4	54.9	52.6
PREVCROP Grass								
K2074	K2064							
0	0	6.5	8.7	16.0	15.4	10.9	11.2	11.5
	315	27.6	34.9	44.1	43.0	31.0	32.5	35.5
	630	36.8	30.8	39.5	51.0	49.2	49.2	42.7
	1260	40.4	30.8	51.5	54.3	49.2	52.0	46.4
250	0	42.1	32.8	47.5	50.1	44.6	48.3	44.2
	315	48.1	42.3	53.4	53.9	56.1	46.6	50.1
	630	49.4	50.1	51.0	62.0	59.1	60.4	55.3
	1260	53.9	37.3	56.4	50.8	60.3	57.4	52.7
Mean		38.1	33.4	44.9	47.6	45.0	44.7	42.3

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74/R/AG/6

POTATOES

PERCENTAGE WARE: 3.81 CM (1.5 INCH) RIDDLE

	OLDRESD OLDROTN	None Fallow	None Legume	PKNaMg Fallow	PKNaMg Legume	NPKNaMgC Fallow	NPKNaMgC Legume	Mean
PREVCROP Arable								
K2074	K2064							
0	0	91.3	92.3	95.6	93.6	92.4	93.6	93.2
	315	90.5	91.6	94.9	95.1	95.3	93.5	93.5
	630	92.1	94.8	94.9	95.4	94.3	90.1	93.6
	1260	93.2	92.8	94.6	93.4	91.0	93.8	93.1
250	0	87.9	95.0	92.8	92.7	91.6	94.4	92.4
	315	95.1	92.8	94.0	95.5	92.0	92.9	93.7
	630	93.5	94.1	94.0	94.4	93.3	92.4	93.6
	1260	95.2	95.4	96.8	93.7	91.2	93.2	94.3
Mean		92.4	93.6	94.7	94.2	92.6	93.0	93.4
PREVCROP Grass								
K2074	K2064							
0	0	51.3	61.5	59.1	77.4	58.7	64.9	62.1
	315	84.3	91.4	95.0	91.5	85.0	87.9	89.2
	630	95.5	88.1	89.7	91.4	93.8	94.1	92.1
	1260	92.2	93.0	93.8	93.3	94.1	93.6	93.3
250	0	91.7	93.9	91.1	92.7	91.5	91.0	92.0
	315	94.5	92.1	94.3	90.5	92.5	93.4	92.9
	630	96.3	94.4	91.4	92.5	94.1	93.5	93.7
	1260	95.1	92.9	94.3	92.0	93.0	94.9	93.7
Mean		87.6	88.4	88.6	90.2	87.8	89.2	88.6

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74/R/BN/7

BARNFIELD

Object: Originally studied the effects of organic and inorganic manures on continuous roots. The experiment has been modified to study effects on other crops and continuous beans.

The eighth year of beans on Sections 1 and 2. The rest of the experiment was fallowed in preparation for a new scheme except that potatoes were grown on Strip 3 for a study of pink rot (Phytophthora erythroseptica) and barley on the discard area of Strip 4 for a study of take-all (Gaeumannomyces graminis).

For previous years see 'Details' 1967, 68/A/5(t), 69/R/BN/7, 70/R/BN/7(t), 71/R/BN/7(t), 72/R/BN/7(t) and 73/R/BN/7.

Plot dimensions and areas harvested:
Beans: Section 1 (half-plots): 5.33 x 55.9. (Strips 1 and 8: 4.27 x 55.9). Area harvested: 0.00585.

Treatments to beans (Sections 1 and 2 only). All combinations of:-
Whole plots: 1. Fertilisers and organic manures

	MANURE
D	D
D P K	DPK
P K (Na) Mg	PK(Na)Mg
P	P
P K	PK
P (Na) Mg	P(Na)Mg
None	None

P: 35 kg P as triple superphosphate (single superphosphate until 1973)
K: 225 kg K as sulphate of potash
(Na): 90 kg Na as sodium chloride until 1973
Mg: 90 kg Mg as kieserite every fourth year since 1974 (sulphate of magnesia until 1973)
D: Farmyard manure at 35 tonnes.

Sub plots: 2. Year of applying simazine (at 1.1 kg)

	SIMAZINE
1972, none since (mechanically weeded)	1972
1974 (mechanically weeded 1972 and 1973)	1974

NOTES: (1) Beans were sown on half plots only, the eastern half of each plot was fallowed.
(2) Manurial treatments were applied to all sections.
(3) For a fuller record of treatments see 'Details' etc.

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Standard applications:
Spring beans: Weedkiller: Paraquat 0.56 kg ion in 220 l. Insecticide: Demeton-s-methyl at 0.25 kg in 220 l.

Seed: Maris Bead, sown at 220 kg.

Cultivations, etc.:-
K and Mg applied: 12 Dec, 1973. P applied: 17 Dec. FYM applied: 19 Dec. Ploughed: 20 Dec.
Spring beans: Paraquat applied: 12 Sept, 1973. Rotary harrowed: 4 Apr, 1974. Seed sown and spring-tine cultivated: 5 Apr. Simazine applied: 10 Apr. Insecticide applied: 13 June. Combine harvested: 24 Sept.
Fallow: Spring-tine cultivated: 11 Apr, 1974, 2 May and 10 July. Deep-tine cultivated: 23 May. Rotary cultivated: 11 June. Subsoiled at approximately 50 cm depth: tines 1.4 m apart on 23 July and 0.7 m apart on 24 July.

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74/R/BN/7

TABLES OF MEANS

BEANS

SIMAZINE

	1972	1974	Mean
	GRAIN: TONNES/HECTARE		
MANURE			
D	1.92	2.31	2.11
DPK	2.16	2.38	2.27
PK(Na)Mg	2.24	2.23	2.23
P	2.05	1.99	2.02
PK	2.11	1.74	1.93
P(Na)Mg	2.39	1.92	2.15
None	1.57	1.56	1.56
Mean	2.06	2.02	2.04
	STRAW: TONNES/HECTARE		
MANURE			
D	2.32	1.88	2.10
DPK	1.85	2.79	2.32
PK(Na)Mg	1.20	1.18	1.19
P	1.07	1.16	1.12
PK	1.07	0.96	1.01
P(Na)Mg	1.39	1.10	1.25
None	0.98	0.86	0.92
None	1.41	1.42	1.42

Mean D.M. % Grain: 76.3
Straw: 52.5

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74/R/GC/8

GARDEN CLOVER

Object: To study yields and pathogens of red clover grown continuously - Manor Garden.

The 121st year, red clover.

For previous years see 'Details' 1967, 68/A/8(t) and 69-73/R/GC/8.

Whole plot dimensions: 2.13 x 3.05. Area harvested: 0.00009.

Treatments: Residual effects of fertilisers applied in previous years. All combinations of:-

1. Nitrogen fertiliser (kg N per cut 1967-72):	NPERCUT(72)
0	0
126	126

2. Magnesium fertiliser (kg Mg/annum 1968-72):	MG(72)
0	0
112	112

NOTE: In 1973 plots which had not previously received magnesium were given a corrective dressing of Mg at 500 kg as Epsom salts.

Basal applications: Manures: (0:14:28) at 540 kg. K2O at 75 kg, as muriate of potash, after each cut except the last. Mg at 110 kg, as Epsom salts, half in spring, half after first cut. N at 130 kg, as 'Nitro-Chalk', in spring and after each cut except the last.

Seed: English Leafy Broad Red sown at 34 kg.

Cultivations, etc.:- Area hand dug, all plants removed, basal PK and Mg applied: 1 Apr, 1974. Area raked down to seedbed, seed sown, basal N applied: 29 Apr. Cut, basal N, K and Mg applied: 2 Aug. Cut: 11 Sept. Basal N and K applied: 12 Sept. Cut: 21 Oct.

NOTE: Samples of herbage were taken for determination of N, P, K, Ca, Na and Mg.

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74/R/GC/8

TABLES OF MEANS

DRY MATTER: TONNES/HECTARE

NPERCUT(72)	0		126		
MG(72)	0	112	0	112	Mean
1st cut	1.87	1.52	2.03	1.83	1.81
2nd cut	2.67	2.17	2.52	2.45	2.46
3rd cut	0.59	0.51	0.78	0.55	0.61
Total of 3 cuts	5.13	4.20	5.33	4.84	4.87

Mean D.M. %
1st cut: 21.1
2nd cut: 12.6
3rd cut: 16.8
Total of 3 cuts: 16.8

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74/S/RN/1

ROTATION I

Object: To compare nutrient cycles, uptakes of nutrients and responses to fresh P and K of lucerne and grass leys. To obtain an estimate of the rate of release of nutrients, particularly K, from Saxmundham soil. The effects of lucerne and grass leys will be compared on subsequent arable crops - Saxmundham.

Sponsors: A.E. Johnston, R.C. Flint.

For previous years see 'Details' 1967, 68/A/9(t), 69/S/RN/1(t), 70/S/RN/1(t) and 71-73/S/RN/1.

Treatments: From 1899 to 1969 the experiment followed a four-course rotation of wheat, roots, barley, legumes. Each phase of the rotation was present each year on a separate block. From 1966 each plot was divided, a small area at the south end continued under the original treatment (OLDTREAT), on the larger sub-plots modified treatments (NEWTREAT) were applied (see below).

In 1970 the rotation was stopped and each pair of blocks was divided for lucerne and grass
(the OLDTREAT sub-plots form a part of the Grass area).

TREATMENT 1899-1965	OLDTREAT Grass	NEWTREAT Lucerne	NEWTREAT Grass
	MANURE	MANURE	MANURE
D	(D)	(D)	(D)N
B	B	B	BN
N	N	(N)P2	(N)P2N
P	P	(P)P1	(P)P1N
K	K	(K)P2K	(K)P2KN
-	-	(-)P2	(-)P2N
PK	PK	(PK)P1K	(PK)P1KN
NK	NK	(NK)P2K	(NK)P2KN
NP	NP	(NP)P1	(NP)P1N
NPK	NPK	(NPK)P1K	(NPK)P1KN

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74/S/RN/1

D: Farmyard manure at 15 tonnes
(D): Farmyard manure at 30 tonnes (1966-1969 15 tonnes on OLDTREAT), 60 tonnes in autumn 1969, none since 1970
B: Bone meal at 0.5 tonnes
N: 1899-1965 - 38 kg N as nitrate of soda. Since 1970 - 100 kg N (38 kg N on OLDTREAT) as 'Nitro-Chalk'
(N1),(N2): Residues of N applied as 'Nitro-Chalk' 1966-1969: 63, 126 kg N (wheat, sugar beet, barley): 0, 63 k g N (beans)
P: 38 kg P2O5 as superphosphate
P1,P2: 50, 100 kg P2O5 as triple superphosphate (single superphosphate until 1973)
K: 1899-1965 63 kg K2O as muriate of potash. Since 1966 - 126 kg K2O (63 kg K2O on OLDTREAT)

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

Whole plot dimensions (new treatments): 5.49 x 17.1.

Areas harvested:	Grass, Old treatments,	1st cut:	0.00050
		2nd cut:	0.00050
	Lucerne, New treatments,	1st cut:	0.00123
		2nd cut:	0.00130
	Grass, New treatments,	1st cut:	0.00130
		2nd cut:	0.00137

Seed: Grass: Timothy S 352 and Meadow Fescue S215.
Lucerne: Europe.

Cultivations, etc.:-
Grass: P, K and bone meal applied: 21 Feb, 1974. N applied: 21 Mar and 3 July. Cut: 24 June and 23 Sept.
Lucerne: P, K and bone meal applied: 21 Feb, 1974. Cut: 3 July and 10 Sept.

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74/S/RN/1

TABLES OF MEANS

DRY MATTER: TONNES/HECTARE

OLDTREAT - Grass

	MANURE									
(D)	B	N	P	K	-	PK	NK	NP	NPK	Mean
				1ST CUT						
2.02	0.83	2.21	0.72	0.47	0.61	0.76	1.92	2.19	2.59	1.43
				2ND CUT						
0.28	0.28	0.86	0.14	0.06	0.08	0.12	0.73	0.89	0.98	0.44
				TOTAL OF 2 CUTS						
2.29	1.11	3.07	0.86	0.53	0.69	0.87	2.65	3.08	3.57	1.87

Mean D.M. % 1st cut: 43.7
2nd cut: 22.0
Total of 2 cuts: 32.8

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74/S/RN/1

DRY MATTER: TONNES/HECTARE

NEWTREAT - Lucerne

MANURE

(D)	B	(N)P2	(P)P1	(K)P2K	(-)P2	(PK)P1K	(NK)P2K	(NP)P1	(NPK)P1K	Mean
				1ST CUT						
6.71	6.50	6.01	6.00	6.35	5.25	6.06	6.73	5.34	5.84	6.08
				2ND CUT						
3.10	2.49	2.59	2.58	2.54	2.27	2.63	2.71	2.65	2.87	2.64
				TOTAL OF 2 CUTS						
9.81	8.98	8.60	8.58	8.88	7.53	8.69	9.44	7.99	8.71	8.72

Mean D.M. % 1st cut: 24.6
2nd cut: 30.4
Total of 2 cuts: 27.5

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74/S/RN/1

DRY MATTER: TONNES/HECTARE

NEWTREAT - Grass

MANURE

(D)N	BN	(N)P2N	(P)P1N	(K)P2KN	(-)P2N	(PK)P1KN	(NK)P2KN	(NP)P1N	(NPK)P1KN	Mean
				1ST CUT						
7.23	4.75	5.09	4.93	5.75	4.82	5.90	6.34	5.47	6.31	5.66
				2ND CUT						
2.98	2.87	2.59	2.82	2.90	3.06	3.10	3.29	2.91	3.01	2.95
				TOTAL OF 2 CUTS						
10.21	7.62	7.68	7.74	8.65	7.88	9.00	9.63	8.38	9.33	8.61

Mean D.M. % 1st cut: 42.2
2nd cut: 20.2
Total of 2 cuts: 31.2

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74/S/RN/2

ROTATION II

Object: To measure, by crop yields and soil analysis, the residual value of P applied as FYM or superphosphate in the periods 1899-1964 and 1965-1967 - Saxmundham.

Sponsors: G.E.G. Mattingly, A.E. Johnston.

The sixth year of revised scheme, potatoes, barley, sugar beet.

For previous years see 'Details' 1967, 68/A/10(t), 69/S/RN/2(t) and 70-73/S/RN/2.

Whole plot dimensions: 5.49 x 39.8. Sub plot area harvested: Potatoes - 0.00078, Barley - 0.00056, Sugar beet - 0.00100.

Treatments: From 1899-1964 the experiment tested farmyard manure and nitrogen and phosphate fertilisers applied to a rotation of crops. Since 1965 the treatments have been changed to evaluate old residues of P (from FYM and superphosphate) and new residues from treatments applied 1965-1967. All crops of the rotation - potatoes, barley, sugar beet, barley test combinations of:-

Whole plots: 1. Residues of previous treatments:-

	Approximate total dressing 1899-1964	Total dressing 1965-1967	RESIDUE
Plot 1	None	None	(O)O
Plot 2	400 tonnes FYM	None	(D)O
Plot 3	400 tonnes FYM, 2.7 tonnes P2O5	None	(DP)O
Plot 4	400 tonnes FYM, 2.7 tonnes P2O5	100 tonnes FYM	(DP)D2
Plot 5	400 tonnes FYM, 2.7 tonnes P2O5	100 tonnes FYM, 0.56 tonnes P2O5	(DP)D2P1
Plot 6	400 tonnes FYM, 2.7 tonnes P2O5	0.56 tonnes P2O5	(DP)P1
Plot 7	400 tonnes FYM, 2.7 tonnes P2O5	1.13 tonnes P2O5	(DP)P2
Plot 8	326 tonnes FYM, 4.3 tonnes P2O5 (until 1952 only)	None	(DP52)O

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Potatoes and sugar beet test in addition to 1:-

Sub plots: 2. Phosphate residues 1970-72 (total P205 applied (kg)): P205(72)

None (2 sub plots/plot)	(0)
126	(126)
252	(252)
378	(378)

and some of the combinations of 2 with:-

3. Phosphate in 1974 (kg P205): P205(74)

None	0
63	63
189	189

Barley tests in addition to 1:-

Sub plots: 2. Phosphate residues 1969-71 (total P205 applied (kg)): P205(71)

None (2 sub plots/plot)	(0)
126	(126)
252	(252)
378	(378)

and some of the combinations of 2 with:-

3. Phosphate in 1973 and 74 (kg P205): P2057374

1973	1974	
None	None	(0) 0
63	63	(63)63
189	None	(189) 0

Standard applications:

Potatoes: Manures: K20 at 380 kg as muriate of potash before ploughing, (25:0:16) at 1000 kg to seedbed. Weedkillers: Linuron at 0.84 kg plus paraquat at 0.42 kg ion in 340 l. Insecticide: Menazon at 0.28 kg in 340 l on the first occasion and in 280 l on the second. Fungicide: Mancozeb at 1.35 kg in 280 l on two occasions.

Barley: Manures: (25:0:16) at 310 kg. Weedkiller: Dichlorprop plus MCPA ('Mephetol Plus' at 5.6 l in 280 l). Fungicide: Tridemorph at 0.53 kg applied with the weedkiller.

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Sugar beet: Manures: K20 at 380 kg as muriate of potash before ploughing. (25:0:16) at 750 kg to seedbed. Insecticide: Menazon at 0.28 kg in 340 l on the first and in 280 l on the second and third occasions.

Seed: Potatoes: King Edward.
Barley: Julia, dressed with ethirimol, sown at 170 kg.
Sugar beet: Klein E, rubbed and graded, sown at 18 kg.

Cultivations, etc.:-

Potatoes: Autumn K applied: 19 Sept, 1973. Ploughed: 22 Oct. Test P applied: 28 Mar, 1974. Basal NK applied, rotary cultivated and potatoes planted: 8 Apr. Weedkiller applied: 7 May. Insecticide applied: 12 June and 10 July. Fungicide applied: 10 July and 24 July. Lifted: 1 Oct.

Barley: Ploughed: 22 Oct, 1973. Test P applied: 19 Mar, 1974. NK applied and seed sown: 21 Mar. Weedkiller and fungicide applied: 21 May. Harvested by hand: 20 Aug.

Sugar beet: Autumn K applied: 19 Sept, 1973. Ploughed: 22 Oct. Basal NK and test P applied, seed sown: 27 Mar, 1974. Insecticide applied: 12 June, 10 July and 24 July. Lifted: 4 Nov.

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TABLES OF MEANS

POTATOES. TOTAL TUBERS: TONNES/HECTARE

P205(72)	0	0	0	126		252		378	
P205(74)	0	63	189	63	189	63	189	63	189
RESIDUE									
(0)0	18.6		25.0	34.3			30.2	30.2	
(D)0	22.1	29.1			28.5	37.8			43.0
(DP)0	34.3	46.5			48.8	43.0			45.3
(DP)D2	50.6		43.0	41.3			55.8	47.7	
(DP)D2P1	45.9	47.7			56.4	54.6			51.7
(DP)P1	52.9	51.7			45.9	58.1			50.0
(DP)P2	52.3		48.8	54.6			53.5	57.0	
(DP52)0	45.3		57.0	48.8			54.6	44.2	

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BARLEY AFTER POTATOES

P205(71)	0	0	0	126		252		378	
P2057374	(0)0	(63)63	(189)0	(63)63	(189)0	(63)63	(189)0	(63)63	(189)0

GRAIN: TONNES/HECTARE

RESIDUE									
(0)0	4.29	5.38			5.08	5.05			5.07
(D)0	4.87		4.87	5.07			5.40	5.89	
(DP)0	5.08		5.17	5.44			5.48	5.47	
(DP)D2	5.62	5.15			5.35	5.45			5.49
(DP)D2P1	5.20		5.27	5.36			5.17	5.71	
(DP)P1	5.64		5.73	5.64			5.47	5.45	
(DP)P2	4.96	5.90			5.47	5.68			5.31
(DP52)0	5.92	5.80			5.15	5.08			5.71

STRAW: TONNES/HECTARE

RESIDUE									
(0)0	3.90	4.49			4.20	4.46			3.90
(D)0	4.90		3.93	4.20			4.37	5.06	
(DP)0	4.65		4.36	4.57			4.31	4.57	
(DP)D2	4.92	5.20			4.38	4.69			4.81
(DP)D2P1	5.04		4.49	4.53			4.83	4.78	
(DP)P1	5.22		5.24	5.18			5.30	4.34	
(DP)P2	4.47	5.20			4.60	5.02			4.60
(DP52)0	5.26	5.23			4.49	4.80			4.45

Mean D.M. % Grain: 83.3
Straw: 87.2

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SUGAR BEET

P205(72)	0	0	0	126		252		378	
P205(74)	0	63	189	63	189	63	189	63	189
ROOTS (WASHED): TONNES/HECTARE									
RESIDUE									
(0)0	17.0	20.0			21.9	28.9			27.4
(D)0	25.1		24.5	27.6			28.5	27.9	
(DP)0	22.7		30.0	33.7			34.1	28.6	
(DP)D2	30.5	32.6			24.3	34.0			28.7
(DP)D2P1	35.7		26.1	29.0			31.6	33.1	
(DP)P1	27.0		35.3	27.3			31.3	33.9	
(DP)P2	27.1	33.8			32.5	30.0			32.7
(DP52)0	34.8	24.9			34.6	26.0			26.3
SUGAR PERCENTAGE									
RESIDUE									
(0)0	14.6	14.2			14.6	14.6			14.6
(D)0	14.9		15.1	15.4			15.4	15.2	
(DP)0	14.4		15.2	15.9			15.7	14.8	
(DP)D2	15.6	15.6			14.7	16.1			14.9
(DP)D2P1	15.6		14.3	14.8			15.1	15.3	
(DP)P1	14.9		15.7	15.4			14.6	15.0	
(DP)P2	14.6	15.4			15.6	15.1			15.5
(DP52)0	15.3	14.5			15.2	15.1			14.4
TOTAL SUGAR: TONNES/HECTARE									
RESIDUE									
(0)0	2.48	2.85			3.21	4.23			4.01
(D)0	3.75		3.71	4.27			4.38	4.25	
(DP)0	3.28		4.57	5.37			5.34	4.23	
(DP)D2	4.77	5.08			3.57	5.47			4.28
(DP)D2P1	5.56		3.74	4.30			4.76	5.05	
(DP)P1	4.02		5.54	4.20			4.56	5.09	
(DP)P2	3.97	5.22			5.07	4.52			5.06
(DP52)0	5.33	3.62			5.27	3.92			3.78

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SUGAR BEET

P205(72)	0	0	0	126		252		378	
P205(74)	0	63	189	63	189	63	189	63	189
TOPS: TONNES/HECTARE									
RESIDUE									
(O)O	21.7	36.6			37.1	33.5			32.1
(D)O	35.7		40.7	40.7			33.2	35.9	
(DP)O	34.6		38.4	34.4			37.5	35.3	
(DP)D2	33.2	39.1			38.2	34.8			35.5
(DP)D2P1	38.4		37.5	38.7			40.9	39.6	
(DP)P1	36.6		37.3	34.4			39.1	36.2	
(DP)P2	36.9	40.9			38.9	36.2			41.1
(DP52)O	37.3	35.0			42.5	39.6			36.2
PLANT NUMBER: THOUSANDS/HECTARE									
RESIDUE									
(O)O	132.6	127.6			106.6	114.6			86.7
(D)O	121.6		123.6	103.7			92.7	94.7	
(DP)O	99.7		111.6	104.6			100.7	115.6	
(DP)D2	95.7	104.6			108.6	113.6			97.7
(DP)D2P1	111.6		81.7	113.6			107.6	105.6	
(DP)P1	113.6		102.7	101.7			109.6	92.7	
(DP)P2	98.1	104.6			104.6	99.7			109.6
(DP52)O	99.7	107.6			103.7	103.7			81.7

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BARLEY AFTER SUGAR BEET

P205(71)	0	0	0	126		252		378	
P205 73 74	(0)0	(63)63	(189)0	(63)63	(189)0	(63)63	(189)0	(63)63	(189)0
GRAIN: TONNES/HECTARE									
RESIDUE									
(0)0	2.86		3.50	4.15			4.25	4.24	
(D)0	3.68	3.90			4.66	4.57			4.27
(DP)0	4.32	5.35			4.87	4.96			4.56
(DP)D2	4.96		4.83	5.08			5.42	5.23	
(DP)D2P1	5.24	4.61			5.23	4.73			5.29
(DP)P1	5.13	4.65			5.44	5.17			5.03
(DP)P2	5.23		4.75	4.82			4.98	5.22	
(DP52)0	5.16		5.19	5.76			5.96	5.72	
STRAW: TONNES/HECTARE									
RESIDUE									
(0)0	2.65		3.24	3.31			3.20	3.49	
(D)0	3.18	3.11			3.62	3.83			3.78
(DP)0	5.59	4.19			3.92	3.94			3.82
(DP)D2	3.97		4.03	4.16			4.36	4.18	
(DP)D2P1	4.23	3.96			4.30	4.20			4.35
(DP)P1	4.25	3.96			4.27	4.40			4.31
(DP)P2	4.34		4.06	4.28			4.56	4.43	
(DP52)0	4.43		4.64	4.86			5.06	4.91	

Mean D.M. % Grain: 86.5
Straw: 78.0

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