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Yields of the Field Experiments 1977

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77/R/HB/2 Hoosfield - Barley, Potatoes , Beans

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77/R/HB/2

HOOSFIELD

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

The 126th year, barley, potatoes and beans. The tenth year of revised scheme.

For previous years see 'Details' 1967 & 1973, Station Report for 1966, and 74-76/R/HB/2.

Treatments to barley: All combinations of:-

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

	Form of N 1852-1966	Additional treatments 1852-1977	
---CON	None	-	Continuous
-P-CON	None	P	Continuous
--KCON	None	K (Na) Mg	Continuous
-PKCON	None	P K (Na) Mg	Continuous
A--CON	A	-	Continuous
AP-CON	A	P	Continuous
A-KCON	A	K (Na) Mg	Continuous
APKCON	A	P K (Na) Mg	Continuous
N--CON	N	-	Continuous
N--SICON	N	- Si	Continuous
NP-CON	N	P	Continuous
NP-SICON	N	P Si	Continuous
N-KCON	N	K (Na) Mg	Continuous
N-KSICON	N	K (Na) Mg Si	Continuous
NPKCON	N	P K (Na) Mg	Continuous
NPKSICON	N	P K (Na) Mg Si	Continuous
C--CON	C	-	Continuous
C--RTN	C	-	In rotation (P, BE, B)
CP-CON	C	P	Continuous
CP-RTN	C	P	In rotation (P, BE, B)
C-KCON	C	K (Na) Mg	Continuous
C-KRTN	C	K (Na) Mg	In rotation (P, BE, B)
CPKCON	C	P K (Na) Mg	Continuous
CPKRTN	C	P K (Na) Mg	In rotation (P, BE, B)
DCON	None	D	Continuous
(D)CON	(D)	-	Continuous
(A)CON	(Ashes)	-	Continuous
-CON	None	-	Continuous

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 single superphosphate (triple superphosphate in 1974).

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 annually 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.

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

0
48
96
144

There are four extra plots testing all combinations of:-

1. MANURE Fertilisers other than magnesium:

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

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

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

0
35

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

1. MANURE Fertiliser and organic manures:

To potatoes and beans:
1852-1966 1852-1977

C---	C	-	
CP--	C	P	
C-KMG	C	K (Na) Mg	
CPKMG	C	P K (Na) Mg	

To potatoes only:

N----	N	-	
N---SI	N		Si
NP---	N	P	
NP--SI	N	P	Si
N-KMG-	N	K (Na) Mg	
N-KMGSI	N	K (Na) Mg	Si
NPKMG	N	P K (Na) Mg	
NPKMGSI	N	P K (Na) Mg	Si

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2. NRES(76)	N	Nitrogen fertiliser (kg N), as 'Nitro-Chalk':	
Beans	Potatoes	Beans (residual effects, applied to previous potatoes)	Potatoes (applied 1977)
0	0		
96	96		
192	192		
288	288		

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

Standard applications:

Barley: Weedkillers: Diquat at 0.59 kg ion in 450 l applied in autumn, (to MANURE C--RTN, CP-RTN, C-KRTN and CPKRTN plots only). Dicamba with mecoprop and MCPA ('Banlene Plus' at 4.9 l in 220 l) applied in spring.

Potatoes: Manures: Chalk at 2.9 t. Weedkiller: Linuron at 1.2 kg in 340 l. Fungicide: Mancozeb at 1.3 kg in 340 l applied on four occasions.

Insecticide: Pirimicarb at 0.14 kg applied with the last two fungicide sprays.

Beans: Insecticide: Pirimicarb at 0.14 kg in 280 l.

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

Potatoes: Pentland Crown.

Beans: Minden, sown at 220 kg.

Cultivations, etc.:-

All plots: P, K, Mg and silicate of soda applied: 25 Oct, 1976. FYM applied: 26 Oct. Ploughed: 28 Oct. Spring-tine cultivated: 7 Mar, 1977.

Barley: Autumn weedkiller applied: 6 Aug, 1976. Seed sown: 8 Mar, 1977.

N applied: 14 Apr. Spring weedkillers applied: 24 May. Combine harvested: 23 Aug.

Potatoes: Chalk applied: 6 Sept, 1976. N applied: 14 Apr, 1977. Spike rotary cultivated, potatoes planted: 19 Apr. Grubbed twice: 21 Apr, 21 June. Rotary ridged twice: 26 May, 22 June. Weedkiller applied: 28 May. Fungicide applied: 23 June, 5 July. Fungicide with insecticide applied: 26 July, 10 Aug. Haulm mechanically destroyed: 3 Oct.

Lifted: 3 Nov.

Beans: Seed sown: 9 Mar. Tractor hoed: 18 May. Insecticide applied: 19 July. Combine harvested: 21 Sept.

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BARLEY

GRAIN TONNES/HECTARE

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

N	0	48	96	144	MEAN
MANURE					
---CON	1.69	2.68	2.75	2.77	2.47
-P-CON	1.99	3.56	4.83	4.81	3.80
-KCON	1.78	3.03	3.75	4.24	3.20
-PKCON	1.80	4.57	5.32	5.84	4.38
A--CON	1.68	2.00	2.72	2.82	2.31
AP-CON	2.33	3.31	3.42	2.87	2.98
A-KCON	1.72	2.73	3.20	3.31	2.74
APKCON	2.28	4.38	5.62	5.98	4.56
N--CON	1.75	2.52	2.99	2.68	2.48
N--SICON	2.44	3.76	3.92	4.36	3.62
NP-CON	2.61	4.06	4.29	4.22	3.79
NP-SICON	2.54	4.48	5.74	5.65	4.60
N-KCON	1.94	2.76	3.16	3.66	2.88
N-KSICON	2.09	3.78	5.19	4.75	3.95
NPKCON	2.07	4.64	5.28	6.02	4.50
NPKSICON	2.07	4.35	5.38	5.68	4.37
C--CON	2.30	4.31	5.09	5.39	4.27
C--RTN	2.19	4.44	5.20	5.26	4.27
CP-CON	2.58	4.87	5.77	5.16	4.59
CP-RTN	2.73	4.88	5.77	5.86	4.81
C-KCON	2.43	3.81	4.99	4.79	4.01
C-KRTN	2.15	3.99	4.49	4.54	3.79
CPKCON	2.51	4.61	5.83	5.72	4.67
CPKRTN	3.60	5.00	5.97	6.09	5.16
DCON	5.22	6.11	6.52	5.96	5.95
(D)CON	2.63	4.21	4.59	4.68	4.02
(A)CON	2.12	3.73	3.99	4.84	3.67
-CON	1.97	3.20	3.27	3.42	2.96
MEAN	2.33	3.92	4.61	4.69	3.89

GRAIN MEAN DM% 77.6

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BARLEY

STRAW TONNES/HECTARE

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

N	0	48	96	144	MEAN
MANURE					
---CON	0.61	0.99	1.19	1.38	1.04
-P-CON	0.61	1.19	2.40	2.19	1.60
-KCON	0.59	1.78	1.97	2.38	1.68
-PKCON	0.79	2.78	3.21	3.43	2.55
A--CON	0.39	0.59	0.98	0.98	0.74
AP-CON	0.40	1.00	1.19	1.20	0.95
A-KCON	0.79	0.98	1.78	1.58	1.28
APKCON	0.79	2.41	3.79	3.55	2.64
N--CON	0.36	0.72	1.09	0.72	0.73
N--SICON	0.73	1.10	1.82	1.80	1.36
NP-CON	0.73	1.45	1.45	1.41	1.26
NP-SICON	0.73	1.47	2.92	2.18	1.83
N-KCON	0.72	1.80	1.07	1.80	1.35
N-KSICON	0.72	1.46	2.91	2.53	1.90
NPKCON	0.36	2.19	2.84	2.90	2.07
NPKSICON	0.72	2.19	2.91	3.66	2.37
C--CON	0.37	1.46	2.19	2.19	1.55
C--RTN	0.74	2.22	2.94	2.19	2.02
CP-CON	0.73	1.83	2.54	2.20	1.83
CP-RTN	0.75	2.22	2.19	3.35	2.13
C-KCON	0.73	1.83	2.94	2.59	2.02
C-KRTN	0.73	1.81	2.94	2.93	2.10
CPKCON	0.73	2.58	3.30	3.60	2.55
CPKRTN	1.47	3.29	3.69	4.44	3.22
DCON	3.41	4.46	5.08	4.28	4.31
(D)CON	1.07	2.40	2.67	2.93	2.26
(A)CON	0.80	1.60	1.87	2.41	1.67
-CON	0.78	1.58	2.35	1.56	1.57
MEAN	0.80	1.83	2.44	2.44	1.88

STRAW MEAN DM% 88.2

SUB PLOT AREA HARVESTED 0.00007

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BARLEY

GRAIN TONNES/HECTARE

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

MANURE MGNESIUM	551AN2PK	561--PK	571NN2--	581NN2--	MEAN
0	5.24	0.91	4.38	2.49	3.25
35	5.61	1.21	3.94	2.65	3.35
MEAN	5.42	1.06	4.16	2.57	3.30

GRAIN MEAN DM% 77.5

STRAW TONNES/HECTARE

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

MANURE MGNESIUM	551AN2PK	561--PK	571NN2--	581NN2--	MEAN
0	3.57	0.17	2.03	0.99	1.69
35	3.52	0.33	1.84	1.01	1.68
MEAN	3.55	0.25	1.93	1.00	1.68

STRAW MEAN DM% 87.0

SUB PLOT AREA HARVESTED 0.00306

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POTATOES

TOTAL TUBERS TONNES/HECTARE

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

N	0	96	192	288	MEAN
MANURE					
C---	9.8	12.5	12.2	13.9	12.1
CP--	10.7	13.4	10.8	12.3	11.8
C-KMG	15.3	28.9	28.2	33.4	26.4
CPKMG	21.6	31.4	43.7	48.8	36.4
N----	8.0	7.1	6.1	7.6	7.2
N---SI	7.9	7.0	8.2	7.2	7.6
NP----	6.7	8.1	9.0	6.1	7.5
NP--SI	6.7	7.1	7.3	7.1	7.1
N-KMG-	11.7	19.2	22.8	18.7	18.1
N-KMGSI	15.1	24.7	26.9	27.4	23.5
NPKMG	20.6	32.0	44.7	46.0	35.8
NPKMGSI	14.3	34.5	43.9	52.6	36.3
MEAN	12.4	18.8	22.0	23.4	19.2

PERCENTAGE WARE 3.81 CM (1.5 INCH RIDDLE)

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

N	0	96	192	288	MEAN
MANURE					
C---	87.2	91.2	89.7	90.2	89.6
CP--	80.0	81.2	77.7	72.3	77.8
C-KMG	91.8	94.7	96.2	98.4	95.2
CPKMG	89.1	91.5	96.2	94.1	92.7
N----	89.5	86.0	87.9	86.9	87.6
N---SI	89.3	81.3	91.1	86.2	87.0
NP----	75.0	66.5	75.4	72.4	72.3
NP--SI	68.7	65.4	65.5	72.1	67.9
N-KMG-	92.4	97.0	97.0	96.9	95.8
N-KMGSI	95.5	97.9	98.0	97.5	97.2
NPKMG	91.9	94.4	96.0	95.2	94.4
NPKMGSI	80.2	91.9	92.9	96.0	90.3
MEAN	85.9	86.6	88.6	88.2	87.3

PLOT AREA HARVESTED 0.00191

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BEANS

GRAIN TONNES/HECTARE

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

MANURE NRES(76)	C---	CP--	C-KMG	CPKMG	MEAN
0	1.62	1.07	1.82	2.78	1.82
96	1.61	0.98	1.30	3.07	1.74
192	1.82	1.29	2.24	3.07	2.10
288	2.13	1.20	2.11	2.60	2.01
MEAN	1.79	1.14	1.87	2.88	1.92

GRAIN MEAN DM% 79.9

STRAW TONNES/HECTARE

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

MANURE NRES(76)	C---	CP--	C-KMG	CPKMG	MEAN
0	1.10	1.94	3.07	2.92	2.26
96	0.82	2.14	2.62	3.38	2.24
192	1.64	2.73	2.48	2.36	2.30
288	1.43	3.10	3.33	3.27	2.78
MEAN	1.25	2.48	2.88	2.98	2.40

STRAW MEAN DM% 55.8

SUB PLOT AREA HARVESTED 0.00143