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Yields of the Field Experiments 1974

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

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74/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 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, E)	C--RIN
C	P	Continuous	CP-CON
C	P	In rotation (P, BE, B)	CP-RIN
C	K (Na) Mg	Continuous	C-KCON
C	K (Na) Mg	In rotation (P, BE, B)	C-KRIN
C	P K (Na) Mg	Continuous	CPKCON
C	P K (Na) Mg	In rotation (P, BE, E)	CPKRIN
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):

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:

	MANURE
To potatoes and beans:	
1852-1966	1852-1974
C	-
C	P
C	K (Na) Mg
C	P K (Na) Mg
	C---
	CP--
	C-KMg
	CPKMg

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To potatoes only:				MANURE
1852-1966	1852-1974			
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	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				Mean
	0	48	96	144	
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--S1CON	3.02	4.83	4.05	4.32	4.05
NP-CON	2.74	3.75	4.26	3.51	3.57
NP-S1CON	3.58	4.59	5.14	5.74	4.76
N-KCON	2.20	2.93	2.76	3.10	2.75
N-KS1CON	2.74	3.67	5.02	5.53	4.24
NPKCON	2.85	4.30	5.62	5.08	4.46
NPKS1CON	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

N

	0	48	96	144	Mean
MANURE					
---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	57LNN2--	581NN2--	Mean
GRAIN: TONNES/HECTARE					
MAGNESIUM					
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

MAGNESIUM

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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POTATOES

N

	0	96	192	288	Mean
TOTAL TUBERS: TONNES/HECTARE					
MANURE					
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	30.2	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	0	96	192	288	Mean
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

74/R/RB/2

BEANS

	(0)	(96)	(192)	(288)	Mean
NRESID					
GRATH: 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