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ROTHAMSTED
RESEARCH

Collection of Plans for the Highfield Ley-arable Experiment

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Highfield Ley-arable 1949-59

Rothamsted Research

Rothamsted Research (1949-1990) *Highfield Ley-arable 1949-59* ; Collection Of Plans For The Highfield Ley-Arable Experiment, pp 1 - 11

HIGHFIELD

LEY AND ARABLE ROTATIONS EXPERIMENT

1949 1st Preliminary year

Present Crop	1949 1st Preliminary year																		
	G	W	R	W	W	W	L	L	Cg	H	Cg	R	G	Lul	W	W	W	W	G
1	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
2	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
3	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
4	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
5	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
6	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
7	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
8	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
9	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
10	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
11	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
12	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
13	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
14	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
15	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
16	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
17	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
18	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
19	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
20	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
21	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
22	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
23	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
24	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Test crop: W
 Treatment Crops: H (Seeds hay), Lu (1st year lucerne), Cg (1st year cut grass), L (1st year grazed ley), R (Reseeded grass), G (Old grass)
 Permanent Grass: R, G
 Notes: 1 cut then followed 1 or more cuts; 3 or 4 cuts; grazed with sheep

Rotations	Treatment crops	Test crops
(A)	Hay, Potatoes, Barley	Wheat, Potatoes Barley
(Lu)	1st yr, 2nd yr, 3rd yr lucerne	
(Cg)	1st yr, 2nd yr, 3rd yr cut grass	
(L)	1st yr, 2nd yr, 3rd yr grazed ley	

1/4 plot = 0.02205 acre
 For harvested areas see field notebooks

Symbol	Crop	cwt. N per acre as nitrochalk N2	Basal dressing per acre
W	Wheat	0.3	0.2 cwt. P ₂ O ₅ combine drilled with seed
H	Seeds hay	0.3	0.15 cwt. P ₂ O ₅ , 0.15 cwt. K ₂ O
Cg	1st year cut grass	0.15 (i)	0.6 cwt. P ₂ O ₅ , 0.6 cwt. K ₂ O
Lu	1st year grazed ley	0.075 (ii)	0.6 cwt. P ₂ O ₅ , 0.6 cwt. K ₂ O
R	Reseeded grass	0.075 (ii)	0.3 cwt. P ₂ O ₅ , 0.3 cwt. K ₂ O
G	Old grass	0.075 (ii)	0.3 cwt. P ₂ O ₅ , 0.3 cwt. K ₂ O
Lul	1st year lucerne	—	0.6 cwt. P ₂ O ₅ , 0.6 cwt. K ₂ O

- (i) 1st dressing of N1 and N2 in spring. Repeated dressings of N1 and N2 at the same rates. After 1st cut " 2nd " 3rd "
 - (ii) 1st dressing of N1 and N2 in spring. A second dressing of N1 and N2 later in summer at the same rates.
- The basal dressing is applied as a granulated compound containing 13% P₂O₅ and 13% K₂O

HIGHFIELD LEY AND ARABLE ROTATIONS EXPERIMENT

1951 3rd year

Code letter P

ICg	IG	H	IR	ILu	IL
133	135	137	139	141	143
a b	a b	a b	a b	a b	a b
n	n	n	n	n	n
1 2	1 1	1 1	1 1	1 1	1 1

IR	ICg	IL	H	IG	ILu	W	IG	W	IR	W
97	99	101	103	105	107	109	111	113	115	117
a b	a b	a b	a b	a b	a b	a b	a b	a b	a b	a b
n	n	n	n	n	n	n	n	n	n	n
1 2	2 1	2 1	2 1	2 1	2 1	2 1	2 1	2 1	2 1	2 1

(Cg)	(G)	(A)	(R)	(Lu)	(L)
134	136	138	140	142	144
a b	a b	a b	a b	a b	a b
n	n	n	n	n	n
1 2	2 1	2 1	2 1	2 1	2 1

W	W	IR	W	IG	W	Present crop
121	122	123	124	125	126	127
a b	a b	a b	a b	a b	a b	a b
n	n	n	n	n	n	n
2 1	1 2	2 1	2 1	2 1	2 1	2 1

(Cg)	(G)	(A)	(R)	(Lu)	(L)
145	147	149	151	153	155
a b	a b	a b	a b	a b	a b
n	n	n	n	n	n
2	1	2	1	2	1

(R)	(Cg)	(L)	(A)	(G)	(Lu)	(A)	(G)	(Lu)	(R)	(Cg)	(L)	(R)	(Cg)	(Lu)	(R)	(Cg)	(Lu)
98	100	102	104	106	108	110	112	114	116	118	120	122	124	126	128	130	132
a b	a b	a b	a b	a b	a b	a b	a b	a b	a b	a b	a b	a b	a b	a b	a b	a b	a b
n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n
1 2	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1

(Lu)	(L)	(G)	(A)	(R)	(Lu)	(L)	(G)	(A)	(R)	(Lu)	(L)	(G)	(A)	(R)	(Lu)	(L)	(G)
50	52	54	56	58	60	62	64	66	68	70	72	74	76	78	80	82	84
a b	a b	a b	a b	a b	a b	a b	a b	a b	a b	a b	a b	a b	a b	a b	a b	a b	a b
n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n
2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1

(A)	(Cg)	(R)	(L)	(G)	(Lu)	(A)	(Cg)	(R)	(L)	(G)	(Lu)	(A)	(Cg)	(R)	(L)	(G)	(Lu)
85	87	89	91	93	95	97	99	101	103	105	107	109	111	113	115	117	119
a b	a b	a b	a b	a b	a b	a b	a b	a b	a b	a b	a b	a b	a b	a b	a b	a b	a b
n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n
2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1

(G)	(Lu)	(R)	(Cg)	(A)	(L)	(R)	(Cg)	(A)	(Lu)	(G)
1	3	5	7	9	11	13	15	17	19	21
a b	a b	a b	a b	a b	a b	a b	a b	a b	a b	a b
n	n	n	n	n	n	n	n	n	n	n
1	2	1	2	1	2	1	2	1	2	1

(Lu)	(L)	(G)	(A)	(R)	(Lu)	(L)	(G)	(A)	(R)	(Lu)	(L)	(G)	(A)	(R)	(Lu)	(L)	(G)
22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52	54	56
a b	a b	a b	a b	a b	a b	a b	a b	a b	a b	a b	a b	a b	a b	a b	a b	a b	a b
n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n
1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2

(L)	(A)	(Cg)	(R)	(L)	(G)	(Lu)	(L)	(G)	(Lu)	(R)	(A)	(Cg)	(R)	(L)	(G)	(Lu)	(L)	(G)
25	27	29	31	33	35	37	39	41	43	45	47	49	51	53	55	57	59	61
a b	a b	a b	a b	a b	a b	a b	a b	a b	a b	a b	a b	a b	a b	a b	a b	a b	a b	a b
n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n
2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2

(A)	(Cg)	(R)	(L)	(G)	(Lu)	(A)	(Cg)	(R)	(L)	(G)	(Lu)	(A)	(Cg)	(R)	(L)	(G)	(Lu)
31	33	35	37	39	41	43	45	47	49	51	53	55	57	59	61	63	65
a b	a b	a b	a b	a b	a b	a b	a b	a b	a b	a b	a b	a b	a b	a b	a b	a b	a b
n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n	n
2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1

nd on treatment crops
ND on test crops (WPB)
(d) (D) residuals of 1950 dung treatments

LEY AND ARABLE ROTATIONS — HIGHFIELD — 1953 5th year

Block 12

134	136	138	140	142	144
3G	3G	3Lu	B	3G	B
135	137	139	141	143	
a	b	d		N	
134	136	138	140	142	144
a	b	d		N	

Block 9

97	99	101	103	105	107	109	111	113	115	117	119
3R	3Cg	3L	B	3R	B	3R	B	3R	B	3R	B
a	b	d		N		a	b	d		N	
98	100	102	104	106	108	110	112	114	116	118	120
a	b	d		N		a	b	d		N	

Block 11

121	123	125	127	129	131
a	b	d		N	
122	124	126	128	130	132
a	b	d		N	

Block 10

73	75	77	79	81	83	85	87	89	91	93	95
IG	IL	IR	H	ICg	ILu	W	IR	W	IG	W	W
a	b	d		N		a	b	d		N	
74	76	78	80	82	84	86	88	90	92	94	96
a	b	d		N		a	b	d		N	

Block 8

25	27	29	31	33	35	37	39	41	43	45	47
P	P	P	2R	2G	P	2Lu	2R	P	2Cg	2L	2G
a	b	d		N		a	b	d		N	
26	28	30	32	34	36	38	40	42	44	46	48
a	b	d		N		a	b	d		N	

Block 7

51	53	55	57	59	61	63	65	67	69	71	
W	W	IG	W	W	IR	ICg	ILu	IL	H	IG	IR
a	b	d		N		a	b	d		N	
52	54	56	58	60	62	64	66	68	70	72	
a	b	d		N		a	b	d		N	

Block 6

1	3	5	7	9	11	13	15	17	19	21	23
2G	2Lu	2R	2Cg	P	2L	2R	P	P	P	2G	
a	b	d		N		a	b	d		N	
2	4	6	8	10	12	14	16	18	20	22	24
a	b	d		N		a	b	d		N	

Block 5

49	51	53	55	57	59	61	63	65	67	69	71
W	W	IG	W	W	IR	ICg	ILu	IL	H	IG	IR
a	b	d		N		a	b	d		N	
50	52	54	56	58	60	62	64	66	68	70	72
a	b	d		N		a	b	d		N	

Block 4

L	A	Cg	L	Lu	L	Cg					
a	b	d		N		a	b	d		N	

Area measured
1/4 plot = 1/45 acre
(approx.)

Rotation LU L Cg A

Block 6

Block 7

Block 8

Block 10

Block 11

Block 12

Block 3

Block 4

Block 5

Block 6

Block 7

Block 8

Block 9

Block 10

Block 11

Block 12

All crops (except Lucerne) have nitrogen at single and double rates.
 double Cg = 2 cwt. N/c in spring, 2 cwt. N/c after each cut.
 N = rate of nitrogen
 L = 1 cwt. N/c in spring, 1 cwt. N/c later in season.
 Wheat (W) 4 cwt. N/c, Barley (B) 2.7 cwt. N/c.
 Hay (H) 4 cwt. N/c, Potatoes (P) 5 cwt. Sulphate of ammonia at 12 tons per acre to potato crops only.
 High nitrogen given in previous 3 year crop sequence.
 D Dung
 C Calcium carbonate applied once in 6 years before test crop barley.

6 Year cropping cycles:-
 Treatment crops
 Lu = 3 years Lucerne
 L = 3 years Grazed Ley
 Cg = 3 years Cut Grass
 A = Hay, Potatoes, Barley
 G = Permanent old grass, 2 years grazed, 3rd year hay.
 R = Reseeded Permanent Grass grazed, 3rd year hay.

Basal P.K. All rotations and permanent grass:- 13 c.p.a. Super. 4 c.p.a. Mur/potash spread over 6 years.
 Calcium carbonate applied once in 6 years before test crop barley.

Rothamsted LEY-ARABLE Rotations HIGHFIELD 6th year 1954



121	a b	N	N	N	N	N	132
		A	Cg	R	L	C	Lu

1st. Treatment

109	a b	N	N	N	N	N	120
		N	G	Lu	L	R	Cg

1st. Treatment

97	a b	x	x	x	x	x	108
		R	Cg	L	A	G	Lu

WHEAT

133	a b	x	N	N	x	x	144
		Cg	A	R	Lu	L	N

WHEAT

85	a b	N	N	N	N	N	96
		N	D	A	G	L	Cg

POTATOES

73	a b	N	N	N	N	N	84
		G	L	R	A	Cg	Lu

2nd. Treatment

61	a b	N	N	N	N	N	72
		N	D	A	G	R	N

2nd. Treatment

49	a b	N	N	N	N	N	60
		N	D	A	G	L	Cg

POTATOES

Area manured
1/4 plot - 1/4 acre
Code letter P

37	a b	N	N	N	N	N	48
		N	R	A	Cg	L	C

3rd. Treatment

25	a b	N	N	N	N	N	36
		L	A	Cg	R	N	N

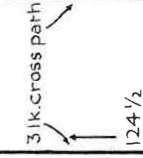
BARLEY

13	a b	N	N	N	N	N	24
		N	R	A	Cg	L	C

BARLEY

1	a b	N	N	N	N	N	12
		G	Lu	R	Cg	A	L

3rd. Treatment



21 AUG 1953

Treatments overleaf

1 JUN 1955

HIGHFIELD LEY-ARABLE ROTATIONS SEVENTH YEAR 1955

2nd. TREATMENT 3rd. TREATMENT 1st. TREATMENT

133 ax, bx D PK, PK ay, by D	135 G 136 N	137 ax, bx PK ay, by N	139 R 140 N	141 ax, bx D P ay, by N	143 ax, bx N D PK ay, by N
61ks	58%	61ks	58%		

107 ax, bx K ay, by N	109b N	111 N	113b N	115 N	117 N	119b N	121b N	123b N	125 N	127 N	129 N	131b N
Lu 108 ax, bx D ay, by N	A 110 D	G 112 D	Lu 114 D	Lu 116 D	R 118 D	Cg 120 D	Cg 122 D	Cg 124 D	R(11) 126 D	L 128 D	G 130 D	Lu 132 D
CK2	CK1	CK2	CK1	CK2	CK2	CK2	CK2	CK2	CK2	CK2	CK2	CK1

105 N	106 G	103 ax, bx N D PK ay, by N	104 A 104 N	105 N	107 Lu 108 ax, bx D ay, by N	109b N	111 N	113b N	115 N	117 N	119b N
Lu 106 D	A 106 D	Lu 108 ax, bx D ay, by N	Lu 104 ax, bx N D PK ay, by N	Lu 106 ax, bx N D PK ay, by N	Lu 108 ax, bx D ay, by N	A 110 D	G 112 D	Lu 114 D	Lu 116 D	R 118 D	Cg 120 D
CK2	CK1	CK2	CK1	CK2	CK2	CK1	CK2	CK1	CK2	CK2	CK2

97 R	98 N	99 ax, bx N D PK ay, by N	100 Cg 100 N	101 ax, bx N D PK ay, by N	103 ax, bx N D PK ay, by N	105 N	106 G	107 Lu 108 ax, bx D ay, by N	109b N	111 N	113b N	115 N	117 N	119b N
R 98 D	N 98 D	Lu 100 ax, bx N D PK ay, by N	Cg 100 ax, bx N D PK ay, by N	Lu 101 ax, bx N D PK ay, by N	Lu 103 ax, bx N D PK ay, by N	Lu 105 ax, bx N D PK ay, by N	Lu 106 ax, bx N D PK ay, by N	Lu 108 ax, bx D ay, by N	A 110 D	G 112 D	Lu 114 D	Lu 116 D	R 118 D	Cg 120 D
CK2	CK1	CK2	CK1	CK2	CK1	CK2	CK1	CK2	CK1	CK2	CK1	CK2	CK2	CK2

133 ax, bx D PK, PK ay, by D	135 G 136 N	137 ax, bx PK ay, by N	139 R 140 N	141 ax, bx D P ay, by N	143 ax, bx N D PK ay, by N
61ks	58%	61ks	58%		

73 N	75 N	77 N	79b N	81b N	83b N	85b N	87 N	89b N	91 N	93b N	95b N
Ch 74 N	L 76 N	Rh 78 N	A 80 N	Cg 82 N	Lu 84 N	Lu 86 N	R 88 N	A 90 N	G 92 N	L 94 N	Cg 96 N
CK2	CK1	CK2	CK1	CK2	CK1	CK2	CK2	CK2	CK2	CK2	CK1

49b N	51b N	53 N	55b N	57b N	59 N	61b N	63b N	65 N	67b N	69 N	71 N
Lu 50 N	L 52 N	G 54 N	Cg 56 N	A 58 N	R 60 N	Cg 62 N	Lu 64 N	L 66 N	A 68 N	Ch 70 N	Rh 72 N
CK2	CK1	CK2	CK1	CK2	CK1	CK2	CK1	CK2	CK1	CK2	CK1

25 N	27b N	29b N	31 N	33 N	35b N	37b N	39 N	41b N	43b N	45b N	47 N
L 26 N	A 28 N	Cg 30 N	R 32 N	G 34 N	Lu 36 N	Lu 38 N	R 40 N	A 42 N	Cg 44 N	L 46 N	G 48 N
CK4	CK4	CK4	CK4	CK4	CK4	CK4	CK4	CK4	CK4	CK4	CK4

1 G	2 N	3 N	4 Lu	5 N	6 R	7 Cg	8 N	9 N	10 A	11 L	12 N	13 N	14 R	15 N	16 L	17b N	19b N	21b N	23 N
G 2 D	N 2 D	N 3 D	Lu 4 ax, bx N D PK ay, by N	N 5 D	R 6 ax, bx N D PK ay, by N	Cg 7 ax, bx N D PK ay, by N	N 8 D	N 9 D	A 10 ax, bx N D PK ay, by N	L 11 ax, bx N D PK ay, by N	N 12 D	N 13 D	R 14 ax, bx N D PK ay, by N	N 15 D	L 16 ax, bx N D PK ay, by N	N 17b D	N 19b D	N 21b D	N 23 D
CK4	CK4	CK4	CK4	CK4	CK4	CK4	CK4	CK4	CK4	CK4	CK4	CK4	CK4	CK4	CK4	CK4	CK4	CK4	CK4

Code Letter P



OATS
DAYS

3 HIGHFIELD 4 XLEY-ARABLE/ROTATIONS 1956



135	137b	139	141b	143b	105	107b	109b	111	113b	115	117	119b	121b	123b	125	127	129	131b	
Cg	G	A	R	Lu	L	Lu	A	G	Lu	L	R	Cg	A	Cg	R	L	G	Lu	
134	136	138	140	142	144	106	108	110	112	114	116	118	120	122	124	126	128	130	132
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

51	53	55b	57b	59	61b	63b	65b	67b	69	71	73	75b	77	79b	81b	83b	85b	87	89b	91	93	95b	
Lu	L	Gh	H	Rh	Cg	Lu	L	A	G	R	G	L	R	A	Cg	Lu	Lu	Lu	Rh	H	Gh	L	Cg
50	52	54	56	58	60	62	64	66	68	70	72	74	76	78	80	82	84	86	88	90	92	94	96
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

3	5	7	9	11	13	15	17b	19b	21b	23	25	27b	29b	31	33	35b	37	39	41	43	45	47	
Lu	R	Cg	A	L	R	L	L	Cg	A	Lu	L	A	Cg	R	C	Lu	Lu	R	L	A	Cg	L	C
4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	
N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	

measurements to Potatoes only
123
61ks
58 1/2
61ks
58 1/2

Code Letter P

POTATOES

POTATOES

POTATOES

