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## Yields of the Field Experiments 1967

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### 67/R/HIA/B/1 and 67/R/FLA/B/1 Ley and Arable Rotations

#### Rothamsted Research

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67/B/1.1

## LEY AND ARABLE ROTATIONS

(HLA and FLA)

Highfield and Fosters Field 1967, the 19th year.

For details of treatments, rotations etc., see 'Details' and 'Results' 63/B/1.1, 64/B/1.1, 65/B/1.1, 66/B/1.1.

The variety of oats is now Manod.

Erratum to 'Results' 66/B/1.5. Fosters. '3rd year Treatment Crops:- Oats:' - Seed combine drilled at 160 lb: Mar 7. 'Nitro-Chalk' applied: Mar 9.

## HIGHFIELD

### 1st year Treatment Crops:

All-grass ley: Ploughed: Sept 12, 1966. Basal PK compound applied: Mar 28, 1967. 'Nitro-Chalk' applied, seeds sown at 33 lb: Mar 31. Sprayed with ioxynil/mecoprop (Actril C at 5 pints in 20 gals): May 31. Cut three times: July 4, Aug 16, Nov 8. NK compound applied after first two cuts.

Clover-grass ley: Ploughed: Sept 12, 1966. Basal PK compound applied: Mar 28, 1967. Seeds sown at 34 lb: Mar 31. Sprayed with 2,4-DB/MCPA (Embutox Plus at 5 pints in 20 gals): May 31. Topped twice: June 20, July 3. Cut three times: July 18, Aug 16, Nov 8. Muriate of potash applied after first two cuts.

Lucerne: Ploughed: Sept 12, 1966. Basal PK compound applied: Mar 28, 1967. Seed drilled at 25 lb: Mar 30. Cut three times: July 14, Aug 29, Nov 13.

Hay (H and RH): Ploughed: Sept 12, 1966. Basal PK compound applied, seeds sown at 40 lb: Sept 13. 'Nitro-Chalk' applied: Mar 28, 1967. Cut twice: June 1, July 17. NK compound applied after first cut.

### 2nd year Treatment Crops:

All-grass ley: Basal PK compound applied: Jan 13, 1967. NK compound applied: Apr 3. Cut four times: May 26, July 4, Aug 16, Nov 8. NK compound applied after first three cuts.

Clover-grass ley: Basal PK compound applied: Jan 13, 1967. Muriate of potash applied: Apr 3. Cut four times: May 26, July 4, Aug 16, Nov 8. Muriate of potash applied after first three cuts.

Lucerne: Basal PK compound applied: Jan 13, 1967. Sprayed with paraquat at 2 lb ion in 37 gals: Feb 6. Cut four times: June 2, July 14, Aug 29, Nov 13.

Sugar beet: Ploughed: July 11 - 22, 1966. Ploughed second time:

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Sept 12. Muriate of potash applied: Jan 30, 1967. Basal NPK compound and 'Nitro-Chalk' applied, seed drilled at 10 lb: Mar 22. Singled: May 17. Sprayed with demeton-s-methyl at 3 oz in 37 gals: June 7, and at 2.5 oz in 20 gals by hand: July 12. Lifted: Oct 13.

### 3rd year Treatment Crops:

All-grass ley: Basal PK compound applied: Jan 13, 1967. NK compound applied: Apr 3. Cut four times: May 26, July 4, Aug 16, Nov 8.

NK compound applied after first three cuts.

Clover-grass ley: Basal PK compound applied: Jan 13, 1967. Muriate of potash applied: Apr 3. Cut four times: May 26, July 4, Aug 16, Nov 8. Muriate of potash applied after first three cuts.

Lucerne: Basal PK compound applied: Jan 13, 1967. Sprayed with paraquat at 2 lb ion in 37 gals: Feb 6. Cut four times: June 2, July 14, Aug 29, Nov 13.

Oats: Ploughed: Dec 21, 1966. Seed combine drilled at 160 lb: Mar 8, 1967. 'Nitro-Chalk' applied: Mar 13. Sprayed with ioxynil/mecoprop (Actril C at 5 pints in 20 gals): May 12. Combine harvested: Aug 17.

### 1st Test Crop, Wheat:-

Half of basal PK compound applied, plots ploughed: Sept 14, 1966.

Remainder of basal PK compound applied, seed drilled at 165 lb:

Oct 27. 'Nitro-Chalk' applied: Apr 17, 1967. Sprayed with ioxynil/mecoprop (Actril C at 6 pints in 32 gals): Apr 26.

Combine harvested: Aug 30.

### 2nd Test Crop, Potatoes:-

Dung applied, plots ploughed: Oct 17, 1966. NPK fertilisers applied:

Mar 22 - Apr 4, 1967. Rotary cultivated, potatoes machine

planted: Apr 5. Sprayed with linuron at 1 lb and paraquat at

0.75 lb ion in 37 gals: May 9. Sprayed four times with mancozeb

at 1.2 lb in 30 gals: June 29, July 20, Aug 4, Aug 24. Sprayed

with undiluted BOV at 15 gals: Sept 7. 15 ft length at South end

of plots 99, 101, 103, 107, (all a and b) hand dug and potatoes

discarded because of an attack of Blackleg (*Rhizoctonia solani*):

Sept 12. Lifted: Sept 13.

### 3rd Test Crop, Barley:-

Ground chalk applied: Oct 31, 1966. Ploughed: Nov 10. Seed

combine drilled at 140 lb: Mar 2, 1967. 'Nitro-Chalk' applied:

Mar 13. Sprayed with mecoprop/2,4-D (Methoxone Extra at 6 pints

in 30 gals): May 12. Combine harvested: Aug 18.

Permanent grasses: 17th, 18th and 19th experimental years permanent (old)

grass, all blocks, 17th, 18th and 19th years reseeded grass, blocks

1, 4, 6, 7, 9 and 12. Ground chalk applied to blocks 5 and 8:

Oct 31, 1966. Basal PK compound applied: Jan 13, 1967. NK compound

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applied to 'all grass' half plots, muriate of potash to 'clover-grass' half plots: Apr 3. Cut four times: May 31, July 4, Aug 16, Sept 26. NK compound and muriate of potash applied to appropriate half plots after each cut except the last.

#### FOSTERS

##### 1st year Treatment Crops:

All-grass ley: Ploughed: Sept 5, 1966. Basal PK compound applied: Mar 28, 1967. 'Nitro-Chalk' applied, seeds sown at 33 lb: Mar 31. Sprayed with ioxynil/mecoprop (Actril C at 5 pints in 20 gals): May 31. Cut three times: July 4, Aug 16, Nov 8. NK compound applied after first two cuts.

Clover-grass ley: Ploughed: Sept 5, 1966. Basal PK compound applied: Mar 28, 1967. Seed sown at 34 lb: Mar 31. Sprayed with 2,4-DE/MCPA (Embutox Plus at 5 pints in 20 gals): May 31. Topped twice: June 20, July 3. Cut three times: July 18, Aug 16, Nov 8. Muriate of potash applied after first two cuts.

Lucerne: Ploughed: Sept 5, 1966. Basal PK compound applied: Mar 28, 1967. Seed sown at 25 lb: Mar 30. Cut three times: July 14, Aug 29, Nov 13.

Hay (H and RH): Ploughed: Sept 5, 1966. Basal PK compound applied, seed sown at 40 lb: Sept 13. 'Nitro-Chalk' applied: Mar 28, 1967. Cut twice: June 1, July 17. NK compound applied after first cut.

##### 2nd year Treatment Crops:

All-grass ley: Basal PK compound applied: Jan 13, 1967. NK compound applied: Apr 3. Cut four times: May 23, July 4, Aug 15, Nov 8. NK compound applied after first three cuts.

Clover-grass ley: Basal PK compound applied: Jan 13, 1967. Muriate of potash applied: Apr 3. Cut four times: May 26, July 4, Aug 15, Nov 8. Muriate of potash applied after first three cuts.

Lucerne: Basal PK compound applied: Jan 13, 1967. Sprayed with paraquat at 2 lb ion in 37 gals: Feb 6. Cut four times: June 2, July 14, Aug 29, Nov 13.

Sugar beet: Ploughed: July 11 - 22, 1966. Ploughed second time: Sept 12. Muriate of potash applied: Jan 30, 1967. Basal NPK compound applied, seed drilled at 10 lb: Mar 22. Singled: May 18. Sprayed with demeton-s-methyl at 3 oz in 37 gals: June 7, and at 2.5 oz in 20 gals by hand: July 12. Lifted: Oct 13.

##### 3rd year Treatment Crops:

All-grass ley: Basal PK compound applied: Jan 13, 1967. NK compound applied: Apr 3. Cut four times: May 23, July 4, Aug 15, Nov 8. NK compound applied after first three cuts.

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Clover-grass ley: Basal PK compound applied: Jan 13, 1967. Muriate of potash applied: Apr 3. Cut four times: May 23, July 4, Aug 16, Nov 8. Muriate of potash applied after first three cuts.  
Lucerne: Basal PK compound applied: Jan 13, 1967. Sprayed with paraquat at 2 lb ion in 37 gals: Feb 6. Cut four times: June 2, July 14, Aug 29, Nov 13.  
Oats: Ploughed: Dec 21, 1966. Seed combine drilled at 160 lb: Mar 8, 1967. 'Nitro-Chalk' applied: Mar 13. Sprayed with ioxynil/mecoprop (Actril C at 5 pints in 20 gals): May 12. Combine harvested: Aug 17.

1st Test Crop, Wheat:-

Basal PK compound applied, plots ploughed: Sept 14, 1966. Basal PK compound applied, seed drilled at 165 lb: Oct 26. 'Nitro-Chalk' applied: Apr 17, 1967. Sprayed with ioxynil/mecoprop (Actril C at 6 pints in 32 gals): Apr 26. Combine harvested: Aug 30.

2nd Test Crop, Potatoes:-

Dung applied, plots ploughed: Oct 14, 1966. NPK fertiliser applied: Mar 22 - Apr 4, 1967. Rotary cultivated, potatoes machine planted: Apr 5. Sprayed with linuron at 1 lb and paraquat 0.75 lb in 37 gals: May 9. Sprayed four times with mancozeb at 1.2 lb in 30 gals: June 29, July 20, Aug 4, Aug 24. Sprayed with undiluted BOV at 15 gals: Sept 7. Lifted: Sept 13.

3rd Test Crop, Barley:-

Ploughed: Nov 9, 1966. Seed combine drilled at 140 lb: Mar 2, 1967. 'Nitro-Chalk' applied: Mar 13. Sprayed with mecoprop/2,4-D (Methoxone Extra at 6 pints in 30 gals): May 12. Combine harvested: Aug 18.

Permanent grasses:-

17th, 18th and 19th years reseeded grass, blocks 1, 3, 6, 8, 9 and 11. Basal PK compound applied: Jan 13, 1967. NK compound applied to 'all-grass' half plots and muriate of potash to 'clover-grass' half plots: Apr 3, 1967. Cut four times: May 31, July 4, Aug 15, Sept 27. NK compound and muriate of potash applied to appropriate half plots after first three cuts.

Standard errors per plot. Test crops:

Potatoes. Total tubers:

Highfield: Sub plot: 0.475 or 2.0% (12 d.f.)  
Fosters: Sub plot: 1.041 or 4.8% (12 d.f.)

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SUMMARY OF RESULTS

WHEAT 1ST TEST CROP

1964 - 1966

	Lu	LC	LN	AH	Mean
GRAIN					
HIGHFIELD					
Mean	51.7	56.9	51.1	54.3	53.5
To test crop					
NO	53.1	62.1	54.5	48.9	
N1	51.0	60.4	52.9	60.2	
N2	55.1	53.5	53.2	54.5	
N3	47.5	51.6	44.0	53.8	
TO	51.3	55.8	53.2	53.8	53.5
T1	52.1	58.0	49.1	54.9	53.5
FOSTERS					
Mean	63.8	61.5	62.7	60.5	62.1
To test crop					
NO	66.4	61.6	60.2	50.4	
N1	66.6	65.6	66.6	66.1	
N2	63.8	60.3	65.5	65.2	
N3	58.6	58.6	58.6	60.3	
TO	64.9	59.7	62.4	58.4	61.3
T1	62.8	63.4	63.0	62.6	62.9

Mean D.M. %: Highfield: 83.4  
 Fosters: 84.0

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WHEAT 1ST TEST CROP

1964 - 1966

	Lu	LC	LN	AH	Mean
STRAW					
HIGHFIELD					
Mean	64.4	61.7	55.0	56.0	59.3
To test crop					
NO	53.6	56.5	49.6	45.6	
N1	64.9	61.4	56.6	57.0	
N2	67.9	63.5	56.9	58.1	
N3	71.2	65.2	56.9	63.1	
TO	62.3	58.8	55.0	52.2	57.1
T1	66.5	64.6	55.0	59.7	61.5
FOSTERS					
Mean	62.8	62.9	60.5	55.2	60.4
To test crop					
NO	55.3	54.8	48.6	39.3	
N1	64.4	64.6	64.4	58.1	
N2	66.0	66.0	63.8	62.6	
N3	65.4	66.1	65.4	60.8	
TO	63.5	59.9	58.3	52.9	58.6
T1	62.1	65.9	62.7	57.5	62.1

Mean D.M. %: Highfield: 85.7  
 Fosters: 88.5

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POTATOES 2ND TEST CROP. TOTAL TUBERS

1963 - 1965

	Lu	LC	LN	AH	Mean
HIGHFIELD					
Mean	23.54	24.28	23.32	22.90	<del>(23.51)</del> 23.51
		( $\pm 0.237$ )*			( $\pm 0.119$ )
F	23.41	24.82	23.36	23.28	23.72
D	23.68	23.75	23.28	22.52	23.31
To wheat 1966		( $\pm 0.237$ )*			( $\pm 0.119$ )
NO2	23.57	24.86	23.44	23.12	23.75
N13	23.52	23.71	23.20	22.69	23.28
FOSTERS					
Mean	21.58	22.00	21.28	21.14	<del>(21.50)</del> 21.50
		( $\pm 0.520$ )*			( $\pm 0.260$ )
F	21.87	22.33	21.28	21.63	21.78
D	21.30	21.67	21.28	20.65	21.22
To wheat 1966		( $\pm 0.520$ )*			( $\pm 0.260$ )
NO2	21.60	21.55	21.40	21.22	21.44
N13	21.57	22.45	21.16	21.06	21.56

\* For use in vertical and interaction comparisons



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POTATOES 2ND TEST CROP. % WARE

1963 - 1965

	Lu	LC	LN	AH	Mean
HIGHFIELD					
Mean	96.4	95.8	96.5	96.7	96.3
F	96.2	95.5	96.8	96.9	96.3
D	96.5	96.1	96.1	96.6	96.3
To wheat 1966					
NO2	96.2	96.2	96.4	96.8	96.4
N13	96.6	95.4	96.5	96.7	96.3
FOSTERS					
Mean	96.1	96.8	96.6	96.2	96.4
F	96.2	96.7	96.8	96.2	96.5
D	96.0	96.8	96.5	96.2	96.4
To wheat 1966					
NO2	96.2	96.4	96.7	96.5	96.5
N13	95.9	97.1	96.6	95.9	96.4

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BARLEY 3RD TEST CROP

GRAIN

1962 - 1964

	Lu	LC	LN	AH	R	Mean
HIGHFIELD						
Mean	42.5	43.4	42.0	40.7	50.0	43.7
1967						
NO	36.4	41.5	39.2	33.4	51.6	40.4
N1	43.5	43.9	37.3	40.0	54.8	43.9
N2	42.8	42.5	44.6	42.9	45.8	43.7
N3	47.4	45.6	47.0	46.6	47.8	46.9
1966						
F	40.7	42.5	41.6	40.3	50.3	43.1
D	44.4	44.2	42.4	41.2	49.7	44.4

Excluding AH

1967

1966	NO	N1	N2	N3	Mean
F	40.9	43.8	43.6	47.0	43.8
D	43.4	46.0	44.4	46.9	45.2

Mean D.M. %: 79.6

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BARLEY 3RD TEST CROP

GRAIN

1962 - 1964

	Lu	LC	LN	AH	R	Mean
FOSTERS						
Mean	51.8	50.8	50.9	50.4	54.0	51.6
1967						
N0	47.9	49.0	45.8	41.4	53.8	47.6
N1	51.5	52.0	52.9	-	55.6	-
N2	54.6	52.3	53.3	49.8	54.1	52.8
N3	53.1	50.0	51.6	56.5	52.3	52.7
N4	-	-	-	54.1	-	-
1966						
F	50.7	50.0	49.5	49.2	52.2	50.3
D	52.9	51.7	52.3	51.7	55.7	52.9

Excluding AH

1967

1966	N0	N1	N2	N3	Mean
F	48.2	51.6	52.2	50.2	50.6
D	50.0	54.4	54.9	53.2	53.2

Mean D.M. %: 78.9

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TREATMENT CROPS ARABLE AND HAY ROTATION

HAY: DRY MATTER (Total of 2 cuts)

After arable crops			After reseeded grass ploughed 1963 - 1964		
F	D	Mean	F	D	Mean
HIGHFIELD					
103.9	100.2	102.0	104.6	105.2	104.9
FOSTERS					
88.5	92.1	90.3	96.6	100.2	98.4

67/B/1.12

TREATMENT CROPS ARABLE AND HAY ROTATION

HIGHFIELD		FOSTERS
Mean		Mean
SUGAR BEET		
ROOTS		
22.27		21.14
SUGAR %		
16.1		16.4
TOTAL SUGAR		
71.5		69.3
TOPS		
19.87		17.57
OATS		
GRAIN		
41.4		41.0

Oats, grain, mean D.M. %: Highfield 80.6  
 Fosters 81.5

67/B/1.13

LUCERNE: DRY MATTER

	HIGHFIELD 1965			FOSTERS 1965		
	F	D	Mean	F	D	Mean
1st year (3 cuts)	57.5	57.2	57.3	53.6	57.2	55.4
2nd year (4 cuts)			76.8			93.4
3rd year (4 cuts)			47.3			60.8

ALL-GRASS LEY: DRY MATTER

	HIGHFIELD 1965			FOSTERS 1965		
	F	D	Mean	F	D	Mean
1st year (3 cuts)	70.5	73.5	72.0	59.6	60.1	59.9
2nd year (4 cuts)			100.6			95.8
3rd year (4 cuts)			85.3			84.1

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CLOVER-GRASS LEY: DRY MATTER

	HIGHFIELD 1965			FOSTERS 1965		
	F	D	Mean	F	D	Mean
1st year (3 cuts)	43.0	44.7	43.9	32.8	36.9	34.8
2nd year (4 cuts)			63.6			64.6
3rd year (4 cuts)			58.9			63.1

PERMANENT GRASS: DRY MATTER

	NO	N1	Mean
	HIGHFIELD		
17th exptl year Blocks 9 and 12	38.4	95.6	67.0
Blocks 10 and 11	36.8	95.8	66.2
18th exptl year Blocks 5 and 8	49.4	96.0	72.8
Blocks 6 and 7	39.3	103.0	71.2
19th exptl year Blocks 1 and 4	46.0	97.4	71.7
Blocks 2 and 3	58.4	93.4	75.9

(NO) Clover-grass management  
(N1) All-grass management

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RESEEDED GRASS: DRY MATTER

	HIGHFIELD			FOSTERS		
	NO	N1	Mean	NO	N1	Mean
17th exptl year	50.4	92.8	71.6	55.8	90.7	73.2
18th exptl year	49.6	94.4	72.0	55.2	87.6	71.4
19th exptl year	46.8	98.9	72.8	53.8	87.8	70.8

(NO) Clover-grass management  
 (N1) All-grass management