

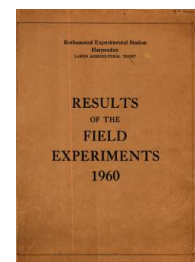
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# Yields of the Field Experiments 1960

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## 60/R/B/2 Ley and Arable Rotations

### Rothamsted Research

Rothamsted Research (1961) *60/R/B/2 Ley and Arable Rotations* ; Yields Of The Field Experiments 1960, pp 25 - 43 - DOI: <https://doi.org/10.23637/ERADOC-1-180>

60/B/2.1

## LEY AND ARABLE ROTATIONS

Highfield and Fosters Field 1960 - the 12th year.

For details of treatments, rotations, etc. see "Details of the Classical and Long Term Experiments" 1956.

Second year lucerne: Three applications of sodium molybdate were made as a foliar spray to small areas before each cut. These areas were harvested separately.

Rate of application: 4 oz of sodium molybdate in 700 gallons per acre, applied to same area for each cut.

In 1960 yields of arable hay, cut grass and silage were estimated (except where otherwise stated in "Cultivations, etc.") from samples cut by a flail action forage harvester. Two sample strips 40" wide were cut from each sub-plot.

Cultivations, etc.:

### HIGHFIELD

#### 1st year Treatment Crops

Cut grass. Ploughed twice: Sept 2, 1959 and Feb 16, 1960. Basal PK compound applied; 'Nitro-Chalk' applied: Apr 7. Seeds sown at 33 lb per acre: Apr 12. Cut by mower: July 7. Cut 4 times: July 7, Aug 3, Sept 28, Dec 16. 'Nitro-Chalk' applied after every cut except the last.

Grazed ley. Ploughed twice: Sept 2, 1959 and Feb 16, 1960. Basal PK compound applied; 'Nitro-Chalk' applied: Apr 7. Seed sown at 44 lb per acre: Apr 12. 'Nitro-Chalk' applied: July 20. Grazed: 8 circuits, June 20 - Oct 16.

Lucerne. Ploughed twice: Sept 2, 1959 and Feb 16, 1960. Basal PK compound applied: Apr 7. Seed drilled at 28 lb per acre: Apr 12. Cut twice: July 21, Sept 26. Variety: Du Puits.

Hay. Seeds undersown in barley at 28 lb per acre: Apr 29, 1959. Basal PK compound applied: Jan 18, 1960. 'Nitro-Chalk' applied: Mar 25. Cut: May 27.

#### 2nd year Treatment Crops

Cut grass. Basal PK compound applied: Jan 18, 1960. Nitrogen and potash applied as compound fertilizer (16% N, 16% K<sub>2</sub>O): Apr 4 and after every cut except the last. Cut 5 times: May 18, June 22, Aug 3, Sept 27, Dec 16.

Grazed ley. Basal PK compound applied: Feb 11, 1960. 'Nitro-Chalk' applied: Mar 30 and July 18. Grazed: 9 circuits, Apr 22 - Oct 4.

Lucerne. Basal PK compound applied: Feb 11, 1960. Molybdenum spray applied 3 times: Apr 28, June 17, Aug 2. Molybdenum strips cut: May 25, July 14, Sept 22. Cut 3 times: May 30, July 15, Sept 24.



60/B/2.2

Potatoes. Ploughed 3 times: June 18, Sept 3, 1959 and Feb 16, 1960. Ridged, basal PK compound applied: Apr 25. Sulphate of ammonia and dung applied; potatoes planted: Apr 27. For later cultivations see Potato Test Crop.

### 3rd year Treatment Crops

Cut grass. Basal PK compound applied: Jan 18, 1960. Nitrogen and potash applied as compound fertilizer (16% N, 16% K<sub>2</sub>O): Apr 4, and after every cut, except the last. Cut 4 times: May 19, June 22, Aug 4, Sept 27.

Grazed ley. Basal PK compound applied: Feb 11, 1960. 'Nitro-Chalk' applied: Mar 30 and July 22. Grazed: 7 circuits, Apr 26 - Sept 18.

Lucerne. Basal PK compound applied: Feb 11, 1960. Cut 3 times: May 30, July 15, Sept 26.

Oats. Ploughed: Oct 8, 1959. 'Nitro-Chalk' applied: Mar 4. Seed drilled at 3½ bushels per acre with basal PK compound: Mar 5. Sprayed with CMFP at 6 pints in 40 gallons per acre: May 7. Combine harvested: Aug 15.

### 1st Test Crop, Wheat

Ploughed: Sept 16, 1959. Seed combine drilled at 2¾ bushels per acre with basal PK compound: Oct 14. 'Nitro-Chalk' applied: Apr 1, 1960. Sprayed with CMFP at 6 pints in 40 gallons per acre: Apr 21. Combine harvested: Aug 23. Variety: Cappelle.

### 2nd Test Crop, Potatoes

Ploughed twice: Sept 3, 1959 and Feb 16, 1960. Ridged, basal PK compound applied: Apr 25. Sulphate of ammonia, additional P and K and dung applied, potatoes planted: Apr 28. Earthed up: June 21. Sprayed twice with copper fungicide at 5 lb in 40 gallons per acre: July 15 and Aug 10. Sprayed with undiluted BOV at 15 gallons per acre: Sept 13. Haulm destroyed mechanically: Sept 19. Lifted: Oct 14.

### 3rd Test Crop, Barley

Ground chalk applied to blocks 2 and 3: Oct 7, 1959. Ploughed twice: Oct 8 and Feb 15, 1960. Additional P and K applied: Feb 8. Seed combine drilled at 2½ bushels per acre with basal PK compound: Mar 7. 'Nitro-Chalk' applied: Mar 8. Sprayed with CMFP at 6 pints in 40 gallons per acre: May 7. Combine harvested: Aug 15. Variety: Proctor.

Permanent grasses. Basal PK compound applied to all plots: Feb 11, 1960.

10th year reseeded, 10th experimental year of permanent grass, Block 9 - 12.

Blocks 10 and 12. 'Nitro-Chalk' applied: Mar 30, 1960. 2nd dressing of 'Nitro-Chalk' applied to reseeded plots: July 18 and to permanent grass plot: July 20. Grazed: 7 circuits, Apr 30 - Oct 8.

Blocks 9 and 11. 'Nitro-Chalk' applied: Mar 25, 1960. Cut for silage: May 27. 2nd dressing of 'Nitro-Chalk' applied to permanent grass plots: July 25 and to reseeded plots: July 28. Grazed: 5 circuits, June 28 - Oct 24.



60/B/2.3

11th year reseeded, 11th experimental year of permanent grass,  
Blocks 5 - 8.

Blocks 7 and 8. 'Nitro-Chalk' applied: Mar 30, 1960. 2nd dressing of 'Nitro-Chalk' applied to permanent grass plots: July 18, and to reseeded plots: July 20. Grazed: 8 circuits, Apr 22 - Oct 28.

Blocks 5 and 6. 'Nitro-Chalk' applied: Mar 25, 1960. Cut for silage: May 27. 2nd dressing of 'Nitro-Chalk' applied to permanent grass plots: July 25 and to reseeded plots: July 27. Grazed: 5 circuits, June 24 - Oct 20.

12th year reseeded, 12th experimental year of permanent grass,

Blocks 1 and 3. 'Nitro-Chalk' applied: Mar 30, 1960. 2nd dressing of 'Nitro-Chalk' applied: July 15. Grazed: Permanent grass plots - 8 circuits, reseeded plots 5 and 6 - 7 circuits each, 31 and 32 - 8 circuits, each; Apr 26 - Oct 28.

Blocks 2 and 4. 'Nitro-Chalk' applied: Mar 25, 1960. Cut for silage: May 27. 2nd dressing of 'Nitro-Chalk' applied: July 18 - 25. Grazed: Permanent grass plots - 5 circuits, reseeded plots 13 and 14 - 5 circuits each, 39 and 40 - 6 circuits. each; June 20 - Oct 16.

#### FOSTERS

##### 1st year Treatment Crops

Cut grass. Ploughed twice: Aug 22, 1959 and Feb 11, 1960.

Basal PK compound and 'Nitro-Chalk' applied: Apr 7. Seeds sown at 33 lb per acre: Apr 12. Cut by mower: July 7. Cut 4 times: July 7, Aug 3, Sept 27, Dec 16. 'Nitro-Chalk' applied after every cut except the last.

Grazed ley. Ploughed twice: Aug 22, 1959 and Feb 11, 1960.

Basal PK compound and 'Nitro-Chalk' applied: Apr 7. Seeds sown at 44 lb per acre: Apr 12. 2nd dressing of 'Nitro-Chalk' applied: July 25. Grazed: 6 circuits, June 18 - Oct 15.

Lucerne. Ploughed twice: Aug 22, 1959 and Feb 11, 1960. Basal PK compound applied: Apr 7. Seeds sown at 28 lb per acre: Apr 12. Cut twice: July 21 and Sept 26.

Hay. Seeds undersown in barley at 28 lb per acre: Apr 29, 1959. Basal PK applied: Jan 19, 1960. 'Nitro-Chalk' applied: Mar 25. Cut: May 27.

##### 2nd year Treatment Crops

Cut grass. Basal PK compound applied: Jan 19, 1960. Nitrogen and potash applied as compound fertiliser (16% N, 16% K<sub>2</sub>O): Apr 2 and after every cut except the last. Cut 5 times: May 18, June 22, Aug 3, Sept 27, Dec 16.

Grazed ley. Basal PK compound applied: Feb 10, 1960. 'Nitro-Chalk' applied: Mar 28 and July 22. Grazed: 7 circuits, Apr 24 - Oct 7.



60/B/2.4

Lucerne. Basal PK compound applied: Feb 10, 1960. Molybdenum spray applied 3 times: Apr 28, June 17, Aug 2. Molybdenum strips cut: May 25, July 14, Sept 22. Cut 3 times: May 30, July 14, Sept 26.

Potatoes. Ploughed three times: June 18 and Aug 22, 1959, Feb 11, 1960. Ridged, basal PK compound applied: Apr 25. Sulphate of ammonia applied: Apr 26. Dung applied and potatoes planted: Apr 27. For later cultivations see Potato Test Crop.

### 3rd year Treatment Crops

Cut grass. Basal PK compound applied: Jan 19, 1960. Nitrogen and potash applied as compound fertiliser (16% N, 16% K<sub>2</sub>O): Apr 2 and after every cut except the last. Cut 4 times: May 18, June 22, Aug 3, Sept 26.

Grazed ley. Basal PK compound applied: Feb 10, 1960. 'Nitro-Chalk' applied: Mar 28 and July 27. Grazed: 5 circuits, Apr 23 - Sept 17.

Lucerne. Basal PK compound applied: Feb 10, 1960. Cut 3 times: May 30, July 14, Sept 26.

Oats. Ploughed twice: Oct 8, 1959, Feb 10, 1960. 'Nitro-Chalk' applied: Mar 4. Seed drilled at 3½ bushels per acre with basal PK compound: Mar 5. Sprayed with TCB/MCPA at 4 pints in 40 gallons per acre: May 6. Combine harvested: Aug 15. Variety: Sun II.

### 1st Test Crop, Wheat

Ploughed: Sept 15, 1959. Seed drilled at 2¾ bushels per acre, with basal PK compound: Oct 14. 'Nitro-Chalk' applied: Apr 1, 1960. Sprayed with CMFP at 6 pints in 40 gallons per acre: Apr 21. Combine harvested: Aug 28. Variety: Cappelle.

### 2nd Test Crop, Potatoes

Ploughed twice: Aug 22, 1959 and Feb 11, 1960. Ridged, basal PK compound applied: Apr 25. Dung, additional P and K and sulphate of ammonia applied, potatoes planted: Apr 27. Earthed up: June 21. Sprayed twice with copper fungicide at 5 lb in 40 gallons per acre: July 16 and Aug 10. Sprayed with undiluted BOV at 15 gallons per acre: Sept 13. Haulm destroyed mechanically: Sept 20. Lifted: Oct 17. Variety: Majestic.

### 3rd Test Crop, Barley

Ploughed twice: Oct 8, 1959 and Feb 10, 1960. Part of additional P and K applied: Jan 20, 1960; remainder: Feb 10. Seed drilled at 2½ bushels per acre with basal PK compound: Mar 5. 'Nitro-Chalk' applied: Mar 8. Sprayed with TCB/MCPA at 4 pints in 40 gallons per acre: May 6. Combine harvested: Aug 13. Variety: Proctor.



60/B/2.5-

Permanent grasses. Basal PK compound applied to all plots:

Feb 10, 1960.

10th year reseeded grass, Blocks 6, 10, 11, 12.

Blocks 6 and 10. 'Nitro-Chalk' applied: Mar 28 and July 28, 1960.

Grazed: 6 circuits, May 1 - Oct 11.

Blocks 11 and 12. 'Nitro-Chalk' applied: Mar 28, 1960. Cut for silage: May 27. 2nd dressing of 'Nitro-Chalk' applied:

Aug 2. Grazed: 4 circuits, June 24 - Oct 23.

11th year reseeded grass, Blocks 5, 7, 8, 9.

Blocks 5 and 9. 'Nitro-Chalk' applied: Mar 28 and July 18 - 25, 1960. Grazed: Plots 47 and 48 - 8 circuits, Plots 81 and 82 - 7 circuits, Apr 23 - Oct 7.

Blocks 7 and 8. 'Nitro-Chalk' applied: Mar 28, 1960. Cut for silage: May 27. 2nd dressing of 'Nitro-Chalk' applied:

July 25. Grazed: 5 circuits, June 22 - Oct 19.

12th year reseeded grass, Blocks 1 - 4.

Blocks 1 and 2. 'Nitro-Chalk' applied: Mar 28 and July 18 - 28, 1960. Grazed: Plots 7 and 8 - 8 circuits; plots 13 and 14 - 7 circuits, Apr 23 - Oct 27.

Blocks 3 and 4. 'Nitro-Chalk' applied: Mar 28, 1960. Cut for silage: May 27. 2nd dressing of 'Nitro-Chalk' applied:

July 22. Grazed: 5 circuits, June 20 - Oct 15.

Standard errors per plot. Test Crops.

Wheat, grain (at 85% dry matter).	Highfield: 3.27 cwt per acre or 6.7% (14 d.f.) Fosters: 2.10 cwt per acre or 4.6% (14 d.f.)
Potatoes, total tubers.	Highfield $\frac{1}{4}$ plot: 1.135 tons per acre or 5.6% (14 d.f.) $\frac{1}{8}$ plot: 0.974 tons per acre or 4.9% (20 d.f.) Fosters $\frac{1}{4}$ plot: 0.946 tons per acre or 4.9% (14 d.f.) $\frac{1}{8}$ plot: 0.713 tons per acre or 3.7% (20 d.f.)
Barley, grain (at 85% dry matter).	Highfield: 2.07 cwt per acre or 4.4% (15 d.f.) Fosters: 2.06 cwt per acre or 4.4% (15 d.f.)

Errata to 'Results of the Field Experiments' 1959 pages 59/Bb/1.14 and 1.15.

Barley Fosters. N x Treatment crops 1954 - 56 table:-  
Levels of N: cwt per acre should read '0.2 not 'None  
0.4' 0.2'



60/B/2.6

Summary of Results

Wheat 1st test crop

N: cwt per acre	Treatment crops 1957 - 1959				Mean
	Lucerne	Ley	Cut grass	Arable with hay	
<u>Grain (at 85% dry matter): cwt per acre</u>					
<u>Highfield</u>					
Mean	53.6	52.8	41.9	48.6	49.2
To test crop					
0.3	51.8	51.6	40.2	44.3	47.0
0.6	55.4	54.1	43.6	52.9	51.5
Difference ( $\pm 2.31$ )	+3.6	+2.5	+3.4	+8.6	+4.5 ( $\pm 1.16$ )
To treatment crops					
Single rate		53.3	41.2	45.9	46.8
Double rate		52.4	42.6	51.3	48.8
Difference ( $\pm 2.31$ )		-0.9	+1.4	+5.4	+2.0 ( $\pm 1.34$ )
<u>Fosters</u>					
Mean	52.4	44.9	43.2	42.0	45.7
To test crop					
0.3	51.5	44.5	41.6	38.3	44.0
0.6	53.4	45.4	44.9	45.8	47.4
Difference ( $\pm 1.49$ )	+1.9	+0.9	+3.3	+7.5	+3.4 ( $\pm 0.74$ )
To treatment crops					
Single rate		45.5	43.3	42.0	43.6
Double rate		44.4	43.2	42.1	43.2
Difference ( $\pm 1.49$ )		-1.1	-0.1	+0.1	-0.4 ( $\pm 0.86$ )



60/B/2.7

Wheat 1st test crop

N: cwt per acre	Excluding Lucerne N to previous treatment crop			Arable with hay only Dung to potatoes 1958: tons per acre		
	Single rate	Double rate	Mean	None	12	Mean

Grain (at 85% dry matter): cwt per acre

Highfield

To test crop	(±1.34)		(±0.94)	(±2.31)		(±1.64)
0.3	43.9	46.9	45.4	44.2	44.4	44.3
0.6	49.7	50.6	50.2	52.8	52.9	52.9
Mean	46.8	48.8	47.8			
	(±0.94)					
To previous treatment crops				(±2.31)		(±1.64)
Single rate				45.2	46.6	45.9
Double rate				51.9	50.8	51.3
Mean				48.5	48.7	48.6
				(±1.64)		

Mean dry matter % as harvested: 81.1

Fosters

To test crop	(±0.86)		(±0.61)	(±1.49)		(±1.05)
0.3	41.2	41.7	41.5	38.4	38.1	38.3
0.6	45.9	44.8	45.3	45.9	45.7	45.8
Mean	43.6	43.2	43.4			
	(±0.61)					
To previous treatment crops				(±1.49)		(±1.05)
Single rate				43.1	40.9	42.0
Double rate				41.3	42.9	42.1
Mean				42.2	41.9	42.0
				(±1.05)		

Mean dry matter % as harvested: 79.7



60/B/2.8

Wheat 1st test crop

N: cwt per acre	Treatment crops 1957 - 1959				Mean
	Lucerne	Ley	Cut grass	Arable with hay	
<u>Straw (at 85% dry matter): cwt per acre</u>					

Highfield

Mean	51.0	45.7	35.1	41.0	43.2
To test crop					
0.3	49.8	44.2	33.6	36.8	41.1
0.6	52.2	47.3	36.6	45.2	45.3
Difference	+2.4	+3.1	+3.0	+8.4	+4.2
To treatment crops					
Single rate		45.4	36.0	39.0	40.1
Double rate		46.0	34.2	43.0	41.0
Difference		+0.6	-1.8	+4.0	+0.9

Fosters

Mean	38.3	29.2	26.5	27.1	30.3
To test crop					
0.3	38.7	27.5	25.9	23.3	28.9
0.6	37.9	30.9	27.2	30.9	31.7
Difference	-0.8	+3.4	+1.3	+7.6	+2.8
To treatment crops					
Single rate		29.0	27.0	27.3	27.8
Double rate		29.4	26.1	26.9	27.4
Difference		+0.4	-0.9	-0.4	-0.4



60/B/2.9

Wheat 1st test crop

N: cwt per acre	Excluding Lucerne N to previous treatment crop			Arable with hay only Dung to potatoes 1958: tons per acre		
	Single rate	Double rate	Mean	None	12	Mean

Straw (at 85% dry matter): cwt per acre

Highfield

To test crop						
0.3	38.2	38.1	38.2	35.4	38.1	36.8
0.6	42.1	43.9	43.0	43.9	46.5	45.2
Mean	40.1	41.0	40.6			
To previous treatment crop						
Single rate				37.6	40.4	39.0
Double rate				41.8	44.3	43.0
Mean				39.7	42.3	41.0

Mean dry matter % as harvested: 66.2

Fosters

To test crop						
0.3	25.1	26.0	25.6	22.2	24.5	23.3
0.6	30.4	28.9	29.6	29.8	32.0	30.9
Mean	27.8	27.4	27.6			
To previous treatment crop						
Single rate				26.9	27.8	27.3
Double rate				25.1	28.8	26.9
Mean				26.0	28.3	27.1

Mean dry matter % as harvested: 85.5



60/B/2.10

Potatoes 2nd test crop. Total tubers: tons per acre

	Treatment crops 1956-1958				Mean
	Lucerne	Ley	Cut Grass	Arable with hay	
<u>Highfield</u>					
Mean	21.13	20.59	20.28	18.35	20.09
N: cwt per acre					
0.5	20.85	20.25	20.16	17.98	19.81
1.0	21.41	20.93	20.41	18.71	20.36
Difference ( $\pm 0.802$ )	+0.56	+0.68	+0.25	+0.73	+0.55 ( $\pm 0.401$ )
Dung: tons per acre					
None	19.88	20.05	19.62	16.41	18.99
12	22.38	21.13	20.94	20.28	21.18
Difference ( $\pm 0.802$ )	+2.50	+1.08	+1.32	+3.87	+2.19 ( $\pm 0.401$ )
P <sub>25</sub> <sup>0</sup> : cwt per acre*					
0.9	21.25	20.81	20.35	18.10	20.13
1.8	21.01	20.36	20.21	18.59	20.04
Difference ( $\pm 0.487$ )	-0.24	-0.45	-0.14	+0.49	-0.09 ( $\pm 0.244$ )
K <sub>20</sub> : cwt per acre*					
0.9	21.13	20.47	20.44	17.56	19.90
1.8	21.13	20.70	20.12	19.13	20.27
Difference ( $\pm 0.487$ )	0.0	+0.23	-0.32	+1.57	+0.37 ( $\pm 0.244$ )
<u>Fosters</u>					
Mean	19.59	19.57	19.36	18.63	19.28
N: cwt per acre					
0.5	19.15	19.36	19.33	18.38	19.06
1.0	20.02	19.77	19.38	18.88	19.51
Difference ( $\pm 0.669$ )	+0.87	+0.41	+0.05	+0.50	+0.45 ( $\pm 0.334$ )
Dung: tons per acre					
None	18.61	18.57	18.83	17.08	18.27
12	20.56	20.56	19.88	20.19	20.30
Difference ( $\pm 0.669$ )	+1.95	+1.99	+1.05	+3.11	+2.03 ( $\pm 0.334$ )
P <sub>25</sub> <sup>0</sup> : cwt per acre*					
0.9	19.68	19.10	19.11	18.43	19.08
1.8	19.49	20.03	19.60	18.83	19.49
Difference ( $\pm 0.356$ )	-0.19	+0.93	+0.49	+0.40	+0.41 ( $\pm 0.178$ )
K <sub>20</sub> : cwt per acre*					
0.9	19.42	19.73	18.96	18.35	19.11
1.8	19.75	19.41	19.75	18.91	19.46
Difference ( $\pm 0.356$ )	+0.33	-0.32	+0.79	+0.56	+0.35 ( $\pm 0.178$ )

\*Including basal dressing



60/B/2.11

Potatoes 2nd test crop. Total tubers: tons per acre

	Dung: tons per acre	P <sub>2</sub> O <sub>5</sub> : cwt* per acre	K <sub>2</sub> O: cwt* per acre
	None 12	0.9 1.8	0.9 1.8
<u>Highfield</u>			
N: cwt per acre	(±0.401)	(1) and (2)	(1) and (2)
0.5	18.44 21.18	19.84 19.78	19.65 19.97
1.0	19.54 21.18	20.41 20.31	20.15 20.57
Dung: tons per acre		(1) and (2)	(1) and (2)
None		19.02 18.96	18.61 19.37
12		21.23 21.13	21.19 21.17

<u>Lucerne rotation only</u>	K <sub>2</sub> O: cwt per acre*		Mean
	0.9	1.8	
P <sub>2</sub> O <sub>5</sub> : cwt per acre*	(3) and (4)		
0.9	21.07	21.42	21.25
1.8	21.19	20.84	21.01
Mean	21.13	21.13	21.13

	Dung: tons per acre	P <sub>2</sub> O <sub>5</sub> : cwt* per acre	K <sub>2</sub> O: cwt* per acre
	None 12	0.9 1.8	0.9 1.8

<u>Fosters</u>			
N: cwt per acre	(±0.334)	(1) and (2)	(1) and (2)
0.5	17.78 20.33	18.78 19.33	19.03 19.08
1.0	18.77 20.26	19.38 19.65	19.20 19.83
Dung: tons per acre		(1) and (2)	(1) and (2)
None		17.95 18.59	17.73 18.81
12		20.21 20.39	20.50 20.10

<u>Lucerne rotation only</u>	K <sub>2</sub> O: cwt per acre*		Mean
	0.9	1.8	
P <sub>2</sub> O <sub>5</sub> : cwt per acre*	(3) and (4)		
0.9	19.50	19.86	19.68
1.8	19.35	19.64	19.49
Mean	19.42	19.75	19.59

\*Including basal dressing

<u>Highfield</u>	<u>Fosters</u>	
(1) ±0.244	(1) ±0.178	for use in horizontal and interaction comparisons.
(2) ±0.332	(2) ±0.268	for use in all others.
(3) ±0.802	(3) ±0.669	for use only in testing the FK interaction.
(4) ±0.664	(4) ±0.536	for use in all other comparisons.



60/B/2.12

Potatoes 2nd test crop. Percentage ware ( $1\frac{1}{2}$ " riddle)

	Treatment crops 1956-1958				Mean
	Lucerne	Ley	Cut Grass	Arable with hay	
	<u>Highfield</u>				
Mean	94.5	94.4	93.6	94.2	94.2
N: cwt per acre					
0.5	94.3	94.2	93.9	94.3	94.2
1.0	94.8	94.6	93.3	94.0	94.2
Difference	+0.5	+0.4	-0.6	-0.3	0.0
Dung: tons per acre					
None	94.1	93.7	92.8	93.1	93.4
12	94.9	95.1	94.4	95.2	94.9
Difference	+0.8	+1.4	+1.6	+2.1	+1.5
P <sub>2</sub> O <sub>5</sub> : cwt per acre*					
0.9	95.0	94.8	93.7	94.6	94.5
1.8	94.1	94.1	93.5	93.7	93.8
Difference	-0.9	-0.7	-0.2	-0.9	-0.7
K <sub>2</sub> O: cwt per acre*					
0.9	94.2	93.7	93.3	93.4	93.7
1.8	94.8	95.2	93.8	95.0	94.7
Difference	+0.6	+1.5	+0.5	+1.6	+1.0
	<u>Fosters</u>				
Mean	95.2	95.5	95.7	94.7	95.3
N: cwt per acre					
0.5	95.2	94.9	96.0	94.9	95.2
1.0	95.2	96.2	95.3	94.6	95.3
Difference	0.0	+1.3	-0.7	-0.3	+0.1
Dung: tons per acre					
None	95.3	95.6	95.8	94.7	95.4
12	95.1	95.5	95.6	94.7	95.2
Difference	-0.2	-0.1	-0.2	0.0	-0.2
P <sub>2</sub> O <sub>5</sub> : cwt per acre*					
0.9	95.2	95.3	95.8	94.9	95.3
1.8	95.2	95.8	95.5	94.6	95.3
Difference	0.0	+0.5	-0.3	-0.3	0.0
K <sub>2</sub> O: cwt per acre*					
0.9	95.0	95.4	95.8	94.2	95.1
1.8	95.4	95.7	95.6	95.3	95.5
Difference	+0.4	+0.3	-0.2	+1.1	+0.4

\*Including basal dressing



60/B/2.13

Potatoes 2nd test crop. Percentage ware (1½" riddle)

	Dung: tons per acre		P <sub>2</sub> O <sub>5</sub> : cwt per acre*		K <sub>2</sub> O: cwt per acre*	
	None	12	0.9	1.8	0.9	1.8

Highfield

N: cwt per acre						
0.5	93.4	95.0	94.5	93.8	93.5	94.8
1.0	93.5	94.9	94.5	93.8	93.8	94.6
Dung: tons per acre						
None			93.9	92.9	92.6	94.2
12			95.1	94.8	94.7	95.2

Lucerne rotation only

K<sub>2</sub>O: cwt per acre\*

	0.9	1.8	Mean
P <sub>2</sub> O <sub>5</sub> : cwt per acre*			
0.9	94.7	95.3	95.0
1.8	93.7	94.4	94.1
Mean	94.2	94.8	94.5

	Dung: tons per acre		P <sub>2</sub> O <sub>5</sub> : cwt per acre*		K <sub>2</sub> O: cwt per acre*	
	None	12	0.9	1.8	0.9	1.8

Fosters

N: cwt per acre						
0.5	95.2	95.3	95.5	95.0	94.9	95.5
1.0	95.5	95.2	95.1	95.6	95.2	95.5
Dung: tons per acre						
None			95.4	95.3	95.2	95.5
12			95.2	95.2	94.9	95.5

Lucerne rotation only

K<sub>2</sub>O: cwt per acre\*

	0.9	1.8	Mean
P <sub>2</sub> O <sub>5</sub> : cwt per acre*			
0.9	94.7	95.6	95.2
1.8	95.2	95.2	95.2
Mean	95.0	95.4	95.2

\*Including basal dressing



60/B/2.14

Barley 3rd test crop. Grain (at 85% dry matter): cwt per acre

	Treatment crops 1955-1957				Mean
	Lucerne	Ley	Cut Grass	Arable with hay	
<u>Highfield</u>					
Mean	47.5	43.6	48.6	49.1	47.2
N: cwt per acre					
None	50.4	44.5	48.7	47.1	47.6
0.2	44.7	42.7	48.5	51.2	46.8
Difference ( $\pm 1.46$ )	-5.7	-1.8	-0.2	+4.1	-0.8 ( $\pm 0.73$ )
Dung to potatoes 1959: tons per acre					
None	48.3	42.5	48.8	48.6	47.0
12	46.7	44.7	48.4	49.7	47.4
Difference ( $\pm 1.46$ )	-1.6	+2.2	-0.4	+1.1	+0.4 ( $\pm 0.73$ )
<u>Fosters</u>					
Mean	47.4	46.5	45.4	46.1	46.4
N: cwt per acre					
0.2	45.4	44.0	44.8	44.4	44.6
0.4	49.5	48.9	45.9	47.9	48.1
Difference ( $\pm 1.46$ )	+4.1	+4.9	+1.1	+3.5	+3.5 ( $\pm 0.73$ )
Dung to potatoes 1959: tons per acre					
None	46.8	46.1	44.1	46.5	45.9
12	48.1	46.8	46.7	45.8	46.8
Difference ( $\pm 1.46$ )	+1.3	+0.7	+2.6	-0.7	+0.9 ( $\pm 0.73$ )
		<u>Highfield</u>		<u>Fosters</u>	
		N: cwt per acre		N: cwt per acre	
		None	0.2	0.2	0.4
Dung to potatoes 1959: tons per acre		( $\pm 0.73$ )		( $\pm 0.72$ )	
None		46.8	47.2	44.2	47.6
12		48.4	46.3	45.1	48.6
Mean dry matter % as harvested:					
Highfield: 77.0					
Fosters: 79.5					



60/B/2.15

Barley 3rd test crop. Straw (at 85% dry matter): cwt per acre

	Treatment crops 1955-1957				Mean
	Lucerne	Ley	Cut Grass	Arable with hay	
	<u>Highfield</u>				
Mean	37.3	38.6	34.9	32.3	35.8
N: cwt per acre					
None	35.3	36.6	33.6	29.2	33.7
0.2	39.4	40.5	36.1	35.4	37.9
Difference	+4.1	+3.9	+2.5	+6.2	+4.2
Dung to potatoes 1959: tons per acre					
None	35.1	38.6	33.7	31.2	34.6
12	39.6	38.5	36.1	33.4	36.9
Difference	+4.5	-0.1	+2.4	+2.2	+2.3
	<u>Fosters</u>				
Mean	33.9	32.2	31.0	33.0	32.5
N: cwt per acre					
0.2	31.9	30.4	27.8	30.8	30.2
0.4	36.0	34.1	34.2	35.2	34.9
Difference	+4.1	+3.7	+6.4	+4.4	+4.7
Dung to potatoes 1959: tons per acre					
None	33.7	31.0	29.3	31.8	31.5
12	34.2	33.4	32.7	34.1	33.6
Difference	+0.5	+2.4	+3.4	+2.3	+2.1

	<u>Highfield</u>		<u>Fosters</u>	
	N: cwt per acre		N: cwt per acre	
	None	0.2	0.2	0.4
Dung to potatoes 1959: tons per acre				
None	32.5	36.8	28.7	34.2
12	34.8	38.9	31.7	35.5

Mean dry matter % as harvested:  
 Highfield: 88.5  
 Fosters: 85.0



60/B/2.16

Treatment crops Arable and Hay rotation  
(values based on mean of 2 sub plots only)

	Highfield			Mean	Fosters		
	N: cwt per acre applied in 1960		Mean		N: cwt per acre applied in 1960		Mean
	Single rate	Double rate			Single rate	Double rate	
<u>Hay (dry matter): cwt per acre</u>							
No dung	43.1	48.9	46.0	31.9	40.3	36.1	
Dung in 1958	47.6	49.4	48.5	33.8	39.5	36.6	
Mean	45.4	49.1	47.2	32.9	39.9	36.4	
<u>Potatoes, total tubers: tons per acre</u>							
No dung	18.61	18.04	18.32	18.51	18.68	18.60	
Dung in 1960	20.14	19.80	19.97	20.97	20.38	20.68	
Mean	19.38	18.92	19.15	19.74	19.53	19.64	
<u>Potatoes, percentage ware (1½" riddle)</u>							
No dung	95.1	93.6	94.4	94.5	95.0	94.8	
Dung in 1960	96.2	96.4	96.2	94.2	94.4	94.3	
Mean	95.6	95.0	95.3	94.4	94.7	94.5	
<u>Oats</u>							
	None	0.2		0.2	0.4		
<u>Grain (at 85% dry matter): cwt per acre</u>							
No dung	33.6	34.4	34.0	37.6	42.8	40.2	
Dung in 1959	38.7	37.3	38.0	38.7	41.4	40.1	
Mean	36.2	35.9	36.0	38.2	42.1	40.1	
<u>Straw (at 85% dry matter): cwt per acre</u>							
No dung	28.8	27.8	28.3	27.2	33.4	30.4	
Dung in 1959	34.8	33.2	34.0	28.9	32.1	30.5	
Mean	31.8	30.5	31.2	28.1	32.8	30.4	

Highfield, Oats, Mean dry matter % as harvested Grain: 73.8 Straw: 76.8  
Fosters, Oats, Mean dry matter % as harvested Grain: 79.2 Straw: 73.8



Cut grass. Dry matter: cwt per acre

	Highfield		Mean	Fosters		Mean
	N to previous 3 test crops Single rate Double rate	Dung to potatoes 1958: tons per acre None 12		N to previous 3 test crops Single rate Double rate	Dung to potatoes 1958: tons per acre None 12	
1st year						
N (1) to cut grass (4 cuts)						
Single rate	63.1	60.5	60.6	56.4	58.3	55.8
Double rate	66.1	63.8	66.1	61.5	63.0	62.0
N to test crops						
Single rate		63.0	64.6		60.4	58.9
Double rate		61.2	62.1		60.8	59.0
Mean		62.1	63.4		60.6	58.9
	Highfield		Mean	Fosters		Mean
	N to cut grass (1) Single rate Double rate	Dung to potatoes 1958: tons per acre None 12		N to cut grass (1) Single rate Double rate	Dung to potatoes 1958: tons per acre None 12	
2nd year (5 cuts)	66.8	78.9		51.7	61.0	
3rd year (4 cuts)	51.1	62.7		47.4	57.5	



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Lucerne. Dry Matter: cwt per acre

1st year (2 cuts)	Highfield			Fosters		
	N to 3 previous test crops		Mean	N to 3 previous test crops		Mean
Single rate	Double rate	Single rate		Double rate		
Dung to potatoes 1958						
None	42.1	47.4	44.7	44.0	58.3	51.1
12 tons	41.6	54.0	47.8	44.7	44.0	44.3
Mean	41.9	50.7	46.3	44.3	51.1	47.7
<u>2nd year</u> (3 cuts)			94.2			115.9
<u>3rd year</u> (3 cuts)			80.0			117.4

Grazed Ley. Dry matter: cwt per acre (estimated from sample cuts)

	Highfield			Fosters		
	N: cwt per acre (yearly)		Mean	N: cwt per acre (yearly)		Mean
0.15	0.30	0.15		0.30		
1st year	42.4	38.2	40.3	37.9	37.1	37.5
2nd year	33.7	42.5	38.1	24.8	31.2	28.0
3rd year	27.6	35.9	31.7	20.1	24.7	22.4



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Reseeded Grass. Dry matter: cwt per acre

	Cut for silage		Mean	Grazed Estimated from sampling cuts		
	N			N		Mean
	Single rate	Double rate		Single rate	Double rate	
<u>Highfield</u>						
10th exptl. year						
Blocks 10 and 12				25.3*	33.3*	29.3*
Blocks 9 and 11	20.1	24.1	22.1	22.8*	28.4*	25.6*
11th exptl. year						
Blocks 7 and 8				28.2*	36.7*	32.5*
Blocks 5 and 6	28.3	30.8	29.6	23.0*	22.0*	22.5*
12th exptl. year						
Blocks 1 and 3				28.4*	31.0*	29.7*
Blocks 2 and 4	30.0	35.7	32.8	22.2*	27.3*	24.7*
<u>Fosters</u>						
10th exptl. year						
Blocks 6 and 10				27.9*	35.1*	31.5*
Blocks 11 and 12	15.2	16.6	15.9	31.5*	34.7*	33.1*
11th exptl. year						
Blocks 5 and 9				35.1*	38.8*	37.0*
Blocks 7 and 8	24.7	28.6	26.6	20.4*	25.6*	23.0*
12th exptl. year						
Blocks 1 and 2				28.8*	32.1*	30.4*
Blocks 3 and 4	30.2	33.3	31.7	20.2*	21.1*	20.6*

Permanent Grass. Dry matter: cwt per acre

<u>Highfield</u>						
10th exptl. year						
Blocks 10 and 12				20.7*	30.8*	25.7*
Blocks 9 and 11	24.6	27.3	26.0	24.4*	28.4*	26.4*
11th exptl. year						
Blocks 7 and 8				28.2*	39.2*	33.7*
Blocks 5 and 6	22.6	27.7	25.1	20.9*	25.3*	23.1*
12th exptl. year						
Blocks 1 and 3				26.4*	37.5*	32.0*
Blocks 2 and 4	25.7	27.0	26.4	27.0*	32.3*	29.7*

\*Aftermath grazing