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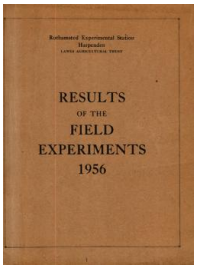
Yields of the Field Experiments 1956

Full Table of Content



56/R/BC/1 Ley and Arable Rotations

Rothamsted Research

Rothamsted Research (1957) *56/R/BC/1 Ley and Arable Rotations ;* Yields Of The Field Experiments 1956, pp 32 - 49 **- DOI: https://doi.org/10.23637/ERADOC-1-176**

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LEY AND ARABLE ROTATIONS

Highfield and Fosters Field 1956 - the 8th year.

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

Rates of application of supplementary (corrective) potash (K_2O: cwt per acre)

Crop	Year of cycle	Rate	
Cut grass	"1st treatment"	3.0	(3 years previous cutting)
	"2nd treatment"	1.5	(received supplement in 1955)
	"3rd treatment"	1.5	(received supplement in 1955)
Lucerne	"1st treatment"	3.0	(3 years previous lucerne)
	"2nd treatment"	1.0	(received supplement in 1955)
	"3rd treatment"	1.0	(received supplement in 1955)
Permanent and Reseeded	"1st treatment"	1.2	(1 previous hay crop taken)
Remainder		None	

Cultivations, etc.:

HIGHFIELD

1st year Treatment Crops

Cut grass. Ploughed twice: Sept 8, 1955 and Nov 29. 1st dressing of supplementary K applied: Mar 9, 1956. Basal PK and 'Nitro-Chalk' applied: Apr 17. Seed sown at 33 lb per acre: Apr 19. 2nd dressing of supplementary K applied: July 11. Cut 4 times: July 10, Aug 9, Sept 6, Nov 12. 'Nitro-Chalk' applied after each cut except the last.

Grazed ley. Ploughed twice: Sept 8, 1955 and Nov 29. Basal PK applied: Apr 17, 1956. 'Nitro-Chalk' applied: Apr 18. Seed sown at 44 lb per acre: Apr 19. 'Nitro-Chalk' applied: Aug 23. Grazed: 7 - 8 circuits, July 5 - Nov 1.

Lucerne. Ploughed twice: Sept 8, 1955 and Nov 29. 1st dressing of supplementary K applied: Mar 9, 1956. Basal PK applied: Apr 17. Seed drilled at 28 lb per acre: Apr 19. 2nd dressing of supplementary K applied: Aug 3. Cut twice: Aug 3, Nov 9. Variety: Du Puits.

Hay. Seeds undersown in barley at 28 lb per acre: Apr 25, 1955. Basal PK applied: Dec 5. 'Nitro-Chalk' applied: Mar 20, 1956. Cut: June 27.

2nd year Treatment Crops

Cut grass. Basal PK applied: Dec 6, 1955. Supplementary K applied: Mar 9, 1956. 'Nitro-Chalk' applied: Mar 15 and after each cut except the last. Cut 6 times: May 16, June 20, July 10, Aug 9, Sept 6, Nov 12.

Grazed ley. Basal PK applied: Dec 6, 1955. 'Nitro-Chalk' applied: May 7, 1956 and Aug 23. Grazed: 9 circuits, Apr 24 - Oct 28.

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Lucerne. Basal PK applied: Dec 6, 1955. Supplementary K applied: Mar 9, 1956. Cut 3 times: June 21, Aug 2, Nov 9.

Potatoes. Ploughed twice: June 11, 1955 and Oct 14. Ridged: Mar 26, 1956. Basal PK applied: Mar 27. Sulphate of ammonia and dung applied, potatoes planted: Mar 29. For later cultivations see Potato Test Crop.

3rd year Treatment Crops

Cut grass. Basal PK applied: Dec 6, 1955. Supplementary K applied: Mar 9, 1956. 'Nitro-Chalk' applied: Mar 15 and after each cut except the last. Cut 6 times: May 16, June 20, July 10, Aug 9, Sept 6, Oct 18.

Grazed ley. Basal PK applied: Dec 6, 1955. 'Nitro-Chalk' applied: May 7, 1956 and Aug 23. Grazed: 8 circuits, Apr 28 - Oct 5.

Lucerne. Basal PK applied: Dec 6, 1955. Sprayed with TCA (Sodium trichloracetate), 20 lb in 90 gallons per acre: Mar 8, 1956. Supplementary K applied: Mar 9. Cut 3 times: June 21, Aug 3, Oct 18.

Oats. Ploughed: Oct 14, 1955. 'Nitro-Chalk' applied, seed drilled at $3\frac{1}{2}$ bushels per acre with basal PK: Mar 13, 1956. Combine harvested: Sept 15. Variety: Sun II.

1st Test Crop, Wheat

Ploughed after oats: Sept 8, 1955. Ploughed leys: Oct 25 - 27. Seed drilled at $2\frac{3}{4}$ bushels per acre with basal PK: Nov 1. 'Nitro-Chalk' applied: Apr 25, 1956. Sprayed with MCPA, 3 pints in 40 gallons per acre: May 22. Combine harvested: Sept 17. Variety: Yeoman.

2nd Test Crop, Potatoes

Ploughed twice: Sept 8, 1955 and Nov 29. Ridged: Mar 26, 1956. Basal PK applied: Mar 27. Dung, sulphate of ammonia and additional P and K applied, potatoes planted: Mar 29. Earthed up: June 22. Sprayed with copper fungicide, 5 lb in 40 gallons per acre: July 25. Sprayed with sulphuric acid, 20% BOV at 80 gallons per acre: Sept 13. Lifted: Oct 12. Variety: Majestic.

3rd Test Crop, Barley

Ploughed: Oct 14, 1955. Ground chalk applied to blocks 9 and 12: Dec 5. 'Nitro-Chalk' applied: Mar 13, 1956. Seed drilled at 2 bushels per acre with basal PK: Mar 14. Combine harvested: Sept 15 - 17. Variety: Proctor.

Permanent grasses. Basal PK applied to all plots: Dec 6, 1955.

6th year reseeded, 6th experimental year of permanent grass, Blocks 9-12.

Blocks 9 and 12. Ground chalk applied: Dec 5, 1955. 'Nitro-Chalk' applied to reseeded grass: May 30, 1956 and Sept 7. 'Nitro-Chalk' applied to permanent grass: June 4 and Aug 27. Grazed: 8 circuits, May 6 - Nov 3.

Blocks 10 and 11. 'Nitro-Chalk' to reseeded grass: May 28, 1956 and Sept 3. 'Nitro-Chalk' to permanent grass: May 30 and Aug 27. Grazed: 8 circuits, May 6 - Oct 30.

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7th year reseeded, 7th experimental year of permanent grass, Blocks 5-8.
Blocks 5 and 8. Supplementary K applied: Mar 9, 1956. 'Nitro-Chalk' applied: Mar 20. Cut for hay, 'Nitro-Chalk' applied: June 27. Grazed aftermath: 4 circuits, July 21 - Oct 22.
Blocks 6 and 7. 'Nitro-Chalk' applied: May 24 - 26, 1956 and Aug 23. Grazed: 3 circuits, May 2 - Oct 30.

8th year reseeded, 8th experimental year of permanent grass, Blocks 1-4. 'Nitro-Chalk' applied: Mar 18, 1956 and Aug 27 - Sept 3. Grazed: 8-9 circuits, Apr 24 - Nov 7.

FOSTERS

1st year Treatment Crops

Cut grass. Ploughed twice: Sept 7, 1955 and Nov 28. 1st dressing of supplementary K applied: Mar 8, 1956. Basal PK applied: Mar 17. 'Nitro-Chalk' applied: Mar 18. Seed sown at 33 lb per acre: Mar 19. 2nd dressing of supplementary K applied: July 12. Cut 4 times: July 11, Aug 8, Sept 8, Nov 12. 'Nitro-Chalk' applied after each cut except the last.

Grazed ley. Ploughed twice: Sept 8, 1955 and Nov 29. Basal PK applied: Apr 17, 1956. 'Nitro-Chalk' applied: Apr 18. Seed sown at 44 lb per acre: Apr 19. 'Nitro-Chalk' applied: Aug 24. Grazed: 5 circuits, July 6 - Oct 19.

Lucerne. Ploughed twice: Sept 7, 1955 and Nov 28. 1st dressing of supplementary K applied: Mar 8, 1956. Basal PK applied: Apr 17. Seed drilled at 28 lb per acre: Apr 19. 2nd dressing of supplementary K applied: Aug 2. Cut twice: Aug 1 and Nov 9. Variety: Du Puits.

Hay. Seeds undersown in barley at 28 lb per acre: Apr 25, 1955. Basal PK applied: Dec 5. 'Nitro-Chalk' applied: Mar 20, 1956. Cut: June 25.

2nd year Treatment Crops

Cut grass. Basal PK applied: Dec 5, 1955. Supplementary K applied: Mar 8, 1956. 'Nitro-Chalk' applied: Mar 14 and after each cut except the last. Cut 6 times: May 16, June 20, July 11, Aug 8, Sept 8, Nov 12.

Grazed ley. Basal PK applied: Dec 5, 1955. 'Nitro-Chalk' applied: May 7, 1956 and Aug 25. Grazed: 7-8 circuits, Apr 25 - Oct 23.

Lucerne. Basal PK applied: Dec 6, 1955. Supplementary K applied: Mar 8, 1956. Cut 3 times: June 22, July 31, Nov 9.

Potatoes. Ploughed twice: June 11, 1955 and Oct 14. Ridged: Mar 26, 1956. Basal PK applied: Mar 27. Sulphate of ammonia and dung applied, potatoes planted: Mar 28. For later cultivations see Potato Test Crop.

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3rd year Treatment Crops

Cut grass. Basal PK applied: Dec 5, 1955. Supplementary K applied: Mar 8, 1956. 'Nitro-Chalk' applied: Mar 14 and after each cut except the last. Cut 6 times: May 16, June 20, July 11, Aug 8, Sept 8, Oct 19.

Grazed ley. Basal PK applied: Dec 5, 1955. 'Nitro-Chalk' applied: May 7, 1956 and Aug 24. Grazed: 7 circuits, Apr 29 - Oct 15.

Lucerne. Basal PK applied: Dec 5, 1955. Supplementary K applied: Mar 8, 1956. Cut 3 times: June 22, July 31, Oct 19.

Oats. Ploughed: Oct 13, 1955. 'Nitro-Chalk' applied, seed drilled at $3\frac{1}{2}$ bushels per acre with basal PK: Mar 13, 1956. Combine harvested: Sept 14. Variety: Sun II.

1st Test Crop, Wheat

Ploughed after oats: Sept 7, 1955. Ploughed leys: Oct 27. Seed drilled at $2\frac{3}{4}$ bushels per acre with basal PK: Nov 1. 'Nitro-Chalk' applied: Apr 25, 1956. Sprayed with MCPA, 3 pints in 40 gallons per acre: May 17. Combined harvested: Sept 4. Variety: Yeoman.

2nd Test Crop, Potatoes

Ploughed twice: Sept 7, 1955 and Nov 28. Ridged: Mar 26, 1956. Basal PK applied: Mar 27. Dung, sulphate of ammonia and additional P and K applied, potatoes planted: Mar 27 - 28. Earthed up: June 22. Sprayed with copper sulphate, 5 lb in 40 gallons per acre: July 24. Sprayed with sulphuric acid, 20% BOV at 80 gallons per acre: Sept 13. Lifted: Oct 9. Variety: Majestic.

3rd Test Crop, Barley

Ploughed: Oct 13, 1955. 'Nitro-Chalk' applied: Mar 13, 1956. Seed drilled at 2 bushels per acre with basal PK: Mar 14. Combine harvested: Sept 14. Variety: Proctor.

Note: One block received a basal dressing of sulphate of ammonia in error.

Permanent grasses. Basal PK applied to all plots: Dec 5, 1955.

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

'Nitro-Chalk' applied: May 14, 1956 and Aug 25. Grazed: 7 circuits, May 3 - Oct 27.

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

Blocks 5 and 7. Supplementary K applied: Mar 8, 1956. 'Nitro-Chalk' applied: Mar 20. Cut for hay, 'Nitro-Chalk' applied: June 25. Grazed aftermath: 4 circuits, July 28 - Oct 7.

Blocks 8 and 9. 'Nitro-Chalk' applied: May 14, 1956 and Aug 24. Grazed: 7 circuits, May 3 - Oct 19.

8th year reseeded grass, Blocks 1, 2, 3, 4.

'Nitro-Chalk' applied: May 14, 1956 and Aug 29 - Sept 3. Grazed: 8-9 circuits, Apr 25 - Oct 31.

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Standard errors per ¼ plot. Test Crops.

Wheat, grain (at 85% dry matter).	Highfield:	1.78 cwt per acre or 5.5%	(13 d.f.)
	Fosters:	1.36 cwt per acre or 3.8%	(13 d.f.)
Potatoes, total tubers.	Highfield ¼ plot:	1.507 tons per acre or 9.4%	(14 d.f.)
	⅛ plot:	1.134 tons per acre or 7.1%	(20 d.f.)
	Fosters ¼ plot:	0.531 tons per acre or 3.7%	(14 d.f.)
	⅛ plot:	1.011 tons per acre or 7.1%	(20 d.f.)
Barley, grain (at 85% dry matter).	Highfield:	2.73 cwt per acre or 8.0%	(15 d.f.)
	Fosters:	1.64 cwt per acre or 4.2%	(15 d.f.)

Summary of Results

Wheat 1st test crop

N: cwt per acre	Treatment crops 1953-1955: Lucerne	Ley	Cut Grass	Arable with hay	Mean
Grain (at 85% dry matter): cwt per acre					
Highfield					
Mean	34.2	36.2	20.4	39.7	32.6
To test crop					
0.3	34.8	36.9	21.4	38.2	32.8
0.6	33.7	35.4	19.5	41.1	32.4
Difference (±1.26)	-1.1	-1.5	-1.9	+2.9	-0.4 (± 0.63)
To treatment crops					
Single rate		36.3	22.2	39.2	32.6
Double rate		36.1	18.7	40.1	31.6
Difference (±1.26)		-0.2	-3.5	+0.9	-1.0 (± 0.73)
Fosters					
Mean	41.7	36.1	33.8	30.5	35.5
To test crop					
0.3	40.4	34.6	32.0	27.1	33.5
0.6	43.0	37.6	35.7	34.0	37.6
Difference (±0.96)	+2.6	+3.0	+3.7	+6.9	+4.1 (± 0.48)
To treatment crops					
Single rate		35.2	33.4	28.8	32.5
Double rate		37.0	34.3	32.3	34.5
Difference (±0.96)		+1.8	+0.9	+3.5	+2.0 (± 0.56)

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Wheat 1st test crop

N: cwt per acre	Excluding Lucerne: N to previous treatment crop, Single rate	Excluding Lucerne: N to previous treatment crop, Double rate	Excluding Lucerne: Mean	Arable with hay only: Dung to potatoes 1954: tons per acre, None	Arable with hay only: Dung to potatoes 1954: tons per acre, 12	Arable with hay only: Mean
Grain (at 85% dry matter): cwt per acre						
Highfield						
To test crop	(± 0.73)		(± 0.51)	(± 1.26)		(± 0.89)
0.3	32.0	32.4	32.2	37.0	39.3	38.2
0.6	33.2	30.9	32.0	39.3	42.9	41.1
Mean	32.6	31.6	32.1	38.2	41.1	39.7
	(± 0.51)			(± 0.89)		
To previous treatment crops				(± 1.26)		(± 0.89)
Single rate				37.9	40.4	39.2
Double rate				38.5	41.8	40.1
Mean				38.2	41.1	39.7
				(± 0.89)		
Mean dry matter % as harvested: 81.6						
Fosters						
To test crop	(± 0.56)		(± 0.39)	(± 0.96)		(± 0.68)
0.3	30.2	32.3	31.2	26.7	27.6	27.1
0.6	34.8	36.8	35.8	32.6	35.3	34.0
Mean	32.5	34.5	33.5	29.6	31.5	30.5
	(± 0.39)			(± 0.68)		
To previous treatment crops				(± 0.96)		(± 0.68)
Single rate				28.2	29.3	28.8
Double rate				31.0	33.6	32.3
Mean				29.6	31.5	30.5
				(± 0.68)		
Mean dry matter % as harvested: 71.4						

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Wheat 1st test crop

N: cwt per acre	Treatment crops 1953-1955 Lucerne	Ley	Cut Grass	Arable with hay	Mean
Straw (at 85% dry matter): cwt per acre					
Highfield					
Mean	24.2	37.1	15.3	26.7	25.8
To test crop					
0.3	24.8	37.3	15.0	28.9	26.5
0.6	23.6	37.0	15.6	24.5	25.2
Difference	-1.2	-0.3	+0.6	-4.4	-1.3
To treatment crops					
Single rate		36.3	17.2	25.8	26.4
Double rate		38.0	13.4	27.6	26.3
Difference		+1.7	-3.8	+1.8	-0.1
Fosters					
Mean	26.2	27.5	22.0	21.2	24.2
To test crop					
0.3	27.1	26.7	20.4	18.9	23.3
0.6	25.3	28.3	23.6	23.4	25.2
Difference	-1.8	+1.6	+3.2	+4.5	+1.9
To treatment crops					
Single rate		27.0	22.9	18.6	22.8
Double rate		27.9	21.2	23.7	24.3
Difference		+0.9	-1.7	+5.1	+1.5

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Wheat 1st test crop

N: cwt per acre	Excluding Lucerne: N to previous treatment crop: Single rate	Double rate	Mean	Arable with hay only: Dung to potatoes 1954: tons per acre: None	12	Mean
Straw (at 85% dry matter): cwt per acre						
Highfield						
To test crop						
0.3	26.4	27.8	27.1	26.7	31.2	28.9
0.6	26.5	24.9	25.7	24.8	24.2	24.5
Mean	26.4	26.3	26.4	25.8	27.7	26.7
To previous treatment crops						
Single rate				26.1	25.6	25.8
Double rate				25.4	29.8	27.6
Mean				25.8	27.7	26.7

Mean dry matter % as harvested: 84.6

Fosters						
To test crop						
0.3	21.0	23.0	22.0	17.1	20.8	18.9
0.6	24.6	25.6	25.1	24.8	21.9	23.4
Mean	22.8	24.3	23.6	21.0	21.4	21.2
To previous treatment crops						
Single rate				18.8	18.5	18.6
Double rate				23.2	24.2	23.7
Mean				21.0	21.4	21.2

Mean dry matter % as harvested: 83.4

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

	Treatment crops 1952-1954				
	Lucerne	Ley	Cut Grass	Arable with hay	Mean
Highfield					
Mean	15.64	17.86	14.81	15.54	15.96
N: cwt per acre					
0.5	16.13	17.89	14.74	15.18	15.98
1.0	15.15	17.82	14.87	15.90	15.94
Difference (±1.066)	-0.98	-0.07	+0.13	+0.72	-0.04 (± 0.533)
Dung: tons per acre					
None	13.10	16.62	13.38	13.92	14.25
12	18.19	19.10	16.23	17.16	17.67
Difference (±1.066)	+5.09	+2.48	+2.85	+3.24	+3.42 (± 0.533)
P_2O_5: cwt per acre*					
0.9	15.75	17.99	14.47	15.12	15.83
1.8	15.54	17.72	15.14	15.96	16.09
Difference (±0.567)	-0.21	-0.27	+0.67	+0.84	+0.26 (± 0.284)
K_2O: cwt per acre*					
0.9	14.53	17.47	13.65	14.40	15.01
1.8	16.75	18.25	15.96	16.67	16.91
Difference (±0.567)	+2.22	+0.78	+2.31	+2.27	+1.90 (± 0.284)
Fosters					
Mean	14.23	14.76	13.37	14.70	14.27
N: cwt per acre					
0.5	14.22	14.40	13.62	14.18	14.10
1.0	14.24	15.12	13.12	15.22	14.43
Difference (±0.375)	+0.02	+0.72	-0.50	+1.04	+0.33 (± 0.188)
Dung: tons per acre					
None	12.95	14.28	12.01	13.37	13.15
12	15.51	15.24	14.73	16.03	15.38
Difference (±0.375)	+2.56	+0.96	+2.72	+2.66	+2.23 (± 0.188)
P_2O_5: cwt per acre*					
0.9	14.44	14.79	12.94	14.53	14.17
1.8	14.02	14.73	13.80	14.87	14.36
Difference (±0.505)	-0.42	-0.06	+0.86	+0.34	+0.19 (± 0.253)
K_2O: cwt per acre*					
0.9	13.65	14.41	13.13	14.68	13.97
1.8	14.81	15.11	13.61	14.72	14.56
Difference (±0.505)	+1.16	+0.70	+0.48	+0.04	+0.59 (± 0.253)

*Including basal dressing

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

	Dung: tons per acre		P_2O_5: cwt per acre*		K_2O: cwt per acre*	
	None	12	0.9	1.8	0.9	1.8
Highfield						
N: cwt per acre	(±0.533)		(1) and (2)		(1) and (2)	
0.5	13.88	18.09	16.07	15.90	15.02	16.95
1.0	14.63	17.25	15.60	16.27	15.01	16.87
Dung: tons per acre			(1) and (2)		(1) and (2)	
None			14.09	14.42	12.51	15.99
12			17.58	17.76	17.51	17.82

Lucerne rotation only	K_2O: cwt per acre* 0.9	1.8	Mean
P_2O_5: cwt per acre*	(3) and (4)		
0.9	14.87	16.63	15.75
1.8	14.19	16.88	15.54
Mean	14.53	16.75	15.64

	Dung: tons per acre		P_2O_5: cwt per acre*		K_2O: cwt per acre*	
	None	12	0.9	1.8	0.9	1.8
Fosters						
N: cwt per acre	(± 0.188)		(1) and (2)		(1) and (2)	
0.5	13.04	15.17	14.08	14.13	13.82	14.38
1.0	13.27	15.58	14.27	14.58	14.11	14.74
Dung: tons per acre			(1) and (2)		(1) and (2)	
None			13.18	13.13	12.59	13.71
12			15.17	15.58	15.34	15.41

Lucerne rotation only	K_2O: cwt per acre* 0.9	1.8	Mean
P_2O_5: cwt per acre*	(3) and (4)		
0.9	13.80	15.09	14.44
1.8	13.49	14.54	14.02
Mean	13.65	14.81	14.23

*Including basal dressing.

Highfield	Fosters	
(1) ±0.284	(1) ±0.253	for use in horizontal and interaction comparisons.
(2) ±0.427	(2) ±0.223	for use in all others.
(3) ±1.066	(3) ±0.375	for use only in testing the PK interaction.
(4) ±0.854	(4) ±0.445	for use in all other comparisons.

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

	Treatment crops 1952-1954				
	Lucerne	Ley	Cut Grass	Arable with hay	Mean
Highfield					
Mean	77.3	74.3	69.6	67.5	72.2
N: cwt per acre					
0.5	80.6	75.3	69.5	70.8	74.0
1.0	74.0	73.3	69.7	64.2	70.3
Difference	-6.6	-2.0	+0.2	-6.6	-3.7
Dung: tons per acre					
None	74.7	75.1	71.7	67.6	72.3
12	79.9	73.5	67.5	67.4	72.1
Difference	+5.2	-1.6	-4.2	-0.2	-0.2
P_2O_5: cwt per acre*					
0.9	79.9	73.7	69.2	65.6	72.1
1.8	74.6	75.0	70.0	69.4	72.2
Difference	-5.3	+1.3	+0.8	+3.8	+0.1
K_2O: cwt per acre*					
0.9	78.0	70.6	70.0	66.0	71.2
1.8	76.6	78.0	69.2	69.0	73.2
Difference	-1.4	+7.4	-0.8	+3.0	+2.0
Fosters					
Mean	91.2	89.3	89.7	91.0	90.3
N: cwt per acre					
0.5	91.4	89.7	90.2	91.8	90.8
1.0	90.9	88.9	89.1	90.3	89.8
Difference	-0.5	-0.8	-1.1	-1.5	-1.0
Dung: tons per acre					
None	90.3	91.3	89.6	90.8	90.5
12	92.0	87.3	89.8	91.4	90.1
Difference	+1.7	-4.0	+0.2	+0.6	-0.4
P_2O_5: cwt per acre*					
0.9	92.2	88.4	89.4	91.2	90.3
1.8	90.1	90.2	89.9	90.9	90.2
Difference	-2.1	+1.8	+0.5	-0.3	-0.1
K_2O: cwt per acre*					
0.9	90.4	89.3	90.3	90.1	90.0
1.8	91.9	89.3	89.0	92.0	90.6
Difference	+1.5	0.0	-1.3	+1.9	+0.6

*Including basal dressing.

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

	Dung: tons per acre		P_2O_5: cwt per acre*		K_2O: cwt per acre*	
	None	12	0.9	1.8	0.9	1.8
Highfield						
N: cwt per acre						
0.5	74.7	73.4	75.0	73.1	73.9	74.2
1.0	69.8	70.8	69.2	71.4	68.4	72.2
Dung: tons per acre						
None			73.0	71.5	71.8	72.7
12			71.2	72.9	70.5	73.6

Lucerne rotation only	K_2O: cwt per acre* 0.9	1.8	Mean
P_2O_5: cwt per acre*			
0.9	81.0	78.9	79.9
1.8	75.0	74.2	74.6
Mean	78.0	76.6	77.3

	Dung: tons per acre		P_2O_5: cwt per acre*		K_2O: cwt per acre*	
	None	12	0.9	1.8	0.9	1.8
Fosters						
N: cwt per acre						
0.5	90.9	90.7	90.4	91.2	90.6	91.0
1.0	90.0	89.5	90.2	89.3	89.5	90.1
Dung: tons per acre						
None			90.9	90.0	90.6	90.3
12			89.7	90.5	89.4	90.8

Lucerne rotation only	K_2O: cwt per acre* 0.9	1.8	Mean
P_2O_5: cwt per acre*			
0.9	90.5	94.0	92.2
1.8	90.4	89.8	90.1
Mean	90.4	91.9	91.2

*Including basal dressing.

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

	Treatment crops 1951-1953				
	Lucerne	Ley	Cut Grass	Arable with hay	Mean
Highfield					
Mean	31.5	33.2	35.9	36.8	34.3
N: cwt per acre					
None	32.8	33.9	35.4	39.7	35.4
0.2	30.2	32.5	36.4	34.0	33.3
Difference (±1.93)	-2.6	-1.4	+1.0	-5.7	-2.1 (± 0.97)
Dung to potatoes 1955: tons per acre					
None	30.6	32.6	37.2	35.9	34.1
12	32.3	33.8	34.6	37.7	34.6
Difference (±1.93)	+1.7	+1.2	-2.6	+1.8	+0.5 (± 0.97)
Fosters					
Mean	36.7	38.8	40.3	39.8	38.9
N: cwt per acre					
0.2	36.6	39.3	41.6	39.9	39.3
0.4	36.9	38.4	39.1	39.7	38.5
Difference (±1.16)	+0.3	-0.9	-2.5	-0.2	-0.8 (± 0.58)
Dung to potatoes 1955: tons per acre					
None	38.2	38.9	40.3	40.5	39.5
12	35.3	38.7	40.4	39.1	38.4
Difference (±1.16)	-2.9	-0.2	+0.1	-1.4	-1.1 (± 0.58)

	Highfield		Fosters	
	N: cwt per acre		N: cwt per acre	
	None	0.2	0.2	0.4
Dung to potatoes 1955: tons per acre	(±0.97)		(±0.58)	
None	36.4	31.8	39.6	39.4
12	34.5	34.7	39.1	37.6

Mean dry matter % as harvested:
Highfield: 79.3
Fosters: 80.3

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Barley 3rd test crop. Straw: cwt per acre

	Treatment crops 1951-53				
	Lucerne	Ley	Cut Grass	Arable with hay	Mean
Highfield*					
Mean	38.4	37.5	33.5	35.4	36.2
N: cwt per acre					
None	38.1	33.9	33.9	33.1	34.8
0.2	38.7	41.1	33.1	37.8	37.7
Difference	+0.6	+7.2	-0.8	+4.7	+2.9
Dung to potatoes 1955: tons per acre					
None	35.8	36.8	31.2	34.2	34.5
12	41.1	38.2	35.8	36.7	37.9
Difference	+5.3	+1.4	+4.6	+2.5	+3.4
Fosters					
Mean	27.7	30.0	28.2	29.6	28.9
N: cwt per acre					
0.2	26.5	28.5	28.0	29.5	28.1
0.4	29.0	31.5	28.5	29.6	29.6
Difference	+2.5	+3.0	+0.5	+0.1	+1.5
Dung to potatoes 1955: tons per acre					
None	27.7	29.1	28.1	30.1	28.8
12	27.8	30.9	28.4	29.0	29.0
Difference	+0.1	+1.8	+0.3	-1.1	+0.2

	Highfield		Fosters	
	N: cwt per acre		N: cwt per acre	
	None	0.2	0.2	0.4
Dung to potatoes 1955: tons per acre				
None	33.5	35.5	28.2	29.3
12	36.0	39.8	28.1	30.0

Mean dry matter % as harvested:
Highfield: 73.7
Fosters: 84.0

*At 85% dry matter.

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Treatment crops Arable and Hay rotation

(values based on Mean of 2 sub plots only)

	Highfield N: cwt per acre applied in 1956			Fosters N: cwt per acre applied in 1956		
	Single rate	Double rate	Mean	Single rate	Double rate	Mean
Hay (dry matter): cwt per acre						
No dung	50.7	59.2	55.0	41.4	48.3	44.9
Dung in 1954	61.0	55.4	58.2	39.6	57.0	48.3
Mean	55.8	57.3	56.6	40.5	52.7	46.6
Potatoes, total tubers: tons per acre						
No dung	11.78	13.14	12.46	12.77	12.17	12.47
Dung in 1956	17.46	18.91	18.19	14.35	15.14	14.74
Mean	14.62	16.03	15.32	13.56	13.66	13.61
Potatoes, percentage ware (1½" riddle)						
No dung	64.2	73.0	68.6	92.2	89.3	90.8
Dung in 1956	71.1	74.2	72.6	88.6	90.4	89.5
Mean	67.7	73.6	70.6	90.4	89.9	90.2
Oats						
	None	0.2		0.2	0.4	
Grain (at 85% dry matter): cwt per acre						
No dung	30.6	30.0	30.3	33.6	38.7	36.2
Dung in 1955	32.4	30.2	31.3	37.1	34.4	35.8
Mean	31.5	30.1	30.8	35.3	36.6	36.0
Straw: cwt per acre						
No dung	32.7	28.7	30.7	25.0	24.2	24.6
Dung in 1955	25.8	31.2	28.5	25.5	33.3	29.4
Mean	29.2	29.9	29.6	25.3	28.7	27.0

Highfield, Oats, Mean dry matter % as harvested Grain: 78.3 Straw: 85.7
Fosters, Oats, Mean dry matter % as harvested Grain: 81.5 Straw: 84.7

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Cut grass. Dry Matter: cwt per acre

1st year	Corrective dressing of K_2O: cwt per acre 3.0	Highfield: N: to previous 3 test crops, Single rate	Highfield: N: to previous 3 test crops, Double rate	Highfield: Dung to potatoes 1954: tons per acre, None	Highfield: Dung to potatoes 1954: tons per acre, 12	Highfield: Mean	Fosters: N: to previous 3 test crops, Single rate	Fosters: N: to previous 3 test crops, Double rate	Fosters: Dung to potatoes 1954: tons per acre, None	Fosters: Dung to potatoes 1954: tons per acre, 12	Fosters: Mean
N(1) to cut grass (4 cuts)											
Single rate		55.7	56.7	55.7	56.7	56.2	36.4	40.7	37.7	39.4	38.5
Double rate		63.4	61.9	60.8	64.5	62.7	46.2	49.3	48.6	46.8	47.7
N to test crops											
Single rate				59.0	60.1	59.5			41.4	41.2	41.3
Double rate				57.5	61.1	59.3			44.9	45.0	45.0
Mean				58.2	60.6	59.4			43.1	43.1	43.1

	Highfield: N to cut grass (1), Single rate	Highfield: N to cut grass (1), Double rate	Highfield: Mean	Fosters: N to cut grass (1), Single rate	Fosters: N to cut grass (1), Double rate	Fosters: Mean
2nd year (6 cuts)	60.6	86.9	73.8	54.2	73.3	63.7
3rd year (6 cuts)	65.1	86.2	75.7	63.2	77.9	70.6

(1) 0.15 v. 0.3 cwt N as 'Nitro-Chalk' for every cut.

93

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Lucerne. Dry matter: cwt per acre

1st year (2 cuts)	Corrective dressing of K_2O: cwt per acre	Highfield N to 3 previous test crops Single rate	Highfield Double rate	Highfield Mean	Fosters N to 3 previous test crops Single rate	Fosters Double rate	Fosters Mean
Dung to potatoes 1954							
None		43.0	48.0	45.5	32.9	35.7	34.3
12 tons		45.1	48.6	46.8	32.2	33.0	32.6
Mean		44.1	48.3	46.2	32.6	34.4	33.5
2nd year (3 cuts)	1.0			88.0			90.1
3rd year (3 cuts)	1.0			96.6			105.4

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

	Highfield N: cwt per acre (yearly) 0.15	Highfield 0.30	Highfield Mean	Fosters N: cwt per acre (yearly) 0.15	Fosters 0.30	Fosters Mean
1st year	20.7	19.8	20.3	15.4	18.2	16.8
2nd year	25.0	29.5	27.2	25.0	23.0	24.0
3rd year	29.8	30.6	30.2	21.1	24.3	22.7

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Reseeded Grass. Dry matter: cwt per acre

	Corrective dressing of K_2O: cwt per acre	Cut for hay N Single rate	Cut for hay N Double rate	Cut for hay Mean	Grazed Estimated from sampling cuts N Single rate	Grazed Estimated from sampling cuts N Double rate	Grazed Estimated from sampling cuts Mean
Highfield							
6th exptl. year Blocks 9-12	None				32.5	33.6	33.0
7th exptl. year Blocks 6 and 7	None				25.0	33.3	29.1
Blocks 5 and 8	1.2	59.8	63.2	61.5	19.9*	25.9*	22.9*
8th exptl. year Blocks 1-4	None				23.5	28.8	26.2
Fosters							
6th exptl. year Blocks 6, 10-12	None				17.2	18.5	17.8
7th exptl. year Blocks 8 and 9	None				13.0	17.0	15.0
Blocks 5 and 7	1.2	33.1	37.7	35.4	16.2*	21.6*	18.9*
8th exptl. year Blocks 1-4	None				24.5	21.4	22.9

Permanent Grass. Dry matter: cwt per acre

Highfield							
6th exptl. year Blocks 9-12	None				31.4	31.9	31.6
7th exptl. year Blocks 6 and 7	None				21.7	25.0	23.4
Blocks 5 and 8	1.2	39.6	43.9	41.7	25.1*	26.6*	25.8*
8th exptl. year Blocks 1-4	None				24.7	29.1	26.9

*Aftermath grazing.

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