ROTHAMSTED RESEARCH

Yields of the Field Experiments 1959

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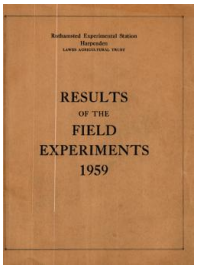

59/R/BB/1 Ley and Arable Rotations

Rothamsted Research

Rothamsted Research (1960) *59/R/BB/1 Ley and Arable Rotations ;* Yields Of The Field Experiments 1959, pp 27 - 44 **- DOI: https://doi.org/10.23637/ERADOC-1-179**

3rd Test Crop, Barley

Ploughed: Oct 15, 1958. Additional P and K applied: Jan 5, 1959. Ground chalk applied to blocks 10 and 11: Feb 9. Seed combine drilled at 2 bushels per acre with basal PK compound: Mar 14. 'Nitra-Shell' applied: Mar 16. Combine harvested: Aug 7. Variety: Proctor.

Permanent grasses. Basal PK compound applied to all plots: Feb 13 - 16, 1959.

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

Blocks 10 and 12. 'Nitra-Shell' applied: Mar 25, 1959. Cut for silage: June 6. 2nd dressing of 'Nitra-Shell' applied to permanent grass plots: July 20 and to reseeded plots: July 21. Grazed: 3 circuits, July 17 - Sept 9.

Blocks 9 and 11. 'Nitra-Shell' applied: June 9, 1959. 2nd dressing of 'Nitra-Shell' applied to permanent grass plots: July 23 and to reseeded plots: July 25. Grazed: 6 circuits, May 2 - Sept 11.

10th year reseeded, 10th experimental year of permanent grass, Blocks 5 - 8.

Blocks 7 and 8. Supplementary K applied: Nov 11, 1958. 'Nitra-Shell' applied: Mar 25, 1959. Cut for silage: June 6. 2nd application of 'Nitra-Shell' applied: July 16. Grazed: 3 circuits, July 9 - Sept 5.

Blocks 5 and 6. Supplementary K applied: Nov 11, 1958. 'Nitra-Shell' applied: June 6 and July 17, 1959. Grazed: 6 circuits, Apr 26 - Sept 7.

11th year reseeded, 11th experimental year of permanent grass, Blocks 1 - 4.

Blocks 1 and 3. 'Nitra-Shell' applied: Mar 25, 1959. Cut for silage: June 6. 2nd dressing of 'Nitra-Shell' applied: July 16. Grazed: 3 circuits, July 6 - Aug 28.

Blocks 2 and 4. 'Nitra-Shell' applied: June 1 and July 16, 1959. Grazed: 6 circuits, Apr 22 - Sept 1.

FOSTERS

1st year Treatment Crops

Cut grass. Ploughed twice: Sept 11 and Nov 19, 1958. Supplementary K applied: Nov 21. Basal PK compound applied: Apr 8, 1959. 'Nitra-Shell' applied: Apr 10. Seeds sown at 33 lb per acre: Apr 11. Sprayed with MCPB at 4 pints in 40 gallons per acre: May 28. Cut 3 times: July 3, Aug 7, Sept 16. 'Nitra-Shell' applied after each cut except the last.

Grazed ley. Ploughed twice: Sept 11 and Nov 19, 1958. Basal PK compound applied: Apr 8, 1959. 'Nitra-Shell' applied: Apr 10. Seeds sown: Apr 11. Sprayed with MCPB at 4 pints in 40 gallons per acre: May 28. 2nd application of 'Nitra-Shell': July 17. Grazed: 4 circuits, June 8 - Aug 17.

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Lucerne. Ploughed twice: Sept 11 and Nov 19, 1958. Supplementary K applied: Nov 21. Basal PK compound applied: Apr 8, 1959. Seeds sown at 28 lb per acre: Apr 11. Cut twice: July 7 and Sept 1.

Hay. Seeds undersown in barley at 28 lb per acre: Apr 24, 1958. Basal PK applied: Feb 17, 1959. 'Nitra-Shell' applied: Mar 25. Cut: June 4.

2nd year Treatment Crops

Cut grass. Basal PK compound applied: Feb 17, 1959. Nitrogen and potash applied as compound fertilizer (16% N, 16% K_2O): Apr 3 and after all cuts except the last. Cut 4 times: May 25, July 3, Aug 10, Sept 16.

Grazed ley. Basal PK compound applied: Feb 16. 'Nitra-Shell' applied: June 2 and July 17. Grazed: 5 circuits, Apr 23 - Aug 9.

Lucerne. Basal PK compound applied: Feb 16, 1959. Cut 4 times: June 8, July 7, Aug 28, Nov 12.

Potatoes. Ploughed twice: June 16 and Nov 19, 1958. Ridged: Apr 14, 1959. Dung, sulphate of ammonia and basal PK compound applied, potatoes planted: Apr 23. For later cultivations see Potato Test Crop.

3rd year Treatment Crops

Cut grass. Basal PK compound applied: Feb 17, 1959. Nitrogen and potash applied as compound fertilizer (16% N, 16% K_2O): Apr 3 and after each cut except the last. Cut 4 times: May 25, July 3, Aug 11, Sept 1.

Grazed ley. Basal PK compound applied: Feb 16, 1959. 'Nitra-Shell' applied: June 6 and July 17. Grazed: 6 circuits, Apr 27 - Aug 30.

Lucerne. Basal PK compound applied: Feb 16, 1959. Cut 3 times: June 8, July 7, Aug 28.

Oats. Ploughed: Oct 16, 1958. Seed drilled at $3\frac{1}{2}$ bushels per acre with basal PK compound: Mar 13. 'Nitra-Shell' applied: Mar 14. Combine harvested: Aug 5. Variety: Sun II.

1st Test Crop, Wheat

Ploughed after oats: Sept 11 and Oct 20, 1958. Ploughed leys: Oct 9. Seed drilled at $2\frac{3}{4}$ bushels per acre with basal PK compound: Oct 27. 'Nitra-Shell applied: Mar 26, 1959. Sprayed with CMPP at 6 pints in 40 gallons per acre: Apr 20. Combine harvested: Aug 8. Variety: Cappelle.

2nd Test Crop, Potatoes

Ploughed twice: Sept 11 and Nov 19. Ridged: Apr 14, 1959. Dung, sulphate of ammonia, basal PK compound applied, potatoes planted: Apr 24. Earthed up: July 1. Sprayed with copper fungicide at 5 lb in 40 gallons per acre: Aug 24. Sprayed with sulphuric acid, 15% BOV, at 100 gallons per acre: Sept 17. Haulms destroyed mechanically: Sept 26. Lifted: Sept 30. Variety: Majestic.

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3rd Test Crop, Barley

Ploughed: Oct 16, 1958. Additional P and K applied: Dec 15. Seed drilled at 2 bushels per acre with basal PK compound: Mar 14, 1959. 'Nitra-Shell' applied: Mar 16. Combine harvested: Aug 8. Variety: Proctor.

Permanent grasses. Basal PK compound applied to all plots: Feb 16 - 17, 1959.

9th year reseeded grass, Block 6, 10, 11, 12.

Blocks 6 and 10. 'Nitra-Shell' applied: Mar 25 and July 18 - 22, 1959. Cut for silage: June 4. Grazed: 2 circuits, July 14 - Aug 17.

Blocks 11 and 12. 'Nitra-Shell' applied: June 6 and July 17, 1959. Grazed: 6 circuits, May 1 - Sept 6.

10th year reseeded grass, Blocks 5, 7, 8, 9.

Blocks 5 and 9. Supplementary K applied: Nov 11, 1958. 'Nitra-Shell' applied Mar 25 and July 18 - 22, 1959. Cut for silage: June 4. Grazed 2 circuits, July 14 - Aug 21.

Blocks 7 and 8. Supplementary K applied: Nov 11, 1958. 'Nitra-Shell' applied: June 6, July 17, 1959. Grazed: 7 circuits, Apr 27 - Sept 4.

11th year reseeded grass, Blocks 1 - 4.

Blocks 1 and 2. 'Nitra-Shell' applied: Mar 25 and July 28, 1959. Cut for silage: June 4. Grazed: 2 circuits, July 22 - Aug 29.

Blocks 3 and 4. 'Nitra-Shell' applied: June 2 and July 17, 1959. Grazed: 6 circuits, Apr 23 - Sept 2.

Standard errors per plot. Test Crops.

Wheat, grain (at 85% dry matter).		Highfield:	4.13 cwt per acre or 8.7% (14 d.f.)
		Fosters:	3.94 cwt per acre or 8.6% (14 d.f.)
Potatoes, total tubers.	Highfield	$\frac{1}{4}$ plot:	0.702 tons per acre or 4.8% (14 d.f.)
		$\frac{1}{8}$ plot:	0.781 tons per acre or 5.3% (20 d.f.)
	Fosters	$\frac{1}{4}$ plot:	0.540 tons per acre or 4.1% (14 d.f.)
		$\frac{1}{8}$ plot:	0.224 tons per acre or 1.7% (20 d.f.)
Barley, grain (at 85% dry matter).		Highfield:	2.33 cwt per acre or 4.9% (15 d.f.)*
		Fosters:	2.14 cwt per acre or 4.6% (14 d.f.)

*1 missing value.

59/Bb/1.6

Summary of Results

Wheat 1st test crop

N: cwt per acre	Treatment crops 1956 - 1958 Lucerne	Ley	Cut grass	Arable with hay	Mean
Grain (at 85% dry matter): cwt per acre					
Highfield					
Mean	47.3	48.5	47.8	45.6	47.3
To test crop					
0.3	45.6	48.4	45.5	42.6	45.5
0.6	49.0	48.6	50.2	48.6	49.1
Difference (±2.92)	+3.4	+0.2	+4.7	+6.0	+3.6 (±1.46)
To treatment crops					
Single rate		49.0	46.6	44.6	46.7
Double rate		48.0	49.1	46.6	47.9
Difference (±2.92)		-1.0	+2.5	+2.0	+1.2 (±1.69)
Fosters					
Mean	51.0	45.6	45.4	40.9	45.7
To test crop					
0.3	48.7	43.1	42.4	36.6	42.7
0.6	53.3	48.1	48.4	45.1	48.7
Difference (±3.10)	+4.6	+5.0	+6.0	+8.5	+6.0 (±1.55)
To treatment crops					
Single rate		44.7	47.0	39.7	43.8
Double rate		46.4	43.8	42.0	44.1
Difference (±3.10)		+1.7	-3.2	+2.3	+0.3 (±1.79)

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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 1957: tons per acre: None	Arable with hay only: Dung to potatoes 1957: tons per acre: 12	Arable with hay only: Mean
Grain (at 85% dry matter): cwt per acre						
Highfield						
To test crop			(±1.68)			(±2.92)
0.3	45.2	45.7	45.5	41.9	43.3	42.6
0.6	48.3	50.0	49.1	47.9	49.3	48.6
Mean	46.7	47.9	47.3			
			(±1.19)			
To previous treatment crops						(±2.92)
Single rate				44.3	45.0	44.6
Double rate				45.5	47.7	46.6
Mean				44.9	46.3	45.6
					(±2.06)	
Mean dry matter % as harvested: 78.3						
Fosters						
To test crop			(±1.61)			(±2.79)
0.3	40.8	40.5	40.7	36.1	37.1	36.6
0.6	46.8	47.6	47.2	44.7	45.6	45.1
Mean	43.8	44.1	43.9			
			(±1.14)			
To previous treatment crops						(±2.79)
Single rate				37.6	41.9	39.7
Double rate				43.2	40.8	42.0
Mean				40.4	41.3	40.9
					(±1.97)	
Mean dry matter % as harvested: 85.6						

Wheat 1st test crop

N: cwt per acre	Treatment crops 1956 - 1958 Lucerne	Ley	Cut grass	Arable with hay	Mean
Straw (at 85% dry matter): cwt per acre					
Highfield					
Mean	53.5	46.9	41.7	36.9	44.7
To test crop					
0.3	51.3	46.5	38.6	34.4	42.7
0.6	55.7	47.2	44.9	39.5	46.8
Difference	+4.4	+0.7	+6.3	+5.1	+4.1
To treatment crops					
Single rate		47.7	41.8	36.5	44.9
Double rate		46.0	41.6	37.4	44.6
Difference		-1.7	-0.2	+0.9	-0.3
Fosters					
Mean	42.6	39.6	34.0	28.7	36.2
To test crop					
0.3	38.7	36.5	31.5	25.2	33.0
0.6	46.5	42.7	36.6	32.1	39.5
Difference	+7.8	+6.2	+5.1	+6.9	+6.5
To treatment crops					
Single rate		41.1	35.6	27.8	34.8
Double rate		38.0	32.5	29.5	33.3
Difference		-3.1	-3.1	+1.7	-1.5

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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 1957: tons per acre None	Arable with hay only: Dung to potatoes 1957: tons per acre 12	Arable with hay only: Mean
Straw (at 85% dry matter): cwt per acre						
Highfield						
To test crop						
0.3	42.9	42.5	42.7	34.6	34.1	34.4
0.6	46.9	46.6	46.8	39.7	39.3	39.5
Mean	44.9	44.6	44.7			
To previous treatment crops						
single rate				37.6	35.4	36.5
Double rate				36.8	38.1	37.4
Mean				37.2	36.7	36.9

Mean dry matter % as harvested 89.2

Fosters

To test crop						
0.3	31.2	30.9	31.0	24.4	26.0	25.2
0.6	38.5	35.8	37.1	31.3	32.9	32.1
Mean	34.8	33.3	34.1			
To previous crop treatment crops						
Single rate				26.0	29.7	27.8
Double rate				29.8	29.2	29.5
Mean				27.9	29.5	28.7

Mean dry matter % as harvested: 91.5

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

	Treatment crops 1955-1957				
	Lucerne	Ley	Cut Grass	Arable with hay	Mean
Highfield					
Mean	14.74	14.77	15.67	13.64	14.70
N: cwt per acre					
0.5	14.92	15.06	15.80	13.23	14.75
1.0	14.57	14.49	15.54	14.05	14.66
Difference (±0.497)	-0.35	-0.57	-0.26	+0.82	-0.09 (±0.248)
Dung: tons per acre					
None	14.43	14.76	15.63	12.95	14.44
12	15.06	14.78	15.71	14.33	14.97
Difference (±0.497)	+0.63	+0.02	+0.08	+1.38	+0.53 (±0.248)
P_2O_5: cwt per acre*					
0.9	15.08	14.38	15.22	14.15	14.71
1.8	14.41	15.16	16.11	13.12	14.70
Difference (±0.391)	-0.67	+0.78	+0.89	-1.03	-0.01 (±0.195)
K_2O: cwt per acre*					
0.9	14.63	14.59	15.49	13.46	14.54
1.8	14.85	14.95	15.85	13.81	14.87
Difference (±0.391)	+0.22	+0.36	+0.36	+0.35	+0.33 (±0.195)
Fosters					
Mean	14.13	13.58	13.36	12.14	13.30
N: cwt per acre					
0.5	14.30	13.55	13.44	12.20	13.37
1.0	13.96	13.61	13.28	12.09	13.23
Difference (±0.382)	-0.34	+0.06	-0.16	-0.11	-0.14 (±0.191)
Dung: tons per acre					
None	13.09	12.58	12.58	11.22	12.37
12	15.17	14.58	14.13	13.06	14.24
Difference (±0.382)	+2.08	+2.00	+1.55	+1.84	+1.87 (±0.191)
P_2O_5: cwt per acre*					
0.9	13.99	13.53	13.11	11.72	13.08
1.8	14.28	13.63	13.61	12.57	13.52
Difference (±0.112)	+0.29	+0.10	+0.50	+0.85	+0.44 (±0.056)
K_2O: cwt per acre*					
0.9	13.88	13.67	12.95	12.18	13.17
1.8	14.38	13.49	13.77	12.10	13.44
Difference (±0.112)	+0.50	-0.18	+0.82	-0.08	+0.27 (±0.056)

*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						
0.5	14.38	15.12	14.81	14.69	14.65	14.85
1.0	14.50	14.82	14.61	14.71	14.44	14.88
Dung: tons per acre						
None			14.48	14.40	14.17	14.70
12			14.93	15.00	14.91	15.03
	(±0.248)		(1) and (2)		(1) and (2)	

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	15.28	15.08
1.8	14.40	14.43	14.41
Mean	14.63	14.85	14.74

	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	12.46	14.29	13.13	13.62	13.24	13.51
1.0	12.28	14.19	13.04	13.43	13.10	13.37
Dung: tons per acre						
None			12.18	12.56	12.04	12.70
12			13.99	14.48	14.30	14.17
	(±0.191)		(1) and (2)		(1) and (2)	

Lucerne rotation only	K_2O: cwt per acre* 0.9	1.8	Mean
P_2O_5: cwt per acre*	(3) and (4)		
0.9	13.63	14.35	13.99
1.8	14.14	14.42	14.28
Mean	13.88	14.38	14.13

*Including basal dressing.

Highfield	Fosters	
(1) ±0.195	(1) ±0.056	for use in horizontal and interaction comparisons.
(2) ±0.223	(2) ±0.141	for use in all others.
(3) ±0.497	(3) ±0.382	for use only in testing the PK interaction.
(4) ±0.447	(4) ±0.282	for use in all other comparisons.

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

	Treatment crops 1955-1957				
	Lucerne	Ley	Cut Grass	Arable with hay	Mean
Highfield					
Mean	87.9	87.9	91.6	90.6	89.5
N: cwt per acre					
0.5	87.8	87.0	91.1	89.6	88.9
1.0	88.1	88.8	92.1	91.5	90.1
Difference	+0.3	+1.8	+1.0	+1.9	+1.2
Dung: tons per acre					
None	87.5	86.6	91.2	88.9	88.5
12	88.3	89.2	92.0	92.3	90.4
Difference	+0.8	+2.6	+0.8	+3.4	+1.9
P_2O_5: cwt per acre*					
0.9	88.8	87.5	91.5	91.1	89.7
1.8	87.0	88.3	91.7	90.1	89.3
Difference	-1.8	+0.8	+0.2	-1.0	-0.4
K_2O: cwt per acre*					
0.9	87.2	87.4	91.8	89.7	89.0
1.8	88.6	88.4	91.4	91.4	89.9
Difference	+1.4	+1.0	-0.4	+1.7	+0.9
Fosters					
Mean	96.0	95.3	94.5	95.6	95.3
N: cwt per acre					
0.5	95.9	95.0	94.5	95.4	95.2
1.0	96.0	95.6	94.5	95.8	95.5
Difference	+0.1	+0.6	0.0	+0.4	+0.3
Dung: tons per acre					
None	95.7	94.7	93.3	95.2	94.7
12	96.3	95.9	95.6	96.0	95.9
Difference	+0.6	+1.2	+2.3	+0.8	+1.2
P_2O_5: cwt per acre*					
0.9	95.3	95.5	94.6	95.3	95.2
1.8	96.6	95.1	94.3	95.8	95.5
Difference	+1.3	-0.4	-0.3	+0.5	+0.3
K_2O: cwt per acre*					
0.9	96.0	95.1	94.2	96.1	95.3
1.8	96.0	95.5	94.8	95.1	95.3
Difference	0.0	+0.4	+0.6	-1.0	0.0

*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	87.5	90.2	89.2	88.5	88.4	89.4
1.0	89.6	90.7	90.2	90.0	89.7	90.5
Dung: tons per acre						
None			88.8	88.3	87.7	89.4
12			90.7	90.2	90.4	90.5

Lucerne rotation only	K_2O: cwt per acre*		
	0.9	1.8	Mean
P_2O_5: cwt per acre*			
0.9	87.5	90.1	88.8
1.8	86.9	87.1	87.0
Mean	87.2	88.6	87.9

	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	94.5	95.9	94.8	95.6	94.9	95.4
1.0	94.9	96.0	95.6	95.4	95.7	95.2
Dung: tons per acre						
None			94.5	95.0	95.0	94.5
12			95.9	96.0	95.7	96.2

Lucerne rotation only	K_2O: cwt per acre*		
	0.9	1.8	Mean
P_2O_5: cwt per acre*			
0.9	95.2	95.5	95.3
1.8	96.8	96.5	96.6
Mean	96.0	96.0	96.0

*Including basal dressing

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59/Bb/1.14

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

	Treatment crops 1954-1956				
	Lucerne	Ley	Cut Grass	Arable with hay	Mean
Highfield					
Mean	46.4	48.1	46.7	49.9	47.8
N: cwt per acre					
None	47.5	49.2	46.6	49.0	48.1
0.2	45.3	47.1	46.7	50.7	47.5
Difference (±1.65)	-2.2	-2.1	+0.1	+1.7	-0.6 (±0.82)
Dung to potatoes 1958: tons per acre					
None	48.1	49.2	49.0	49.1	48.9
12	44.7	47.0	44.4	50.6	46.7
Difference (±1.65)	-3.4	-2.2	-4.6	+1.5	-2.2 (±0.82)
Fosters					
Mean	50.6	47.2	47.1	43.0	47.0
N: cwt per acre					
None	48.0	44.8	45.5	40.2	44.6
0.2	53.3	49.6	48.7	45.9	49.4
Difference (±1.51)	+5.3	+4.8	+3.2	+5.7	+4.8 (±0.76)
Dung to potatoes 1958: tons per acre					
None	50.7	46.1	46.3	41.9	46.2
12	50.6	48.3	47.9	44.2	47.7
Difference (±1.51)	-0.1	+2.2	+1.6	+2.3	+1.5 (±0.76)

	Highfield N: cwt per acre		Fosters N: cwt per acre	
	None	0.2	0.2	0.4
Dung to potatoes 1958: tons per acre	(±0.82)		(±0.76)	
None	49.5	48.3	43.8	48.7
12	46.7	46.6	45.4	50.1

Mean dry matter % as harvested:
Highfield: 84.5
Fosters: 85.7

59/Bb/1.15

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

	Treatment crops 1954-1956				
	Lucerne	Ley	Cut Grass	Arable with hay	Mean
Highfield					
Mean	39.1	37.6	34.9	33.8	36.3
N: cwt per acre					
None	32.3	35.6	33.1	30.8	33.0
0.2	46.0	39.6	36.6	36.7	39.7
Difference	+13.7	+4.0	+3.5	+5.9	+6.7
Dung to potatoes 1958: tons per acre					
None	39.9	37.4	33.5	32.3	35.7
12	38.4	37.8	36.2	35.3	36.9
Difference	-1.5	+0.4	+2.7	+3.0	+1.2
Fosters					
Mean	29.9	27.6	29.5	26.2	28.3
N: cwt per acre					
None	28.8	25.3	27.6	23.2	26.2
0.2	31.1	30.0	31.4	29.2	30.4
Difference	+2.3	+4.7	+3.8	+6.0	+4.2
Dung to potatoes 1958: tons per acre					
None	29.8	28.5	30.2	24.6	28.3
12	30.0	26.8	28.8	27.9	28.4
Difference	+0.2	-1.7	-1.4	+3.3	+0.1

	Highfield		Fosters	
	N: cwt per acre		N: cwt per acre	
	None	0.2	0.2	0.4
Dung to potatoes 1958: tons per acre				
None	33.3	38.2	25.9	30.6
12	32.6	41.2	26.5	30.3

Mean dry matter % as harvested:
Highfield: 91.4
Fosters: 89.9

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59/Bb/1.16

Treatment crops Arable and Hay rotation

(values based on mean of 2 sub plots only)

	Highfield N: cwt per acre applied in 1959			Fosters N: cwt per acre applied in 1959		
	Single rate	Double rate	Mean	Single rate	Double rate	Mean
Hay (dry matter): cwt per acre						
No dung	60.2	60.4	60.3	60.1	58.3	59.2
Dung in 1957	54.4	67.7	61.0	61.7	76.2	68.9
Mean	57.3	64.0	60.7	60.9	67.3	64.1
Potatoes, total tubers: tons per acre						
No dung	10.49	11.45	10.97	11.73	10.33	11.03
Dung in 1959	12.25	14.47	13.36	12.57	11.73	12.15
Mean	11.37	12.96	12.17	12.15	11.03	11.59
Potatoes, percentage ware ($1\frac{1}{2}$" riddle)						
No dung	89.4	88.0	88.7	96.4	92.9	94.6
Dung in 1959	89.8	94.8	92.3	94.1	95.5	94.8
Mean	89.6	91.4	90.5	95.2	94.2	94.7
Oats						
	None	0.2		0.2	0.4	
Grain (at 85% dry matter): cwt per acre						
No dung	16.7	16.4	16.6	42.6	42.4	42.5
Dung in 1958	15.5	16.0	15.8	43.2	43.6	43.4
Mean	16.1	16.2	16.2	42.9	43.0	42.9
Straw (at 85% dry matter): cwt per acre						
No dung	15.7	20.0	17.8	29.6	30.4	30.0
Dung in 1958	18.6	20.9	19.8	25.8	30.0	27.9
Mean	17.2	20.4	18.8	27.7	30.2	28.9

Highfield, Oats, Mean dry matter % as harvested Grain: 78.4 Straw: 84.8
Fosters, Oats, Mean dry matter % as harvested Grain: 81.6 Straw: 88.8

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Cut grass. Dry matter: cwt per acre

1st year	Highfield N to previous 3 test crops: Single rate	Highfield N to previous 3 test crops: Double rate	Highfield Dung to potatoes 1957: tons per acre: None	Highfield Dung to potatoes 1957: 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 1957: tons per acre: None	Fosters Dung to potatoes 1957: tons per acre: 12	Fosters Mean
N (1) to cut grass (3 cuts)										
Single rate	40.3	39.0	36.5	42.9	39.7	21.7	24.8	22.9	23.5	23.2
Double rate	42.7	44.4	42.7	44.3	43.5	25.0	26.6	24.9	26.7	25.8
N: test crops										
Single rate			39.5	43.5	41.5			23.0	23.6	23.3
Double rate			39.7	43.7	41.7			24.8	26.6	25.7
Mean			39.6	43.6	41.6			23.9	25.1	24.5

	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 (4 cuts)	54.8	70.8	62.8	42.9	58.7	50.8
3rd year (4 cuts)	43.4	60.2	51.8	52.8	63.1	58.0

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

Corrective dressing of K_2O cwt per acre to cut grass 1st year:
Highfield: 3.5
Fosters: 4.0

59/Bb/1.17

Lucerne. Dry Matter: cwt per acre

1st Year (2 cuts)	Highfield N to 3 previous test crops Single rate	Highfield N to 3 previous test crops Double rate	Highfield Mean	Fosters N to 3 previous test crops Single rate	Fosters N to 3 previous test crops Double rate	Fosters Mean
Dung to potatoes 1957						
None	32.0	32.5	32.2	37.3	36.2	36.7
12 tons	36.4	34.1	35.2	38.3	37.6	37.9
Mean	34.2	33.3	33.7	37.8	36.9	37.3
2nd year (4 cuts)			98.6			110.3
3rd year (3 cuts)			58.0			70.2

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

	Highfield N: cwt per acre (yearly) 0.15	Highfield N: cwt per acre (yearly) 0.30	Highfield Mean	Fosters N: cwt per acre (yearly) 0.15	Fosters N: cwt per acre (yearly) 0.30	Fosters Mean
1st year	13.8	16.6	15.2	9.2	11.5	10.3
2nd year	15.5	21.2	18.4	15.6	16.1	15.9
3rd year	21.4	27.5	24.5	23.0	20.9	22.0

Corrective dressing of K_2O cwt per acre to Lucerne 1st year:
Highfield: 3.0
Fosters: 4.0

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Reseeded Grass. Dry matter: cwt per acre

	Cut for silage N			Grazed Estimated from sampling cuts N		
	Single rate	Double rate	Mean	Single rate	Double rate	Mean
Highfield						
9th exptl. year						
Blocks 9 and 11				25.8	23.7	24.7
Blocks 10 and 12	37.2	40.3	38.7	18.4*	20.5*	19.5*
10th exptl. year						
Blocks 5 and 6				21.8	22.1	22.0
Blocks 7 and 8	47.6	58.2	52.9	14.2*	13.8*	14.0*
11th exptl. year						
Blocks 2 and 4				19.7	21.4	20.5
Blocks 1 and 3	48.7	54.5	51.6	16.2*	19.4*	17.8*
Fosters						
9th exptl. year						
Blocks 11 and 12				29.6	34.2	31.9
Blocks 6 and 10	39.4	43.0	41.2	11.0*	11.3*	11.2*
10th exptl. year						
Blocks 7 and 8				23.5	28.2	25.8
Blocks 5 and 9	47.3	46.5	46.9	8.5*	8.9*	8.7*
11th exptl. year						
Blocks 3 and 4				32.4	32.9	32.6
Blocks 1 and 2	52.6	53.0	52.8	10.9*	14.1*	12.5*

Corrective dressing of K_2O cwt per acre to Reseeded Grass 10th experimental year: Highfield Blocks 6 and 7; Fosters Blocks 8 and 9: 3.0

Permanent Grass. Dry matter: cwt per acre

Highfield						
9th exptl. year						
Blocks 9 and 11				19.3	21.7	20.5
Blocks 10 and 12	40.3	46.5	43.4	12.7*	14.1*	13.4*
10th exptl. year						
Blocks 5 and 6				14.8	18.4	16.6
Blocks 7 and 8	35.3	42.4	38.8	19.3*	18.2*	18.8*
11th exptl. year						
Blocks 2 and 4				18.6	25.2	21.9
Blocks 1 and 3	43.0	51.4	47.2	20.1*	19.9*	20.0*

* Aftermath grazing.

Corrective dressing of K_2O cwt per acre to Permanent Grass 10th experimental year. Highfield Blocks 6 and 7: 2.5

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REFERENCE PLOTS

The effects of N P K and Dung on a sequence of five arable crops and on permanent grass - Great Field IV 1959.

From 1959 cropping year onwards dung is applied only to the root crops of the rotation. The rate of dressing is now 20 tons per acre for these two crops.

Permanent grass still has an annual dressing of dung at 15 tons per acre.

Area of each plot: 0.0013 acres.

Cultivations, etc.:

Winter wheat. Dug by hand: Sept 17, 1958. PK applied, seed drilled: Oct 17. First N dressing applied: Mar 2, 1959. Second N dressing applied: May 1. Harvested: July 31. Variety: Cappelle.

Kale. Dung applied, plots dug by hand: Nov 19, 1958. N P and K applied, seed sown: Apr 3, 1959. Harvested: Nov 17. Variety: Thousand head.

Barley. Dug by hand: Nov 10, 1958. N P and K applied, seed drilled and undersown: Apr 2, 1959. Harvested: July 27. Variety: Proctor.

Grass - clover ley. Undersown in barley: Mar 25, 1958. N P and K applied: Mar 2, 1959. Cut three times: Oct 30, 1958, June 6 and Aug 13, 1959. Varieties: S22 ryegrass and Giant Hybrid red clover.

Potatoes. Dung applied, plots dug by hand: Dec 1, 1958. N P and K applied on flat, setts planted: Apr 2, 1959. Harvested: Sept 14. Variety: King Edward.

Permanent grass. Dung applied: Dec 2, 1958. First N dressing and PK applied: Feb 17, 1959. Second N dressing applied: June 2. Cut twice: June 2 and Sept 24.

For details of the previous years results see "Results of the Field Experiments" 58/Bc/1 in which the rates of N P and K are given.

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