

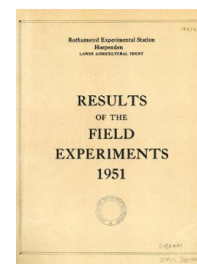
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Yields of the Field Experiments 1951

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51/BC/1 Ley and Arable Rotations - Rothamsted

Rothamsted Research

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51/Bc/1.1

LEY AND ARABLE ROTATIONS

Highfield and Fosters Field - 1951.

For details of treatments and rotations etc. see Appendix Z 1950.

Cultivations, etc.:

Highfield

Wheat (Blocks 10 and 11). Ploughed: Oct 2. Seed drilled at $3\frac{1}{2}$ bushels per acre with basal fertilizers: Oct 19. Ground chalk applied: Mar 1. Nitrochalk applied: May 18. Harvested: Aug 18. Variety: Yeoman.

Potatoes (Blocks 5,6,7,8). Ploughed: Aug 25. Ridged: May 10. Dung, sulphate of ammonia and basal fertilizers applied, potatoes planted: May 16. Earthed up ridges: July 12 and again Aug 1. Sprayed with copper sulphate solution, 5 lb per acre: Aug 15 and again Sept 11. Sprayed with 20% sulphuric acid: Sept 29. Lifted: Oct 15. Variety: Majestic.

Barley (Blocks 1-4). Ploughed: Nov 3. Ground chalk applied to Blocks 1 and 4: Mar 31. Seed drilled at 3 bushels per acre with basal fertilizers: Apr 17. Nitrochalk applied: Apr 19. Harvested: Sept 10. Variety: Plumage Archer. The crop had been laid for a long time and the grain eaten by birds and therefore no yields were recorded.

Hay, Cut Grass, Grazed Ley, Lucerne and Reseeded Grass, all 1st year (Blocks 9 and 12, Reseeded Grass 9-12). Ploughed: Oct 2. Ground chalk applied: Mar 1. Basal fertilizers applied: Apr 23. Nitrochalk applied (none to Lucerne): May 21.

Hay. Seeds sown at 38 lb per acre: Apr 24. Cut: Aug 14.
Cut Grass. Seeds sown at 38 lb per acre: Apr 24. Cut: 4 times - June 5, July 9, Aug 20 and Oct 1. Nitrochalk applied after each cut except the last.

Grazed Ley. Seeds sown at 55 lb per acre: Apr 24. Nitrochalk applied: May 21. Grazed: 7 circuits July 6 - Oct 10.

Lucerne. Seed drilled at 33 lb per acre: Apr 24. Cut: twice - July 30 and Oct 2. Variety: Du Puits.

Reseeded Grass. Seeds sown at 55 lb per acre: Apr 24. Nitrochalk applied: July 20. Grazed: 7 circuits July 6 - Oct 10.

Permanent Grass. 1st year (Blocks 9-12). Ground chalk applied: Mar 1. Basal fertilizers applied: Apr 23. Nitrochalk applied: May 21. Pre-grazing cut: July 6. Nitrochalk applied: July 20. Grazed: 5 circuits July 6 - Oct 10.

51/Ec/1.2

Cut Grass, Grazed Ley, Lucerne, Reseeded Grass, Permanent Grass all 2nd year (Blocks 5 and 8, Reseeded and Permanent Grass 5-8). Basal fertilizers applied: Mar 29. Nitrochalk applied (none to Lucerne): May 22.

Cut Grass. Cut: 4 times - May 31, July 9, Aug 20 and Oct 3. Nitrochalk applied after each cut except the last.

Grazed Ley, Pre-grazing cut: June 1. Nitrochalk applied: July 12. Grazed: 7 circuits June 28 - Oct 2.

Lucerne. Cut: 3 times - July 7, Aug 13, Oct 3.

Reseeded Grass, Pre-grazing cut: June 1. Nitrochalk applied: July 20. Grazed: 5 circuits June 28 - Oct 2.

Permanent Grass. Cut: June 1. Nitrochalk applied: July 20. Grazed: 5 circuits June 28 - Oct 18.

Cut grass 3rd year (Blocks 2 and 3). Basal fertilizers applied: Mar 29. Nitrochalk applied: May 21. Cut: 4 times - June 5, July 9, Aug 20 and Oct 1. Nitrochalk applied after each cut except the last.

Grazed Ley, 3rd year (Blocks 2 and 3). Basal fertilizers applied: Mar 29. Nitrochalk applied: May 21. Pre-grazing cut: June 4. Nitrochalk applied: July 14. Grazed: 6 circuits July 2 - Sept 26.

Lucerne, 3rd year (Blocks 2 and 3). Basal fertilizers applied: Mar 29. Cut: 3 times - July 7, Aug 13, Oct 2.

Reseeded grass, 3rd year (Blocks 1-4). Basal fertilizers applied: Mar 29. Ground chalk applied: Mar 31. Nitrochalk applied: May 18. Cut: June 18. Nitrochalk applied: July 5. Grazed: 5 circuits July 14-Oct 26.

Permanent grass, 3rd year (Blocks 1-4). Basal fertilizers applied: Mar 29. Ground chalk applied: Mar 31. Nitrochalk applied: May 18. Cut: June 19. Nitrochalk applied: July 5. Grazed: 5 circuits July 14-Oct 26.

Fosters

Wheat (Blocks 10 and 12). Ploughed: Sept 19. Seed drilled at 3 bushels per acre with basal fertilizers: Oct 21. Ground chalk applied: Feb 7 and again Mar 1. Nitrochalk applied: May 7. Harvested: Aug 18. Variety: Yeoman.

Potatoes (Blocks 5,7,8,9). Ploughed: Aug 21 and again Nov 14. Ridged: May 10. Dung, sulphate of ammonia and basal fertilizers applied: May 15. Potatoes planted: May 16. Earthed up ridges: July 6. Sprayed with copper sulphate solution, 5 lb per acre: Aug 15 and again Sept 8. Sprayed with 20% sulphuric acid: Sept 29. Lifted: Oct 13. Variety: Majestic.

Barley (Blocks 1-4). Ploughed: Nov 1. Seed drilled at $3\frac{1}{4}$ bushels per acre with basal fertilizers: Apr 17. Nitrochalk applied: Apr 18. Harvested: Aug 30. Variety: Plumage Archer.

Hay, Cut Grass, Grazed Ley, Lucerne and Reseeded Grass, all 1st year
(Blocks 6 and 11, Reseeded Grass 6, 10, 11, 12). Ploughed: Sept 19.
Ground chalk applied: Feb 7 and again Mar 1. Basal fertilizers
applied: Apr 20. Nitrochalk applied (none to Lucerne): May 8.

Hay. Seeds sown at 38 lb per acre: Apr 20. The crop failed and no
yields were recorded.

Cut Grass. Seeds sown at 38 lb per acre: Apr 20. Cut: Oct 5.

Grazed Ley. Seeds sown at 55 lb per acre: Apr 20. Nitrochalk
applied: July 21. Grazed: 5 circuits July 11-Sept 27.

Lucerne. Seed drilled at 33 lb per acre: Apr 20. Cut: Oct 5,
Variety: Du Puits.

Reseeded Grass. Seeds sown at 55 lb per acre: Apr 20. Grazed:
4 circuits July 13-Oct 21.

Cut Grass, Grazed Ley, Lucerne and Reseeded Grass, all 2nd year
(Blocks 5 and 7, Reseeded Grass 5-9). Basal fertilizers applied:
Mar 21. Nitrochalk applied (none to Lucerne): May 8.

Cut Grass. Cut: 4 times - June 8, July 10, Aug 22 and Oct 5.

Nitrochalk applied after each cut except the last.

Grazed Ley. Cut: June 7. Nitrochalk applied: June 21. Grazed:
6 circuits July 3 - Oct 1.

Lucerne. Cut: 3 times - July 5, Aug 10, Oct 5.

Reseeded Grass. Cut: June 7. Nitrochalk applied: June 21.
Grazed: 4 circuits July 3 - Oct 5.

Cut Grass, Grazed Ley, Lucerne and Reseeded Grass, all 3rd year.
(Blocks 2 and 4, Reseeded Grass 1-4). Basal fertilizers applied:
Mar 28. Nitrochalk applied (none to Lucerne): May 8.

Cut Grass. Cut: 4 times - June 8, July 10, Aug 22, Oct 4.

Nitrochalk applied after each cut except the last.

Grazed Ley. Cut: June 7. Nitrochalk applied: July 21. Grazed:
6 circuits July 17 - Oct 5.

Lucerne. Cut: 3 times - July 5, Aug 10 and Oct 4.

Reseeded Grass. Cut: June 18. Nitrochalk applied: July 3.
Grazed: 4 circuits July 11 - Oct 13.

Standard errors per subplot:

Per $\frac{1}{4}$ plot. Wheat, grain. Highfield: 3.68 cwt per acre or 11.4%
(23 d.f.)

Fosters: 1.63 cwt per acre or 5.4%
(23 d.f.)

Potatoes, total clean tubers. Highfield: 1.56 tons per acre or 15.6%
(21 d.f.)

Fosters: 1.17 tons per acre or 13.0%
(21 d.f.)

Barley. Highfield: No yield recorded

Fosters: 1.72 cwt per acre or 5.7%
(21 d.f.)

Hay, dry matter. Highfield 1.16 cwt per acre or 9.8%
(3 d.f.)

Fosters: No yield recorded.

51/Bc/1.4

Out Grass, dry matter. Highfield: 5.24 cwt per acre or 8.6%
(11 d.f.)
Fosters: 3.63 cwt per acre or 7.0%
(11 d.f.)

Summary of Results

	Highfield			Fosters			
<u>Wheat</u> : cwt per acre	cwt N per acre			cwt N per acre			
	0.3	0.6	Mean	0.3	0.6	Mean	
	(±0.92)			(±0.41)			
Grain	32.7	32.1	32.4	23.1	32.5	30.3	
Straw	50.6	51.5	51.0	38.1	46.7	42.4	
<u>Potatoes</u>	cwt N per acre			cwt N per acre			
	Dung: tons per acre	0.5	1.0	Mean	0.5	1.0	Mean
Total clean tubers: tons per acre	None	10.26	9.29	(±0.390) 9.78	8.44	8.14	(±0.293) 8.29
	15	10.69	9.73	10.21	9.21	10.14	9.68
	Mean	10.48	9.51	9.99	8.83	9.14	8.99
		(±0.390)			(±0.293)		
Percentage Ware	None	88.2	90.5	89.4	91.2	89.7	90.4
	15	89.2	89.7	89.4	90.0	91.1	90.6
	Mean	88.7	90.1	89.4	90.6	90.4	90.5

Barley: cwt per acre

	Highfield Dung: tons per acre applied in 1950	Fosters cwt N per acre		Mean (± 0.43)
		0.2	0.4	
Grain	None	27.9	30.5	29.2
	15	Crop failed (± 0.61)		31.0
	Mean	28.6	31.6	30.1 (± 0.43)
Straw	None	27.7	30.0	28.8
	15	30.1	33.4	31.8
	Mean	28.9	31.7	30.3

One year Hay: Dry Matter: cwt per acre

cwt N per acre		Mean	Crop failed
0.3	0.6		
12.4	11.5	11.9	
(±0.58)			

Cut Grass: Dry Matter: cwt per acre

	No. of cuts	cwt N per acre for each cut		Mean	No. of cuts	cwt N per acre for each cut		Mean
		0.15	0.30			0.15	0.30	
		(±2.62)		(±1.85)		(±1.81)		(±1.28)
1st year	4	40.6	44.5	42.5	1	17.8	15.4	16.6
2nd year	4	64.9	68.3	66.6	4	70.0	72.7	71.4
3rd year	4	67.0	78.9	73.0	4	63.7	71.2	67.5
Mean		57.5	63.9	60.7		50.5	53.1	51.8
		(±1.51)				(±1.05)		

Lucerne: Dry Matter: cwt per acre

	No. of cuts		No. of cuts	
1st year	2	33.3	1	13.0
2nd year	3	72.6	3	84.2
3rd year	3	73.3	3	88.8

51/Bc/1.6

Grazed Plots

Estimates from sample cuts of amount of Dry Matter cwt per acre, eaten by sheep.

		Highfield			Fosters		
		cwt N per acre			cwt N per acre		
		0.15	0.30	Mean	0.15	0.30	Mean
<u>Permanent Grass</u>							
1st year blocks	Pre-grazing ⁺						
	cut	19.0	17.3	18.2			
	Grazing	33.6	34.5	34.0			
2nd year blocks	Pre-grazing ⁺						
	cut	22.2	25.9	24.0			
	Grazing	31.4	28.9	30.2			
3rd year blocks	Hay	47.0	47.5	47.2			
	Aftermath grazing ¹²	22.0	24.7	23.4			
<u>Ley & Reseeded Grass</u>							
1st year							
L & R.G.	Grazing	42.7	40.7	41.7	23.0	25.9	24.4
2nd year L & R.G.	Pre-grazing ⁺						
	cut	30.8	28.6	29.7	38.9	39.8	39.3
	Grazing	26.0	30.4	28.2	24.2	24.3	24.3
3rd year L	Pre-grazing ⁺						
	cut	35.6	43.8	39.7	32.9	35.5	34.2
	Grazing	30.1	24.5	27.3	30.9	29.9	30.4
3rd year R.G.	Hay	49.5	50.3	49.9	46.9	47.9	47.4
	Aftermath grazing ¹²	16.6	19.7	18.2	24.4	25.8	25.1

⁺ Owing to pressure of spring work it was necessary to take a preliminary cut before grazing on Permanent Grass 1st and 2nd year blocks, Ley 2nd and 3rd years, Reseeded Grass 2nd year.

¹² An additional dressing of nitrochalk at the indicated rates was applied to the aftermath.

Note. The estimates of Dry Matter calculated from the sheep weights were considered unreliable and have been omitted.