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Yields of the Field Experiments 1950

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50/BE/1 Ley and Arable - Woburn

Rothamsted Research

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LEY AND ARABLE ROTATIONS

Woburn, Stackyard - 1950.

For details of rotations, etc. see Appendix Z.

Cultivations, etc.:

Block I. Potatoes. Ploughed: Nov 1-2, Jan 24-25, and Mar 5. Springtined and rolled: Mar 30. Ridged: Apr 3. Dung applied: Apr 2-5. Potatoes planted and covered in, basal fertilizer applied: Apr 5. Rolled down ridges: Apr 12. Tractor weeded: May 11. Harrowed: May 15. Ridged: May 16. Harrowed: May 24. Grubbed: June 7. Ridged: June 29. Thistles pulled: July 14-17. Sprayed with Perenox: July 22 and again Aug 4. Sprayed with 15% B.O.V. to kill off haulm: Sept 18. This was ineffective so sprayed with 20% B.O.V.: Sept 23. Lifted: Oct 3-4. Variety: Majestic. Previous crops: Ley, lucerne, hay, sugar beet.

Block II. Barley. Ploughed: Sept 26, and Jan 20. Ground chalk (8.1 cwt CaO per acre) applied: Feb 27. Springtined: Mar 7. Basal fertilizers applied: Mar 15. Harrowed, seed drilled and harrowed in: Mar 16. Rolled: Mar 17. Rows patched: Apr 21. Sprayed with D.N.O.C.: June 5. Harvested: Aug 10. Variety: Plumage Archer. Previous crop: Potatoes.

Block III. Ley. Third year. Grazed by sheep: Apr 24-28, May 7-15, May 30 - June 7, June 15-19, July 11-18, July 28 - Aug 1, Aug 17-19, Aug 31 - Sept 3, Sept 14-15 and Oct 3-7.

Lucerne. Third year. Harrowed: Jan 19. Hoed: Feb 17. Weeded: Feb 18 and Mar 10. Harrowed: Mar 24-25. Harrowed three times: Apr 5. Hoed: Apr 21. First cut: June 20. Second cut: July 31. Third cut: Oct 4.

Hay. Seeds mixture undersown in rye: Mar 30. Rolled: Mar 27. First dressing of nitrochalk applied: Mar 28. First cut: June 20. Second dressing of nitrochalk applied: June 22. Second cut: Aug 30. Seeds mixture: Late flowering Montgomery Red Clover (12 lb. per acre); Perennial Ryegrass (24 lb. per acre) and American Alsike Clover (3 lb. per acre). Previous crop: Rye.

Sugar beet. Ploughed: Sept 6 and Jan 20. Springtined: Mar 7, 24 and 25. Rolled: Mar 27. Nitrate of soda applied: Mar 28. Seed drilled: Mar 29. Hoed: May 11. Singled: May 31. Hoed: June 7 and 15. Lifted: Oct 5. Variety: Klein E. Previous crop: Rye.

Block IV. Ley. First year. Ploughed: Sept 6 and Jan 19. Springtined: Mar 7 and 24. Harrowed: Mar 25. Rolled: Mar 27. Seed sown, harrowed and rolled in: Mar 28. Fertilizers applied: Apr 3. Topped: June 15. Grazed by sheep: June 12-15; June 23-26, July 22-26. Aug 8-12, Sept 5-8 and Oct 10-12. Seeds mixture: S23 Perennial Ryegrass (21 lb. per acre); S143 Cocksfoot (12 lb. per acre); Late flowering Montgomery Red Clover (6 lb. per acre); S100 White Clover (3 lb per acre). Previous crop: Barley.

50/Be/1.2

Lucerne. First year. Ploughed: Sept 16 and Jan 19. Springtined: Mar 7 and 24. Harrowed: Mar 25. Rolled: Mar 27. Seed drilled and rolled in: Mar 28. Fertilizers applied: Apr 3. Dusted with D.D.T.: May 10. Plots 55 and 56 (Arable with Hay rotation) spoilt by tornado: May 21. Plots 55 and 56. Thistle barred: May 30. Harrowed, rolled, seed redrilled and rolled in: May 31. Dusted with D.D.T.: June 7. Hoed and weeded: June 21-22. Hoed: Aug 16. First cut: Aug 30. Second cut: Oct 4. Plots 59 and 60. (Lucerne Rotation). Hoed: June 2. First cut: June 30. Second cut: Oct 4. Variety: Du Puit. Previous crop: Barley.

Potatoes. Ploughed: Sept 16 and Jan 19. Springtined: Mar 7 and 24. Harrowed: Mar 25. Rolled: Mar 30. Ridged, fertilizers applied: Apr 3. Potatoes planted: Apr 4. Covered in: Apr 5. Rolled down ridges: Apr 12. Tractor weeded: May 11. Harrowed: May 15. Ridged: May 17. Harrowed: May 31. Grubbed: June 7. Ridged: June 29. Sprayed with Perenox: June 22 and Aug 4. Sprayed with 15% B.O.V. to kill off haulm: Sept 18. Lifted: Oct 2. Variety: Majestic. Previous crop: Barley.

Block V. Ley. Second year. Rolled: Mar 30. 1 cwt Nitrochalk per acre applied: June 13. Grazed by sheep: Apr 28 - May 7, May 15-23, June 7 - 12, June 19-23, July 18-28, Aug 12-17, Sept 3-5, Sept 12-14 and Oct 7-10.

Lucerne. Second year. Harrowed: Jan 19. Hoed and weeded: Feb 15. Weeded: Mar 10. Hoed and harrowed: Mar 24. Hoed: Apr 21. First cut: June 20. Second cut: July 31. Third cut: Oct 4.

Rye. Ploughed: Sept 29. Springtined: Oct 31. Harrowed; seed sown: Nov 1. Harrowed in: Nov 2. Weeded: Mar 10. Rolled: Mar 18. 3 cwt Nitrochalk per acre applied, hay mixtures undersown on appropriate plots: Mar 28. Variety: King II. Previous crops: Ley, lucerne, potatoes.

Standard errors per plot:

Block I. Potatoes.

Total tubers:	whole plot, 1.12 tons per acre or 7.0% (4 d.f.)
	sub-plot, 0.358 tons per acre or 2.2% (4 d.f.)
Percentage ware:	whole plot, 1.24 (4 d.f.)
	sub-plot, 1.29 (4 d.f.)

Block II. Barley.

Grain:	whole plot, 3.62 cwt per acre or 21.9% (4 d.f.)
	sub-plot, 2.38 cwt per acre or 14.4% (3 d.f.)
Straw:	whole plot, 2.36 cwt per acre or 10.8% (4 d.f.)
	sub-plot, 1.60 cwt per acre or 7.3% (4 d.f.)

50/Be/1.3

Previous Rotation

	Ley	Lucerne	Arable with hay	Arable with sugar beet	Mean
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Block I

Potatoes. Total tubers: tons per acre

No Dung (± 0.810) ⁽¹⁾	14.94	15.02	13.40	12.26	13.90
Dung in 1950	18.66	18.74	17.73	16.55	17.92
Mean (± 0.790)	16.80	16.88	15.56	14.41	15.91
Increase (± 0.358)	3.72	3.72	4.33	4.29	4.02 (± 0.179)

Potatoes: Percentage Ware

No Dung (± 1.09) ⁽¹⁾	93.7	93.4	92.1	93.8	93.2
Dung in 1950	95.1	95.0	94.2	93.4	94.4
Mean (± 0.88)	94.4	94.2	93.2	93.6	93.8
Increase (± 1.29)	1.4	1.6	2.1	-0.4	1.2 (± 0.64)

Block II

Barley. Grain: cwt per acre

No Dung (± 2.82) ⁽¹⁾	23.0	16.4	14.3	16.1	17.4
Dung in 1949	19.7	16.9	12.4	13.6	15.7
Mean (± 2.56)	21.3	16.6	13.4	14.9	16.5
Increase (± 2.38)	-3.3	0.5	-1.9	-2.5	-1.7 (± 1.19)

Barley. Straw: cwt per acre

No Dung (± 1.85) ⁽¹⁾	21.1	19.8	19.0	21.4	20.3
Dung in 1949	21.5	24.0	26.0	22.6	23.5
Mean (± 1.67)	21.3	21.9	22.5	22.0	21.9
Increase (± 1.60)	0.4	4.2	7.0	1.2	3.2 (± 0.80)

Standard error (1) for comparisons other than vertical ones.

50/Be/1.4

Block III

<u>Ley.</u> 3rd Year	Sheep days of grazing per acre	No. of sheep carried per acre for the year
Mean	2089	5.7

Lucerne. 3rd Year

Yield of Lucerne Hay (85% dry matter): tons per acre

	1st Crop	2nd Crop	3rd Crop	Total
No Dung	1.86	1.60	0.78	4.24
Dung in 1946	2.27	1.86	0.90	5.03
Mean	2.07	1.73	0.84	4.64
Increase	0.41	0.26	0.12	0.79
Previous Rotation:				
Lucerne	1.84	1.58	0.80	4.22
Arable with hay	2.30	1.87	0.86	5.03

Hay (85% dry matter): tons per acre

	1st Crop	2nd Crop	Total
No Dung	2.56	0.83	3.39
Dung in 1946	3.20	1.26	4.46
Mean	2.88	1.04	3.92
Increase	0.64	0.43	1.07
Previous Rotation:			
Lucerne	2.76	1.26	4.02
Arable with hay	2.98	0.84	3.82

Sugar Beet

	Clean Beet tons per acre	Tops tons per acre	Total Sugar cwt per acre	Sugar %
No Dung	13.41	8.02	50.6	18.87
Dung in 1946	14.90	8.80	57.9	19.44
Mean	14.16	8.41	54.3	19.16
Increase	1.49	0.78	7.3	0.57
Previous Rotation:				
Ley	14.48	9.03	55.6	19.18
Arable with sugar beet	13.84	7.79	53.0	19.12

50/Be/1.5

Block IV

Ley. 1st Year

	Sheep days of grazing per acre	No. of Sheep carried per acre for the year
Mean	1000	2.7

Potatoes

	Total tubers tons per acre	Percentage Ware
No Dung	11.79	91.3
Dung in 1948	14.82	92.8
Mean	13.30	92.0
Increase	3.03	1.5
Previous Rotation:		
Ley	15.20	93.4
Lucerne	13.27	92.6
Arable with hay	12.40	91.2
Arable with sugar beet	12.36	90.9

Lucerne. 1st Year

Yield of Lucerne Hay (85% dry matter): tons per acre

	1st Crop	2nd Crop	Total
No Dung	0.58	0.42	1.00
Dung in 1948	0.82	0.64	1.46
Mean	0.70	0.53	1.23
Increase	0.24	0.22	0.46
Previous Rotation:			
Lucerne	0.68	0.92	1.60
Arable with hay	0.71	0.13	0.84

50/Be/1.6

Block V

Ley. 2nd Year

	Sheep days of grazing per acre	No. of sheep carried per acre for the year
Mean	2217	6.1

Lucerne. 2nd Year

Yield of Lucerne Hay (85% dry matter): tons per acre

	1st Crop	2nd Crop	3rd Crop	Total
No Dung	1.61	1.56	0.74	3.91
Dung in 1947	1.92	1.63	0.82	4.37
Mean	1.77	1.60	0.78	4.15
Increase	0.31	0.07	0.08	0.46
Previous Rotation:				
Lucerne	1.70	1.62	0.77	4.09
Arable with sugar beet	1.84	1.58	0.78	4.20

Rye

	Grain: cwt per acre	Straw: cwt per acre
No Dung	34.7	43.1
Dung in 1947	34.5	45.4
Mean	34.6	44.2
Increase	-0.2	2.3
Previous Rotation:		
Ley	35.8	47.1
Lucerne	36.1	46.8
Arable with hay	33.7	41.6
Arable with sugar beet	32.8	41.5