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Yields of the Field Experiments 1949

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49/BA/4 Six-course Rotation - Rothamsted and Woburn

49/BA/4 Six-course Rotation - Rothamsted and Woburn, Rothamsted Research (1950) Yields Of The Field Experiments 1949, pp 26 - 30

49/Ba/4.1

SIX COURSE ROTATION EXPERIMENT 1949

Seasonal effects of N, P₂O₅ and K₂O

Rotation and treatments as given in 1932 **Report**, p. 131, with the exceptions that since 1934 the forage crop has been replaced by rye harvested as a mature crop, and that green manure crops are now omitted. Since 1934 lime has been applied at the rate of 10 cwt per acre at two stages in the rotation: immediately after the removal of the potato crop, and before sowing barley.

Cultivations, etc.:

Rothamsted, Long Hoos IV

Sugar beet. Series 2.

Ploughed: Sept 4-8. Reploughed: Jan 18-19. Harrowed: Apr 9. Harrowed, rolled, seed drilled: Apr 11. Artificial fertilizers applied, harrowed and rolled in: Apr 12. Wireworm dust applied by hand (2 cwt per acre): Apr 16. Hoed: May 13 - June 28. Singled: May 30. Lifted: Nov 23. Variety: Klein E. Previous crop: Rye.

Barley. Series 3.

Sugar beet tops remaining from 1948 crop ploughed in: Nov 30 - Dec 1. Ground lime applied (10 cwt per acre): Jan 25. Springtined twice: Feb 22, 25. Artificial fertilizers applied: Mar 2. Seed drilled and harrowed in: Mar 4. Ring rolled: Apr 12. Clover seed undersown: Apr 13. Rolled: Apr 14. Thistles hand pulled: June 13-14. Harvested: July 29. Variety: Plumage Archer. Previous crop: Sugar beet.

Clover. Series 4.

Seed undersown in barley: Apr 15, 1948. Harrowed and ring rolled: Apr 16. Autumn artificial fertilizers applied: Dec 16. Rolled: Mar 23, 1949. Sulphate of ammonia applied: Apr 23. Cut: June 27. Variety: Late flowering Montgomery Red. Previous crop: Barley.

Wheat. Series 1.

Ploughed: July 28-29, 1948. Reploughed: Sept 22-23. Springtined twice: Oct 21, 22. Autumn artificial fertilizers applied: Oct 26. Seed drilled: Oct 28. Harrowed and rolled: Apr 11, 1949. Sulphate of ammonia applied: Apr 23. Harvested: July 28. Variety: Yeoman. Previous crop: Clover.

Potatoes. Series 5.

Ploughed: Sept 2-3. Reploughed: Jan 20. Harrowed

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and ring rolled: Mar 31. Bouted: Apr 1. Artificial
applied: Apr 2. Potatoes planted and covered in:
Apr 4. Ridges rolled down: Apr 9. Chain harrowed:
Apr 27. Re-ridged: May 9. Ridges harrowed: May 16.
Grubbed: June 1, 29. Earthed up: July 9. Sprayed
to kill off haulm: Sept 8. Lifted: Sept 20. Variety:
Majestic. Previous crop: Wheat.

Rye. Series 6.

Ploughed: Sept 30 - Oct 1. Ground lime applied:
Oct 21-22. Harrowed: Oct 22. Autumn artificials
applied: Oct 27. Seed drilled and harrowed in: Oct 28.
Harrowed and rolled: Apr 11, 1949. Sulphate of ammonia
applied: Apr 23. Harvested: July 26-27. Variety:
King II. Previous crop: Potatoes.

Woburn, Stackyard, Series B.

Sugar beet. Series 5.

Ploughed: Sept 2. Re-ploughed: Jan 17-18. Springtined
twice: Mar 22, 30. Harrowed, seed drilled, artificials
applied, harrowed: Apr 5. Rolled: Apr 11. Hoed:
Apr 30 - June 28. Singled: May 30 - 31. Lifted:
Sept 27-28. Variety: Klein E. Previous crop: Rye.

Barley. Series 4.

Sugar beet tops remaining from 1948 crop ploughed in:
Nov 10. Ploughed: Jan 31 - Feb 1. Ground lime
(66%CaO) applied (15 cwt per acre): Feb 6. Springtined:
Feb 19. Artificial applied: Mar 3. Seed drilled,
clover seed undersown, harrowed in: Mar 18. Rolled:
Mar 24. Harvested: July 26. Variety: Plumage Archer.
Previous crop: Sugar beet.

Clover. Series 6.

Seeds undersown in barley: Mar 12, 1948. Harrowed: Mar 13.
Phosphate and potash fertilizer applied: Nov 9. Rolled:
Mar 24, 1949. Sulphate of ammonia applied: Apr 26.
Cut: June 29. Variety: Late flowering Red (New Zealand).
Previous crop: Barley.

Wheat. Series 3.

Ploughed, harrowed twice: July 23, 1948. Ploughed: Sept 3.
Ploughed, harrowed, autumn artificials applied: Nov 8-9.
Seed drilled and harrowed in: Nov 10. Harrowed, rolled:
Apr 14-16, 1949. Sprayed with "D.N.O.C.": Apr 20.
Sulphate of ammonia applied: Apr 26. Harvested: Aug 8.
Variety: Squareheads Master 13/4. Previous crop: Clover.

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Potatoes. Series 1.
Ploughed: Sept 13-16. Re-ploughed: Jan 27-28. Springtined:
Mar 24. Bouted: Apr 8. Artificials applied: Apr 11.
Potatoes planted and covered in: Apr 12. Ridges harrowed,
re-ridged: May 11. Grubbed: May 31. Hood: June 18.
Ridged: June 20-21. Sprayed to kill off haulm: Sept 10.
Lifted: Sept 22-23. Variety: Majestic. Previous crop:
Wheat.

Rye. Series 2.
Ploughed: Oct 6-8. Ground lime (66% CaO) applied (15 cwt
per acre): Oct 19. Harrowed: Oct 23. Autumn artificials
applied: Nov 8. Harrowed twice, seed drilled: Nov 9.
Harrowed in: Nov 10. Harrowed and rolled: Apr 14-16.
Sprayed with "D.N.O.C.": Apr 20. Sulphate of ammonia
applied: Apr 26. Harvested: July 26. Variety: King II.
Previous crop: Potatoes.

A summary of the results from the 6-course rotation for
1930-1948 will be found in the 1948 Station Report, pp. 90-94.

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Mean yields per acre and increments in yield per cwt of N, P₂O₅ and K₂O

	Rothamsted		Woburn		Rothamsted		Woburn		
	Response	S.E.	Response	S.E.	Response	S.E.	Response	S.E.	
Sugar Beet, roots (washed): tons per acre					Clover, hay: dry matter cwt per acre				
Yield	8.08		7.96		44.8		37.0		
N	-0.59	0.633	-0.90	1.064	6.4	5.54	-9.0	6.61	
P	-0.99	0.633	-1.15	1.064	5.2	5.54	4.1	6.61	
K	0.62	0.380	2.76	0.638	-8.1	3.33	-1.1	3.97	
Sugar Beet, tops: tons per acre					Wheat, grain: cwt per acre				
Yield	6.29		4.33		28.6		18.0		
N	1.81	1.547	1.06	0.890	3.2	5.71	27.5	8.01	
P	-0.05	1.547	0.69	0.890	-3.1	5.71	-13.3	8.01	
K	0.43	0.928	1.10	0.534	4.5	3.43	-3.8	4.80	
Sugar Beet, sugar percentage					Wheat, straw: cwt per acre				
Yield	15.12		18.04		46.5		27.9		
N	-0.25		-0.05		7.1		46.7		
P	-1.23		1.47		-3.8		-2.9		
K	-0.48		0.35		5.1		-12.2		
Sugar Beet, total sugar: cwt per acre					Potatoes, total tubers: tons per acre				
Yield	24.4		28.7		4.67		8.42		
N	-2.1	2.03	-3.3	4.52	2.01	0.407	3.71	0.796	
P	-4.9	2.03	-2.1	4.52	-0.27	0.407	0.78	0.796	
K	1.2	1.22	10.6	2.71	1.95	0.244	0.26	0.478	
Sugar Beet, plant number: thousands per acre					Potatoes, percentage ware				
Yield	25.3		23.7		78.1		90.5		
N	-1.9	2.24	-3.4	3.73	1.5		1.0		
P	-2.9	2.24	-2.4	3.73	-9.8		-1.5		
K	0.3	1.34	2.1	2.24	9.0		1.4		

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	Rothamsted Response S.E.		Woburn Response S.E.		Rothamsted Response S.E.		Woburn Response S.E.	
	Barley, grain: cwt per acre				Rye, grain: cwt per acre			
Yield	30.7		24.6		32.3		26.7	
N	4.7	2.46	21.5	6.76	16.5	6.35	9.5	6.50
P	1.1	2.46	-0.5	6.76	-2.5	6.35	-8.3	6.50
K	0.8	1.48	-5.8	4.06	-4.0	3.81	0.5	3.90
	Barley, straw: cwt per acre				Rye, straw: cwt per acre			
Yield	37.6		29.4		55.2		41.8	
N	27.7		38.2		21.2		5.5	
P	4.0		-0.9		-0.3		-20.9	
K	-1.3		-4.4		-6.2		7.7	