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Yields of the Field Experiments 1957

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57/R/BA/3 and 57/W/BA/3 Six-course Rotation

Rothamsted Research

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57/Ba/3.1

SIX COURSE ROTATION EXPERIMENT

The 28th year

Seasonal effects of fertilizers - Rothamsted Long Hoos IV and Woburn Stackyard 1957.

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

Area of each plot: Rothamsted, 0.0250 acres; Woburn, 0.0266 acres.

Cultivations, etc.:

Rothamsted

Sugar beet.

Ploughed twice: Sept 21, 1956 and Nov 12. Fertilizers applied: Apr 13, 1957. Seed drilled at 12 lb per acre: Apr 16. Sprayed with miscible DDT, 3 pints in 20 gallons per acre: May 29. Singled: June 14 - 19. Sprayed with methyl demeton, 12 oz in 80 gallons per acre: July 9. Lifted: Nov 4 - 13. Variety: Klein E.

Barley.

Sugar beet tops spread: Dec 6, 1956. Ploughed: Jan 12, 1957. Ground chalk applied at 20 cwt per acre: Feb 21. Fertilizers applied: Mar 16. Seed drilled at $2\frac{3}{4}$ bushels per acre: Mar 18. Clover seed undersown: May 20. Harvested: Aug 8. Variety: Plumage Archer.

Clover.

Seed undersown in barley at 40 lb per acre: Apr 23, 1956. Autumn fertilizers applied: Nov 16. Sulphate of ammonia applied: Mar 30, 1957. Cut: July 9. Variety: S123 Late Flowering Red.

Wheat.

Ploughed twice: July 27, 1956 and Sept 21. Seed drilled at $2\frac{3}{4}$ bushels per acre: Oct 25. Autumn fertilizers applied: Oct 26. Sulphate of ammonia applied: Apr 24, 1957. Harvested: Aug 8. Variety: Yeoman.

Potatoes.

Ploughed 3 times: Sept 21, 1956, Nov 12, Jan 22, 1957. Ridged, fertilizers applied: May 3. Potatoes planted: May 4. Earthed up: July 6. Sprayed with copper fungicide, 5 lb in 40 gallons per acre: July 31 and Aug 21. Sprayed with sulphuric acid, 15% BOV at 100 gallons per acre: Sept 19. Lifted: Sept 30. Variety: Majestic.

Rye.

Ground chalk applied at 20 cwt per acre, ploughed: Oct 15, 1956. Seed drilled at 3 bushels per acre: Oct 25. Autumn fertilizers applied: Oct 26. Sulphate of ammonia applied: Apr 24, 1957. Harvested: Aug 7. Variety: King II.

57/Ba/3.2

Woburn

Sugar beet.

Ploughed twice: Sept 1, 1956 and Nov 14. Fertilizers applied: Apr 11, 1957. Seed drilled at 12 lb per acre: Apr 12. Sprayed with miscible DDT, 3 pints in 20 gallons per acre: May 22. Singled: June 12 - 13. Sprayed with methyl demeton, 12 oz in 60 gallons per acre: July 8. Lifted: Nov 12. Variety: Klein E.

Barley.

Ploughed: Nov 14, 1956. Fertilizers applied: Mar 12, 1957. Seed drilled at $2\frac{1}{2}$ bushels per acre: Mar 16. Harvested: Aug 2. Variety: Herta.

Clover.

Ploughed twice: Aug 24, 1956 and Nov 13. Fertilizers applied: Mar 23, 1957. Seed broadcast at 40 lb per acre: Mar 26. Cut: July 5. Variety: Crimsen clover.

Wheat.

Ploughed twice: July 24, 1956 and Sept 29. Autumn fertilizers applied: Oct 15. Seed drilled at $2\frac{1}{2}$ bushels per acre: Oct 20. Sprayed with MCPP at 7 pints in 40 gallons per acre: Apr 6, 1957. Sulphate of ammonia applied: May 1. Harvested: Aug 7. Variety: Yeoman.

Potatoes.

Ploughed twice: Sept 4, 1956 and Nov 13. Ridged, fertilizers applied and potatoes planted: Apr 26, 1957. Sprayed with miscible DDT, 3 pints in 20 gallons: May 22. Sprayed with copper fungicide, 5 lb in 40 gallons per acre: Aug 3, Aug 22 and Sept 4. Sprayed with arsenious compound, 1 gallon in 40 gallons per acre: Sept 16. Lifted: Oct 1. Variety: Majestic.

Rye.

Ploughed: Oct 6, 1956. Ground chalk applied at 20 cwt per acre: Oct 11. Seed drilled at $2\frac{1}{2}$ bushels per acre: Oct 20. Sprayed with MCPP at 7 pints in 40 gallons per acre: Apr 6, 1957. Sulphate of ammonia applied: Apr 18. Harvested: Aug 7. Variety: King II.

Note: In 1957 at Woburn, the nitrogen levels were doubled on all crops except clover.

Summary of Results

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

	Rothamsted	Woburn	Rothamsted	Woburn
Sugar Beet, roots (washed): tons per acre		Barley, grain: cwt per acre		
Mean	7.71	14.15	26.7	28.4
Response to: N	+2.55	+2.27	+12.9	+9.9
P	-0.80	+0.48	-12.4	+13.6
K	-0.31	+2.75	-4.9	-1.0
Mean dry matter % as harvested:			83.3	**
Sugar Beet, sugar percentage		Barley, straw: cwt per acre		
Mean	16.7	17.5	16.1	24.3
Response to: N	+0.7	-0.3	+16.9	+10.6
P	+1.1	0.0	-7.2	+7.5
K	+0.8	+1.1	+7.3	+1.5
Mean dry matter % as harvested:			83.1	**
Sugar Beet, total sugar: cwt per acre		Clover, hay, dry matter: cwt per acre		
Mean	25.7	49.8	25.1	8.9
Response to: N	+9.5	+7.1	-14.0	+14.8
P	-0.8	+1.7	+8.7	-5.7
K	+0.1	+12.9	+4.0	-2.1
Mean dry matter % as cut:			58.7	25.3
Sugar Beet, tops: tons per acre		Wheat, grain: cwt per acre		
Mean	9.26	10.09	32.1	10.0
Response to: N	+5.43	+6.35	+9.4	+2.9
P	+0.69	-0.19	+0.9	-17.6
K	-1.08	+0.13	-4.2	+9.3
Mean dry matter % as harvested:			83.7	**
Sugar Beet, plant number: thousands per acre		Wheat, straw: cwt per acre		
Mean	29.6	**	43.5	11.8
Response to: N	-1.3		+21.3	+2.2
P	-0.3		-4.4	-17.3
K	+0.3		-8.2	+4.0
Mean dry matter % as harvested:			84.9	**

*(At 85% dry matter). ** Not recorded.

57/Ba/3.4

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

	Rothamsted	Woburn	Rothamsted	Woburn
	Potatoes, total tubers: tons per acre		Rye, grain: cwt per acre	
Mean	7.38	12.16	*	24.8
Response to: N	+0.15	+2.57	+14.9	+14.7
P	+1.15	-0.16	-2.3	+13.5
K	+0.61	+0.17	-3.5	-0.9
Mean dry matter % as harvested:			82.0	**
	Potatoes, percentage ware		Rye, straw: cwt per acre	
	(1)	(2)	*	
Mean	80.0	90.5	32.9	28.9
Response to: N	-4.4	+3.1	+7.2	+10.6
P	+8.3	+2.4	-3.1	+15.5
K	+5.6	-3.0	-5.8	-1.4
Mean dry matter % as harvested:			84.7	**

*(At 85% dry matter).

Riddle: (1) 1½"; (2) 1⅝"