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Yields of the Field Experiments 1960

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60/R/B/1 and 60/W/B/1 Six-course Rotation

Rothamsted Research

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60/B/1.1

SIX COURSE ROTATION EXPERIMENT

The 31st and last year

Seasonal effects of fertilisers - Rothamsted Long Hoos IV and Woburn Stackyard 1960.

For history, treatments, etc., see "Details of the Classical and Long Term Experiments" 1956. The experiment is now terminated.

In 1960 the cereals on the Woburn experiment were again combine-harvested the yields being estimated from 2 cuts.

Magnesium test (Woburn only): The 1959 magnesium test on potatoes was repeated in 1960.

Area of each plot (acres): Rothamsted - 0.0250; Woburn - 0.0265.
Area harvested: Rothamsted - full area; Woburn - Sugar beet - full area; Barley, wheat, rye - 0.0190; Potatoes (sub plot) - 0.0095.

Cultivations, etc.:

Rothamsted

Sugar beet.

Ploughed twice: Aug 19 and Nov 27, 1959. Fertilisers applied: Apr 1, 1960. Seed drilled at 19 lb per acre: Apr 6. Sprayed with demeton methyl at 12 fluid oz in 60 gallons per acre: Apr 30. Singled: May 30 - June 1. Lifted: Nov 11. Harvested: Nov 15. Variety: Klein E.

Barley.

Sugar beet tops spread, ground chalk applied at 23 cwt per acre: Nov 17, 1959. Ploughed: Nov 27. Fertilisers applied: Mar 10, 1960. Seed drilled at $2\frac{3}{4}$ bushels per acre: Mar 18. Clover seed undersown: Apr 22. Harvested: Aug 17. Variety: Plumage Archer.

Clover.

Seed undersown in barley at 40 lb per acre: Apr 29, 1959. Autumn fertilisers applied: Oct 3. Sulphate of ammonia applied: Mar 23, 1960. Cut: June 27. Variety: S123 Late Flowering Red.

Wheat.

Ploughed three times: June 23, Aug 11 and Sept 9, 1959. Autumn fertilisers applied: Oct 3. Seed drilled at $2\frac{3}{4}$ bushels per acre: Oct 12. Sulphate of ammonia applied: Mar 23, 1960. Sprayed with CMPP, 6 pints in 40 gallons per acre: Apr 21. Harvested: Aug 5. Variety: Yeoman.

Potatoes.

Ploughed: Aug 19, 1959. Ridged, fertilisers applied: Apr 21, 1960. Potatoes planted: Apr 22. Earthed up: June 20. Sprayed twice with copper fungicide: July 16 and Aug 10. Sprayed with sulphuric acid, 15% BOV at 100 gallons per acre: Aug 31. Haulms destroyed mechanically: Sept 21. Lifted: Oct 6. Variety: Majestic.

60/B/1.2

Rye.

Ground chalk applied at 23 cwt per acre: Oct 3, 1959. Ploughed: Oct 7. Autumn fertilisers applied: Oct 12. Seed drilled at 3 bushels per acre: Oct 13. Sulphate of ammonia applied: Mar 23, 1960. Sprayed with CMPP at 6 pints in 40 gallons per acre: Apr 21. Harvested: Aug 5. Variety: King II

Woburn

Sugar beet.

Ploughed twice: Sept 1 and Nov 28, 1959. Fertilisers applied, seed drilled at 13 lb per acre: Apr 13, 1960. Sprayed against flea beetle with miscible DDT at 3 pints in 40 gallons per acre: May 6; and with demeton methyl at 12 oz in 40 gallons per acre: June 1. Singled: May 27 - June 3. Lifted: Oct 7. Variety: Klein E.

Barley.

Ground chalk applied at 18 cwt per acre: Nov 16, 1959. Ploughed: Nov 20. Fertilisers applied: Mar 8, 1960. Seed drilled at 2½ bushels per acre: Mar 14. Sprayed with TOB/MCPA at 4 pints in 40 gallons per acre: May 6. Combine harvested: Aug 13. Variety: Herta.

Clover.

Ground chalk applied at 20 cwt per acre: Sept 1, 1959. Ploughed twice: Sept 2 and Nov 25. Fertilisers applied: Mar 25, 1960. Seed broadcast at 40 lb per acre: Mar 28. Sprayed against weevil and miscible DDT at 3 pints in 40 gallons per acre: May 6. Crop discarded owing to pigeon damage and weed infestation.

Wheat.

Ploughed twice: June 3 and Sept 1, 1959. Autumn fertilisers applied: Oct 19. Seed drilled at 3 bushels per acre: Oct 23. Sulphate of ammonia applied: Mar 28, 1960. Sprayed with CMPP at 5 pints in 40 gallons per acre: Apr 19. Combine harvested: Aug 18. Variety: Yeoman.

Potatoes.

Ploughed twice: Sept 2 and Nov 25, 1959. Ridged, fertilisers applied and potatoes hand planted: Apr 28, 1960. Earthed up: June 14. Sprayed twice with copper fungicide at 5 lb in 40 gallons per acre: July 15 and July 29. Haulms destroyed mechanically: Aug 27. Lifted: Sept 29. Variety: Majestic.

Rye.

Ground chalk applied at 18 cwt per acre: Oct 1, 1959. Ploughed: Oct 2. Fertilisers applied: Oct 19. Seed drilled at 3 bushels per acre: Oct 23. Sulphate of ammonia applied: Mar 25, 1960. Sprayed with CMPP at 6 pints in 40 gallons per acre: Apr 19. Combine harvested: Aug 20. Variety: King II.

60/B/1.3

Summary of Results

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

	Rothamsted	Woburn	Rothamsted	Woburn
<u>Sugar Beet, roots (washed):</u> tons per acre			<u>Barley, grain:</u> cwt per acre	
Mean	11.13	9.42	25.6*	30.1*
Response to: N	+5.31	+4.48	+8.5	+16.6
P	+1.40	-1.35	-2.5	-6.0
K	-0.45	+2.30	+2.2	-4.7
Mean dry matter % as harvested:			80.9	81.0
<u>Sugar Beet, sugar percentage</u>			<u>Barley, straw:</u> cwt per acre	
Mean	16.5	16.6	28.5*	23.0*
Response to: N	-0.5	0.0	+8.6	+13.5
P	+0.3	+0.5	-1.5	+2.5
K	+0.7	+1.4	-0.4	+0.8
Mean dry matter % as harvested:			81.9	66.2
<u>Sugar Beet, total sugar:</u> cwt per acre			<u>Clover, hay, dry matter:</u> cwt per acre	
Mean	36.7	31.4	19.4	
Response to: N	+16.5	+14.7	+18.5	(Crop discarded)
P	+5.3	-3.7	-0.9	
K	0.0	+10.2	-0.4	
Mean dry matter % as harvested:			76.0	
<u>Sugar Beet, tops:</u> tons per acre			<u>Wheat, grain:</u> cwt per acre	
Mean	7.75	6.41	34.9*	27.5*
Response to: N	+5.61	+3.73	+0.9	+26.8
P	+0.59	-3.21	+1.7	-0.7
K	-0.01	+0.79	-1.0	+2.5
Mean dry matter % as harvested:			83.0	80.3
<u>Sugar Beet, plant number:</u> thousands per acre			<u>Wheat, straw:</u> cwt per acre	
Mean	27.6	**	58.9*	33.2*
Response to: N	+1.5		-3.7	+31.5
P	-1.6		+5.3	+3.9
K	+1.8		+3.8	+6.4
Mean dry matter % as harvested:			86.6	81.1

* (At 85% dry matter).

** Not recorded

60/B/1.4

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

	Rothamsted	Woburn		Rothamsted	Woburn
	<u>Potatoes, total tubers:</u> tons per acre			<u>Rye, grain:</u> cwt per acre	
		Without Mg	With Mg		
Mean	12.00	9.33	10.46	26.2*	28.9*
Response to: N	+3.64	+6.71	+6.45	+8.0	+20.5
P	+0.10	-2.55	-1.64	-0.7	-4.6
K	+3.54	-0.31	+1.74	-3.2	-0.9
Mean dry matter % as harvested:				82.2	79.2
	<u>Potatoes, percentage</u> ware			<u>Rye, straw:</u> cwt per acre	
	(1)	Without ⁽²⁾ Mg	With Mg		
Mean	91.5	81.1	83.9	38.5*	29.5*
Response to: N	+3.3	+31.3	+19.0	+21.9	+14.8
P	-7.7	-9.6	-5.7	+4.3	+2.7
K	+2.8	+7.8	+11.3	-2.3	-0.6
Mean dry matter % as harvested:				86.9	62.8

*(At 85% dry matter)

Riddle: (1) 1½"; (2) 1⅝".