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Yields of the Field Experiments 1952

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52/BA/2 Four-course Rotation - Rothamsted

Rothamsted Research

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52/Ba/2.1

FOUR COURSE ROTATION EXPERIMENT

The 23rd year

Direct and residual effects of organics and phosphates - Hoosfield 1952.

For details of treatments and rotation see "Results of the Field Experiments 1939-47".

Area of each plot: Potatoes: 0.0242 acre. Barley and wheat: 0.0244 acre.
Ryegrass: 0.0233 acre.Manures (cwt per acre) applied 1951-52

	Organic manures				Supplementary fertilizers		
	Organic matter	N	P ₂ O ₅	K ₂ O	N as Sulph. of amm.	P ₂ O ₅ as Super	K ₂ O as Mur. of potash
Dung [†]	50	1.191	0.526	2.485	0.609	0.674	0.515
Adco	50	1.140	0.795	0.351	0.660	0.405	2.649
Straw	132	0.684	0.262	1.395	1.116	0.938	1.605
Super			None		0.36	1.2	0.6
Rock phosphate			None		0.36	1.2*	0.6

*As rock phosphate

[†]Note: The application of Dung to the Ryegrass and Wheat was made in error at a rate to supply:

Organic matter	N	P ₂ O ₅	K ₂ O
59	1.413	0.625	2.950

Cultivations, etc.:

Potatoes:

Ploughed: Sept 13, 1951. Dung, Adco and supplementary fertilizers and first dressing to straw plots applied: Dec 18. Straw applied, all plots ploughed: Dec 19. Second dressing to straw plots applied: Feb 7, 1952. Ridged: Apr 25. Spring fertilizers, including third dressing to straw plots, and sulphate of ammonia to half plots, applied: Apr 26. Potatoes planted: Apr 28. Earthed up: July 10. Sprayed with copper fungicide 5 lb per acre: Sept 4. Sprayed with sulphuric acid, 20% B.O.V.: Sept 23. Lifted: Oct 7. Variety: Majestic.

Barley:

Dung and Adco applied: Dec 18, 1951. Supplementary fertilizers to dung and Adco, and first dressing to straw plots applied: Dec 19. Straw applied, all plots ploughed: Dec 20. Second dressing to straw plots applied: Feb 7, 1952. Ground chalk 22½ cwt per acre applied: Feb 26. Spring fertilizers and

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third dressing to straw plots applied, seed drilled at 3 bushels per acre: Mar 3. Sprayed with M.C.P.A. 5 pints per acre: May 10. Harvested: July 30. Variety: Plumage Archer.

Ryegrass:

Dung, Adco and supplementary fertilizers, and first dressing to straw plots applied: Sept 24, 1951. Straw applied, all plots ploughed: Sept 25. Autumn fertilizers applied: Oct 22. Seed sown at 112 lb per acre: Oct 25. Second dressing to straw plots applied: Dec 20. Sulphate of ammonia and third dressing to straw plots applied: Apr 16, 1952. Sprayed with M.C.P.A. 5 pints per acre: May 10. Harvested: June 16. Variety: Western Wolths.

Wheat:

Floughed: Aug 1, 1951. Dung, Adco and supplementary fertilizers, and first dressing to straw plots applied: Sept 25. Straw applied, ploughed all plots: Sept 26. Autumn fertilizers applied, seed drilled at 3 bushels per acre: Oct 20. Second dressing to straw plots applied: Dec 20. Sulphate of ammonia and third dressing to straw plots applied: Apr 24, 1952. Sprayed with M.C.P.A. 5 pints per acre: May 10. Harvested: July 29. Variety: Squareheads Master 13/4.

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Summary of Results

Manure +	Year of Cycle	Potatoes					Percentage Ware		Response to N	Barley		Ryegrass		Wheat	
		Total tubers, tons per acre		Response to N	Additional N		Mean	Grain cwt per acre		Straw per acre	Dry Matter cwt per acre	Grain cwt per acre	Straw per acre		
		Without	With		Without	With									
Manure as F.Y.M.	I	11.59	11.62	11.60	0.03	87.1	82.4	84.8	-4.7	35.0	38.1	25.0	16.6	38.0	
	II	5.93	7.07	6.50	1.14	77.1	79.3	78.2	2.2	20.0	18.3	15.6	9.9	20.4	
	III	6.56	9.19	7.88	2.63	74.1	83.0	78.6	8.9	20.4	19.0	14.0	7.0	15.5	
	IV	6.74	9.66	8.20	2.92	80.0	83.9	82.0	3.9	16.9	14.3	11.4	10.4	13.2	
	V	3.21	5.73	4.47	2.52	60.0	78.7	69.4	18.7	17.2	16.5	13.6	10.4	19.5	
Manure as Adco	I	7.33	7.26	7.32	-0.12	79.2	73.1	76.2	-6.1	31.1	34.2	23.0	19.7	*	
	II	5.38	6.14	5.76	0.76	81.0	77.8	79.4	-3.2	26.1	25.4	15.0	13.4	24.9	
	III	7.34	7.30	7.32	-0.04	80.9	82.9	81.9	2.0	19.1	15.4	15.1	9.7	13.7	
	IV	5.65	8.52	7.03	2.87	76.5	85.4	81.0	8.9	20.7	18.3	15.5	8.2	14.0	
	V	5.65	6.43	6.06	0.83	72.1	78.2	75.2	6.1	14.1	12.6	12.8	11.8	23.8	
Manure as Straw	I	5.89	8.55	7.22	2.66	76.9	74.6	75.8	-2.3	31.9	35.6	31.4	14.3	36.6	
	II	6.60	6.95	6.73	0.35	78.9	81.1	80.0	2.2	17.4	14.3	14.2	8.7	16.4	
	III	6.68	9.46	8.07	2.73	74.6	75.0	74.8	0.4	20.1	17.8	17.5	10.7	22.4	
	IV	8.27	9.94	9.19	1.67	76.9	80.0	78.4	3.1	19.8	21.8	13.7	8.8	18.5	
	V	5.46	7.09	6.23	1.63	75.5	81.1	78.3	5.6	18.2	16.6	14.5	8.8	16.2	
Super-phosphate	I	8.97	8.72	8.84	-0.25	76.4	75.9	76.2	-0.5	23.3	28.5	24.5	13.7	32.7	
	II	8.45	9.39	8.92	0.94	82.8	81.1	82.0	-1.7	24.9	26.3	24.6	8.6	23.6	
	III	4.05	5.53	4.82	1.53	64.9	77.9	71.4	13.0	23.5	29.2	26.2	10.0	19.7	
	IV	5.10	5.22	5.16	0.12	80.3	78.5	79.4	-1.8	27.5	27.5	22.5	7.3	20.0	
	V	6.52	7.32	7.17	1.30	72.3	81.2	76.6	9.2	28.2	30.1	24.3	10.6	23.1	
Rock phosphate	I	4.20	5.27	4.74	1.07	60.0	71.7	65.8	11.7	26.0	26.3	21.1	15.2	23.8	
	II	5.41	6.56	5.98	1.15	84.8	81.4	83.1	-3.4	26.1	26.5	22.8	12.5	21.7	
	III	3.22	2.76	2.99	-0.46	69.9	62.2	66.0	-7.7	27.6	29.2	21.6	13.5	26.5	
	IV	3.77	6.25	5.01	2.43	76.2	79.0	77.6	2.8	24.6	25.6	25.9	10.2	20.6	
	V	6.20	6.35	6.28	0.15	82.1	87.4	84.8	5.3	25.8	28.4	21.6	16.8	31.0	

+Note: All manures are supplemented by fertilizers as shown in table on page 52/Ba/2.1

*Recorded yield obviously incorrect. No estimate possible at this stage.