

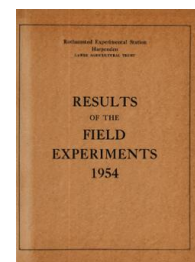
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Yields of the Field Experiments 1954

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54/R/BA/2 Four-course Rotation

Rothamsted Research

Rothamsted Research (1955) *54/R/BA/2 Four-course Rotation* ; Yields Of The Field Experiments 1954, pp 20 - 22 - DOI: <https://doi.org/10.23637/ERADOC-1-184>

54/Ba/2.1

FOUR COURSE ROTATION EXPERIMENT

The 25th year

Direct and residual effects of organic manures and phosphatic fertilizers - Hoosfield 1954.

For details of treatments and rotation see "Results of the Field Experiments 1939-47" Vol.I, Section Ba/3.

Area of each plot: Potatoes (whole plot): 0.0228 acre. Barley, ryegrass and wheat: 0.0244 acre.

Manures (cwt per acre) applied 1953-54

Treatment	Organic manures and phosphates				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 (a)	50	1.236	0.534	2.331	0.564	0.666	0.669
Dung (b)	50	1.189	0.514	2.406	0.611	0.686	0.594
Adco	50	1.302	0.754	0.822	0.498	0.446	2.178
Straw (a)	167	0.533	0.100	0.550	1.267	1.100	2.450
Straw (b)	167	0.833	0.250	1.250	0.967	0.950	1.750
Super			1.2		0.36*		0.6*
Rock phosphate			1.2		0.36*		0.6*

Dung and straw: (a) applied to wheat and ryegrass; (b) to barley and potatoes.

*Yearly dressings totalling to the standard rates in the 5 year period.

Cultivations, etc.:

Potatoes.

Ploughed: Sept 2, 1953. Dung and adco applied: Nov 26. Straw, first dressing of fertilizers to straw plot and supplementary fertilizers to dung and adco plots applied, all plots ploughed: Nov 30. Second dressing of fertilizers to straw plot applied: Jan 18, 1954. Ridged, spring fertilizers including third dressing to straw plot and sulphate of ammonia to half plots applied, potatoes planted: Apr 20. Earthed up: July 21. Sprayed with copper fungicide, $\frac{1}{2}$ gallon paste in 10 gals. water per acre: July 27. Sprayed with copper fungicide, 5 lb per acre: Aug 13. Sprayed with sulphuric acid, 15% B.O.V. 100 gallons per acre: Sept 28. Lifted: Oct 9. Variety: Majestic.

Barley.

Dung and adco applied: Nov 26, 1953. Straw, first dressing of fertilizers to straw plot and supplementary fertilizers to dung and adco plots applied, all plots ploughed: Dec 1. Ground chalk applied at 21 cwt per acre: Dec 5. Second dressing of fertilizer to straw plot: Jan 18, 1954. Spring fertilizers

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including third dressing to straw plot applied: Mar 12. Seed drilled at 3 bushels per acre: Mar 15. Harvested: Aug 27.

Variety: Plumage Archer.

Ryegrass.

Dung and adco with supplementary fertilizers, straw with first dressing of fertilizers applied, all plots ploughed: Sept 23, 1953.

Autumn fertilizers applied: Oct 8. Seed sown at 112 lb per acre:

Oct 9. Second dressing of fertilizers to straw plot applied:

Jan 18, 1954. Sulphate of ammonia, and third dressing of fertilizers to straw plot applied: Apr 29. Harvested: June 29.

Variety: Western Wolths.

Wheat.

Dung and adco with supplementary fertilizers, straw with first dressing of fertilizers applied, all plots ploughed: Sept 23, 1953.

Autumn fertilizers applied: Oct 9. Seed drilled at 3 bushels per acre: Oct 22. Second dressing of fertilizers to straw plot

applied: Jan 18, 1954. Sulphate of ammonia and third dressing of fertilizers to straw plot applied: May 1. Harvested: Sept 6.

Variety: Squareheads Master 13/4.

Summary of Results

Manure +	Year of Cycle	Potatoes				Percentage Ware		Response to N	Barley Grain Straw # cwt per acre	Ryegrass Dry matter cwt per acre	Wheat Grain # Straw * cwt per acre
		Total tubers, tons per acre	Additional N Without	With	Mean	Without	With				
Dung	I	5.02	5.81	5.42	+0.79	78.6	74.3	76.4	32.2	36.9	28.0
	II	4.77	5.46	5.12	+0.69	86.0	78.1	82.0	19.2	13.1	17.3
	III	4.24	4.32	4.28	+0.08	73.8	77.4	75.6	24.8	21.0	16.6
	IV	3.45	4.80	4.12	+1.35	78.3	73.3	75.8	15.0	13.0	16.5
	V	3.24	4.06	3.65	+0.82	76.9	81.7	79.3	17.0	17.3	18.9
Adco (Straw compost)	I	4.17	5.07	4.62	+0.90	76.8	83.6	80.2	28.9	32.2	27.0
	II	2.78	3.51	3.14	+0.73	69.5	72.0	70.8	25.7	20.7	15.4
	III	2.29	2.78	2.54	+0.49	69.5	78.5	74.0	22.1	17.4	16.8
	IV	2.53	2.36	2.44	-0.17	72.9	74.7	73.8	20.8	13.1	18.0
	V	3.21	3.24	3.22	+0.03	69.7	77.6	73.6	20.6	16.7	18.3
Straw	I	4.58	5.48	5.03	+0.90	76.7	76.2	76.4	26.0	46.6	29.4
	II	2.86	4.06	3.46	+1.20	74.0	83.4	78.7	20.0	11.9	13.2
	III	3.73	4.82	4.28	+1.09	74.1	85.5	79.8	23.5	20.0	17.8
	IV	3.65	4.02	3.84	+0.37	78.8	77.4	78.1	20.5	13.6	15.3
	V	5.46	5.40	5.43	-0.06	77.0	82.5	79.8	20.0	17.1	15.5
Super-phosphate	I	4.36	5.56	4.96	+1.20	78.1	76.1	77.1	23.0	25.7	20.2
	II	3.62	3.53	3.58	-0.09	78.2	74.3	76.2	24.8	28.7	21.8
	III	4.24	2.70	3.47	-1.54	72.6	74.8	73.7	25.4	28.4	22.3
	IV	3.54	4.11	3.82	+0.57	80.5	79.9	80.2	23.8	30.7	18.2
	V	3.43	3.99	3.71	+0.56	74.0	82.1	78.0	24.8	26.4	21.8
Rock phosphate	I	1.70	2.18	1.94	+0.48	62.4	67.6	65.0	25.9	34.0	24.3
	II	2.14	2.66	2.40	+0.52	76.1	73.7	74.9	23.2	24.9	22.3
	III	2.41	2.51	2.46	+0.10	79.5	70.0	74.8	25.9	27.2	19.6
	IV	1.92	1.95	1.94	+0.03	70.1	69.5	69.8	26.1	25.7	20.3
	V	2.33	1.83	2.08	-0.50	76.3	65.8	71.0	24.9	23.4	22.8
Mean Dry Matter % 82.5											

* At 65% Dry Matter

+ Note: All manures are supplemented by fertilizers as shown in table on page 54/Ba/2.1

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