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Yields of the Field Experiments 1954

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54/R/BA/1 Three-course Rotation

Rothamsted Research

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54/Ba/1.1

THREE COURSE ROTATION EXPERIMENT

3rd year of revised scheme

For details of treatments and rotation see "Results of the Field Experiments 1952", Section Ba/1.

Area of each plot: Potatoes (sub-plot) - 0.0092 acre;
Barley - 0.0200 acre; Sugar beet - 0.0204 acre.

Cultivations, etc.:

Potatoes. Straw applied, ploughed all plots: Dec 28, 1953.
Fertilizers applied: Apr 8, 1954. Ridged: Apr 9. Potatoes planted: Apr 12. Earthed up: July 6. Sprayed (low volume) with copper fungicide at 5 lb powder per acre: July 27. Sprayed (low volume) with copper fungicide at $\frac{1}{2}$ gallon paste per acre: Aug 23. Sprayed with 15% sulphuric acid: Sept 28. Lifted: Oct 2. Variety: Majestic.

Barley. Straw applied, ploughed all plots: Dec 28, 1953.
Ground chalk applied at 22 cwt per acre: Jan 5, 1954. Fertilizers applied, seed drilled at 3 bushels per acre: Mar 15. Harvested: Aug 26. Variety: Plumage Archer.

Sugar beet. Straw applied, ploughed all plots: Dec 28, 1953.
Fertilizers applied: Mar 29, 1954. Seed drilled at 18 lb per acre: Apr 5. Sprayed (at low volume) with D.D.T. emulsion at $\frac{1}{2}$ lb per acre: May 12. Singled: June 1. Sprayed again as above: June 24. Lifted: Nov 16. Variety: Klein E.

Treatment symbols

Ar Complete artificials only
St1 Straw ploughed in in autumn, artificials applied in spring
St2 Straw ploughed in in autumn, artificials applied half in autumn, half in spring
Ad Adco ploughed in in autumn with supplementary artificials
St $5\frac{1}{3}$ cwt cut straw in autumn
Nitrogen dressing: 0.2; 0.4; 0.6 cwt N as sulphate of ammonia
K₃ Muriate of potash equivalent to K₂O in straw
K 0.5 cwt K₂O as muriate of potash.

Summary of Results

Potatoes

Treatments applied	1950	1953		1954		1952 & 1954		St + 0.2N	St + 0.6N	Ks	Ks + 0.4N
		0	K	0	K	0	K				
		-	-	-	-	-	-	-	-	-	-
		6.15	6.24	4.92	5.98	4.92	5.98				
		5.19	6.72	4.18	5.62	4.18	5.62				
		6.43	5.76	5.19	5.38	5.19	5.38	5.91	6.63	7.30	4.66
		4.75	5.57	4.37	4.47	4.37	4.47	5.91	6.24	7.20	7.25
		7.54	8.55	7.68	7.44	7.68	7.44				
		5.57	7.15	6.00	5.67	6.00	5.67				
		4.23	7.30	5.47	6.82	5.47	6.82	7.68	5.28	4.95	6.10
		5.38	5.52								
		6.24	7.30								

Total tubers: tons per acre

54/Ba/1.2

54/Ba/1.3

Treatments applied	1950	1951	1953 1954	Potatoes														
				0	0.4N	St + 0.2N	St + 0.6N	Ks	Ks + 0.4N	0	K							
				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				82.4	76.8	86.8	76.8	79.4	76.8	79.4	82.4	86.8	76.8	79.4	82.4	86.8	76.8	79.4
				78.8	72.3	84.4	72.3	76.8	72.3	76.8	78.8	84.4	72.3	76.8	78.8	84.4	72.3	76.8
				85.2	82.8	81.1	82.8	81.7	82.3	81.8	83.0	82.2	74.1	79.0	78.5	82.4	82.8	81.1
				80.0	77.1	82.2	77.1	82.7	82.3	81.8	83.0	82.2	74.1	79.0	78.5	82.4	82.8	81.1
				81.7	79.9	86.1	79.9	83.0	82.3	81.8	83.0	82.2	74.1	79.0	78.5	82.4	82.8	81.1
				82.0	84.0	84.2	84.0	79.4	82.3	81.8	83.0	82.2	74.1	79.0	78.5	82.4	82.8	81.1
				76.8	80.7	84.4	80.7	81.7	82.3	81.8	83.0	82.2	74.1	79.0	78.5	82.4	82.8	81.1
				80.3	76.8	84.4	76.8	84.4	82.3	81.8	83.0	82.2	74.1	79.0	78.5	82.4	82.8	81.1
				84.9	80.7	84.4	80.7	81.7	82.3	81.8	83.0	82.2	74.1	79.0	78.5	82.4	82.8	81.1
				86.5	80.7	84.4	80.7	81.7	82.3	81.8	83.0	82.2	74.1	79.0	78.5	82.4	82.8	81.1

Percentage Ware

54/Ba/1.4

Barley

Treatments applied		1953	0	0.4N	St + 0.2N	St + 0.6N	K _S	K _S + 0.4N
1950	1951	1952 & 1954	Grain: cwt per acre					
	Ar	0		30.1				
		0.4N	29.9					
Ar		0		30.8				
		0.4N	30.5					
	St1 St2	0	24.3		30.5			28.3
		0.4N	34.7		31.4		34.3	
St1 St2		0		29.9				
		0.4N	30.7					
		St+0.2N		23.5				
		St+0.6N		33.0				
		K _S		28.5				
		K _S +0.4N		34.3				
	Ad	0		28.9		27.0		32.6
		0.4N	32.0					
Ad		St+0.6N	29.7					
		K _S +0.4N	35.3					
			Straw: cwt per acre					
	Ar	0		33.5				
		0.4N	41.8					
Ar		0		35.1				
		0.4N	40.2					
	St1 St2	0	27.6		42.0			32.8
		0.4N	42.7		43.6		39.6	
St1 St2		0		43.8				
		0.4N	34.3					
		St+0.2N		26.5				
		St+0.6N		44.6				
		K _S		31.8				
		K _S +0.4N		44.1				
	Ad	0		33.5		30.9		34.9
		0.4N	43.2					
Ad		St+0.6N	37.7					
		K _S +0.4N	43.9					

54/Ba/1.5

Treatments applied 1953			Sugar Beet					
1950	1951	1952 & 1954	0	0.4N	St + 0.2N	St + 0.6N	K _S	K _S + 0.4N
			Roots (washed): tons per acre					
	Ar	0		7.90				
		0.4N	8.90					
Ar		0		6.46				
		0.4N	9.42					
	St1 St2	0		7.40		8.21		8.23
		0.4N	9.45		9.32		10.30	
St1 St2		0		8.29				
		0.4N	9.93					
		St+ 0.2N		8.75				
		St+ 0.6N	9.78					
		K _S		8.29				
		K _S +0.4N	10.93					
	Ad	0		7.77		6.66		8.07
Ad		0.4N	8.95					
		St+ 0.6N	9.65					
		K _S +0.4N	8.34					

			Sugar Percentage					
	Ar	0		17.00				
		0.4N	17.08					
Ar		0		17.51				
		0.4N	17.25					
	St1 St2	0		16.82		17.48		17.08
		0.4N	17.19		17.22		17.34	
St1 St2		0		17.14				
		0.4N	17.08					
		St+ 0.2N		17.19				
		St+ 0.6N	17.16					
		K _S		16.88				
		K _S +0.4N	17.16					
	Ad	0		16.85		17.14		17.44
Ad		0.4N	16.93					
		St+ 0.6N	17.77					
		K _S +0.4N	17.14					

54/Ba/1.6

Sugar Beet

Treatments applied			1953	0	0.4N	St + 0.2N	St + 0.6N	K _S	K _S + 0.4N
1950	1951	1952 & 1954	Total sugar: cwt per acre						
	Ar	0		26.8					
		0.4N	30.4						
Ar		0		22.6					
		0.4N	32.5						
	St1 St2	0		24.9		28.7			28.1
		0.4N	32.5		32.1		35.7		
St1 St2		0		28.4					
		0.4N	33.9						
		St + 0.2N		30.1					
		St + 0.6N		33.6					
		K _S		28.0					
		K _S + 0.4N		37.5					
	Ad	0		26.2		22.8			28.2
Ad		0.4N	30.3						
		St + 0.6N		34.3					
		K _S + 0.4N		28.6					
			Tops: tons per acre						
	Ar	0		8.28					
		0.4N	8.90						
Ar		0		6.07					
		0.4N	10.14						
	St1 St2	0		6.70		7.14			7.46
		0.4N	7.51		7.81		8.71		
St1 St2		0		9.62					
		0.4N	10.61						
		St + 0.2N		8.47					
		St + 0.6N		10.72					
		K _S		7.22					
		K _S + 0.4N		13.33					
	Ad	0		6.35		9.47			7.59
Ad		0.4N	9.76						
		St + 0.6N		8.47					
		K _S + 0.4N		6.72					

54/Ba/1.7

Sugar Beet

Treatments applied 1953			0	0.4N	St + 0.2N	St + 0.6N	K _S	K _S + 0.4N
1950	1951	1952 & 1954						
Plant number: thousands per acre								
	Ar	0		27.1				
		0.4N	27.4					
Ar		0		27.0				
		0.4N	27.0					
	St1 St2	0		27.2		27.9		27.0
		0.4N	25.8		26.8		27.6	
St1 St2		0		27.7				
		0.4N	26.7					
		St + 0.2N		26.6				
		St + 0.6N	27.4					
		K _S		27.1				
		K _S +0.4N	27.5					
	Ad	0		26.3		27.6		26.6
Ad		0.4N	26.5					
		St + 0.6N	26.2					
		K _S +0.4N	27.0					

Noxious nitrogen:mg per 100g.

	Ar	0		20.0				
		0.4N	15.0					
Ar		0		15.0				
		0.4N	17.5					
	St1 St2	0		15.0		20.0		15.0
		0.4N	15.0		15.0		15.0	
St1 St2		0		20.0				
		0.4N	15.0					
		St + 0.2N		20.0				
		St + 0.6N	25.0					
		K _S		15.0				
		K _S +0.4N	20.0					
	Ad	0		15.0		15.0		15.0
Ad		0.4N	20.0					
		St + 0.6N	15.0					
		K _S +0.4N	15.0					