ROTHAMSTED RESEARCH

Rothamsted Report for 1932

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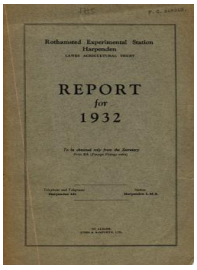

Potatoes

Rothamsted Research

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TABLE II.—Yield of Potatoes in Tons per acre.

		Sulphate of Ammonia			Sulphate of Potash			Superphosphate		
		None.	Increase with.	Quantity of fertiliser used. cwt.	None.	Increase with.	Quantity of fertiliser used. cwt.	None.	Increase with.	Quantity of fertiliser used. cwt.
Potton (earlies) ..	Sand .. (Nitrate of Soda)	5.07	**1.20**	2½	5.56	0.21	2	5.67	0.0	3
Wisbech	Silt ..	11.90	**0.53**	2	12.19	−0.27	2			
			−0.75	4		−0.03	4			
Stanford ..	Gravel ..	11.89	**0.61**	1½	12.26	0.12	1½	12.32	0.14	3
			0.28	3		0.15	3			
	Sand ..	7.26	**1.61**	3	3.95	**4.11**	3	5.88	0.26	4
Little Downham	Fen ..	9.29	**2.07**	2	10.32	0.02	2	8.37	**2.19**	5
									1.49	10
March	Fen ..	3.96	**0.60**	2	4.02	**0.48**	2	3.60	**1.92**	2
Kingennie.. ..	Loam ..	13.58	**0.37**	1						
			0.45	2						
			0.20	3						
Owmby Cliff ..	Limestone				3.79	**1.82**	1			
						0.77	2			
						−0.35	3			

The figures in heavy type are significant. In cases where two or more levels of a fertiliser were applied, the second increment of yield shown is the additional increment given by the heavier dressing as compared with the lighter.
Dung has been given at Potton, Wisbech and Stanford, but not at the other centres.

POTATOES

In the experiments at Rothamsted, Woburn and the outside centres up to the present good results have commonly been obtained with a mixture corresponding to 1 N : 1.5 P_2O_5 : 2.5 K_2O with increased phosphate where the soil is known to be deficient in this substance. In the 1932 experiments at the outside centres the most general response was, as usual, to nitrogen. The average increase in yield given by 1 cwt. sulphate of ammonia was 0.35 tons potatoes per acre, *i.e.* 1 ton of additional potatoes was obtained by an expenditure of 19/- on sulphate of ammonia. All the soils tested, even the fen soils, responded. Most of them responded also to potash ; indeed, on the sandy soil at Stanford nitrogen acted only when potash also was given. The response to phosphate was less general, but it was well marked on the fen soils when, indeed, responses were obtained up to 10 cwt. super per acre, and nitrogen was more effective when phosphate was applied as well. (Table II.)

FODDER CROPS

Fodder mixtures of oats and vetches. The results in 1932 confirm those of previous years that the nitrogenous manure favours the oats and depresses the vetches. The relations are shown in Fig. 1 ; the full details are given on pp. 148-149.

The total nitrogen content of the crop is not appreciably altered by the application of nitrogen. The total dry matter reaches a maximum with a seeding rate of 110 lb. oats and 90 lb. vetches per acre where no nitrogen is given, and with a mixture somewhat richer in oats when nitrogen is given. The total nitrogen content is a maximum with a mixture of 50 lb. oats and 150 lb. vetches per acre irrespective of whether nitrogen is given or not.

Kale. Our experience with kale is very promising. The crop is hardy, easy to grow, convenient in use and much liked by stock ; its leaves are rich in protein, and its yield is easily increased by nitrogenous manuring. On the light soil at Woburn we have been able to push the yields up to 28 tons per acre, and even higher yields may be possible (Fig. 2) ; indeed, kale appears to be one of the most suitable crops for converting cheap fertilisers into animal food.

Thinning and cultivating beyond what is necessary for keeping down weeds were not only unnecessary, but reduced the yield about 2 tons per acre. The results were :

	Unthinned	*Thinned*
Number of plants per acre, about	55,000	14,500
Yield, tons per acre :		
Ordinary cultivation .	27.65	25.18
Intensive cultivation .	25.51	23.63

Samples of the crop were taken each month from November to March : analysis showed that the content of nitrogen increased up to mid-January ; there was no gain in dry matter after mid-November, but also there was no loss. After February both dry matter and nitrogen fell off as the result of the withering of some of the leaves. (Table III.)

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