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Report for 1937

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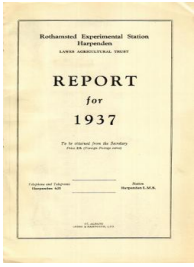
Rothamsted Experimental Station
Harpenden

REPORT
for
1937

Beans

Rothamsted Research

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BEANS

Field beans have not formed the subject of many experiments and yet they have considerable value as fodder. During the past four years (1934-1937) several manuring experiments have been made, and in them were included comparisons of narrow and of wide spacing respectively.

The effects of the fertilizer treatments are shown in Table XLII : the summary is shown in Table XLI.

TABLE XLI

Beans grain (cwt. per acre)

Responses to treatments

Year	Dung (10 tons per acre)	Nitro-chalk (0.4 cwt. nitrogen per acre)	Muriate of potash (1 cwt. K_2O per acre)	Super-phosphate (0.6 cwt. P_2O_5 per acre)	Standard error	Mean yield
1934	+1.9(1)	+1.1	+0.5	—	±0.91	18.7
1935	+5.6(1)	+1.2	+2.7(1)	−2.0	±1.20	21.0
1936	−0.1	−2.2(1)	−0.3	+0.3	±0.61	16.8
1937	+2.0	+0.4	+2.4	+3.3(1)	±1.34	29.0

(1) Significant effect.

In 1936 the crop was weedy and the yields were poor—only 16 to 18 cwt. grain per acre. There were no treatment effects except a significant depression of yield on plots receiving nitrochalk, which may have been due to a stimulation of the weeds.

In each of the other years dung has given an increased yield, though only in 1935 was the effect large. Nitrochalk has had little effect in the other years, while potash gave increases in 1935 and 1937, and superphosphate increased the yield in 1937.

The results suggest that the bean crop is not very responsive to fertilizers. While farmyard manure has given increases there seems no reason to invoke any special action beyond what is due to the nutrients present.

The narrow spacing (16-18 ins.) proved superior to the wide spacing (24 ins.) in both years (1935 and 1937) in which it was tested, giving increases of 2.8 cwt. in 1935 and 7.7 cwt. in 1937. The mean yield on the 1936 spacing experiment was only 14.8 cwt. ; the yields with the three spacings were :

8 ins.	15.4 cwt.
16 ins.	14.8 cwt.
24 ins.	14.2 cwt.

small differences, but in the same direction as above.

The narrow spacing might have been supposed more responsive to manures than the wide, on account of extra demand for nutrients : the results, however, tend rather in the opposite direction. The responses in cwt. per acre to treatments at the two spacings were :

D

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Response to	1935 Spacing		1937 Spacing	
	18 ins.	24 ins.	16 ins.	24 ins.
Dung	+3.8	+7.4	+2.5	+1.4
Nitrochalk	0.0	+2.4	−0.4	+1.2
Potash	−0.4	+5.8	+1.8	+3.1
Superphosphate	−3.0	−0.9	+2.7	+3.8
Standard error	±1.69		±1.89	

The standard errors per cent. per plot ranged from 10.3 to 18.4. Beans have proved more variable than most farm crops in our experiments.

TABLE XLII

Effect of Various Manures on the Yield of Beans (cwt. per acre). Rothamsted 1934-1937

Year	Dung			Nitrochalk			Superphosphate		Muriate of potash			Drill width		Standard error
	No dung	D_1	D_2	No nitrogen	N_1	N_2	No phosphate	P_1	No potash	K_1	K_2	18ins.	24 ins.	±
Grain :														
1934	17.2	18.9	20.1	18.2	18.7	19.3	—	—	18.7	17.8	19.4	—	—	0.647
1935	18.2	23.8	—	20.4	—	21.6	22.0	20.0	19.6	—	22.4	22.4	19.6	0.845
1936	16.8	16.8	—	17.9	—	15.7	16.6	16.9	16.9	—	16.6	—	—	0.430
1937	28.0	30.0	—	28.8	—	29.2	27.4	30.7	27.8	—	30.2	32.9	25.2	0.947
Straw :														
1934	13.4	14.6	16.7	14.9	14.7	15.3	—	—	15.2	14.3	15.3	—	—	0.549
1935	21.4	31.2	—	25.1	—	27.5	25.4	27.2	24.9	—	27.7	28.6	24.0	0.892
1936	31.2	34.5	—	32.0	—	33.8	32.6	33.1	32.0	—	33.8	—	—	—
1937	29.4	32.0	—	30.5	—	30.9	29.5	31.9	29.4	—	32.1	34.2	27.2	—

$D_1 = 7\frac{1}{2}$ tons 1934, 10 tons 1935-1937. $N_1 = 0.4$ cwt. Nitrogen. $K_1 = 1.0$ cwt. K_2O. $P_1 = 0.6$ cwt. P_2O_5 per acre. D_2, N_2, K_2, applications double D_1, N_1, K_1. Narrow drill 16 inch in 1937.

POSSIBLE NEW CROPS: SOYA BEANS AND MAIZE

In 1934 experiments on the possibility of finding varieties of maize and soya beans suited to this country were begun at Rothamsted and Woburn by Prof. W. Southworth, who had been very successful in similar work at the Manitoba Agricultural College.

Maize

Seed of Manitoba Flint and Manalta were obtained from the Manitoba Agricultural College where they originated and sown both at Rothamsted and Woburn in the spring of 1934. The season was hot and sunny. The seed ripened well and was saved for 1935. This season also was sufficiently good to allow of ripening and by this time it was clear that Manalta was in our conditions earlier than Manitoba Flint. The latter, therefore, was discarded.

1936 was cloudy and wet; during July and September, two important months for both maize and soya beans, there were no less than 152 hours less sunshine than the normal; seeding was, therefore, not good. 1937 was better and at Woburn we obtained a good crop of well ripened Manalta seed.

Meanwhile two varieties of sweet corn, Golden Bantam, from the Manitoba Agricultural College, and Dorinni from the Central Experiment Farm, Ottawa were grown at Rothamsted in 1935. The former proved less suitable and was, therefore, discarded. The two varieties had been grown side by side and cross pollination took

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