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## Report for 1937

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### Possible New Crops

#### Rothamsted Research

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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 <sub>1</sub>	D <sub>2</sub>	No nitrogen	N <sub>1</sub>	N <sub>2</sub>	No phosphate	P <sub>1</sub>	No potash	K <sub>1</sub>	K <sub>2</sub>	18 ins.	24 ins.	
<i>Grain :</i>														
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
<i>Straw :</i>														
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<sub>1</sub>=7½ tons 1934, 10 tons 1935-1937. N<sub>1</sub>=0.4 cwt. Nitrogen. K<sub>1</sub>=1.0 cwt. K<sub>2</sub>O. P<sub>1</sub>=0.6 cwt. P<sub>2</sub>O<sub>5</sub> per acre. D<sub>2</sub>, N<sub>2</sub>, K<sub>2</sub>, applications double D<sub>1</sub>, N<sub>1</sub>, K<sub>1</sub>. 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

place. The resulting seed was, therefore, no longer the pure Dorinni but a back cross, Golden Bantam having been one of the parents of Dorinni. This new strain, which we call Rothamsted Sweet Corn, is now being grown under a variety of conditions.

#### SOYA BEANS

In the spring of 1934 two varieties were planted, Manitoba Brown and Mandarin; the former being a semi-dwarf, early maturing, brown-seeded variety, developed at the Manitoba Agricultural College, while the latter is a medium sized variety with yellow seeds, much later in maturing.

Manitoba Brown ripened satisfactorily but Mandarin did not. It was, therefore, discarded.

In 1935 three other varieties were sown in addition to Manitoba Brown, namely, The Jap, an early maturing dwarf plant with pale green seeds; J. Yellow, a late maturing plant with yellow seeds; and Black, a medium sized plant with black seed coming later than Manitoba Brown. Frosts in the middle of May severely checked all four varieties but the plants recovered later and gave a fair yield. Manitoba Brown and Jap came out best, followed by Black but J. Yellow was too late to ripen properly. At Woburn also Manitoba Brown did well.

In 1936 at Rothamsted a May frost again checked the plants and a severe hail storm on June 21st did much damage. The yield of seed was small, nevertheless the maturity was good. At Woburn the plants suffered from rabbits, hares and birds.

In 1937 some more varieties were received from the Manitoba Agricultural College, one of which, Tokio, is promising both in yield and early maturity; the seed is dark but it may be possible to remedy this by suitable hybridisation and selection.

Prof. Southworth has now more assistance than before and has been able to commence more intensive study of the morphological and physiological characters of soya bean and he is trying to obtain new varieties better suited to our conditions than the existing sorts. We have been fortunate in securing the help of a collaborator in South Africa who plants the seeds during our winter and returns them to us in time for planting during our summer; we thus secure two crops in one year which saves a good deal of time in making selections.

Vernalisation did not prove helpful either for soya beans or maize.

#### PYRETHRUM

In view of the importance of pyrethrum as an insecticide and of the fact that it grows well on light sandy soil, a number of experiments have been made to see if by manuring the yields can be raised to levels at which they would become remunerative without at the same time lowering the insecticidal efficiency of the crop.

The experiments were made at Woburn, and were continued over four years: both lime and fertilizers increased the yield of flowers and of pyrethrum, the substance which measures the insecticidal value, but in some seasons the effects were only slight.