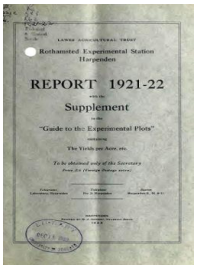
Report 1921-22 With the Supplement to the Guide to the Experimental Plots Containing the Yields per Acre Etc.



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Soil Population and Plant Foods

Rothamsted Research

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THE RELATION BETWEEN QUANTITY OF FERTILISER AND CROP YIELD.

These investigations started from the Broadbalk result that the second increment of nitrogenous fertiliser produced a larger increment of yield than the first. If this proved generally true in farm practice it would mean that under normal conditions of price a farmer would be well-advised to manure pretty liberally. The Broadbalk experiment has, however, certain unpractical features, and a series of field trials under ordinary farm conditions has been carried out.

The results with wheat in 1920 favoured this view (Report 1918-20, p. 79), the yields without nitrogen being 28.9 bushels and with the higher dressing 35.9 bushels per acre. Unfortunately both in 1921 and 1922 the wheat crops were very poor, the yields without nitrogen averaging 17.5 and 13.4 bushels per acre respectively, which values were hardly raised in 1921, and only to 17.1 and 19.7 bushels by the single and double dressing respectively in 1922 (p. 93). No definite conclusion can be drawn from these figures.

Potatoes made much better growth. The tops were not weighed, but the tubers increased in yield with successive increments of sulphate of ammonia, and gave a record crop for this land. The increases for the second increment, however, were not greater than for the first, but probably slightly less; nevertheless under ordinary conditions of price the results would have been very profitable. The figures were :—

GREAT HARPENDEN FIELD: POTATOES, 1922.

(Mean of duplicate set.)

Treatment	Tons per acre	
	Dung (15 tons)	No Dung
Basal manure only : no nitrogen	6.07	5.50
,, ,, plus 1½ cwt. sulphate/ammonia	7.99	7.37
,, ,, plus 3 cwt. sulphate/ammonia	9.73	8.97
,, ,, plus 4½ (1) cwt. sulphate/ammonia	10.08	8.98

Basal manure (with dung) equals 4 cwt. super, 1½ cwt. sulphate/potash.
Basal manure (no dung) equals 6 cwt. super, 2 cwt. sulphate/potash.
(1) Of this 4½ cwt., 3 were applied with the seed, and 1½ given later as a top dressing.

These apparent discrepancies are being fully gone into during the coming season.

THE SOIL POPULATION AND THE PRODUCTION OF PLANT FOOD IN THE SOIL.

The important investigations by Mr. Cutler and the staff of the Protozoological Department have necessitated considerable revision of our ideas of the soil population. It had always been supposed that the numbers of organisms present in natural soil

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