III.

CO-OPERATIVE EXPERIMENTS.

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EXPERIMENTS WITH FERTILIZERS.

During the past two years the writer has been conducting fertilizer experiments on the tobacco soils of the flue-cured district.

The soils on which these experiments were conducted are of the Learnington sand type, and known as the typical flue-cured or bright tobacco soils of Essex county.

Fields of as uniform fertility and contour as could be obtained were selected. In each field one-tenth acre plots were staked out. All plots were ploughed, diseed, harrowed, etc., the same way. The different fertilizers were applied in the row to the various plots in the spring on the same day, and when planting time came all plots were planted the same day. They were enlitvated alike, harvested and enred together in the same kiln. The tobacco from each plot was kept separate, stripped and graded into bright, red and dark tobacco. Each grade was weighed and the yield per acre calculated. One plot in every ten to which no fertilizer was applied was used as a check.

The object of these experiments was to determine the best formula and most economical fertilizer for the production of a good yield of flue-cured tobacco of good quality.

In order to fertilize any erop intelligently three things must be known: what the plant requires, what is deficient in the soil, and the best source of plant food to supply the deficiency. Physical and chemical studies of the various types and classes of tobacco soils in Canada are supplementing field trials, manurial and fertilizer experiments.

The experiments have been running two years and are to be continued. A fertilizer test should be run several seasons to determine many points, yet two seasons may be sufficient to show fairly accurately what fertilizers are needed and whether profitable on a tobacco erop.

The r mounts of fertilizers used in the various mixtures were sulphate of ammonia, 100 to 250 pounds; acid phosphate, 16 per cent, 200 to 600 pounds; sulphate of potash, 50 to 400 pounds.

The yields increased with every increase in the addition of sulphate of ammonia, but the per cent of bright leaf decreased with greater application than 150 pounds nuless an application of at least 300 pounds of sulphate of potash and 500 pounds of 16 per cent acid phosphate were used.

Yields were increased by applications of acid phosphate up to 500 pounds per acre; heavier applications did not show a profitable increase.

The sulphate of potash gave substantial increases for every addition up to 400 pounds per aere, with no deterioration in quality of the cured leaf. At prices paid for the potash, which was \$400 per ton, the large applications did not pay, as was to be expected, but cheaper potash is sure to come and the larger applications will then be profitable. One hundred pounds combined with 500 pounds of 16 per cent acid phosphate and 150 pounds of sulphate of ammonia made a very profitable return,