FERTILIZER EXPERIMENTS

1947-48 Season.— These are the results following the general flooding of the Station when some experiments had to be abandoned and others had to be considered with some reserve. Where the quantity of fertilizer per acre was varied, results confirmed previous indications that at least 1,200 lb. per acre should be used on soils of the Station type. Although no "sand drown" has been in evidence on the Station, increased yield and better-quality leaf have justified the inclusion of some magnesium in the fertilizer. Under conditions of flooding, leguminous cover-crops did not produce the rank tobacco of previous seasons, indicating that considerable leaching of nitrogen took place. Under the seasonal conditions, increase in phosphate gave higher yields and earlier maturity of the tobacco. That considerable leaching occurred received confirmation from the results of the source-of-nitrogen experiment. For the first time the plots receiving a high proportion of nitrate of soda gave the lowest yield of all treatments.

In the liming experiment, those plots without lime outyielded those receiving a dressing of ground limestone in the early spring. Results obtained in the first year of an experiment with boron suggested some benefit from 5 lb. borax per acre, even on land where boron deficiency had not been evident previously in the crop.

1948–49 Season.—The results of these experiments will not be available until the grading of the leaf is completed, but some general trends are noticeable. Differences due to the variations in the rate of fertilizer applications were apparent, indicating that from 1,200 lb. to 1,400 lb. could be used with benefit. In general, plots receiving 4 per cent. nitrogen were better than those receiving 3 per cent. Differences in growth due to varying the phosphate were evident, the best plots being those receiving high phosphate together with high potash. The addition of magnesium to the fertilizer appeared to be beneficial. There was no noticeable difference between high and low calcium mixtures. Ten pounds of borax per acre for the second season in succession appeared to have a retarding effect on the early growth.

In the cover-crop experiment, legumes detrimentally affected the following tobacco crop which produced rank growth and which ripened very slowly and wilted down in the hot weather. Where wide and narrow rows were compared, the former appeared to encourage earlier ripening.

CHEMICAL COMPOSITION OF TOBACCO WITH DIFFERENT FERTILIZER TREATMENTS AND CULTURAL PRACTICES

In the 1946–47 season, variation in the rate of standard fertilizer from 800 lb. to 1,400 lb. per acre did not have any pronounced effect on the sugar content of tobacco-leaves. The nitrogen content, however, varied from 1·39 per cent with 800 lb. application to 1·76 per cent. with the 1,200 lb. treatment. In another experiment the nitrogen content of the tobacco leaf showed an increase from 1·26 per cent. with 2 per cent. nitrogen in the fertilizer to 1·55 per cent. with fertilizer of 5 per cent. nitrogen.

Where the percentage of potash in the fertilizer was varied from 4 per cent. to 12 per cent. little variation in the sugar and nitrogen contents resulted. The use of a low calcium fertilizer was associated with a high sugar content in the tobacco-leaf. Little effect on the nitrogen content of tobacco was noted with high and low calcium fertilizers.

Influence of Cover-crop and Cultural Practice on Chemical Composition.—In the 1948 harvest the use of different cover-crops for ploughing in, prior to planting with tobacco, caused some variation in the sugar content of the tobacco harvested from the different plots. The highest sugar content was obtained on the rye-grass plot, followed by ryecorn, then lupins, and finally oats and tares plots. The variations in sugar content were small, and do not appear to be sufficient to affect the quality of the leaf. It must be noted, however, that the lupin crop was a poor one.