

most potash producing the best leaf. Where different types of phosphate were applied at the same rate per acre, superphosphate outyielded both serpentine-superphosphate and basic superphosphate for the second year in succession. The addition of dolomite to the fertilizer had a beneficial effect on both yield and appearance of leaf. In the rotation experiment comparing tobacco after rye-corn ploughed under with continuous tobacco, there was no significant difference in either yield or quality. Where various methods of applying the fertilizer were tested out, the best results were obtained by applying half in the furrow under the plant and the remaining half along the row about three weeks after planting. This is confirmed by the average of five years' results and can be taken as a definite recommendation for conditions similar to those at the Station. Applying all the fertilizer in the furrow before planting resulted only in a slight reduction in yield. Those plots receiving the fertilizer in side bands were slow to come away and yielded considerably less than either of the other treatments. In an experiment to determine the best time to apply the second portion of the divided fertilizer, results indicated that seasonal conditions play a big part, but that in general if the second application is delayed later than mid-December there is a risk of unduly delaying the maturity of the crop, although the yield may not be adversely affected. Where the nitrogen was supplied to the fertilizer mixture in various forms, the experiment once again demonstrated that seasonal conditions greatly affect the result, and that therefore a mixed fertilizer is necessary to meet varying weather conditions and to regulate the supply of nitrogen through the season.

On an area to demonstrate the effect on the plant of the absence of the chief plant-food constituents from the fertilizer mixture, some striking results were obtained. Omitting the nitrogen resulted in a marked drop in total yield and in size of leaf. While absence of potash had little effect on yield, it produced leaf of very poor quality. No phosphate caused a definite reduction in yield, although it took three successive seasons of such treatment to bring about the result. Once again the best yield and quality were produced by the low calcium mixture. In a spacing experiment with all rows 3 ft. 6 in. apart, a 2 ft. spacing of plants in the row produced better yield and quality than a wider spacing of the plants.

The results of the 1945-46 season will not be available until after the crop is graded, but the general trend of growth is outlined in the following observations. Under the dry conditions prevailing there was little or no leaching of fertilizer. Increasing the quantity of fertilizer up to 1,400 lb. produced corresponding increases in growth, but even the lowest level, 800 lb., produced an excellent crop. Increasing the percentage of nitrogen in the mixture resulted in heavier growth accompanied by delayed maturity, while extra potash resulted in better-quality leaf. Of the various types of phosphate used, superphosphate appeared to be the most satisfactory. In a new experiment in which the percentage of phosphate in the mixture is varied, no differences were apparent in this, the first, season. Where the effect of lime on flue-cured tobacco was under trial a special low calcium mixture appeared to be better than the standard fertilizer, while additional lime appeared to retard the early growth.

SEED-BED EXPERIMENTS

These experiments have two objectives: (1) to provide information on the merits of various seed-bed treatments in the raising of seedlings, and (2) to observe the effect of various seed-bed practices on the incidence of mosaic in the field. For soil sterilization and control of weeds no chemical treatment approached steam for effectiveness. Although chloropicrin, formalin, and urea were superior to the untreated beds, they gave only partial control of weeds and so far cannot be recommended. In a trial to determine the optimum time and steam pressure for steam sterilizing, satisfactory results were obtained from a pressure of 90 lb. for periods of ten and fifteen minutes. Using a lower pressure or reducing the steaming-time resulted in only partial control of weeds and could not be considered satisfactory. In fertilizer trials for seedling beds, $\frac{3}{4}$ lb. to 1 lb. of tobacco fertilizer per square yard proved the most suitable for unsteamed soil, the lower amount being used on the more fertile soil types.