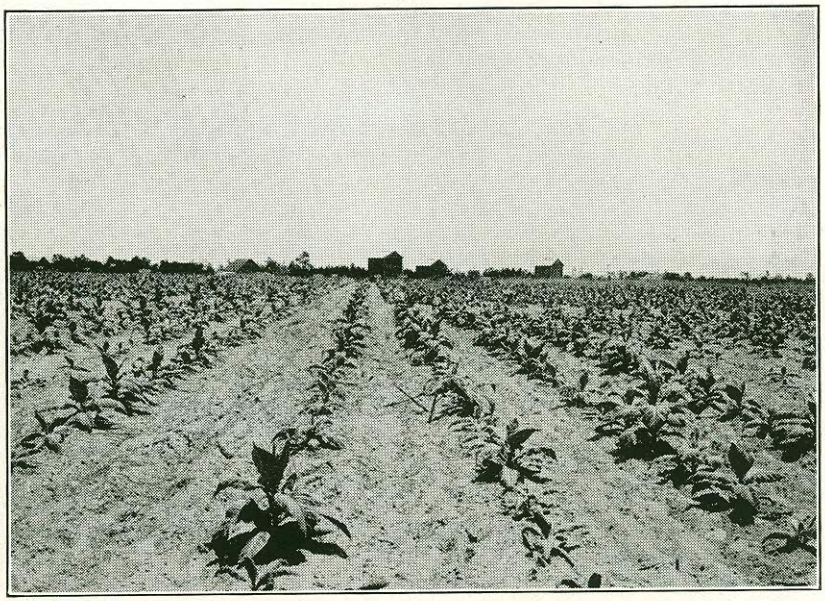
NEMATOLOGY

In August, 1935, a nematology field laboratory was established in cooperation with the Division of Nematology, Bureau of Plant Industry, United States Department of Agriculture.

Preliminary work only was done in 1935. The program for 1936 includes work on the following projects:

Chemicals as Soil Nematicides
Active Migration of the Root Knot Nematode Under Field Conditions
Host Range of the Root Knot Nematode
Distribution of the Root Knot Nematode
Relative Resistance of Plant Varieties to the Root Knot Nematode



Nematode injury on virgin soil.

TOBACCO

The experimental work with tobacco at the Georgia Coastal Plain Experiment Station is being conducted in cooperation with the Division of Tobacco and Plant Nutrition of the United States Department of Agriculture and the University of Georgia College of Agriculture.

This work is divided into two phases as follows: first, soils, fertilizers and varieties; second, disease investigations which include both control and preventive measures. In reporting this work it is believed that it is well to include general recommendations based on all of the work to date as well as reporting the progress of the work carried on in 1935.

SOILS, VARIETIES AND PLANT BEDS

Soils: The soils of the Coastal Plain of Georgia best adapted to the production of flue-cured tobacco are the light loamy friable or "fluffy" types of the Tifton and Norfolk soil series. The best types of these two series are the Norfolk sandy loams and the light phase of the Tifton sandy loam. The typical Tifton sandy loams which carry an abundance of small iron concretions or "pebbles" are too heavy for tobacco. Regardless of the type of soil used it should be well drained, yet have good water holding capacity; be soft and friable, warm up quickly in the spring and be fairly low in ammonia reserve.

Varieties: Many varieties of flue-cured tobacco will satisfactorily produce the type of tobacco now in demand. Of these, the Bonanza, Jamaica, Yellow Mammoth, Virginia Bright Leaf and Yellow Pryor are the most popular. These varieties are much better suited to growing the thin light type of tobacco than varieties such as Warne, Gold Leaf, Adcock and the Gooches.

Plant Beds: The seed bed is the foundation of the crop and the proper preparation and care of these beds cannot be too strongly stressed. Seed beds should be located on a moist, deep loamy soil. Such soils are usually found growing gallberry bushes or blackberry briars. Soils that have washed down from surrounding fields are likely to be infested with the root knot nematode and therefore should not be used. In order that plants may be produced as early as possible the beds should have a south or southeastern exposure with natural or artificial windbreaks on the north and northwest sides. All trees on the east or southeast that shade the bed should be cut so that the sun can reach the bed throughout the day. Where equipment or material is available, sterilization of the soil used for seed beds is recommended. This may be accomplished by steam or burning with wood, or any other material available. Where the soil is to be sterilized it should be loosened up throughly before the

heat is applied. This enables the heat to penetrate the soil and do a better job of sterilizing. If it is not practical to sterilize, seed beds should be located on new areas each year. Fertilizer should be applied at the rate of from 2 to 3 pounds per square yard on new beds and 1½ to 2 pounds per square yard on old beds that have had previous applications of fertilizer. Only tobacco fertilizers should be used. The seed should be sown during the latter part of December or early in January. One well rounded tablespoon full of good clean seed per 100 square yards is sufficient.

FERTILIZERS

Phosphorus: This element apparently is almost entirely absent in the virgin soils of the Coastal Plain area. Since phosphorus does not readily leach from the soil, those soils that have previously received applications of this element will produce fair sized plants for a few years. However, continued cultivation without applications of phosphorus will eventually result in a failure of the plants to make any growth at all. Phosphorus not only increases the growth or size of the tobacco plant, but it promotes ripening and thereby improves the quality of the cured leaf. Plants deficient in phosphorus are small in size, of a dark green color and never ripen properly. Such plants are impossible to cure. Too much phosphorus results in a premature ripening or firing of the lower leaves and often in dry weather causes the plant to ripen faster than it can be handled to the best advantage. Experiments with various rates of phosphorus show that while 40 pounds of phosphorus (P_2O_5) per acre will give practically as much yield as heavier applications, it takes about 80 to 100 pounds per acre to give the proper combination of yield and quality. Stating this in the terms of field applications means that 1000 to 1200 pounds of fertilizer analyzing 8 per cent phosphorus (P_2O_5) is required to supply sufficient phosphorus for optimum results. The superphosphates or di-calcium phosphates are satisfactory sources of this element. However, where triple-superphosphate is used the calcium requirement of the plant must be considered.

Ammonia: The misuse of ammonia can destroy the quality of flue-cured tobacco quicker and more completely than either phosphorus or potash. It is therefore highly desirable to control as far as possible the amount and form of ammonia supplied the plant in the field. The absence of sufficient nitrogen produces a small thin leaf which usually cures well but does not yield profitably. Excess nitrogen produces a coarse rough plant low in quality and difficult to cure. Extremely heavy applications of nitrogen render the crop almost entirely unfit for commercial purposes. The ideal application is one that gives the maximum yield compatible with high quality. Results from tests with varying amounts of nitrogen show that the optimum applications will vary on different soils. Generally speaking, 30 pounds of ammonia (24.7 pounds nitrogen) per acre is sufficient. This is the amount contained in 1000 pounds of fertil-