

**REPORT OF FIELD STATION IN McINTOSH COUNTY**

Work at this Station is being continued as indicated in the previous (Twenty-Second) Annual Report.



*Blueberries offer profitable returns in some Coastal Plain areas.*

## NEMATOLOGY

Work on plant parasitic nematodes at this Station is in cooperation with the Division of Nematology, Bureau of Plant Industry, Soils and Agricultural Engineering, Agricultural Research Administration, U. S. Department of Agriculture.

### ROOT KNOT AND LESPEDEZA

As complete or partial failure of lespedeza in this section of the South is often associated with root-knot nematode attack, the root-knot resistance of lespedeza plants from 15 lots of seed of various varieties and species was tested. *Lespedeza stipulacea* (Korean lespedeza) was found to be highly susceptible to root knot and was badly damaged by this pest, 34% to 100% of the plants being dead or dying two months after planting. *L. striata* (varieties Common, Kobe, and Tennessee 76) was found to be somewhat more resistant. Damage to this species was also much less, though it was apparently somewhat stunted by heavy attack. *L. cuneata* (Sericea lespedeza) was found to be resistant to root knot, but was not immune. The species *L. bicolor*, *L. cystoides*, and *L. Cyrtobotrya* were also found to be resistant. There was some difference in susceptibility between various lots of seed of both *L. stipulacea* and *L. striata*, indicating a possibility that improved strains might be developed by selection.

These data are in agreement with the general observation that more or less complete failure frequently results where Korean lespedeza is planted on root-knot infested soil, particularly if it occupies the same ground for several years in succession. Planting of *Lespedeza striata* varieties on infested soil is not so apt to result in complete failure, but poor growth is often noted, especially where moisture is not abundant. In this case, also, the effect may become more marked after several years. As the growing of any of the above-mentioned species of lespedeza will increase the root-knot nematode population of the soil, it should never be planted on land which might be needed later for root-knot susceptible crops.

### CONTROL OF ROOT KNOT BY THE USE OF CROTALARIA SPECTABILIS

It has been found that the larvae of the root-knot nematode often enter the roots of *Crotalaria spectabilis*, but do not develop to maturity or reproduce in this plant. Instead, the nematodes in the roots die when the plant dies, if not before.

It is evident that practical use can be made of this fact, since every nematode entering the roots is permanently removed from the soil population. Experiments have indicated that root-knot nematodes can be almost eliminated from fields where nothing but *Crotalaria spectabilis* is allowed to grow for two years. A large proportion of the nematodes can be eliminated in one season by the use of this plant. It can be recommended for use in fields which are to be planted to susceptible crops, for planting in home gardens after the vegetables have been harvested, or for seed beds after the seedlings have been transplanted.

*Crotalaria intermedia* and *C. striata* are not effective for this purpose as the root-knot nematode is able to reproduce on these species.

### CONTROL OF ROOT KNOT IN PEACH ORCHARDS

The experiment on the effect of different nematode-controlling practices in peach orchards reported last year has been continued.

This experiment consists of 16 plots, each originally containing 6 peach trees of the Elberta variety on ordinary root-knot susceptible rootstocks. The 16 plots are divided into four groups of four plots each. One group has been planted to cover crops highly susceptible to root knot (cowpeas and Austrian winter peas), and a second group has been planted to cover crops resistant to root knot (oats and *Crotalaria spectabilis*). In the third group, the nematode population has been reduced by clean cultivation. In the fourth group, several plantings of cowpeas have been made each year and destroyed after the nematodes have entered the roots but before they have had time to reproduce; this is known as the trap crop method of nematode control. As the soil was infested with root-knot nematodes when the trees were planted four years ago, all of them are infected with root knot, but the spaces between the trees have been practically freed of this pest by the methods outlined above, except where susceptible cover crops have been planted. In the susceptible cover-crop plots, the nematode population in the spaces between the trees has been increased. The result is that, as the trees grow and the roots spread out, they encounter heavily infested soil in the susceptible cover-crop plots and soil practically free of nematodes in the other plots.

The effect of this situation on the growth and yield of the peach trees is shown by the data collected in 1942. The average yield of peaches per tree (second crop) was 5.2 lbs. on the plots used for susceptible cover crops, 24.9 lbs. per tree on the clean-cultivated plots, 29.3 lbs. per tree on the trap-crop plots, and 65.2 lbs. per tree on the resistant cover-crop plots. In four years, the average trunk diameter of the trees on the susceptible cover-crop plots has increased 2.11 inches, compared with increases of 3.28 inches, 3.43 inches, and 3.65 inches on the resistant cover-crop, clean-cultivated, and trap-crop plots, respectively. The differences between the last three averages have no statistical significance. Observations on the roots of the trees have shown that those in the susceptible cover-crop plots are much more heavily infected with root knot than those in the other plots, with no marked variations between plots where root knot has been controlled.

It is evident that some sort of nematode control is highly advantageous in peach orchards on soil infested with root-knot nematodes. Of the three systems mentioned, the best and most practical is the use of oats as a cover crop in the winter and spring and *Crotalaria spectabilis* in the summer. Where this method was used, nematodes were controlled and growth of trees increased about as well as where clean cultivation and trap crops were employed. In addition, production of peaches was greatly stimulated, apparently by the extra nitrogen and humus added to the soil when the cover crops were turned under. It should also be remarked that, under the conditions of the experiment, no cover crop at all was better than root-knot-susceptible cover crops.

In connection with this general subject, it should again be emphasized that

