THE GROWTH OF KOBE LESPEDEZA AS INFLUENCED BY THE ROOT-KNOT NEMATODE RESISTANCE OF THE BERMUDA GRASS STRAIN WITH WHICH IT IS ASSOCIATED

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ON THE heavier soils of the Southeast, Bermuda grass, *Cynodon dactylon* (L.) Pers., and annual lespedeza, *Lespedeza striata* (Thunb.) H. & A., make a very desirable permanent pasture mixture. On the light sandy soils the annual lespedezas usually disappear after two or three years and attempts to reseed them artificially on such soils generally fail. Stephens (3) has reported that the root-knot nematode, *Heterodera marioni* (Cornu), is largely responsible for the failure of lespedeza in this area. This distribution of the root-knot nematode is so universal in the lighter soils of the Coastal Plain as to make practically all lespedeza plantings of short duration. The need for a solution to this problem stimulated the studies described here.

MATERIALS AND METHODS

Twenty-eight selections and introductions of lespedeza listed below were obtained from Roland McKee of the Division of Forage Crops and Diseases, U. S. Dept. of Agriculture, Beltsville, Md. These selections carried the following F. C. numbers: 3157, 19601, 19601-44-1, 19601-44-2, 22730, 22896, 30667-44, 30935, 31057, 31249, 31475, 31480, 31481, 31485, 31757, 31825, 31835, 31836, 31840, 31845, 31850, 31851, 31852, 31854, 31855, 31856, 31858, and P. P. I. 90553. They were planted in root-knot nematode-free bins (soil was fumigated with methyl bromide) and in nematode-infested bins of well-fertilized soil. Notes on the establishment and survival of these strains were recorded in an effort to discover if any of them were resistant to root-knot.

In 1939, 147 different selections of Bermuda grass were planted in 4×24 foot plots in triplicate on a Tifton sandy loam. Crimson clover was planted on these plots in the fall of 1941 and 1942 and made excellent growth. All plots were uniformly fertilized with 500 pounds of complete fertilizer per acre each year and were mowed several times each season for hay. Kobe lespedeza was planted at a rate of 40 pounds per acre on half of each plot on February 29, 1944, and again on March 9, 1945. A 4-12-4 fertilizer was applied in 1944 and a 4-8-6 in 1945 at the rate of 500 pounds per acre prior to seeding the lespedeza. Good stands of seedlings were obtained both years. Ratings on stand and yield of lespedeza, ranging from 1 for excellent stands and yields to 6 for complete absence of lespedeza plants, were made. The yields from the “grass alone” half and the “grass plus lespedeza” half of each plot furnished the data summarized in Table 2. The percentage of lespedeza in the grass and lespedeza hay was determined by actual separation. The data summarized in Tables 1 to 3 were analyzed statistically to give the probability values presented with each table.

The resistance of the Bermuda grass selections considered in this study was