THE RESPONSE OF LESPEDEZA TO LIME AND FERTILIZER

R. E. STITT

THE annual lespedezas have become established as hay, pasture, and soil-improvement crops in many of the southern states. The general experience of farmers with the annual varieties of common lespedeza (Lespedeza striata) (Thunb.) H. & A. and Korean (L. stipulacea Maxim.) and the perennial sericea (L. sericea (Thunb.) Benth.) has shown that they are adapted to soils on which other legumes will not grow without considerable expense for lime and fertilizer. Although the lespedezas will grow on so-called poor soils there is some evidence indicating that the use of fertilizers under certain conditions may be beneficial.

In pot experiments, Hyland (5) studied the growth of Korean and sericea lespedezas as compared with red clover and sweet clover on four acid soil types in which the pH was raised to different levels by applying calcium carbonate. Sericea was slightly more tolerant of higher acidity than Korean lespedeza. Soil pH readings were not true indicators of the adaptation of any of the legumes to the soils studied.

In west Tennessee Essary (2) reports increases in yield of common lespedeza from the use of lime but commercial fertilizers did not influence yields to an appreciable extent.

Blair (1) in North Carolina reports the average yield of four different varieties of lespedeza on an Alamance gravelly silt loam to be higher with lime and superphosphate treatments than on the untreated plots.

Pieper, et al. (7), in southern Illinois, increased the yield of Korean lespedeza on several soils with applications of limestone and crop residues and also concluded that some soils need phosphate for lespedeza.

In Missouri the yield of Korean lespedeza was increased with superphosphate but decreased with application of 3 tons of lime according to Etheridge, et al. (3).

On a Berks shale soil in Virginia, Gish and Hutcheson (4) increased the yield of Korean lespedeza with both lime and superphosphate.

At the Kentucky Agricultural Experiment Station (6) analyses were made of 34 lespedeza hay samples and found that all from poorer soils were low in phosphorus. Lime and phosphates increased hay yields on a sandstone soil at the western Kentucky substation, however, no increased growth was found with lime and fertilizer treatments on a limestone soil.

These few experimental results over a widespread area indicate that lime and phosphates may be beneficial to lespedeza on some soil types. Previous fertilizer treatment and the type of rotation seem not to have been considered in these experiments which raises the question of the desirability of applying fertilizer to lespedeza when fertilizer has been used with other crops in the rotation. The first experiment

1Contribution from the Division of Forage Crops and Diseases, Bureau of Plant Industry, U. S. Dept. of Agriculture, in cooperation with the North Carolina Department of Agriculture and the North Carolina Agricultural Experiment Station. Received for publication February 9, 1939.
2Assistant Agronomist.
3Figures in parenthesis refer to "Literature Cited", p. 527.