COMPARISON OF THE EFFECT OF CLIPPING AND GRAZING TREATMENTS ON THE BOTANICAL COMPOSITION OF PERMANENT PASTURE MIXTURES

MASON A. HEIN AND PAUL R. HENSON

In evaluating various strains of pasture species in small plots, workers have had to resort to clipping to determine the productivity of these species. Even if time and facilities were available to determine the productivity of new or improved species under grazing, seed stocks are usually inadequate for these tests. Hence, it is highly important that the methods employed in testing new strains approach the grazing practices of that particular region. Robinson, Pierre, and Ackerman (6), Gardner, et al. (3), and Brown (1) have reported correlated or relatively close agreement between yields of clipped vs. grazed pastures. The literature contains little information as to the comparative effect of clipping and grazing on the botanical composition of permanent pasture mixtures.

The studies reported here compare the effects of clipping and grazing on the botanical composition of various pasture mixtures sown at Beltsville, Md.

PROCEDURE

Eight mixtures of various grasses in combination with Louisiana white clover in replicated plots were studied under frequent clipping and grazing with sheep. The details of the seedbed preparation and fertilization have been discussed by Henson and Hein (4). Before preparing the seedbed for the mixtures, the area received 2,000 pounds of limestone, 600 pounds of 16% superphosphate, 200 pounds of muriate of potash, and 14 tons of well-rotted manure per acre. The mixtures, as listed in Table I, were sown in triplicate 5 X 12 foot plots September 29, 1936. Excellent stands were secured on all plots.

On the mowed plots, the herbage was clipped with a lawn mower to a height of 1 3/4 inches whenever it had reached a pasture stage of growth (4 to 6 inches). All plots were clipped in 1937, nine clippings being obtained. The first replicate of each mixture was clipped in this manner throughout the 4-year period, 1937-40. The second and third replicates were grazed by sheep during the three grazing seasons 1938-40. Sheep in sufficient numbers to graze the area uniformly in 3 days or less were placed on all the plots when the herbage had reached a 4- to 6-inch height. While the plots were usually uniformly grazed, tall and uneaten herbage was cut with a scythe immediately after grazing. It was not always possible to graze and mow the plots at the same time, therefore, botanical readings were made at times when the stage of growth of the herbage under the two treatments was comparable.

The relative frequency or density of the species in the swards of the various mixtures was determined by making five random counts on each plot with the

1 Contribution from the Division of Forage Crops and Diseases, Bureau of Plant Industry, U. S. Dept. of Agriculture. This experiment was conducted at the Beltsville Research Center, Beltsville, Md., on land furnished by the Bureau of Dairy Industry. Received for publication February 2, 1942.

2 Agronomist and Associate Agronomist, respectively. The experiment was inaugurated by the late H. N. Vinall, Senior Agronomist.

3 Figures in parenthesis refer to "Literature Cited", p. 573.