The Clover Populations and Yields of a Kentucky Bluegrass Sod as Affected by Nitrogen Fertilization, Clipping Treatments, and Irrigation

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Pasture production throughout the northeastern United States is seriously limited by a deficiency of available nitrogen as well as by deficiencies of lime, phosphate, and potash. Inasmuch as nitrogen can be supplied most economically through the use of legumes, and since legumes are nutritious feed, a better understanding of the factors affecting the proportion of legumes in pastures is particularly important. At the present time *Trifolium repens* L. appears to be one of the most promising legumes on the better pasture soils in the region. Its principal weakness is the fluctuation in stand from year to year or even within the same season. The cause of this fluctuation has not been definitely determined but undoubtedly a number of factors are involved. Soil fertility, soil moisture, pasture management practices, competition from other plant species, winter injury, and perhaps disease appear to be among the most important factors affecting the stand of clover. The primary objectives of the present investigations were to determine the effects of nitrogen fertilization, soil moisture supply, and defoliation treatments on clover populations, total yields, and seasonal distribution of yields.

Experimental Treatments and Procedure

The experiments reported in this paper were started in 1944 on a good sod of Kentucky bluegrass, *Poa pratensis* L., on Hagerstown silt loam. The area had been in Kentucky bluegrass since 1941 and had been clipped at intervals with a lawn mower. Very little clover was present at the time the experiment was started. In the early spring of 1944 the entire area was seeded uniformly with *Trifolium repens*. Since several clipping treatments were involved in the experiment, it seemed advisable to seed a mixture of several types of white clover. The mixture consisted of Ladino clover, 2 pounds; Kent white clover, 1 pound; Louisiana white clover, 1 pound; Polish white clover, ½ pound; Wisconsin white clover, ½ pound; and Oregon white clover, ½ pound per acre.

The area was uniformly limed, and fertilizer was applied annually to all plots at the rate of 100 pounds P₂O₅ and 150 pounds K₂O per acre.

The experiment involved two soil moisture levels, two nitrogen levels, and four defoliation treatments in all possible combinations. Natural rainfall without supplemental water and natural rainfall plus irrigation at intervals and in amounts judged necessary for optimum growth provided the two levels of soil moisture.  

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