RESPONSE OF SOYBEANS TO EXPERIMENTAL DEFOLIATION

R. M. GIBSON, R. L. LOVVORN, AND BEN W. SMITH

The increasing livestock industry in the southeastern states has necessitated a cheap source of forage. Supplementary pastures are recognized by most livestock men as essential for the economical production of beef or dairy products. This is especially true in many of the well-drained, sandy soils where permanent pastures are not adequate. The acreage of soybeans utilized as a grazing crop has increased recently in North Carolina, Biloxi being the variety most often used for this purpose. The authors are not aware of any controlled experiments in which the management of the soybean as a grazing crop has been investigated. Cattle are usually turned on to the crop and allowed to consume most of the foliage within a few days. They are then removed and the crop is allowed to produce new leaves. Information is needed on the varietal response to the frequency and degree of defoliation, and it was the object of the work reported in this paper to measure such response in the Biloxi and Tokyo varieties.

Most defoliation studies on perennials have been concerned with the maintenance of organic root reserves adequate for initiating new growth the following growing season. Such reserves are not so essential in annuals. A photosynthetic area must be maintained, however, that will permit recovery within the single growing season.

Eldredge (2), Dungan (1), Hume and Franzke (3), and Li and Liu (5) have shown that grain yields of corn and *Andropogon sorghum* vary inversely with the degree of defoliation and that the reduction becomes progressively less as the plants approach maturity. Leukel, et al. (4) reported that cutting Sudan grass four times after it had reached a height suitable for grazing prevented new top growth. In the case of the soybean, information is needed on the effect of defoliation on both the recovery of leaves and the ultimate seed yield.

MATERIALS AND METHODS

Biloxi and Tokyo soybean varieties were grown on a Congaree sandy loam at Raleigh, N. C., during the summer of 1940 for the purpose of studying the effect of defoliation on leaf, stem, and seed yield. All of the combinations of four degrees and three frequencies of defoliation were studied. The treatments were as follows:

1. The light defoliation treatment consisted in the removal of all but six...