STUDIES ON THE GROWTH OF ALFALFA AND SOME PERENNIAL GRASSES

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It has long been a matter of common knowledge that the extent of the top growth of plants is intimately associated with the extent of their root development, and that plants are able to store organic foods which the plant may subsequently use. Only recently, however, have some of the specific aspects of these relations been studied and some of the results of these investigations embodied in agricultural practice.

Kraus and Kraybill (3) were the first workers to call attention to the relationship existing between the carbohydrate reserves and nitrogenous compounds of the tomato plant with its behavior in regard to vegetative growth and fruitfulness.

Subsequently, work by Reid (5) brought out the fact that a low nitrogen content associated with a high carbohydrate content of the stem promoted a vigorous root growth in tomato cuttings. Definite responses in root and shoot growth would result when the existing relations of nitrogen and carbohydrates were altered.

At Missouri (8) the importance of a high content of reserves to the timothy plant had already been shown. It had been established that the cutting of timothy at immature stages reduced the storage of organic reserves and inhibited corn development. This reduced the longevity of the field as well as lessening the yields and thickness of stand. It was suggested that the initial top growth of timothy was made at the expense of reserves previously stored in the corms and that when timothy was cut at relatively immature stages the utilization of these reserves for top growth was very rapid. Early cutting, therefore, gave little opportunity for storage of such reserves as might be required for a maximum amount of future growth.

Remy (6) studied the absorption of mineral nutrients by alfalfa and other plants. A decrease in the amount of minerals present in

1Resumé of a thesis submitted in partial fulfillment of the requirement for the degree of Doctor of Philosophy at the University of Wisconsin, Departments of Applied Botany, Agronomy and Plant Chemistry. Published with the approval of the Director of the Wisconsin Agricultural Experiment Station. Received for publication April 12, 1927.

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3Reference by number is to "Literature Cited," p. 654.