THE RELATIONSHIP OF ORGANIC ROOT RESERVES AND OTHER FACTORS TO THE PERMANENCY OF ALFALFA STANDS

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The alfalfa plant has received much attention and study and has been widely distributed over the farms of the United States since its introduction. The common status of opinion seems to be, however, that it is primarily adapted to the northern, northwestern, and eastern part of the United States, production in the southern states having been limited. The reasons for this limitation are not evident. The common impression, and possibly rightly so, is that it is not readily adapted to many of the acid soil regions of the South. It should be pointed out, however, that in many areas of the South soil acidity cannot be a limiting factor since it is either not present or has been corrected with lime. It is true that other natural forage crops have dominated on acid soils because they have been found to be, to some extent, more acid tolerant.

During the past few years the Arkansas Agricultural Experiment Station has given attention to the study of alfalfa and alfalfa varieties. Roughly speaking a test dealing with some of the common varieties of alfalfa over a period of five years demonstrated the fact that there was considerable reduction in stand after the first two years of cropping. A study of when, how, and why a reduction in stand occurred in these varieties was not undertaken in the first few years of the work. It was evident, however, that such varieties as Grimm, Baltic, Kansas, and in fact many of the common so-called hardy varieties maintained their stand with a greater tenacity than did the less hardy varieties similar to the Peruvian types.

In 1925, a second series of alfalfa varieties was seeded. The soil was limed and the seed was inoculated previous to planting. On this series a study was made of (a) the relation between varieties and reduction of stand, (b) the possible effect of winter injury and subsequent fungal invasion on stand, and (c) the organic root reserves as well as changes occurring in these reserves over winter and their relation to the reduction of plant stands.

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