THE RESISTANCE OF CERTAIN VARIETIES AND REGIONAL STRAINS OF ALFALFA TO CONTROLLED LOW TEMPERATURES

F. L. TIMMONS and S. C. SALMON

During the last 30 years extensive experience and a considerable number of experiments have shown marked differences in the adaptation of different varieties and strains of alfalfa. In general, Grimm and other variegated varieties and strains have proved best in northern regions, while various strains of common alfalfa or of the non-hardy group (Peruvian) are better adapted to the central and southern areas. It is reasonable to suppose that differences in adaptation are correlated with resistance to low temperature. Indeed, it is well known that adaptation in many cases is limited primarily to inability to survive severe winters and hence presumably by susceptibility to freezing temperatures. In a few cases differences in resistance to winter killing and to low temperatures have been experimentally demonstrated. In connection with other work of a similar nature at the Kansas Station, it seemed desirable to make a more extensive study of this relation in order to determine whether or to what extent resistance to low temperatures is a factor of major importance in determining the adaptation of alfalfa varieties and whether artificial freezing may be usefully employed in determining the relative resistance of varieties and strains to winterkilling.

REVIEW OF LITERATURE

The literature on the general subject of winterkilling in plants has been comprehensively reviewed by Chandler (5), Newton (18), Martin (13), and others. In this paper mention will be made only of those contributions relating to alfalfa.

Lyon and Hitchcock (12), in a field test conducted at the Nebraska Agricultural Experiment Station from 1898 to 1903, observed that strains of common alfalfa from Arizona and California winterkilled completely and that common alfalfas from Utah, Colorado, and Kansas were injured more severely than those from Nebraska and Turkestan.

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*Assistant Professor of Farm Crops, Kansas State College of Agriculture and Applied Science, and Principal Agronomist, Division of Cereal Crops and Diseases, U. S. Dept. of Agriculture, respectively.
*Reference by number is to “Literature Cited,” p. 654.