AN ANALYSIS OF SOIL AND SEASONAL EFFECTS IN
ALFALFA VARIETY TESTS

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DURING recent years considerable interest has been attached to field experimental technic as evidenced by the 1933 report and bibliography of the committee of the American Society of Agronomy on standards for the conduct and interpretation of field and lysimeter experiments. An opportunity has been given the writer to analyze certain phases of alfalfa varietal testing, and, alfalfa being a perennial crop, the results may indicate certain problems which are not apparent in the testing of annual crops.

Two problems have been investigated in the present paper concerned with alfalfa testing, viz., the number of years required to determine relative yields for a given set of plats, involving the question of differential response to season; and the relative importance of "place effect" in field trials of this crop. The term "place effect" is not used in the sense of regional effect, but rather in the sense of field heterogeneity on the same farm. Although variety tests from four different states are used, no attempt has been made to study the varieties, as such, in different regions of the country. The different stations were chosen chiefly to determine if conclusions from tests in one region of the country would or would not substantiate those from other regions.

METHODS

Through the courtesy of the various cooperating institutions, detailed data of the yields of replicated plats of alfalfa varieties were obtained for this analysis. Since the yield of the varieties, as such, are not concerned, the detailed data are not given, but information is presented in Table 1 to give an adequate understanding of the amount of data upon which the calculations are based.

The relative stand of plants is no doubt a factor in the present study, but an analysis of its relation to production is impossible with the data at hand. Care was taken to omit those varieties from consideration where the stand was obviously too thin for maximum production since those varieties which thin out rapidly demonstrate their undesirability and yield data are unnecessary. In all tests analyzed systematic replication was the rule, and objections may be raised to using certain statistical methods on systematic distributions. It is believed,