VARIATIONS IN STAND AS SOURCES OF EXPERIMENTAL ERROR IN YIELD TESTS WITH CORN

H. E. BREWBAKER AND F. R. IMMER

The aim of investigators concerned with agronomic plat trials is to eliminate as many sources of error as possible. Variations in stand in test plats of corn are commonly obtained in spite of most careful attention to details of planting, thinning, and cultivation. It is essential to know the effect of such variations in order to obviate, so far as possible, such effect at harvest.

Reduction of stand in varietal trials may result from seed-borne infection with the seedling blight organisms; and also from other uncontrolled sources of error, such as insect or rodent injury, variations in germination, particularly in a dry spring, and accidental destruction of plants during cultivation. Variations in stand in varietal trials may be obviated to a considerable extent by planting thick and later thinning to a uniform stand. Where studies on the effect of seedling blight diseases are being conducted, such a practice is obviously undesirable.

Reduced stand as an important source of error in yield trials was demonstrated by Kiesselbach in studies conducted for two years at the Nebraska Station. He found, in 1914, that the relative grain yields of 3-plant, 2-plant, and 1-plant hills surrounded by hills having a full stand of 3 plants were 100, 82, and 74, respectively. In 1917, the corresponding relative yields were 100, 83, and 50. In 1914, 3-plant hills adjacent to one hill with 2 plants, one hill with 1 plant, one blank hill, and two blank hills, respectively, and otherwise surrounded by a full stand, were increased in yield 3, 5, 13, and 43%, respectively. In 1917, the corresponding increases were 2, 9, 15, and 25%.

Olson found variations in stand closely correlated with yield per acre. In the course of a seed study experiment in which ear rows of

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1Paper No. 988 of the Journal Series, Minnesota Agricultural Experiment Station, St. Paul, Minn. Received for publication December 22, 1930.

2This study was completed while the writers were Assistant Plant Geneticists, Division of Agronomy and Plant Genetics, University of Minnesota. The writers are now Associate Agronomist and Associate Geneticist, Office of Sugar Plants, U. S. Dept. of Agriculture, Ft. Collins, Colorado, and St. Paul, Minnesota, respectively. Acknowledgment is due Dr. H. K. Hayes for help in planning these studies.
