ANALYSIS OF YIELD IN CERTAIN OAT VARIETIES

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At the present time very little is known about the inheritance of seed yield in oats. Of the varieties now in existence some give high yields, some moderate yields, and some low yields, but the reasons for these differences are, in the main, unknown. Since yield is a complex character, it seems advisable for the plant breeder to attempt to analyze it into its constituent parts and learn how these are inherited in order to make the most progress in breeding for yield.

The purpose of this investigation was three-fold—to attempt to analyze seed yield of oat varieties into its component parts, to determine the relations existing between the components and yield, and to determine the relations existing among the components themselves.

MATERIAL AND METHODS

The data used in this study were obtained on individual plants of 20 different varieties and strains grown at the Illinois Agricultural Experiment Station, Urbana, Ill., during the summer of 1930. An attempt was made to include as many different types as possible so that genetic differences in yielding ability between varieties could be determined. Varieties differing in maturity, grain color, panicle type, and many less noticeable characters were included.

An attempt was made by the method of planting to eliminate, in so far as possible, all environmental differences so that differences found might be considered genetic. The varieties were planted in rows 16 feet long and 1 foot apart, with the plants spaced 2 1/8 inches apart in the rows. Each 16-foot row was divided into seven sections and a different variety planted in each section. Each variety was replicated 15 times, each replicate consisting of a 12-plant section and the replicates were scattered systematically throughout the plat. The early and late varieties were planted in separate adjoining plats to avoid competitive effects.

The number of plants on which data were taken varied for different varieties due to differences in stand. The end plants of each section were discarded to eliminate end-to-end varietal competitive effects, thus giving 10 plants per section with a full stand. However, a full

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