A STUDY OF THE DEVIATION OF YIELDS FROM DUPLICATE POT CULTURES

FRANKLIN L. DAVIS

Although there is a considerable amount of literature on various phases of experimental plat work with crops and soils, there is but very little literature concerning the average variation in yields from replicated field plats or pot cultures. In the majority of publications in which the experimental error or variation is calculated, the calculated variation is applicable only to the yields from which it is obtained and has but little significance in indicating the degree or magnitude of variation that might be expected in other similar experimental work. It seems that the variation in yields obtained in any given experimental plat or pot culture work should be of a magnitude comparable to that of any other similar experimental work. This should be true if the number and range of yields are sufficient to provide a true and random representation of the population of variations between duplicate or replicate yields. It is the object of this paper to present the results of a study of the deviations of a large number of yields on duplicate pot cultures in the greenhouse.

In the course of a study of the uniformity of the more important agricultural soil types of Alabama, a large number of greenhouse yields from duplicate pot cultures have been obtained. An analysis of the variation between these duplicate pot culture yields has proved of interest, and this analysis is given in this paper with the hope that it may be of general interest and value in giving some information on the nature and magnitude of the average variation to be expected in the yields of duplicate pot cultures in the greenhouse.

EXPERIMENTAL

Only that part of the experimental work that is pertinent to the present discussion will be described here, a more complete description having been given in a previous paper. A number of representative samples of each of the four soil series, Norfolk, Greenville, Hartsells, and Decatur, were collected in the field. In the greenhouse these soils were weighed into 2-gallon glazed pots. Seven different fertilizer treatments in duplicate were used and three crops were grown in succession. The soil was removed after each crop, passed through a screen to remove plant roots, refertilized, mixed, and replaced in the original pot for each successive crop. The first crop grown on each of the groups of soils was Austrian winter peas and the two succeeding crops were sorghum. Only the yields of the sorghum are considered in this paper.

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2Assistant Soil Chemist.