Information in the literature indicates clearly the value of systematic replications in conducting experiments in the field. The value of field experiments is usually questioned when such experiments are conducted in a manner which does not permit the measurement of uncontrolled variation.

Systematic replication of treatments is very common in plant breeding work. In soil fertility and similar studies it has been less commonly used, and while duplicate plats are occasionally found in some experiments, more extensive replications have been very rarely employed.

It is customary in conducting field experiments with fertilizer materials to continue the work over a considerable period of time and the degree of reliability placed upon the conclusions which are drawn is frequently in proportion to the length of time the experiment has been conducted. In those instances where soil variation occurs and in unreplicated series, however, such variation is not necessarily overcome by the extended duration of the experiment but is obviously emphasized thereby.

While an extended interval of time appears to be an essential characteristic of those experiments which deal with residual effects, there are many other types of problems for which earlier established conclusions are a most definite desideratum.

From recent experience gained from the application of intensive methods of experimentation, it seems clear that for certain kinds of problems at least the usual time requirement may not only be considerably reduced but the efficiency in terms of accomplishment and cost may be greatly increased.

The experiments upon which this experience is based are given in Table 1. It will be seen that in several instances the entire experiment has been duplicated at other locations and the results, if concordant, should add further to the confidence which may be placed upon the data.

A specific example will serve to indicate the design of experiment which has been used and the nature of the results secured. For this purpose, one of the smaller experiments has been chosen and the one

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1Contribution from the American Cyanamid Co., 535 Fifth Ave., New York, N. Y. Received for publication April 26, 1928.

2Agronomist.