Experimental Error in Field Experiments with Pineapples

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Improvement in agricultural practices of the pineapple industry rests, to a large degree, upon careful and adequate field experiments. In such a program the determination of the magnitude of the field error, the optimum plat size, and the number of replications requiring the minimum expense and trouble are important.

Mercer and Hall (3), who in 1910 published an excellent article on uniformity trials, were among the first to make a critical study of yield variation and its bearing on experimental technic. They found that with a sufficiently large number of plats, the distributions of yield and other measurable characters of the crop grown tended to be normal in form. Many more recent investigators have confirmed the presence of a normal distribution.

One of the most exhaustive investigations of this type is that of Demandt (1), who in Java in 1931 harvested 203 blank experiments with sugar cane, each consisting of 36 plats. Not only were yields of cane obtained but sugar content as well. The distribution of yields was normal in character. Thus, on the basis of cane weights, considering each experiment to consist of two blocks of 18 replications each, 96, or 47% of the total, fell in the group where the difference between the two blocks was less than 1% of the mean yield. He demonstrated that occasionally the difference between "treatments" in a blank experiment is very great as would naturally follow from the normal distribution curve.

The present article contains data relating to field experiments with pineapples, gives estimates of the experimental error under various conditions, and suggests how field experiments can be improved.

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3Figures in parentheses refer to "Literature Cited," p.643.