SINCE the publication of Mercer and Hall's paper in 1911, many studies have been made to determine desirable methods of conducting field trials. The primary purpose has been to learn the most efficient methods of making comparative tests. For certain groups of crops the general methods suggested by Love and Craig (7) have been used extensively.

Only a few studies have been made with cotton. Engledow and Yule (2) suggested 1/80-acre plats with a few replications. Bailey and Trought (1), in 1928, recommended that the beds should be in long strips (up to 16 times as long as wide) and that where possible, each strip should be 1/5 feddan in area (1 feddan = 1.038 acres). They recommended 10 replications, and where sufficient land or seed was not available, the number of replications might be made up by dividing the strip into sections. Because of great seasonal variations, they stated that the trial should be carried out over a period of at least 3 years. Ligon (5) suggested the use of single row plats not longer than 100 feet, with three replications.

The results of these investigators differ widely and no generalization can be made. A blank test was carried out by the writer over a period of 3 years, beginning in 1930, at Yuyao, Chekiang, China, in the hope of throwing some light on desirable methods of field experimentation with cotton. This paper summarizes the results of that test.

MATERIALS AND METHODS

Two hundred rows of cotton each 24 feet long, and spaced 1 foot apart were planted in a single series in 1930 and in 1931. Seed was sown in drills and the seedlings were thinned finally to 30 plants per row, more or less evenly distributed. In 1932, 22 ridged beds each 192 feet long were planted with the same variety of cotton. The beds were 4.5 feet in width and occupied by three rows of cotton. Each bed was cut into 12 sections and the crop from each section harvested separately. Owing to the existence of border effect the plats on the border were discarded. As a result only 200 plats arranged in a 20x10 block were used in the analysis.

Varying numbers of single rows were combined to form plats of different width for the study of the most efficient size of plat. In each case 25 varieties were assumed in the test except for the three-row plats in 1932 where only 20 varieties were assumed. In 1932 the size of plat was increased in both directions by extending the length of the plat or by expanding the width of the plat. Because of the

1Contribution from the Division of Agronomy and Plant Genetics, University of Minnesota, St. Paul, Minn. This paper is a summary of a thesis submitted to the Graduate School of the University of Minnesota as a partial fulfillment of the requirements for the degree of master of science, June 1934. Received for publication October 31, 1935.

2Graduate Student. The writer wishes to express his appreciation to Dr. H. K. Hayes, Chief of the Division of Agronomy and Plant Genetics, for his helpful direction throughout the analysis of the data and in the preparation of the manuscript.

3Reference by number is to "Literature Cited", p. 979.