ROW COMPETITION AND ITS RELATION TO COTTON VARIETIES OF UNLIKE PLANT GROWTH

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In cotton variety trials it is customary to plant three- and four-row plats of each variety and to harvest the middle row or rows for the data on yield. The assumption is made that the border rows will be affected by an unequal vegetative growth and these rows are therefore discarded.

The planting of these extra rows requires additional expense of labor and time as well as either spreading the experiment over a larger area of land or reducing the number of replications. Is the magnitude of the error attributed to unlike plant growth large enough to justify the planting of these extra rows?

The border effect at the ends of rows or along the sides of the area in the experiment are well recognized and are not a part of this problem. The need of buffer rows in experiments where different fertilizer treatments are given is fully granted. The unequal spacing of plants may be of importance in its effect upon row competition. In the immediate problem the variable factor is unlike plant growth. Fertilizer treatments, spacing, and cultural methods were made alike as nearly as it is possible to do so under field conditions.

A great deal of work on unequal plant growth and its relation to row competition has been done on small grains, but there are very few experiments reported on cotton. Ligon (4) measured the variation when different size plats of 100-, 200-, and 300-foot rows were used. The probable errors are calculated by the "deviation from the mean" method of Hayes. A brief summary of the three-row plats 100 feet long is given in Table 1. In this table it is seen that the variation of the middle row is not consistently less than that of the outside rows.

In a paper before the Southern Agricultural Workers Association in 1932, Hale (3) reported that in cotton variety trials in Arkansas and Georgia, border rows produced from 12% to 46% more seed cotton than middle rows of three-row plats, and that the Trice variety yielded 104 pounds more cotton per acre when grown alone than when tested with alternate rows of Cleveland. He did not give any

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3Figures in parenthesis refer to "Literature Cited", p. 957.