IN DESIGNING experiments to test the yields of varieties of cotton, it is important to know to what extent intervarietal competition may be expected to affect the yields of the varieties. Intervarietal competition either has been found by test or assumed in many field crops, and the effect of the competition in yield trials of these crops has been eliminated by protecting the plot area to be harvested with border plantings of the same variety. If it can be demonstrated that the effect of the intervarietal competition in cotton is not significant, no precision in testing will be gained by protecting the plot area to be harvested with border rows. Under such conditions the width of the plot may be reduced to a minimum or a single row. On the other hand, if cotton varieties differ in their ability to compete, a bias resulting from intervarietal competition will be introduced in tests in which single-row plots are used. Even if some intervarietal competition can be demonstrated, the lower experimental error expected when single-row plots are used, as compared to the experimental error of tests employing multiple-row plots in which more than one row is harvested for yield, may increase the precision of the test as much or more than the elimination of competition between varieties through use of border rows. Furthermore, the additional area occupied by multiple-row plots adds considerably to the expense of conducting a variety test.

Investigators who have worked on this problem are not in full agreement as to the effects of intervarietal competition on variety tests of cotton. Christidis (1) from experiments at the Greek Cotton Institute found significant differences between varieties grown in adjacent, unprotected rows and concluded that, "The results . . . seem to suggest that competition may cause a definite bias in estimating the comparative yielding value of cotton varieties."

Quinby, Killough, and Stansel (3) conclude from studies at three locations in Texas that, " . . . cotton varieties differ but little in ability to compete, that varieties compete the same in a favorable as in an unfavorable season, and that single-row plots can safely be used."

Hancock (2), in Tennessee, conducted an experiment with two varieties of cotton, California Acala and Delfos 6102, which, from previous trials, appeared to differ considerably in plant growth. The two varieties were arranged in single-row plots in such a way