COMPETITION BETWEEN COTTON VARIETIES IN ADJACENT ROWS

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The testing of cotton varieties is an activity common to all experiment stations in cotton growing regions and during the past 25 years much has been published on methods of conducting cotton variety experiments. The recommendations concerning experimental methods with cotton, including those of the American Society of Agronomy (7), have, in most part, been in regard to size and shape of plat and to number of replications. Very little has been done with the problem of whether or not guard rows are necessary, and without information on this point it has been the general practice on Texas substations to use guard rows. The plats consist, therefore, of three or of four rows, the inside one or two of which are harvested for yield. This procedure results in the loss of one-half or two-thirds of the area used since the outside rows of each plat are not harvested for yield data. It is generally accepted that an increase in the amount of replication is desirable, but at the same time it is recognized that enlarging the area involved in an experiment brings about an increase in variability due to additional soil differences. The omission of guard rows from plats affords the best opportunity of increasing replication without affecting the net size of plat or the size of the experimental area. This omission is justifiable provided there is no difference in competing ability among cotton varieties, or the differences in competing ability are so small as to be very minor sources of variability in the results when varieties are distributed at random.

During the years from 1927 to 1934, data have been gathered at the Texas substations located at Chillicothe and Angleton and at the main station farm at College Station to determine whether or not it is necessary to protect one variety from the competition of another by using guard rows, or, in other words, whether or not single-row plats can properly be used.

THE RESULTS

During the period 1927 to 1929, inclusive, the variety test at Chillicothe consisted of the same 48 varieties grown in quadruplicate plats. The test was on a different block of land each year. The plats consisted of four rows, each row being 1/168 acre in area, and each row was harvested separately. The sequence of varieties was constant...