BIOMETRICAL RELATIONSHIPS OF CERTAIN CHARACTERS IN UPLAND COTTON

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At the onset of any breeding program in plants it is necessary to know the ultimate possibilities of available material in order to avoid the wasting of much time and money. To accomplish this, it is necessary to consider the things that we desire to build into a variety for commercial use; then, to find out if the material to be worked with contains these ultimate possibilities. If the available material does not contain the characters desired in such a way as to obtain certain combinations by intra-strain or intra-varietal crosses and selections, it will then be necessary to introduce these certain characters or combinations of characters by crossing with unrelated varieties or species.

The work reported herein is the result of preliminary investigations on the possibilities of the Acala variety of cotton as to future breeding work. In this study not only were four strains or different varieties of Acala used, but two varieties of cotton were included which were unrelated to Acala. At the outset it was desired to find out the situation with respect to the characters that go to make up yield and quality as regards their compared means of the different varieties in a minor way but mainly to ascertain the relationships of characters with each other as regards the possibility of their being correlated in certain degrees. In this connection it might be well to call attention to some interesting relationships in small grains obtained by Hayes, Aamodt, and Stevenson (1) and by Immer and Stevenson (2).

MATERIALS AND METHODS

The data included in this report were collected at State College, New Mexico, in the fall of 1928. State College is located in southern New Mexico, 40 miles north of El Paso, Texas, in the upper Rio Grande Valley. This valley is irrigated with water from the Elephant Butte Reservoir. The rainfall is slight, but the reservoir supplies water in sufficiency. The altitude is 3,838 feet.

1Contribution from the Department of Agronomy, New Mexico Agricultural Experiment Station, State College, N. M. Credit is due Oris V. Wells of the Bureau of Agricultural Economics of the U. S. Dept. of Agriculture and Professor J. W. Branson of this college for their criticisms and assistance in connection with some of the calculations included in this paper. Received for publication October 1, 1929.
2Associate Agronomist.
3Reference by number is to "Literature Cited," p. 340.