INHERITANCE OF AWN DEVELOPMENT IN SONORA WHEAT CROSSES

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The inheritance of awnedness in wheat has been studied for many years in different crosses and by several workers. Most of the work has been research to determine the genetic behavior of the factors controlling awn development. In addition to determining the mode of inheritance there is a practical side to the problem, as in some sections of the United States increasing length of awns is known to be associated with increased yield. On the other hand, where hand labor is still used in harvesting, awnless varieties usually are preferred by growers. It is desirable, therefore, to have some knowledge of the manner of segregation to be expected from crosses between varieties differing in length of awns.

PREVIOUS WORK WITH SONORA

In 1918, Babcock and Collins (1) advised their students to “avoid the use of Sonora wheat in hybridizing to produce material for elementary class use. Some of its characters behave differently from similar characters of other varieties.”

Gericke (4) reported in 1923 that Sonora wheat when grown in tap water produced 7 plants in 100 with awns 1½ to 2 inches long, whereas none of the plants grown in the soil produced other than rudimentary organs 2/8 to 3/8 inch long, common to the variety. He states: “tap water, and perhaps also the effect of the then prevailing climatic complex, therefore, served as a means to permit expression of a character in wheat that did not appear under the usual conditions in which this variety is grown.”

Love and Craig (5), in a brief note, reported that when Sonora was crossed with other awnless varieties the F1 was awnless, whereas awned and partly awned types appeared in the F2 and later generations. No data were presented, but segregation was stated to approach a 15:1 ratio for awnless and awned types, which indicated that Sonora carries a factor for awns. In crosses between Sonora and awned varieties they reported a preponderance of awned plants. A complete report of their extensive work with Sonora has not yet been published.

From these reports it appears that Sonora differs from other awnless or awnleted wheats in its genetic behavior for awn development.

MATERIALS AND METHODS

In the studies reported herein Sonora was crossed with Quality, Supreme, and Reliance. Sonora has short incurving awnlets that