THE INHERITANCE OF PERICARP TENDERNESS IN SWEET CORN

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The present-day method of corn breeding has met with outstanding success in its application to sweet corn improvement. Many canning companies are now utilizing hybrids exclusively in the production of their commercial canning crop. The superiority of hybrids, in uniformity, productiveness, and in many cases resistance to destructive diseases, has resulted in this rapid change from open-pollinated varieties to hybrid strains. The improvement of quality in hybrids also ranks as a major problem. While many of the "quality" attributes in sweet corn are difficult to evaluate on a numerical basis, pericarp tenderness appears to lend itself to fairly accurate measurement. The need for tender pericarp hybrids is of special importance in meeting the demand for types suitable for whole ear as well as in whole kernel canning methods.

Detailed histological studies have been reported by Haddad showing the changes which occur in the pericarp tissue during the development of the endosperm in sweet corn. Doxtator has made a recent report of previous studies at the Minnesota Agricultural Experiment Station on the measurement of quality in sweet corn.

The present paper will present studies conducted since 1934 pertaining to the inheritance of pericarp tenderness in sweet corn.

MATERIAL AND METHODS

Among the inbred lines used in the sweet corn improvement program, the strains obtained from the Crosby variety have exhibited a greater degree of pericarp toughness than those from 8-rowed Golden Bantam. The objection to the use of the Crosby variety has been based largely upon the toughness of its pericarp. A 4-year selfed Crosby inbred line, culture 1–30, used as one of the parents in Minhybrid 204, was selected as a typical tough pericarp line. An extremely tender pericarp, white endosperm, open-pollinated variety of unknown origin, was obtained from H. M. Hayes of Granby, Conn., who has grown it for home use for many years. This variety has a more tender pericarp than the most tender lines from Golden Bantam.

The measurement of pericarp tenderness was made with a puncture test machine similar to the one first described by Culpepper and Magoon. All ears

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