YIELD COMPARISONS OF HYBRID AND OPEN-POLLINATED VARIETIES OF SWEET CORN

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The market value of canned sweet corn is determined primarily by its quality. The variety factor, together with climatic considerations, has been regarded of great importance in determining the quality of the canned product. Improvement in the quality of the raw product should result in better canned corn. The use of hybrid sweet corn seed should produce a better quality raw product if the right hybrids are used.

The breeding of sweet corn as reported in the literature bearing on the subject has been confined largely to the genetics of the subject. Very little work has been reported on the improvement of strains and the production of new varieties. Earlier work, previous to the last 5 or 10 years, has been confined largely to the development of new varieties by hybridization of standard varieties or through improvement by selection within existing strains. Numerous reports appear in the literature dealing with production and results secured from inbreeding field corn, but very little has been reported on results which can be expected from such a project when applied to sweet corn. This report, therefore, will be found to deal with the comparison of some hybrid sweet corn strains developed at the Iowa Agricultural Experiment Station and varieties in use by canners in the corn belt region.

REVIEW OF LITERATURE

No attempt will be made to review the literature with regard to the genetics of corn breeding, nor to review the extensive studies that have been reported on the relation between various characters and yield in open-pollinated field corn or sweet corn.

Hayes (3) found in 1929 that the first five crosses of first generation hybrids between lines of Golden Bantam sweet corn selfed for 6 to 7 years yielded from 22 to 69% more corn than open-pollinated Golden Bantam. Lindstrom (7) crossed commercial varieties of dent corn and sweet corn with inbred sires which produced significantly increased yields of grain. Prepotency of the inbred sire for ear type, disease resistance, lodging, and uniformity was established.

In the selection of inbreds for crossing, a knowledge of the ability of the lines to use available nutrient materials is desirable. Smith (8) discovered that some inbred lines showed distinct differences when grown with a limited phosphorus supply. Evidence of differential response to a low nitrogen supply was less pronounced. No definite relationship was found between phosphate efficiency and percentage composition of phosphorus in the inbred lines. He considered the

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3Figures in parenthesis refer to "Literature Cited," p. 712.