THE RELATIVE EFFECTS OF FOREIGN POLLEN UPON THE KERNEL WEIGHT OF COMMERCIAL VARIETIES AND SELFED STRAINS OF CORN

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The object of this investigation has been to compare the immediate effects of fertilization by foreign pollen upon the kernel weights of selfed strains, commercial varieties, and various botanical types of corn.

By pairing varieties differing in endosperm or aleurone color under control conditions, the pure and hybrid kernels may be distinguished by color, because of changes resulting from the secondary fertilization of the endosperm nucleus in the embryo sac.

HISTORICAL

McCleur (5) appears to have been the first to report on the immediate effect of foreign pollen upon the kernel weight of corn. Using five ears of sweet corn pollinated with a mixture of sweet and dent pollen, he found an increase in weight of hybrid over pure kernels ranging from 19.47 to 31.82 percent for the different ears.

Collins (2) secured an increase of 16 percent for hybrid kernels on an ear of Chinese corn fertilized in part with pollen from a dent variety. Roberts (7) also observed a large increase for kernels of this variety fertilized by foreign dent pollen. Collins and Kempton (3) reported an increase in kernel weight ranging from 3 to 21 percent for eleven crosses in which ears were fertilized with a mixture of pollen.

Wolfe (8) offers the results of 37 crosses as evidence of marked effects on kernel weight resulting from the fertilization of commercial varieties with pollen from other varieties. Wolfe concludes that

1Contribution from the Department of Agronomy, Nebraska Agricultural Experiment Station, Lincoln, Nebraska. Received for publication November 20, 1923.
2Agronomist and Graduate Assistant, respectively.
3Reference by number is to "Literature cited," p. 36.