Observations on Factors Affecting Seed-set with Inbred Strains of Dent Corn

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INTERFERENCE with the pollination process has been recognized as one important way in which drought may affect corn plants. This has been pointed out by Martin (9) and Lonnquist and Jugenheimer (8). In spite of the importance of drought as a factor in corn production there have been few critical studies of the ways in which it prevents the normal functioning of the corn plant. Jenkins (4), Sayre (10), Haber (2), Heyne and Brunson (3), and Lonnquist and Jugenheimer (8) have shown that resistance to various manifestations of drought is an inherited character and that breeding offers a means of developing drought-resistant strains. Resistance to drought is one of the more important criteria of selection in the Great Plains area. Breeding operations would be more efficient and selection more effective if more were known of the ways in which drought affects corn and of the plant characters responsible for drought resistance. The studies here reported were concerned with seed-setting ability of various inbred lines when they were self-pollinated at different times of the day under different conditions of temperature and humidity.

Materials and Methods

Plantings of inbreds being grown for seed increase by hand-pollination were used, the data on the seed-set being incidental to the main purpose of the planting. The data were recorded during the 1946 and 1947 growing seasons.

In 1946 inbreds K41, Ind. 33-16, K148, K55, K201, and K63 were used. Plants to be pollinated on a given inbred each day were divided into three groups, one group being pollinated from 9 to 11 a.m., the next from 11 a.m. to 1 p.m., and the third from 1 to 3 p.m. The period and date for each pollination were indicated on the pollinating bag. At harvest time 1,591 ears were scored for per cent of ovules fertilized.

In 1947 more inbreds were included, but plantings fewer ears of each were available. Pollinations on each date were made as soon as possible after 9 a.m., 11 a.m., 1 p.m., and 3 p.m.