EFFECT OF POLLINATION UPON CHEMICAL COMPOSITION OF SILKS OF CERTAIN INBRED LINES OF MAIZE

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In a study of the chemical composition of developing ears of maize and of the influence of composition upon the resistance of certain strains to the corn earworm (Heliothis obsoleta, Fab.), data have been obtained relative to the effect of pollination on the composition of the silks.

The pollination of maize silks has an immediate retarding effect upon their development, while unpollinated silks will continue to increase in length and total volume. If pollination were prevented, therefore, it would result in a much larger volume of silks for analysis. While prevention of pollination would facilitate the technic in providing sufficiently large samples, it was not known whether the composition of silks grown under such conditions would be comparable with that of silks on which the corn earworms normally feed. The data reported here indicate the effect of pollination on protein and moisture content of the silks, and on the H-ion concentration and the refractive index of the juice expressed from them.

MATERIALS AND METHODS

Inbred lines Kansas K4, Iowa L317, Ohio 51, and U. S. 54o, grown at Urbana, Illinois, in 1938 were used in this study. Silks from four rows of each inbred were analyzed. In two alternate rows pollination was prevented by covering the young shoots with parchment bags before the silks had emerged. The remaining two rows of each inbred were left without bags to be normally pollinated. Approximately 100 plants were represented in each of the samples.

SAMPLING AND PREPARATION FOR ANALYSES

The silks of inbred 51 were sampled July 30; 54o and K4 on August 5, and L317 on August 12, 1938. These samples were taken approximately 72 hours after emergence, which was before any outward appearance of drying was evident. The shoot bags were removed from the unpollinated silks about four o’clock in the afternoon the day before the samples were taken. This should have enabled any moisture differences, due to the bags, to become adjusted, and it is believed that very few silks were pollinated during this period of exposure, although it is realized that some pollen often is shed late in the afternoon. The samples were taken the next morning before significant amounts of pollen had been released.

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