THE INTENSIVE PRODUCTION OF SINGLE CROSSES BETWEEN SELFED LINES OF CORN FOR DOUBLE CROSSING

FREDERICK D. RICHEY

The practicability of F₁ crosses and double crosses between selfed lines of corn has been questioned on the basis of the difficulty of seed production and distribution. The difficulty of maintaining seed of two or four parent lines and producing the F₁ seed of a single cross, or of two single crosses and a double cross, each year seems almost insuperable to those unfamiliar with the ease of obtaining hand-pollinated ears of corn. One accustomed to hand pollinating corn, however, naturally would rely on this procedure in maintaining the parent lines and, if the ultimate objective were a double cross, in making the single crosses. Isolation then would be needed only for the larger plat in which is grown the seed to be sold or used in the commercial fields.

With this in mind, it seemed worthwhile to obtain data on the labor involved in maintaining parent lines and obtaining F₁ crossed seed by hand pollinating necessary to a small continuous production of double crossed seed for commercial use. The writer accordingly obtained such data in 1927, and these are presented here.

The parent lines may be designated 227-2-Sₖ, 227-3-Sₖ, 228-4-8-Sₖ, and 228-6-5-Sₖ. In these pedigrees, 227 and 228 are the Cereal Investigations accession numbers. No. 227 was a sample of a bloody butcher type of dent corn from the Chinese exhibit at the San Francisco Exposition. No. 228 was a single ear of the Lancaster Surecrop variety grown in Illinois. The 2, 3, 4-8, and 6-5 in the pedigrees are the strain numbers, and the subscripts to S show the numbers of selfed generations through which selection has been practiced.

The objective was to maintain these four strains on a small scale and to produce the two single crosses 227-3 x 2 and 228-4-8 x 6-5. It was hoped to carry the work through in 1928 by actually producing seed of the double cross (228-4-8 x 6-5) x (227-3 x 2). Unfortunately, the single crosses and the double cross were not good enough when tested in 1927 in the section where the double crossing was to be done to warrant undertaking this phase.

The corn was grown in the backyard at the writer’s residence in Chevy Chase, Md., on a clay soil some of which had come from the excavation for the basement of said residence in the fall of 1924.

1Contribution from the Office of Cereal Crops and Diseases, Bureau of Plant Industry, U. S. Department of Agriculture, Washington, D. C. Received for publication May 31, 1928.

2Agronomist in Charge of Corn Investigations.