PARENTAL CORN INBREDS: HAND POLLINATION METHODS AND COST STUDIES

J. W. Thayer, Jr., and E. E. Down

This paper reports 1941 yield data, time records, and costs pertinent to the production of 656 pounds of parental inbred seed corn by hand pollination. There also is presented a comparison of the efficiency of the “tassel bagging” method (2) as contrasted with the “bottle” method (2, 3) for hand pollination. Cost and pollination studies have also been reported by Johnson and Hayes (4) and by Richey (5).

MATERIALS AND METHODS

In 1941, the Michigan Experiment Station replaced isolated plot increases of parental inbred corns with controlled pollination plots as suggested by Borgeson and Hayes (1). To produce 1942 seed, 21 parental inbred strains (Table 1), were planted on the college farm in plots which varied in size according to the production required. Plantings of all strains were made at two dates, 10 days apart, to minimize the danger of having all pollinations of any one strain occurring within a limited unfavorable weather period and to spread the work of pollinating.

Pollinating was limited to selfing and the work was done by both the tassel bagging and bottle methods. At harvest all selfed ears were picked and taken to the laboratory where, after drying, they were sorted and shelled.

During the season a record was kept of man hours and materials used in pollinating, harvesting, sorting, and shelling. Time was recorded as total elapsed man hours on the job and no records were kept for short test periods. Regular 3 × 7 inch glassine shoot bags ($1.90 per M) and special water-proof adhesive No. 12 brown kraft anti-pollination bags ($3.05 per M) were used. Two gross 2-ounce, flint glass bottles (2 cents each) fitted with a 6-inch length of No. 22 bare copper magnet wire were available for the bottle pollinating work.

Four inbred strains CC 1, CC 5, CC 7, and WF 9 were selected for testing the efficiency of the tassel bagging against the bottle method for hand pollinating. In each plot selfings were made by the tassel bagging method on the even-numbered rows and by the bottle method on the odd-numbered rows.

RESULTS AND DISCUSSION

The productivity of each strain is recorded as the average number of seeds obtained per pollination, Table 1, column 5. It is not surprising that this figure varies from a high of 298 to a low of 44, because it is dependent upon the inherent productive ability of the strain and the success one has in obtaining fertilization by hand pollination. The latter will vary greatly within a strain but the “percentage of pollinations shelled,” Table 1, column 4, indicates that success in obtaining fertilization also varies considerably from strain to strain. This variation is too great, from a high of 83.8% to