DIFFERENTIAL RESISTANCE OF INBRED AND CROSSBRED STRAINS OF CORN TO DROUGHT AND HEAT INJURY

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In a recent paper it was mentioned that some of the inbred lines and crosses grown at Ames, Iowa, during the season of 1930 showed marked resistance to injury by the hot, dry weather. The crosses of one line in particular were very free from leaf burning. It was thought that it might be of interest to present in more detail some of the evidence of differential resistance to leaf burning which was obtained.

Taking advantage of the opportunity afforded by the extreme season, counts were made on August 5 of the plants with burned upper leaves in three of the six replications of the regular yield comparison of crosses. The percentages of plants with burned leaves for one group of crosses among a number of eight-generation selfed lines and for the parent lines, so far as available, are given in Table 1. They are based on 70 or more plants of the parent lines, except for one line, and on three plats of each cross with a total of 42 three-plant hills. The data for the parent lines are recorded along the lower and right hand margins of the table and those for the crosses at the intersections of the row and column headed with the pedigrees of the parents.

DISCUSSION

There was a very marked difference in the resistance of inbred lines and of their single crosses to the leaf burning common in hot, dry weather. The crosses of line L317B2 were uniformly resistant. In the 10 crosses of which this line was a parent there were no plants with burned leaves. Comparable crosses of line L293A1 were very susceptible to leaf burning. Line L317B2 seems to carry dominant factors for resistance. The cross L317B2 x Mc412A3 was resistant to burning and yet line Mc412A3 itself and all of the other crosses of which it was a parent were very susceptible to burning.

1The data on which this paper is based were obtained in connection with the corn improvement project conducted by the Division of Cereal Crops and Diseases, U. S. Dept. of Agriculture, and the Iowa Agricultural Experiment Station, cooperating. Journal Paper No. 66 of the Iowa Agricultural Experiment Station, Ames, Iowa. Received for publication November 3, 1931.

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