EFFECT OF THE METHOD OF COMBINING TWO EARLY AND TWO LATE INBRED LINES OF CORN UPON THE YIELD AND VARIABILITY OF THE RESULTING DOUBLE CROSSES

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EXPERIENCE with maize has amply demonstrated the value of certain crosses between early- and late-maturing strains for growing in the short-season areas to which the early strains are adapted. Earliness tends to be dominant in such crosses, and in some combinations where the differences in the seasonal requirements of the strains are not too large it has been possible to obtain in the hybrid particularly all of the earliness of the early parent together with much of the increased plant size and vigor of the late parent. This situation has been amply demonstrated in the past with open-pollinated varieties. It has been found to be equally true of hybrids involving inbred lines and is responsible for the present production and utilization of many commercial double crosses of this kind in some of the corn-growing areas with a relatively short growing season.

In the commercial production of such double-crossed hybrid seed corn a single cross of the two early lines may be crossed with a single cross of the two late lines, \((E \times E) \times (L \times L)\), or two single crosses, each involving an early and a late line, may be crossed, \((E \times L) \times (E \times L)\). The first procedure necessitates planting the two single crosses on different dates with a resulting increase in the cost of producing the double-crossed seed. The second procedure requires two dates of planting on only a small scale for the production of the single crosses and permits the planting of both parents at the same time for the seed production of the final double cross. Because of the economic advantage of the second procedure, it is of interest to determine whether the double crosses produced by the two methods differ fundamentally in yield, earliness, variability, or other characters.

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3 \(E\) = early inbred; \(L\) = late inbred.