Stands and Methods of Planting for Corn Hybrids

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In some of the earlier Ohio experiments comparing corn hybrids with open-pollinated varieties, the writers observed that adapted hybrids generally had a lower incidence of barrenness or near-barrenness than did the open-pollinated varieties. This observation led to the hypothesis that the hybrids should have the higher optimum stands. If they did have, it would be necessary to revise recommendations for planting rates where hybrids were grown. The stand problem had been reasonably well solved for open-pollinated varieties, but it seemed desirable to extend the work using hybrids.

REVIEW OF LITERATURE

Roberts and Kinney (6), after experimenting with open-pollinated corn at varying rates, both hilled and drilled, and under varying conditions of plant growth, reached the following conclusions: "To summarize, it would seem that on rich soil in a normal season relatively thick planting will give the highest yields. In dry seasons, thin planting gives the best results. On poor land best yields will be secured from rather thin planting. Planting more than 3 stalks to the hill may result in a higher yield, but the corn is likely to fall badly and the quality of the corn will not be as good... Large varieties of corn are not as well adapted to thick planting as small varieties. The cost of harvesting the corn when planted thick is greater. Finally it may be said that on good corn land of fair fertility 3 stalks per hill or the equivalent in drilled corn will probably give the best results when the average of a number of years is considered."

After extensive testing of southern open-pollinated varieties under varying conditions of soil and season, Mooers (4) established a simple formula for estimating optimum stands. Variables in the formula are the estimated grain yield for the field, and a factor which varies with the productivity of the field. The latter is the weight of grain per plant, which was indicated by the experiments to accompany an optimum stand at a given acre-grain yield.

Richey (5) has summarized the results of many experiments in the South and in the Corn Belt published prior to 1933. These experiments led to the conclusions that the optimum stand for corn is heavier as one proceeds from larger to smaller plants, from the South northward, from low to high moisture supply, and from low to high soil productivity.

Kiesselbach, et al. (2), after comparisons extending over 12 years, concluded that an average of 2½ to 3 plants in checkrowed hills 42 inches apart, or the equivalent in drilled rows, was most practical for standard open-pollinated varieties in eastern Nebraska. They found that there could be some variation in planting rate without materially affecting yields under their conditions.

Samarina (7), working at Saratov, U.S.S.R., which is comparable to southern Canada in latitude, found the most desirable rate for local varieties to be 2,450 square centimeters per plant. This would correspond to 16,518 plants per acre, or 4.64 plants per hill at 42-inch spacing. This paper was read by abstract only.

1Contribution from the Agronomy Department, Ohio Agricultural Experiment Station, Wooster, Ohio, and the Division of Cereal Crops and Diseases, Bureau of Plant Industry, Soils, and Agricultural Engineering, Agricultural Research Administration, U. S. Dept. of Agriculture. Journal Article No. 20–47, Ohio Agricultural Experiment Station. Received for publication July 18, 1947.

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3Figures in parenthesis refer to "Literature Cited", p. 1010.