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Plant Population Effect on Open-Pollinated Corn

Abstract

As seed technology fees rise, use restrictions tighten and market options narrow, more organic and conventional producers are re-examining open-pollinated seed corn. These producers need to have more information about how to manage open-pollinated corn. The objective of this study was to start to identify the optimum plant density for planting open-pollinated corn.

Disciplines

Agricultural Science | Agriculture

Plant Population Effect on Open-Pollinated Corn

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applied. The plots were cultivated first on May 24 and again on June 19.

Introduction

As seed technology fees rise, use restrictions tighten and market options narrow, more organic and conventional producers are re-examining open-pollinated seed corn. These producers need to have more information about how to manage open-pollinated corn. The objective of this study was to start to identify the optimum plant density for planting open-pollinated corn.

Materials and Methods

The experiment layout was a randomized block design with six replications. A maturity adapted (about 110 day relative maturity), open-pollinated variety was used in this evaluation. Individual plots were eight rows (30-in.) by 80 ft long. A John Deere four row, mounted 7100 planter no-till seeded the study on May 4. Corn was planted at 18,000, 26,000, and 34,000 plant densities.

The previous crop was soybeans. On April 24, pre-plant chemicals and 28% liquid nitrogen at 110 pounds per acre of actual nitrogen were

Results and Discussion

The average yield for the study was only 78.7 bushels per acre. Precipitation for the growing season totaled 17.7 in., which was almost 12 in. below the 30 year norm. This coupled with very hot and dry conditions in early September stressed the corn and caused it to mature rapidly. Under these conditions, the open-pollinated corn yielded only about one-half to two-thirds as much as adjacent hybrid cornfields.

The 26,000 plant population treatment yielded better than the 18,000 and was significantly above the 34,000 treatment. Lodging averaged about 35% for the study with the 18,000 population at about 25% and the 34,000 at nearly 70%. Harvest moisture of the grain was consistent across treatments averaging 14.8%. Results of the 2000 study are summarized in Table 1.

Acknowledgments

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Table 1. Effect of plant population on open-pollinated corn at Greenfield in 2000.

| Planted Population | % Harvest Moisture | Bushel/Acre at 15.5% | % Lodging |
|-----------------------|-----------------------|-------------------------|-----------|
| 18,000 | 15.0 | 77.2 | 25 |
| 26,000 | 15.0 | 85.1 | 37 |
| 34,000 | 14.6 | 73.7 | 70 |