

PLANT DENSITY EFFECTS ON FIELD CORN YIELDS

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Results of the 1980 field corn plant density study are shown in Fig. 1. This experiment was established adjacent to the hybrid corn test plots. Thus cultural management was similar to that described in the hybrid corn evaluation report. The corn density experiment in 1980 examined corn silage and earcorn yields of two Dekalb hybrids, XL15 and XL25a, the same two chosen for the 1979 corn density study. Results in 1980 were very similar to those found in 1979 which suggested XL25a was slightly more adapted to a higher planting density than XL15. These two years results also show plant densities for field corn grown for silage or grain, should be close to 30,000 plants per acre for maximum yields on these productive Connecticut River Valley soils. Lodging was not increased by increasing plant density. Results of the 1979 field corn plant density experiment were reported in the 1980 Massachusetts Agronomy Research Report, Vol. 2, p. 20.

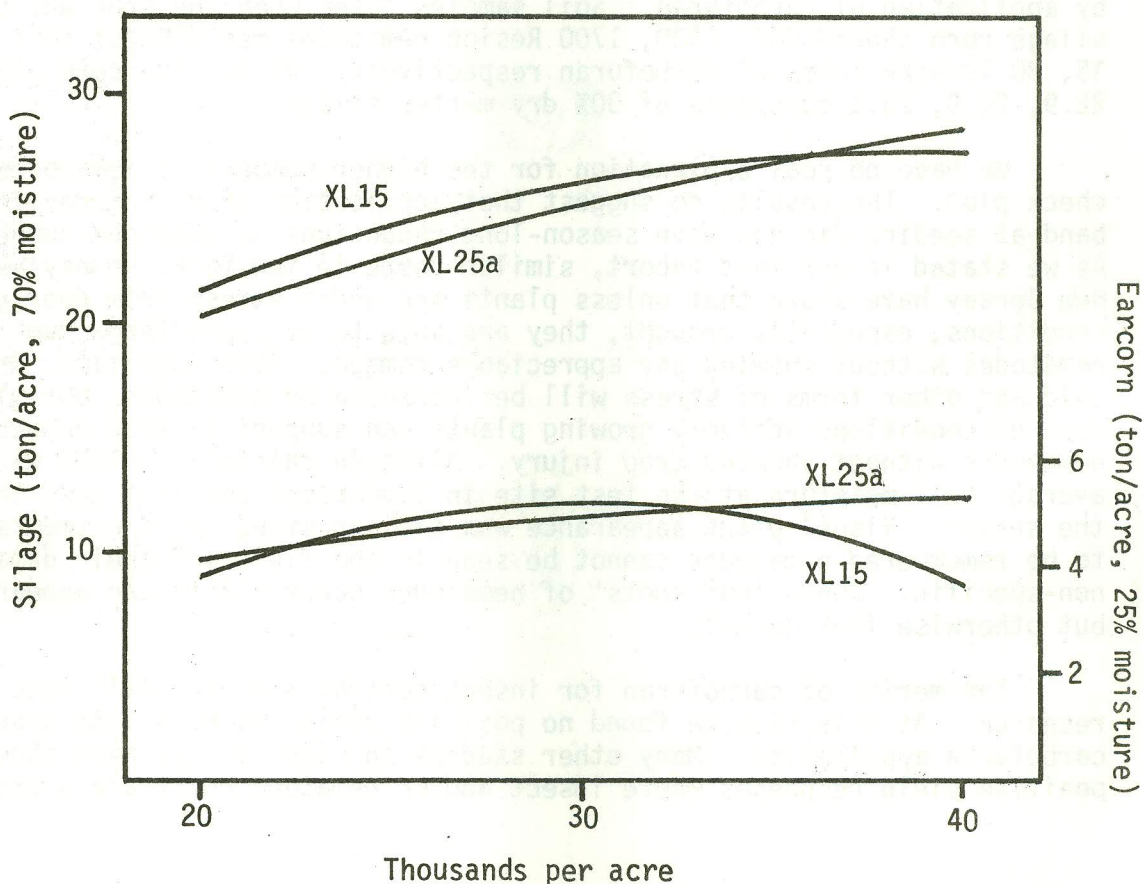


Fig. 1. Corn silage and earcorn yield response to plant density.

NEMATODES AND FIELD CORN

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The application of granular carbofuran (Furadan) is an accepted practice for the control of corn rootworms and other insect pests in field corn. Higher rates of carbofuran will kill soil nematodes. During 1979 and 1980 we established field plots to examine the use of carbofuran for nematode control in field corn.

In 1979 0, 10, 20, 30 lb/acre rates of carbofuran were applied in the row at seeding. Nematodes were present in numbers which might be considered damaging in the midwest. Initially the chemical at two higher rates, reduced nematode populations. This nematode control did not result in increased corn silage or grain yields, as reported in the 1980 Agronomy Research Report. In 1980 results were similar, in so far as field corn yields were not improved by application of carbofuran. Soil samples taken when the crop was cut for silage corn showed 800, 1400, 1700 Resion nematodes per 500g of soil for 0, 15, 30 lb/acre rates of carbofuran respectively. Respective corn yields were 22.9, 20.9, 23.1 tons/acre of 30% dry matter silage.

We have no real explanation for the higher numbers of nematodes in the check plot. The results do suggest that application of carbofuran in a band at seeding did not give season-long reductions in nematode numbers. As we stated in our last report, similar tests in New York, Pennsylvania and New Jersey have shown that unless plants are under stress from poor growing conditions, especially drought, they are able to tolerate large numbers of nematodes without showing any appreciable damage. Poor nutrition, drought, cold and other forms of stress will be increased by nematodes, but given optimum conditions actively growing plants can support a large number of nematodes without showing crop injury. Although rainfall in 1980 was below average soil moisture at the test site in Sunderland remained good throughout the season. Visual plant appearance was similar among the treatments. It is to be remembered nematodes cannot be seen in the field and their damage is non-specific. Where 'hot spots' of nematodes occur plants can appear stunted but otherwise look normal.

The merits of carbofuran for insect control are not challenged by this research. At this site we found no positive yield response with granular carbofuran application. Many other studies in other states have shown positive yield responses where insect and/or nematode pests are a problem.