

Hazelnut Establishment

Many creative Iowa farmers are interested in adding value to their production and in seeking markets for entirely new products. Hazelnuts are one such new product on the horizon. Sparked by Minnesota nut breeder Phil Rutters, several northeast Iowa farmers are planting productive, disease resistant hybrids of this native Midwestern plant. While these plantings have yet to come into production, current demand for hazelnuts far outstrips domestic supply.

But establishing a nut orchard is a considerable investment in money and time. How can producers efficiently and reliably start hazelnut plantings? PFI cooperators **Tom and Irene Frantzen**, New Hampton, and **Mike Natvig**, Cresco, set out in 1995 to answer this question. With funding from PFI Sustainable Projects and the Organic Farming Research Foundation, they set out an on-farm trial of hazelnut establishment methods.

There were two approaches to establishing hazelnut transplants that these producers wanted to evaluate; protective tubes and ground maintenance. Tubex® tubes are made of plexiglass and are used to protect young trees and bushes from extremes of weather and browsing deer and rabbits. Elevated humidity inside the tubes reduces stress on the plants during the growing season, and the tubes give some winter protection as well. Traditional methods of establishing transplants have reduced competition from weeds by keeping an area of bare ground around the plants. Sometimes a mulch has been used to accomplish the same thing. Mulch also buffers changes in soil moisture and temperature, and it requires less total labor than maintaining the bare ground.

The Frantzens and Natvigs set out a "two-by-three" factorial experiment. Three methods of ground preparation were included: bare ground, wood chip mulch, and no ground preparation at all. Each of these three methods was tried with and without the Tubex tubes. Each farm had six replications of these six combinations. [Table 6](#) gives results overall for each farm, and it shows the two factors (one a two-level factor and the other a three-level factor) rather than the six individual treatments.

In late June, 1995, these cooperators transplanted their hazelnut seedlings into rows deep-ripped with a single shank chisel. At the end of the 1995 season and again in the autumn of 1996, they measured several growth parameters, including plant height (in centimeters), plant diameter (in millimeters), and the number of bud nodes. Results for 1996 confirm the value of the protective fiberglass tubing, which produced bigger plants with more leaf nodes.

The second-year data also contain information about plant survival through the winter of 1995-1996. Here is where the two farms begin to look different. Mike Natvig lost only one plant out of 72 to winterkill. The Frantzens lost four of 36 where Tubex was used and 29 out of 36 without tubing. The cause of this difference between farms is not clear. The Frantzen planting is in a somewhat poorly drained spot, while Mike's hazelnuts are in well-drained soil. What's more, hazelnuts grow wild around Natvig's planting. There could be native mycorrhizae or other soil microbes at the Natvig site that are contributing to hazelnut health.

The effect of ground maintenance was also different at the two farms. At the Frantzens' there was a tendency (not statistically significant) for healthier plants with the bare ground treatment, and the least vigorous plants were found under mulch. Mulched plants did best of all at Natvig's, with the poorest performance shown by plants receiving no ground maintenance at all. Good research always answers some questions and raises others, and this project is no exception. Still, producers now have some good tips to help them enter into a hazelnut enterprise.