

Hazelnut Establishment Trial

Two PFI farmers in northeast Iowa have invested in diversification, planting a perennial crop - hazelnuts. **Tom and Irene Frantzen**, Alta Vista, and **Mike and Shelly Natvig**, Cresco, want to know the most cost effective way to get young hazel plants through their first years of life. With help from PFI Sustainable Projects and the Organic Farming Research Foundation, they established a trial on both their farms to answer the question ([Table 4](#)). Carrying out the same trial on more than one farm can be a very powerful tool, because results can be applied more widely.

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 4](#) gives results overall for both farms together, 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 they transplanted their hazelnut seedlings into rows deep-ripped with a single shank chisel. At the end of the season, they measured several growth parameters, including plant height (in centimeters), plant diameter (in millimeters), and the number of bud nodes. The end results won't be known until at least one winter has passed, but the first year data tells a story. Plants with Tubex averaged 25 percent taller than those without, and they also had greater diameter and more nodes. All these differences were statistically significant.

Ground preparation also made a difference. Plants with no preparation or with bare ground were significantly taller than those with wood chip mulch. Plants with bare ground maintained had significantly greater diameter than plants with no ground preparation, while the diameter of mulched plants was intermediate. There were no significant differences in number of nodes, except when tubes were not used. Then plants with no ground preparation had significantly more nodes than mulched plants, with the bare ground treatment falling in between. The height differences between treatments were also greater when tubes were not used.

At the experiment's completion, there may be a trade-off between effectiveness and cost. Some of these methods have only initial costs, others have ongoing costs. If hazel plants survive better or come into production sooner with certain methods, those benefits may outweigh the costs. The Frantzens and Natvigs will follow this experiment for the next several years.