

WINTER TOMATOES

Tomatoes grown and picked daily at Hobbit Hill Farm.



WENTWORTH, NH

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In a winter land of snow and ice, local fresh produce can be hard to find. Living in New Hampshire has its perks but when it comes to a supply of fresh fruits and vegetables we tend to look closer to the equator. During the winter months, people often make do with anemic, flavorless imported tomatoes and are generally disappointed. But the disappointment stops in Wentworth where winter tomatoes are being grown and picked daily.

Dan and Terry Nelson of Hobbit Hill Farm have altered the supply and are giving local tomato lovers something to rave about. It was only two seasons ago when Dan and Terry started producing vine ripened, locally grown, pesticide-free, hydroponic tomatoes which have been well received by local residents.

The Nelsons started out with a small hobby greenhouse and found that they and their friends liked having a "tomato" that tasted like a tomato in the wintertime. The retired couple wanted to add to their income and considered herbs at first but found tomatoes to be more profitable. After receiving much positive feedback from local residents they decided to bite the bullet and buy a bag system greenhouse.

Growing tomatoes in winter is contrary to what most greenhouse

operators do in this part of the world. The cold and short daylight hours make the economics of growing tomatoes more challenging. Originally the Nelsons used propane to heat their experimental unit and found that it was not cost effective. Looking for alternative fuel sources the couple began researching the idea of a wood furnace. "The outdoor wood furnace was a larger investment but it paid for itself in 12 months," said Dan. "This year the cost of wood has gone up but the price is expected to come back down," he noted.

Part of Dan's job is cutting wood in the summer to run the greenhouse furnace in the winter. Dan has logs delivered and cuts the wood into manageable two foot lengths that last longer in the furnace. To keep the wood dry the Nelsons built a cold frame structure to store the wood in. Dan is very happy with the furnace and only feeds it once a day in the fall. During winter months he feeds it twice (once in the morning and at night) and cleans the ashes out every few weeks, depending on the amount of wood being burnt.

The heat from the furnace is piped through the ground keeping the greenhouse floor warm and heating the entire facility up to 78 °F during the day and 64 °F at night. In the event of the wood furnace failing there is a propane backup system in place that takes over when the temperature in the greenhouse reaches 60 °F.

The feed system is regulated by the intensity of the light in the greenhouse and feeds according to plant growth. For that reason, the Nelsons carefully researched and considered suitable plumbing and electronics for their greenhouse. Tomatoes require a certain amount of light to grow at an optimum. To increase the ripening rate, Dan and Terry installed additional grow lights and digital ballast which uses less electricity.

At first the couple had difficulty finding an appropriate feeding formula. The Nelsons credit the University of New Hampshire Cooperative Extension for helping them find a formula that worked. "Now it is just a matter of tweaking it," said Dan. Each day Dan tests the pH and conductivity (how well the plant is able to take up the nutrients). The outside rows, tend to get more sunlight and are fed more in comparison to the inside rows. The system feeds one row at a time. Each bag has two plants with a sprayer

tomato to be round, the pollen must be powdery and fall on the stamen just as nature intended. Tomato flowers are cone shaped and in a garden situation it would pollinate simply by the wind shaking it. In the greenhouse, Dan pollinates the plants by gently shaking the flowers with a vibrating wand that stimulates a future crop.

Another bonus to growing tomatoes in winter is the absence of insects. The floor of the greenhouse is covered with plastic so there are few problems with pests. There are some aphids but they are controlled with the 1,000 Lady Bugs that the Nelsons order and receive in the mail.



Each bag has two plants with a sprayer that feeds the plants for a certain amount of time.

Right on Track

Hobbit Hill Farm started producing tomatoes last year but planted too late. This year the tomato crop is right on schedule, and has attained their goal of delivering tomatoes by December 1. The tomato seeds were planted in the nursery in early July, transplanted on September 1 and the first tomato was picked on November 13. Hobbit Hill Farm has found a local niche market, and supplies 11 nearby stores and restaurants. The demand for local produce is huge and "there is even room for competition," Terry noted.

It is hard to keep the tomatoes on the shelf at the Aldrich General Store in North Haverhill. Store Manager Phil Tucker is more than happy to sell local produce this time of year. "People come from 10 to 12 miles away just to buy tomatoes," said Tucker. "The tomatoes are fresh, smell good and taste great." Six to eight boxes of Hobbit Hill Farm tomatoes are sold weekly at Aldrich as supplies last.

"We wanted our tomatoes to taste good, but we didn't think that we would have people raving about them," said Terry, "they make people happy."

W I N T E R
T O M A T O E S -
page - 26



The Nelsons use an outdoor wood furnace to heat their greenhouse. (top left)
Heat is piped through the ground keeping the greenhouse floor warm and heating the entire facility. To keep the wood dry the Nelsons built a cold frame structure to store the wood in. (left)
The greenhouse glowing in the dark. (center)

that feeds the plants for a certain amount of time with excess water naturally leaching out into the ground.

Controlling humidity in the greenhouse during cold winter months is difficult. The Nelsons have diligently worked to solve the problem that was causing mildew and pollination issues. Humidity affects pollen by causing it to clump together and preventing it from falling on the stamen correctly, creating irregularly shaped tomatoes. In order for a