

High tunnel tomato variety trials

By Sanne Kuro-Jensen

Four Rhode Island farms participated in a 13-variety tomato trial in 2013. The trials were funded through a one-year, \$15,000 Northeast Sustainable Agriculture Research & Education (SARE) Partnership Grant titled, "Realizing the potential of high tunnel tomato production and

income in southern New England."

Andy Radin of URI Extension led this project and oversaw URI's Experiment Station demonstration of intensive indoor tomato cultivation methods including pruning and an adjustable, "leaning and lowering" trellising system.

Project Summary
Season extension using high tunnels has increased the economic viability of small farms across the globe. Indoor production generally reduces disease pressure and fungicide cost. Early production means higher prices in early summer value often leading to

Tomato 35



Growers from Rhode Island, Connecticut and Massachusetts at a Twilight Meeting at URI's Agronomy Research Farm, which featured tasting, tomato variety comparisons and a demonstration of the trellising technique.



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higher profits. Smaller varieties were ready by the end of June. The extra labor required for intensive indoor growing and trellising is generally easily recovered in increased early sales (at high margins) and reduced input costs.

The primary parameters measured in the trial were yield and tissue nu-

trient levels. Growers used their preferred production method, either conventional or organic. Farmers grew with or without mulch, using various water and pest management plans, trellising systems and fertility inputs.

These tomato trials benefit new and experienced high tunnel grow-

ers with tomato variety recommendations and trellis demonstrations for maximum use of covered growing space. Growers from Rhode Island, Connecticut and Massachusetts attended a Twilight Meeting at URI's Agronomy Research Farm which featured tasting, comparison of tomato varieties and a demonstration of

the trellising technique. The Northeast Organic Farming Association of Rhode Island (NOFA/RI) held a Collaborative Regional Alliance for Farmer Training (CRAFT) Workshop at Blue Sky Farm in Cranston, RI, one of the four tomato trial farms.

Variety Trial Results
The 13 indeterminate tomato varieties were se-

lected because they tolerate the 10 to 20 percent lower light intensity of the high tunnel yet have exceptional flavor, appearance and direct-marketability. The varieties are (in order of greatest yield per plant): Clermon, Golden Rave, Rebelaki, Granadero, Suzanne, Pink Beauty, Sakura, Juliet, Pozzano, Black Cherry, Golden Sweet, Red Pearl and Indigo Rose.

Planting Recommendations
Radin recommended a 96 foot by 30 foot tunnel for 330 plants, though growers use a much higher density. Tall high tunnels are the best suited to this type of trellising system. A typical planting might include 175 cherry tomato plants (yielding 12 pints/plant at \$4 each

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for \$8,400. The remaining 155 plants could yield 7 pounds/plant at \$2.50/pound for \$2,700. Total sales could reach \$11,000 in a "full size" tunnel. Early greens could increase grower income until late May or early June under the young tomato plants. Radin said supplemental heating (converting a "high tunnel" into a "greenhouse") may yield extra early production but when adding in labor costs, it does not typically pay. Numbers could vary in either direction; these are presented as ballpark figures.

Production Schedule, Pruning & Trellising

To take full advantage of spring season extension, tomatoes were planted into high tunnels in April. Lower leaf pruning only up to the first fruit cluster began the second week of June. As lower fruit was picked, leaf pruning continued up to next fruit clusters. Radin recommended leaving some leaves above fruit to prevent sunscald. Pruning to a single stem and removal of suckers and branches was done throughout the growing season.

The URI Agronomy team used "leaning and lowering" trellising allowing additional vertical growing all season long. A long string was hung on trellis hangers near the high tunnel ceiling. When the vines reach the top of the string, the ring was unwound and the hangers were slid along overhead tunnel-length cables or other cross bars. The leafless vines were laid along the high tunnel floor.

University of Rhode Island Trial
In the URI high tunnel, soils were tested and amended per New England Vegetable Management Guide recommendations in late March or early April. Plants were spaced 16 inches within rows, 5 feet between rows. At the URI Agronomy farm, tomato transplants were set in the ground on April 18 with soil temperature at 62 degrees F and overnight temperatures in the high 20s. Reemay row covers were used overnight through the first week of May to prevent cold damage. Nylon trellising strings were set up when covers became

unnecessary. High tunnel sides were rolled up most days and closed nightly through mid-May. Water was applied for one hour on alternate days, increasing to one and a half hours. Straw mulch was installed in late May when soil temperature reached 70 degrees F.

Vines were secured to trellis strings with plastic

clips. Trellis and plant lowering began in late June to keep plants below hot greenhouse covers. "Leaning and lowering" allowed additional vine growth.

Season-long plant fertility was maintained using drip fertigation with organic fertility sources (fish emulsion and seaweed extract).

This tomato trial measured yield, fruit weight, fruit number, harvest period and tissue nutrients.

Right — Andrew Radin of URI Extension explaining the trellising system.

Photos courtesy of Heather Foubert, URI Fruit Specialist



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