

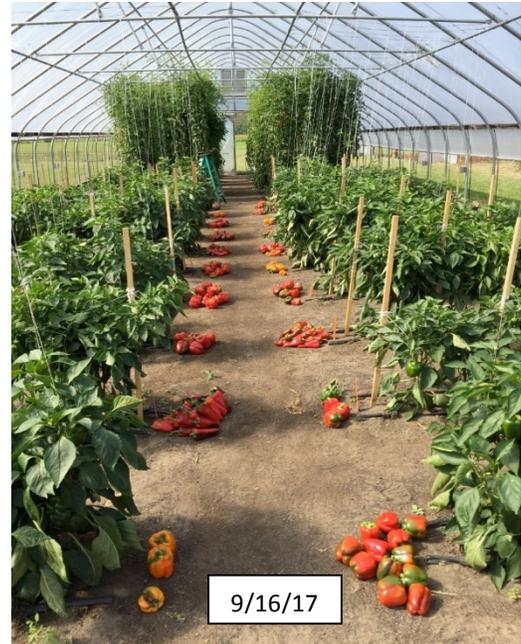
Cherry Tomatoes and Sweet Red Peppers in High Tunnels

By Amy Ivy

Last summer (2017) we ran trials at the Cornell Willsboro Research Farm's high tunnel evaluating a couple of popular summer crops: cherry tomatoes, seen at far end of the tunnel in the photo, and sweet red bell peppers, seen in the front of the photo.

Pruning Cherry Tomatoes

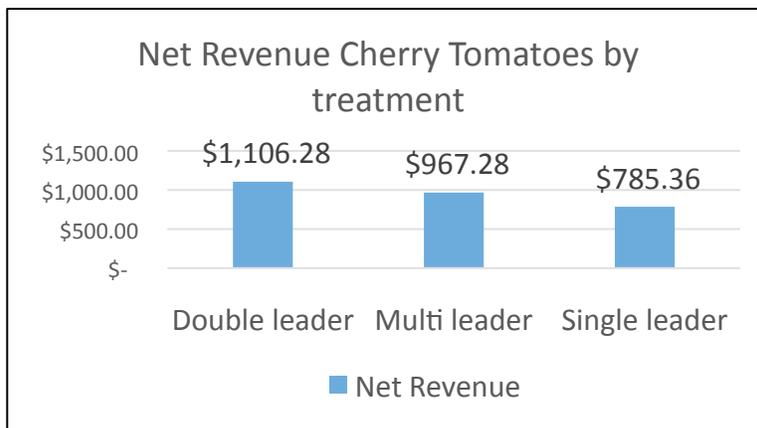
Left unpruned, cherry tomatoes quickly become a tangled mess, especially when grown under the protection of a high tunnel. Growers question whether it's worth the time and effort to prune and train them. This was the second season we studied three different pruning methods and our conclusion is even stronger: **training to the double leader system provided the most benefits as measured by labor efficiency, yield, and net revenue.**

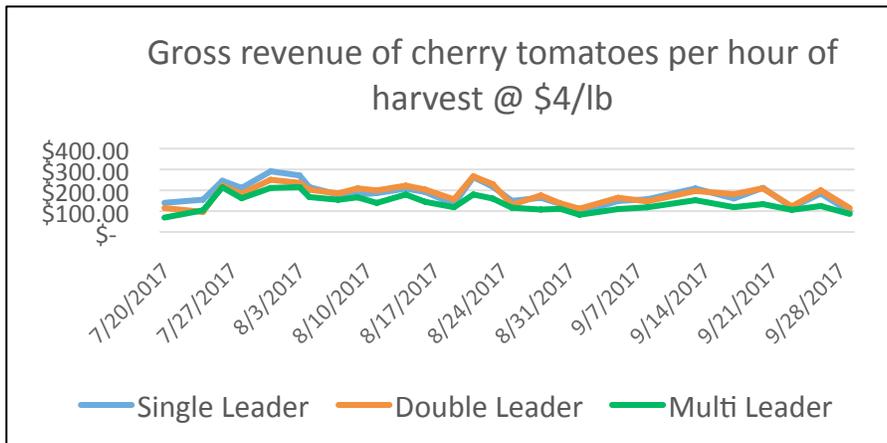


The three systems we studied were single leader, double leader, and multi leader. We simplified the multi leader system in this second year to more closely simulate what often happens on farms. We began the multi leader treatment as a double leader but stopped pruning at the first harvest, doing only minimal training to keep the long shoots out of the aisles. We continued to prune and train the single and double leader treatments throughout the project.

The single leader took the least time to prune, train and harvest but had a significantly lower yield. Using \$12/hour for labor and \$4/lb for gross price for 200 plants, the double leader system in our trial would have brought an additional \$1390 in net profit over the multi leader system.

And because labor is the largest expense on most vegetable farms, the increased efficiency of harvesting the double leader system over the multi-leader is another important factor. Our average yield per hour of harvest was 45.1 lbs/hr for the double leader compared to 34.8 lbs/hour for the multi leader due to the dense, tangled growth that develops when left unpruned.





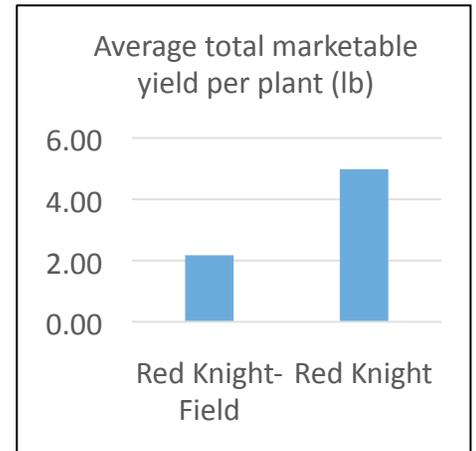
Graph caption: This graph shows the efficiency of harvesting each treatment. The multi-leader (green line) is consistently the least efficient to harvest due to denser growth.

Sweet Red Peppers

This trial addressed three questions detailed below. The field variety was Red Knight and the greenhouse variety was Sprinter. The seed company recommends the greenhouse varieties be grown with supplemental heat but we used an unheated greenhouse to replicate what many growers have. We wanted to see how well a greenhouse variety would perform in these less than ideal conditions. The peppers were harvested as they ripened, with 60-80% red coloration.

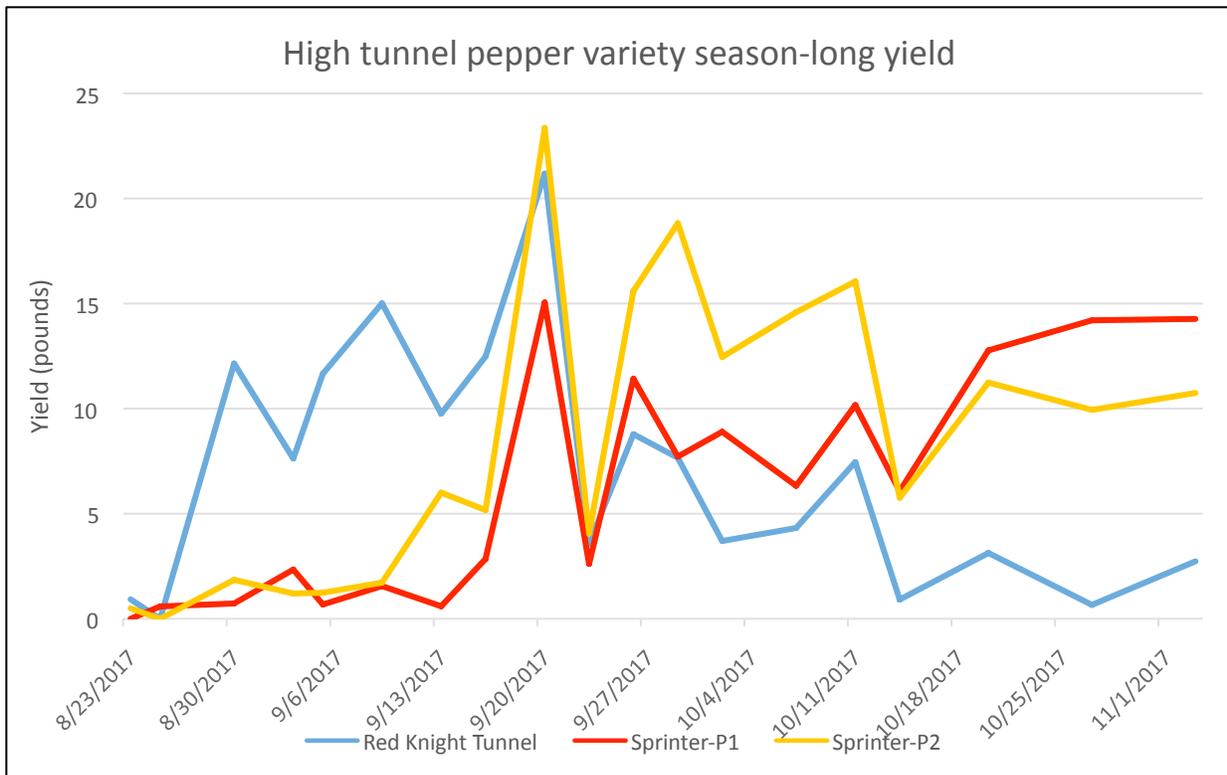
1. What are the yield and timing differences between Red Knight grown inside an unheated tunnel compared to grown outside?

The tunnel plants yielded earlier and more than double the outside (field) plants making the tunnels a clear benefit. In 2017 we had record rainfall and cold temperatures until mid-July which made for a very slow start; we saw a marked difference in vigor between the tunnel and outside plants. First harvest in the tunnel was August 30 and first harvest outside was September 9. Unseasonably warm temperatures in September allowed the plants to continue to ripen fruit until early October. We have received funding to repeat this study in 2018 to see if the differences in yield and timing remain consistent.



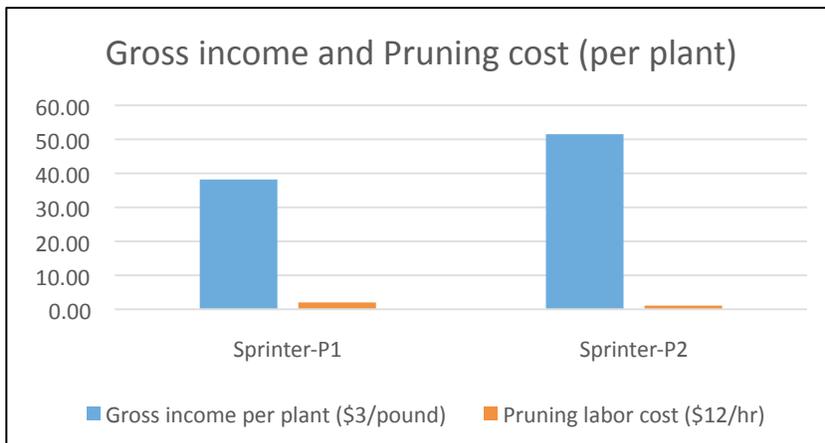
2. What are the yield and timing differences between the varieties Red Knight and Sprinter grown in the same unheated high tunnel?

Red Knight yielded earlier then tapered off while Sprinter began yielding later and kept on yielding until killed by freezing temperatures in early November. The total yield on Sprinter was slightly higher than Red Knight but it was later, from mid-September through October when fresh market demand is less (see chart below).



3. Which pruning and training method works best for Sprinter, the greenhouse variety of pepper?

We compared two pruning methods; the customary stake and weave method and the seed company’s recommended double leader system, and tracked the time spent pruning and training as well as the harvest dates and yields. The double leader system took twice as long to manage compared to the stake and weave system, and the stake and weave system yielded more; an average of 4.24 lbs/plant with the double leader system and an average of 5.72 lbs/plant with the stake and weave system. The double leader system would work best when the plants are grown under the recommended ideal conditions with supplemental heat to allow for an earlier planting date and longer harvest period.



This project was funded by the [Northern New York Agricultural Development Program](#) which is supported by the New York State Senate and administered by the New York State Department of Agriculture and Markets. The detailed report of these trials is posted in the Horticulture section at www.nnyagdev.org.