

## **HAYGROVE HIGH TUNNELS for extending the growing season**

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I put up a 1 acre Haygrove high tunnel 5 years ago for fresh market tomatoes. 3 years ago I put up an additional bay that I planted 600 raspberry plants and then this past season we erected another acre for more tomatoes. This amounts to 13- 24 feet wide bays that are each 300 feet long. I had several reasons for being interested in a Haygrove high tunnel especially after I had experienced 8 seasons with a small 15 X 96 foot high tunnel. Basically I was looking for all the benefits (earliness, quality, and increased yields) a high tunnel gives but on a much larger scale. I found out that there is a learning curve in going to a larger structure.

### **Plant Density**

I have found that a plant population of 4800 plants per acre to work the best. That comes out to 4 rows in the 24' bay with the in-row plant spacing at 18".

### **Ground cover and raised beds**

The first year I planted into the bare soil. I had lots of weeds even with herbicides applied. I spent about \$2500/A on ground cover and installed raised beds the second season. That was a huge step forward as we had very few weeds and the soil temperature warmed up quicker. It also keeps the humidity down when the tunnels are closed at the beginning of the season.

### **Raspberries**

Autumn Britten is the variety I have. We start harvest the 3<sup>rd</sup> week of June and pick up until the first week of Nov. Quality is very good the whole year. Yields are double to triple compared to outside grown plants.

### **Irrigation and fertility**

Simply put you need to irrigate regular and often. I never irrigate without putting on some sort of fertility. Be careful not to apply too much N early on. I do some foliar feeding as well.

### **Season extension**

I usually plant the 3<sup>rd</sup> week of April and harvested from the first week of July until the first week of November. I've never used row covers because I wholesale most of my tomatoes and the grocery stores won't pay a premium for super early tomatoes. I also don't use supplemental heat.

### **Yields**

Over the past 5 years, my average yields have been over 3,000 boxes (25lbs.) per acre. For comparison my average yields in the fields are half that- 1,500 boxes per acre.

## **Quality**

Overall quality is impressive. A rough estimate would be that overall we have about 80% of harvested fruit grade out as #1's which is consistent through out most of the season.

## **Disease**

I use 1/4<sup>th</sup> the amount of fungicides and only spray when deemed necessary. I use my field air-blast sprayer and sprayed in from both ends. It seems to provide adequate coverage and considering the option of spraying it by hand, it seems to work well.

## **Insects**

Every year my biggest insect problem is spider mites. I've been trying to use predators and this past year was the first time I didn't need to use a miticide. Stink bugs have been a bit of a problem and for the first time this past year I have to use an insecticide for tomato horn worms. Usually we pick them off by hand when we see them but in the middle of September a significant spike in numbers forced us to control them with an insecticide.

## **Cost of structure**

With the ground cover, labor for assembly, and initial cost of the structure I figure I have about \$30,000/A into it. On a square foot basis, this is about 1/2 of what a small high tunnel costs to build.

It took us 250 man-hours per acre to build, but I believe with experience, it could be done in about 200 hours. Ralph Cramer, the eastern US Haygrove representative, was very helpful in giving advice and instruction.

## **Maintenance**

Putting on the plastic in the spring is a huge job. 6 people can do it on a calm day, but 8 or 10 are better, especially if it gets a bit breezy. The key is to be ready when the wind is calm and to do as much as possible at that time. Plastic covering and installing the end plastic doors takes about 50 man-hours.

After the plants are planted it is important to properly vent the tunnel to provide optimal growing conditions. This is a learned art by experience. You have to make venting decisions based on temperature, wind speed and direction, and stage of the crop. During initial fruit set, the most critical time, I look at the hourly weather forecast on the internet every day for wind speed and direction. During that 6 week period you need to literally baby-sit the tunnel. Around June 15 or so the tunnel remains open the rest of the year and the end doors come off. If at anytime while the tunnel is completely or partially closed you must fully vent the tunnel if high winds are expected from a storm. A properly constructed tunnel will withstand 70 mph winds.

After the crop is finished the plastic is removed and placed in the gutter of every other bay. This takes about 20 man-hours per acre to complete.

## **Marketing**

High tunnel tomatoes are of better quality and should be sold for a premium price. I have gotten consistently good prices through out the whole season.

Steve Groff and his family, farm 210 acres of vegetables and crops on hilly land in Lancaster County, Pennsylvania. He has pioneered the "Permanent Cover Cropping System", which includes: no-tillage, cover crops, and effective crop rotations as a way to increase profits, save soil, and reduce pesticides.

Cedar Meadow Farm has been the recipient of the "1998 Clean Water Farm Award" from the Chesapeake Bay Program and the 1999 National No-till Farmer Innovator of the Year, the 2001 Pennsylvania Sustainable Agriculture Leadership Award. Most recently he received the 2002 Master Farmer Award. A website, [cedar Meadow Farm.com](http://cedar Meadow Farm.com), details his farming practices.

Steve and his wife Cheri have 3 children, Dana, Lauren, and David.