Low-to-No Heat Hanging Baskets, 2011
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Introduction

In 2011 the project turned its attention to evaluating other flowering annuals in addition to petunias. These baskets were grown in an unheated high tunnel vs. a heated greenhouse to measure earliness to market as well as prices received over time. Pelleted seeds containing both single-species and multi-species varietal mixtures were selected for ease and uniformity of planting. In addition to Petunia, Bacopa (*Sutera cordata*) and Lobelia (*Lobelia erinus*) were produced and marketed for the project.

Materials and Methods

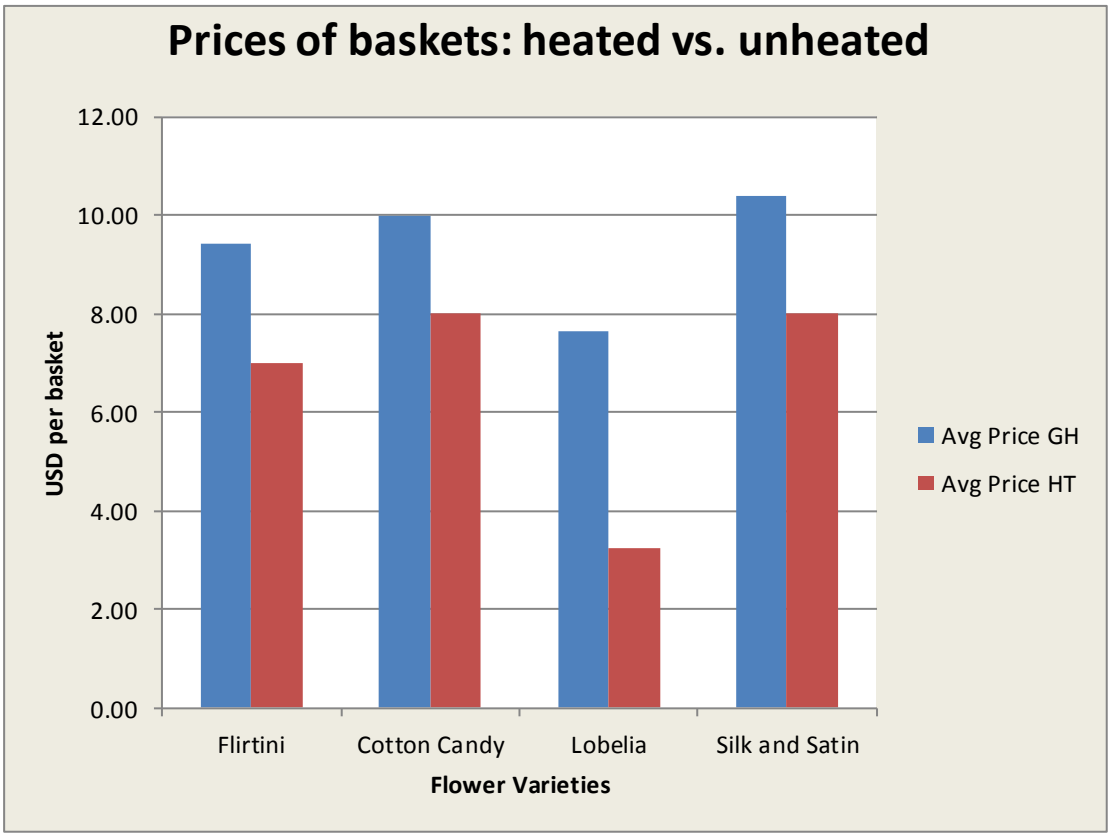
Varietal pellets ('fuseable'seeds) of 'Flirtini' (Petunia: Debonair Lime Green / Carpet Rose), Silk and Satin (Petunia: Shock Wave Pink Shades / Bacopa: Snowtopia White Improved) and Cotton Candy (Petunia: Shock Wave Pink Vein / Bacopa: Blutopia Blue), Ol' Blue Eyes (Lobelia: Riviera Blue Eyes / Mrs. Clibran) (Ball Seed Company, Chicago, Ill) were seeded on February 15, 2011 in a commercial potting mix (Professional Potting Mix, Conrad Fafard, Inc. Agawam, Mass). These were subsequently transplanted to 50-cell transplant flats at the 2-leaf true stage, approximately March 5. A final transplant took place on March 28, when 4 plugs per pelleted varietal mix were moved into 12-inch hanging baskets; 40 baskets per varietal mix. These were hung on the hoop-cross pieces of a 20 by 74-foot heated greenhouse at a density of 16 square feet per basket. Greenhouse temperature and ventilation was managed with a goal of day time temperature of 80°F and nighttime of 58.5°F. Irrigation was accomplished with a single drip emitter in each basket. Fertigation was carried out per plant moisture requirements with 20-20-20 plus micronutrients (Millers Nutri-Leaf Greenhouse Grade) at 150-200 ppm nitrogen, plus sulfuric acid sufficient to achieve irrigation water pH of 6.5. On April 8 20 baskets per varietal mixture were moved to an unheated high tunnel, with the same density and fertigation plan as the remaining 20 baskets of each varietal mixture that were left to grow in the heated greenhouse. Date of sale and prices received per basket were collected from a wholesale auction and on-farm sales. These prices were tabulated and averaged for the 20 baskets of each varietal mixture.

Results

Baskets grown in the heated greenhouse were earlier to market than those grown in an unheated high tunnel. (Table 1). Greenhouse grown baskets also received higher prices across all varietal mixtures (Chart 1). Greenhouse grown flowers were marketed over a longer period than those grown in a high tunnel (Charts 2-5).

Table 1. Greenhouse grown baskets vs. high tunnel baskets, first date to market for 4 varietal mixes.

	Cotton Candy	Flirtini	Lobelia	Silk and Satin
Greenhouse	6-May	4-May	4-May	4-May
High Tunnel	18-May	18-May	1-Jun	18-May


Prices of baskets: heated vs. unheated
12.00
10.00
8.00
6.00
4.00
2.00
0.00
USD per basket
Flirtini
Cotton Candy
Lobelia
Silk and Satin
Flower Varieties
Avg Price GH
Avg Price HT

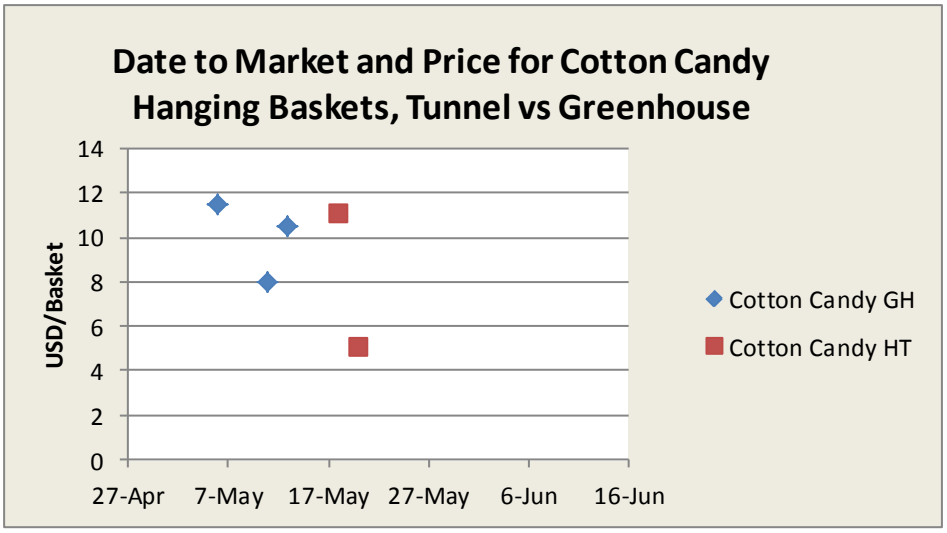


Chart 1. Marketing dates and prices for Cotton Candy baskets from both a greenhouse (GH) and unheated high tunnel (HT).

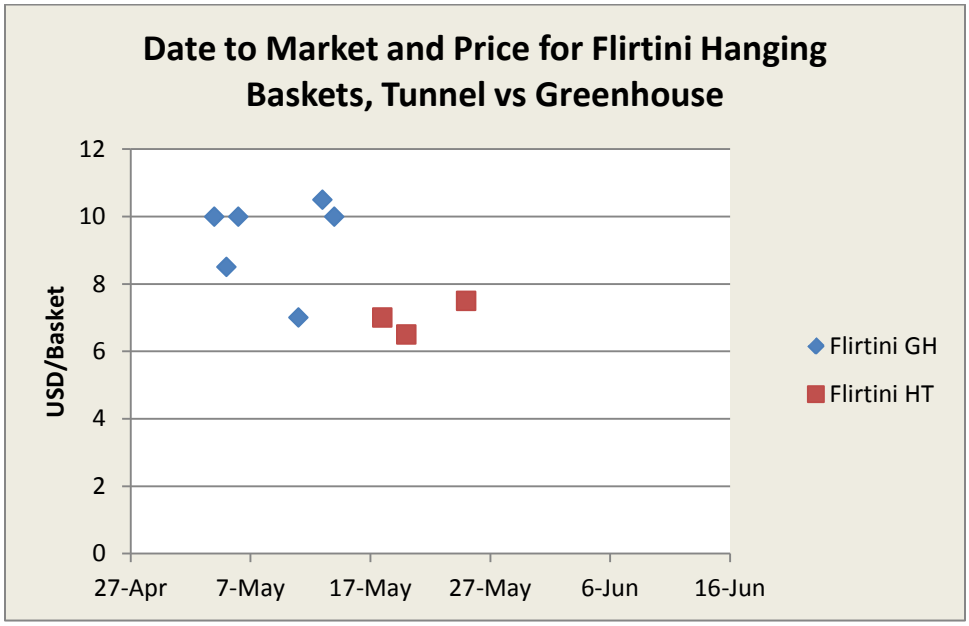


Chart 2. Marketing dates and prices for Flirtini baskets from both a greenhouse (GH) and unheated high tunnel (HT).

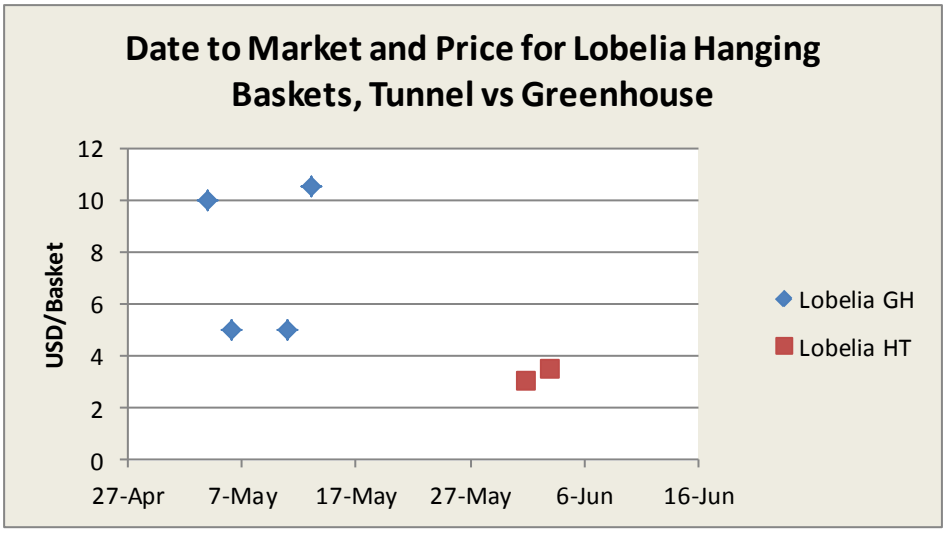


Chart 4. Marketing dates and prices for Lobelia baskets from both a greenhouse (GH) and unheated high tunnel (HT).

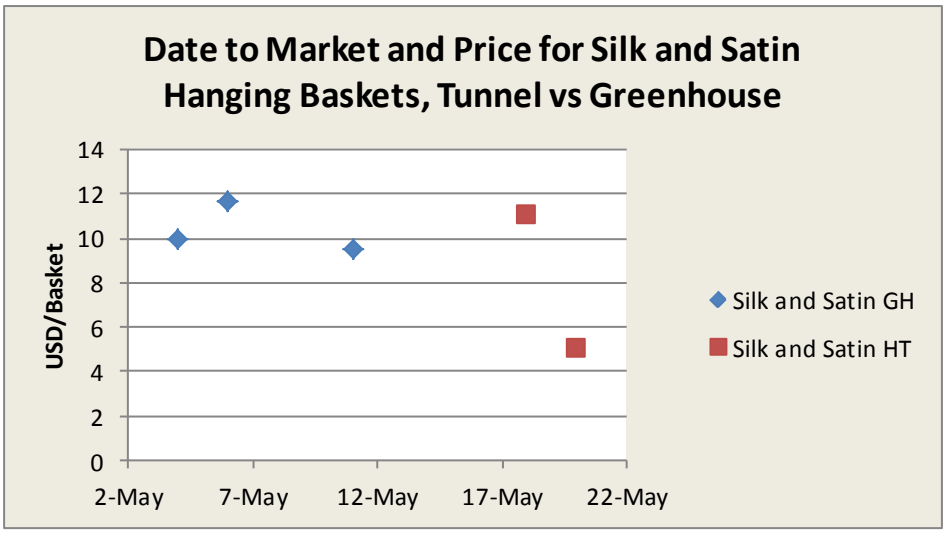


Chart 5. Marketing dates and prices for Silk and Sating baskets from both a greenhouse (GH) and unheated high tunnel (HT).

Discussion

In this project baskets grown in a heated greenhouse gave a gross return of $2.80 more per basket than those grown in a high tunnel, likely due to the earliness to market, as well as a larger plant(s) with more open flowers (see Figures 1-4). Over a 2880sq ft. area (a common single bay area for both tunnels and greenhouses), this would result in a difference of $504.00 gross revenue. However, heating a greenhouse from April 8 to May 14, as we did in this trial, adds to the production costs. Amortizable inputs include a heater with a capacity of 200,000-250,000 BTUs per hour, an additional layer of polyethylene glazing and a fan to inflate the plastic layers. Electricity to run the inflation fan is negligible.

This leaves us with fuel as our highest additional input, or variable cost, when comparing tunnel and greenhouse flowers. At a price of $2.00 per gallon of propane (the most common local fuel) this increases our cost of production in the greenhouse considerably. However, we cannot simply assign this cost to 180 hanging baskets over the 2880 sq. ft., but must include the crops grown on the benches as well. Our cooperating grower estimates a use of 200 gallons of propane over this time period (April 8-May 15), or $400 in fuel/2880 sq. ft. Hanging baskets at the 16 sq. ft. density are estimated by the grower to represent approximately 15% of the total revenue. Thus $60 in fuel can be spread among the 180 baskets for a charge of $0.34 per basket.

Conclusions and Recommendations

Even after calculating fuel inputs, greenhouse grown flowers in this trial outperformed high tunnel flowers economically. However, the data used here is based on one farm, one season. The vagaries of wholesale prices could dramatically change the above results. The grower's experience with the multi-seed, mixed-variety pellets was a positive one, however, Lobelia alone was considered too late to market when grown in a high tunnel, as well as less visually appealing than other mixes containing multiple species. The petunia mixture 'Flirtini' had a dense, upright habit which made it more susceptible to Botrytis Gray Mold (*Botrytis cinerea*). This and other plant density concerns lead us to recommend 3 plugs per 12-inch basket when working with multi-seed pellets (vs. 4 of traditional plugs).

High tunnel baskets remain a viable option for Northeast growers, who are not risk averse, and seek to minimize inputs. Baskets finished in tunnels require less energy than those in greenhouses, representing a lower environmental impact.

Figure 1. Silk and Satin basket in high tunnel on May 4, 2011.

Figure 2. Silk and Satin basket in greenhouse on May 4, 2011.

Figure 3. Flirtini basket in high tunnel on May 4, 2011.

Figure 4. Flirtini basket from greenhouse on May 4, 2011.