Production of Cut Flowers in High Tunnels

What is a High Tunnel? High tunnels are generally unheated plastic covered hoop growing structures. They are semi-permanent, typically with little or no electricity. Features that set them apart from greenhouses include lack of exhaust fans or cooling pads, growing benches, concreted walkways and other permanent fixtures, although the separation of high tunnels and greenhouses is not black and white.

Benefits of High Tunnels: Why would a cut flower grower want to use a high tunnel for cut flower production? There are several reasons for using high tunnels. High tunnel producers can extend their production season and allow them to have year-round flowers for their customers. (Plastic covering allows growers to produce flowers in colder times of year. Shading allows growers to produce flowers in hotter times of year.) They can reduce the amount of time it takes to produce a crop by increasing the average daily temperature. (A high tunnel can increase day temperatures by 15-50°F and night temperatures 6-7°F with double polyethylene or 2-3°F with single layer polyethylene covering. Adding a cold protection cover like Reemay® can further increase night temperatures up to 7°F.) They can allow earlier planting and production of crops that require warmer temperatures. Flowers can be harvested rain or shine. Stems grow longer. They can keep flowers cleaner by eliminating or reducing the dirt that is splashed on them in a rain. They can help reduce some diseases that are spread by water splashing or are more prevalent when leaves and flowers are kept wet by rain. They allow greater control of watering, thus reducing some root diseases and allowing some height control (especially if you want to reduce stem length.)

Potential pitfalls of high tunnel cut flower production: Producing cut flowers in high tunnels isn’t all a “bed of roses” if you’ll pardon the pun. There are some downsides to high tunnel cut flower production. Besides the additional capital resources, some diseases, such as powdery mildew, and some insect pests, such as mites and thrips, can be worse in high tunnels. Of course, as with any horticultural production, it is important to rotate plant families to prevent the buildup of insect pests and pathogens in the soil. Alternatively, soil can be fallowed and solarized to reduce pathogen and insect pest populations. Because flowers attract thrips, and thrips can vector viruses, it is best not to grow flowers and vegetables in the same high tunnel. Salts can build up in high tunnel structures since there is no rain to leach (move) salts out of the root zone.
Growers need to be aware of their water quality, especially the sodium content. Salt buildup tends to be less of a problem when organic fertilizers are used. Leaching excess salts from soil can take a lot of water. It takes 6, 12 and 24 inches of water to leach 50, 80 and 90 percent respectively of the salt from the top foot of soil. For sodium build up, it can take even more water. With salt build up, especially sodium, it may be cost effective to remove the cover from the high tunnel and let rainfall leach out excessive salts.

**What to do with all those flowers?** There are many outlets available for the small cut flower grower. These outlets include farmers' markets, retail and wholesale florists, community supported agriculture (CSA), “cut-your-own”, subscriptions, local businesses (for example, restaurants and banks), grocers, weddings, contract growing, internet, related products and added value. For more information on marketing your cut flowers please see the online publication Specialty Cut Flower Production and Marketing: [http://attra.ncat.org/attra-pub/cutflower.html#markets](http://attra.ncat.org/attra-pub/cutflower.html#markets).

**Real world examples:**

Cost of high tunnel: $1.67 per sq ft

Additional revenues (gross) and examples of crops that could be grown in high tunnel:

- Snapdragons $9.40-18.80/ sq ft, Stock $2-4/ sq ft (Valentine’s Day, winter sales)
- Bulbs such as Tulips $1.30-2.60/ sq ft, Anemone $60-$120, Ranunculus $3.40-6.80/ sq ft (winter sales)
- Sunflowers for winter sales $.70-1.40/ sq ft (but will need night-interrupt lighting for short-day flowering cultivars)
- Zinnia $3.40-6.80 / sq ft (extend flowering season into Sept. and Oct, plant as early as Feb.)
- Celosia $1.40-2.80/ sq ft, Gomphrena $3.40-6.80/ sq ft, Basil $1.40-2.80/ sq foot (earlier planting)
- Lisianthus ($2.70-5.40/ sq ft.) (protect from wind and rain)


**For more information:**


Hightunnels.org. [http://www.hightunnels.org/forgrowers.htm](http://www.hightunnels.org/forgrowers.htm)


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