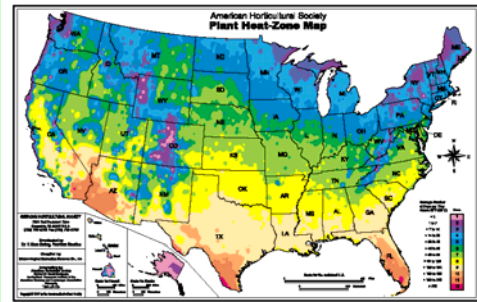


Flower Production in High Tunnels

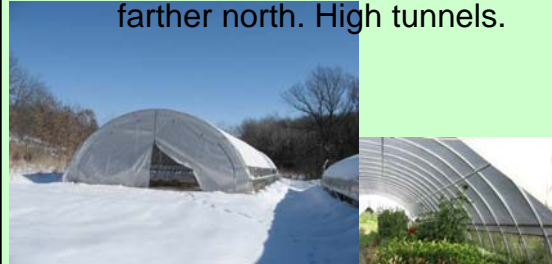
Ted Carey
Kansas State University
tcarey@ksu.edu
www.hightunnels.org
with big help from
Lynn Byczynski
www.growingformarket.com
and special mention of
Carol W. Larsen
Sunborn Gardens, Mt. Horeb, WI



Many flower growers use minimally heated greenhouses to allow year-round production
Vicki Stamback, Bear Creek Farm, Stillwater, OK



But cost of heating get higher farther north. High tunnels.



Fair Field Flowers
Mt. Horeb, WI
(Carol Larsen)



Some roll down
Solar powered roll-down side.
Bryan Boeckmann, Rocky Top Farm, MO



Flowers are often important on a produce farm



Alex + Betsy Hitt, Peregrine Farm
Graham, NC. Management!



Marketing and Profitability

- Product: Bouquets (Direct), bunches (wholesale); fresh or dried
- Market – Wholesale or direct
- Cut flowers can be more profitable per area than other crops
 - Have to know and develop markets – which tend to be easily saturated. But there are so many different flowers!
 - Consumers don't know "value" of flowers.

High Tunnels for Cut Flowers

- Really great protection – can grow crops not possible in outside field, better quality
- Stem length improved (convenience for all)
- Some diseases and pests reduced (though powdery mildew can be worse – don't bother to grow zinnias?)
- Harvesting when it's raining!
- Season extension (Mother's Day?)

Key environmental responses of cut flowers

- So many species and cultivars.
- Day length
 - Short-day plants bloom in spring and fall
 - Long-day plants bloom in summer
 - Day-length neutral (e.g., some sunflowers)
- Temperature (cool season or warm season)
 - DIF (Day/night temp) important for stem length
 - Vernalization (chilling requirement)

Other factors influencing stem length, quality and productivity

- Transplants – no stress or bud set
- Fertility – Really like adequate N

Harvest and Postharvest

- Specific info per crop as to when to harvest for maximum shelf life (mostly when they're shedding pollen, they're about ready to die).
- Time of day – a.m. or p.m., but need a bit of time to recover from cutting before making bouquets
- Cleanliness! Clean buckets, clean clippers. Clean tools with tsp bleach/gal + a few drops of detergent.
- Floral preservatives (sugar, acidifier, biocide)
 - Not all flowers like floral preservatives (test)

Harvest and Postharvest

- Water quality – don't like alkaline or saline water
- Harvesting – cutting, stripping lower leaves (gloves or horse hoof tape) hold up to ten while continuing to pick
- Cooling (34°F) – used commercial cooler, air conditioner (CoolBot)
- Ethylene – many flowers are very sensitive
- Transportation (2x4 frame on floor of van)



Crate-grown lillies



Anemone coronaria 'Jerusalem'
Plant tubers in the fall – Possible in MN?



Bupleurum

- Great filler - bouquets
- 2 weeks before field
- Direct seed in the fall

Similar:
Nigella
Bells of Ireland
Agrostemma
Bachelor buttons



Bells of Ireland
(Molucella laevis)

- Start seed 3/15
- Produce end of June through July (WI)
- Work well for fresh or dried flowers
- Florists like the leaves on local ones.



Delphinium - Elatum
'Aurora'


- Can be very profitable
- Planted in fall from plugs
- June/July production in WI
- Harvest when a fourth of flowers are open
- Very ethylene sensitive

Delphinium - Belladonna




Delphinium - Bellamosum






Dianthus barbatus
(Sweet William)

- 'Electron' and 'Tall Doubles' plant in the fall for early spring
- 'Amazon Neon' and 'Purple Bouquet' don't need vernalization, so plant in spring in succession



Single late tulip
aka French tulip


- Order in July
- 500/crate
- Plant late in fall, 6" deep almost touching
- Harvest
- Storage (1 month)
- colored, not soft
- Immediate sale
- fully colored



Campanula ranunculus
'Heavenly Blue'

- Require cool temps during establishment

Campanula medium 'Champion'



Sunflower – pollenless, daylength-neutral



Sunflowers - Sun rich



Eustoma grandiflorum Lisianthus



- High value crop
- Plant in spring for summer production
- High tunnel growers love them
- University of MD Fact Sheet 770

Lisianthus



Lisianthus



Digitalis – Foxglove Camelot



- Cut when 2 or 3 flowers are open
- Don't eat them

Salvia leucantha (Mexican Sage)

Grows tall during hot summer, but is very frost sensitive. Won't bloom till mid-Sept.



Lupine Russell hybrid



- Like a cool moist climate

Sweet Peas – Very productive
Need a strong trellis.



Also...

- Celosia
- Snap dragon
- Larkspur
- Stocks
- Aster
- Dusty miller
- Kale
- peppers
- Larkspur
- Pentas
- Stocks
- Trachelium
- Hydrangeas
- Peonies
- Black eyed susan
- Godetia

Vicky Stambeck, Stillwater, OK



“Backyard” high tunnels



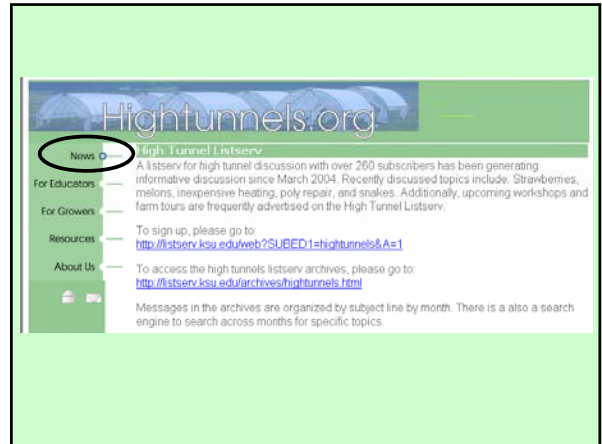
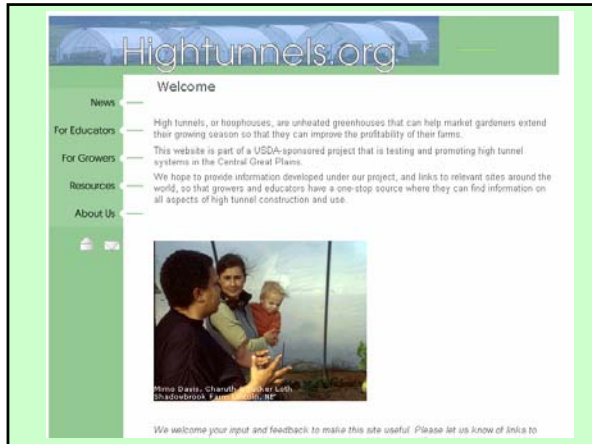
20 x 96' Atlas high tunnel, Harrisburg, MO (Dorothy Canote)

Information sources

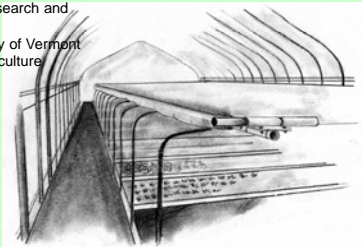
- Lynn Byczynski:
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 - The flower farmer
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 - Cut Flowers Quarterly
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Information sources

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 - Production of vegetable, strawberries and cutflowers using plasticulture
- Cornell: Chris Wien
- Cramers Posie Patch
- ATTRA
- Texas Specialty Cut Flowers
<http://www.texascolor.com>



High Tunnels Using Low-Cost Technology to Increase Yields, Improve Quality and Extend the Season
 DVD + 74 page book, 2007
 By **Ted Blomgren and Tracy Frisch**
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Come and visit any time



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