Melon & Strawberry Production Within High Tunnels in the Central Midwest

Benefits of a High Tunnel:

- Low-cost ($).
- Very productive.
- Exclude pests (great for organics).
- Extend the growing season (3 months).
- Diverse production of many vegetables.
- Supplement field production.

What crops are being grown in high tunnels in the Midwest?

Tomatoes are an excellent early and late season crop for high tunnels.
Good cash crop rotation choices for tomatoes?

Vine-ripened melons
**Musk melons:**
- Good rotation choice (botanically unrelated to tomato).
- Amenable to trellising (vertical growth).
- Premium price for early-season crop.
- Thrive in the dry microclimate of a high tunnel.

**Galia-type Melons:**
- Green to white flesh
- Small seed cavity (good for shipping)
- Very sweet!

Aromatic melons
Charentais Melons: (‘Savor’ or ‘French Orange’) (true cantaloupes)

‘Prescott Melon’ (Cantaloupe)

Large seed cavity and thick rind
Palm-sized cantaloupes (muskmelons)

Foliar diseases
Sunburned fruit
Fruit cracking

Research high tunnels located at Columbia, MO (38°N lat.)

Muskmelons
Squash

Potential Varieties
<table>
<thead>
<tr>
<th>Cultivar</th>
<th>Cucurbit type</th>
<th>Days to maturity</th>
<th>Fruit description</th>
<th>Disease tolerance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Venice</td>
<td>Muskmelon</td>
<td>60</td>
<td>Round fruit with light netting and slight suture</td>
<td>PM, F0, 2</td>
</tr>
<tr>
<td>Aphrodite</td>
<td>Muskmelon</td>
<td>75</td>
<td>Oval, large fruit, Light netting.</td>
<td>PM, F0, 2</td>
</tr>
<tr>
<td>Ambrosia</td>
<td>Muskmelon</td>
<td>86</td>
<td>Round fruit, Coarse netting, Good garden quality</td>
<td>PM</td>
</tr>
<tr>
<td>Cremone</td>
<td>Muskmelon</td>
<td>73</td>
<td>Large, eastern type melon.</td>
<td>PM</td>
</tr>
<tr>
<td>Delancy</td>
<td>Muskmelon</td>
<td>80</td>
<td>Round, large fruit with coarse netting and slight suture</td>
<td>PM, F0, 2</td>
</tr>
<tr>
<td>Drusa</td>
<td>Muskmelon</td>
<td>79</td>
<td>Small, western type developing melon.</td>
<td>PM</td>
</tr>
<tr>
<td>Emera Lind</td>
<td>Muskmelon</td>
<td>80</td>
<td>Round fruit with heavy netting, Green flesh. Large blossom scar. Heirloom melon</td>
<td>PM, F0, 2</td>
</tr>
<tr>
<td>Gallia 152</td>
<td>Gallia</td>
<td>60</td>
<td>Round fruit with green flesh, Very aromatic. No suture.</td>
<td>PM, F0, 2</td>
</tr>
<tr>
<td>Gallia</td>
<td>Gallia</td>
<td>81</td>
<td>Round fruit with green flesh, Light netting.</td>
<td>PM, F0, 2</td>
</tr>
<tr>
<td>Grata</td>
<td>Gallia</td>
<td>77</td>
<td>Round fruit with green flesh, Light netting.</td>
<td>PM, F0, 2</td>
</tr>
<tr>
<td>Gallione</td>
<td>Gallia</td>
<td>86</td>
<td>Round fruit with green flesh, Heirloom melon</td>
<td>PM, F0, 2</td>
</tr>
<tr>
<td>Targit</td>
<td>Gallia</td>
<td>88</td>
<td>Round fruit with green flesh, Very aromatic. Light netting.</td>
<td>PM, F0, 2</td>
</tr>
</tbody>
</table>

**Direct Seeding:**

**Disadvantages:**
- More seed required to produce plants.
- Not suitable for earliest production.

**Direct seeding can reduce uniformity.**

**Mice/ Voles often feed on seed...**

**Direct seeding of melons within a high tunnel:**

If early-season yield is the principal objective, transplanting melons is recommended within the high tunnel.

Early-season (before 7/4) yield: 2004

![Graph showing yield comparison between transplanted and direct seeded melons.](image)
Four to five weeks are required to grow melon and watermelon transplants.

Transplanting melons in the high tunnel:

- Use deep planting cells (>2.75 inches) for melons.
- 9-45-15 Starter Fertilizer
- Water stores heat.
- Black plastic mulch warms the soil.
- Row Covers (medium wt)
- 40-50 City Soil Temperature
- 24 inches between plants
- 8 ft²/plant
- 24 inches between rows
Straw mulch can be used between beds to reduce weed emergence and relative humidity.

Raised beds increase soil temperatures.

Palm-sized, Seedless Watermelons are well-suited for high tunnel production:

SQUASH

High tunnels for cucurbit production should be at least 9 feet high in the center.

Trellising and Pruning
Cucumbers are often trellised in the field to improve quality.

Types of Trellises:
- Wire string
- Mesh wire or netting

Cattle panels can be used to trellis cucumbers in the high tunnel.

Most melon trellises should be 7-8 feet high.

When growing mixed vegetables in the high tunnel, trellising is essential to control vine growth!
Pruning:

Prune to 2 strong laterals / plant.

Small, mesh bags can be used to support the growing fruit on each trellis.
**Pollination**

Cross pollination is very critical for melon number and size/melon.

**High Tunnel Roof Vent**

**Pests**

- Powdery Mildew
- 12 spotted cucumber beetle
- Striped cucumber beetle
- Leaf feeding injury
- Bacterial wilt
Thrips can be found on the underside of leaves.

Thrips cluster in melon flowers, feeding on pollen.

Melon Aphid *(Aphis gossypii)*

(0.1 ounces per 1000 plants)

Aphids

White Flies
Two-Spotted Spider Mite:

Potential Marketable Yields: 1000–1500 melons per 3000 ft² high tunnel.

High Tunnel Strawberries
Annual strawberry production using a high tunnel.

12 in. between plants

12-15 in. between rows
2 drip lines per bed.

1500-2000 strawberry plants per commercial high tunnel.
Have the soil tested prior to planting strawberries within a high tunnel.

If compost is used as a soil amendment, have it tested for nutrients, pH and soluble salts.

Salinity damage to strawberry

Plant Sources:
Some Strawberry Plant Suppliers

Jersey Asparagus Farms
105 Porchtown Rd.,
Pittsgrove, NJ 08318
856-358-2548

Nourse Farms, Inc.
41 River Rd.,
South Deerfield, MA 01373
413-665-2658

Krohne Plant Farms
65295 CR 342
Hatford, MI 49507
269-424-5423

Ruby Mountain Nursery
24244 Hwy. 371
La Jara, CO (719) 587-0540

Strawberry Tyme Farms
R.R. #2 Simcoe, Ontario Canada
N3Y4K1
519-426-3099

Ghesquiere Nursery
Simcoe Ontario Canada
519-428-1087

Goodsen Berry Supplies
Little Rock, Arkansas
501-335-8185

Other strawberry nurseries can be found at: www.ncstrawberry.org

• Runner tips  
• Bare root  
• Plugs

Chandler  
Camarosa  
Sweet Charlie  
Ventana (?)  

Planting date for annual strawberries within a high tunnel is approximately September 20-October 15th for the Central Midwest.

Temperature management is critical for high tunnel strawberries.
Keeping the high tunnel too warm in the fall can trigger flowering of strawberries or runner production. Row cover usage is precarious!

POLLINATION
Bees significantly increased average berry weight of high tunnel strawberries.

Harvest frequency of high tunnel strawberries:

Averge yield per plant:
1.2-1.3 lbs of marketable berries per plant

Thank you, and please visit the high tunnel web site: