

Horticultural Aspects of Tomato Production under Protected Culture



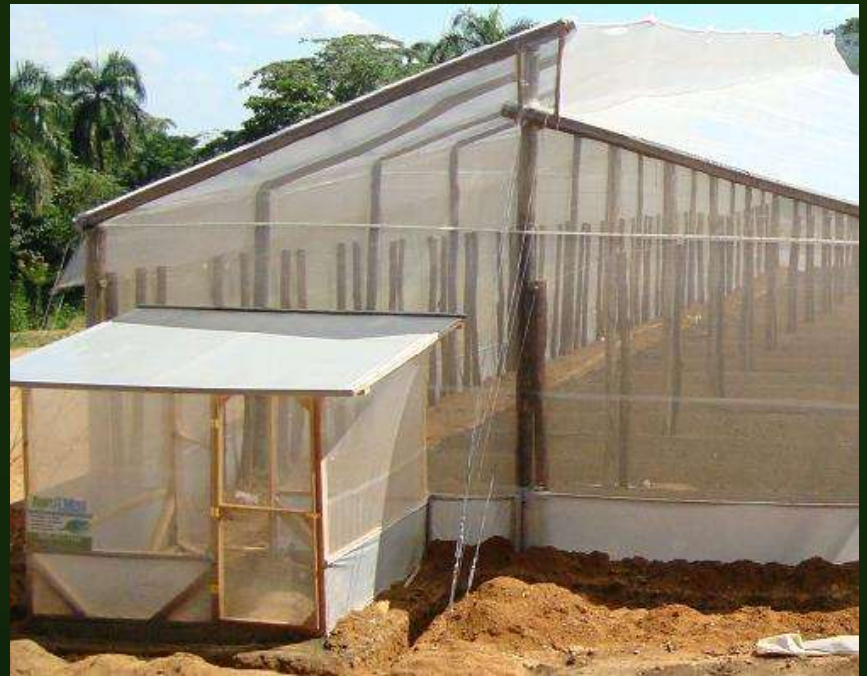
Bielinski M. Santos and Emmanuel A. Torres-Quezada
GCREC, IFAS, Univ. of Florida

Tomato Production under Protected Culture

Country (year)	Acres
Europe	
Spain (2010)	35,100
Netherlands (2008)	3697
North America	
Mexico (2005)	7500
Canada (2010)	1625
United States (2010)	875
Central and South America and the Caribbean	
Argentina (2003)	2500
Guatemala (2011)	250
Dominican Republic (2009)	75



Greenhouses: Metal



Greenhouses: Wood



High tunnels

Why Using Structures?

- ▶ Premium prices for certain tomato types (i.e. vine-ripe clusters).
- ▶ Soilless culture = no fumigation.
- ▶ Stable environment against rain and wind.



Challenges

▲ Structure prices:

- Greenhouses: At least \$100K/acre.
- High tunnels: At least \$20K/acre.

▲ Clear identification of the markets.

▲ Technical knowledge.



Aspects to Consider

- ▲ **Ventilation**
- ▲ **Tomato types**
- ▲ **Soilless media**
- ▲ **Irrigation and fertilization**
- ▲ **Pruning, training, kneeling and tying**
- ▲ **Pollination and pest management**
- ▲ **Harvesting**

Tomato Types



Tomato Types



Tomato Types



Ventilation



Ventilation





Ventilation



Soiless Media

- ▲ No fumigation!
- ▲ None to little soilborne diseases, nematodes and weeds.
- ▲ Know your medium!



Soiless Media

▲ Mineral:

- Vermiculite, perlite, rockwool.

▲ Vegetal:

- Coconut coir, pine bark, peat.
- Burned rice hulls, compost.



Containers: Bags



Containers: Troughs and Boxes



Containers: Trenches



Cultural Practices: Tying and Trellising



Cultural Practices: Kneeling and Pruning



Cultural Practices

- ▲ **Pruning: 1 main stem/plant.**
- ▲ **Density: 8000-12000 plants/acre.**
- ▲ **In-row distance: 8-10 inches.**
- ▲ **Pollination: Bees or vibration.**
- ▲ **Fruit thinning.**



Irrigation: Delivery



Irrigation

▲ **Frequency: 2-12 times/day.**

▲ **Volume:**

□ Crop stage.

□ Temperature, RH, evaporation, wind, medium.

□ Mature plants: 0.5 gal/day.



Irrigation: Monitoring Equipment



Fertilization: Injection Equipment



Fertilization: Injection Equipment



Fertilization

▲ **Frequency: 2-5 times/day.**

▲ **Rates:**

□ 1100-1900 lb/acre of N.

□ 250-400 lb/acre of P.

□ 1400-2000 lb/acre of K.



Harvesting

- ▲ Weekly or biweekly harvests.
- ▲ Starting at 5-6 weeks after transplanting.
- ▲ 20-30 harvest during the season.



Harvesting

▲ 70-150 ton/acre.



Thanks!! Questions?
bmsantos@ufl.edu
813-468-6322



Acknowledgements
FDACS, US-AID, SWFWMD