

Potential of High Tunnels for Small Fruit and Vegetable Production in Florida



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Protected agriculture



Hydroponics and soilless culture



Extension and education



Potential Benefits for Florida

- Early production: Competitive edge in the market.
- Grow diverse crops and cultivars.
- Freeze protection:
 - Reduced water consumption.
 - Reduced low fuel/electricity.
- Reduced foliar and fruit diseases.
- Intensive ag: Intercropping and soilless culture.

Strawberry under Tunnels

- Three studies: 2007-08, 2008-09 and 2009-10.
- Open field and high-tunnel culture.
- RCB design with 4 replications.
 - Early (6 harvests) and total fruit weight.
 - Water use for freeze protection.



Effective freeze protection



-2°C
Water use: 750 m³/ha



3°C
Water use: 0

Strawberry Yields (2007-08 & 2008-09)

Production systems	Early yield	Total yield
	-----ton/acre-----	
High tunnels	2.7 a	14.6 a
Open fields	2.1 b	9.4 b
Significance ($P < 0.05$)	*	*
Difference	+28%	+55%

1 ton/acre = 0.9 t/ha

Strawberry Preliminary Economics (2007-10)

Components	Open fields	High tunnels
Early yield		+0.6 ton/acre (+\$3000/acre)
Total yield		+4.4 ton/acre (+\$8800/acre)
Tunnel installation & maintenance		5 years (-\$7000/acre)
Freeze protection	15 acre-inch (3 acre-inch x 5 days)	Water: 0 (+\$150/acre) Personnel: 10 h/man (+\$150/acre)
Balance		+\$5100/acre

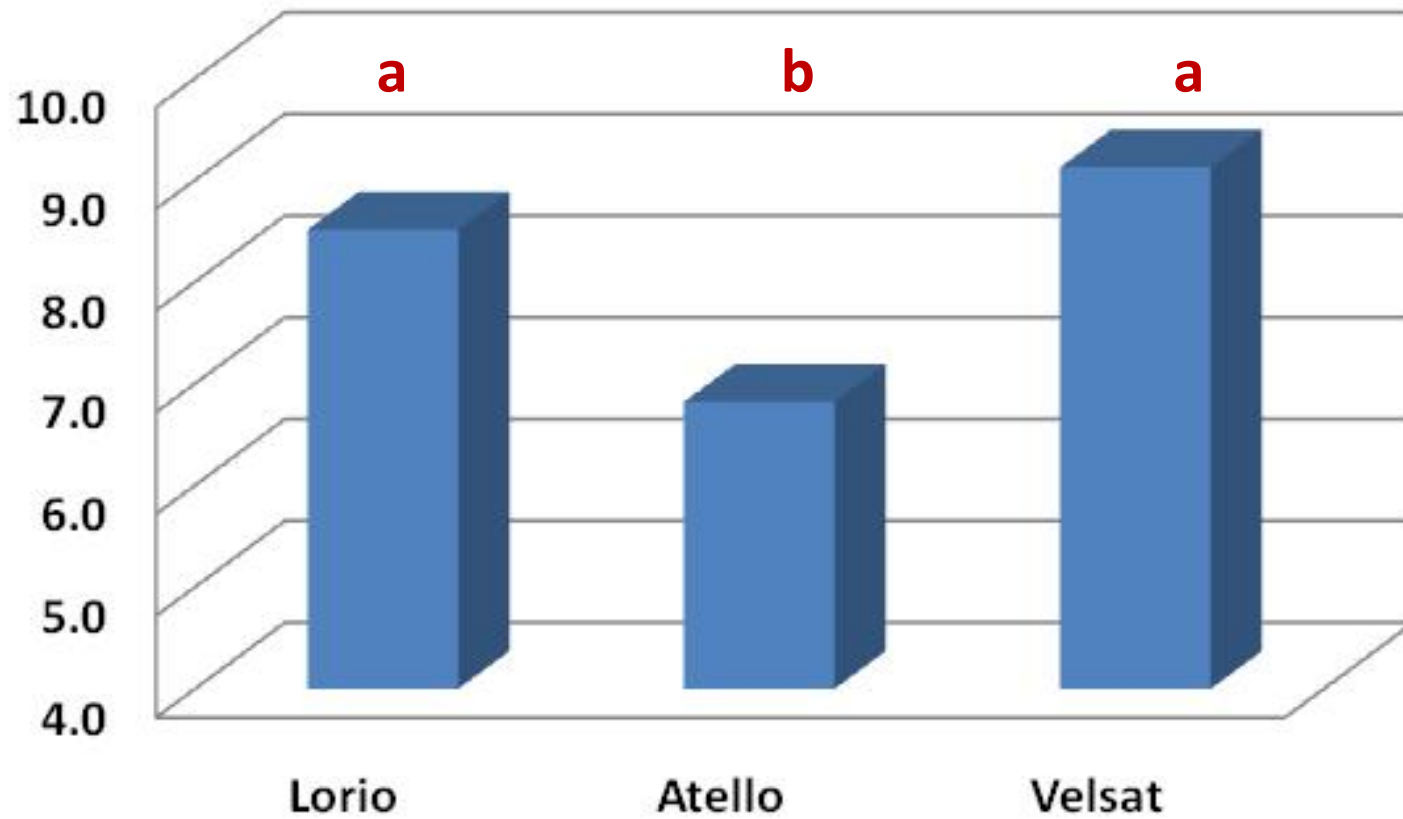
**Intercropped at the end of
the strawberry season**





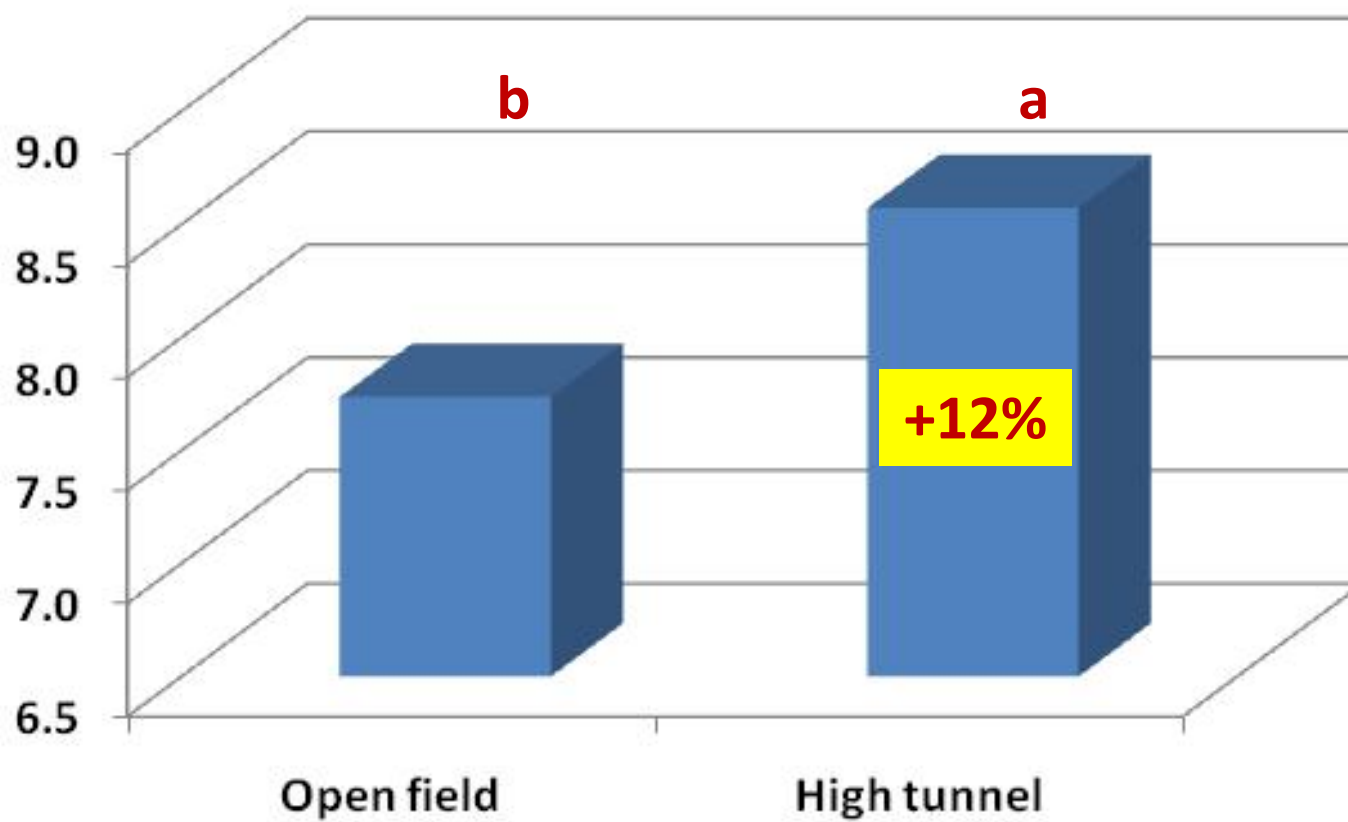
- **Two studies at the GCREC (2008-09 & 2009-10).**
- **Three specialty cantaloupe cultivars.**
- **RCB design with 4 replications.**

Fruit weight (ton/acre)



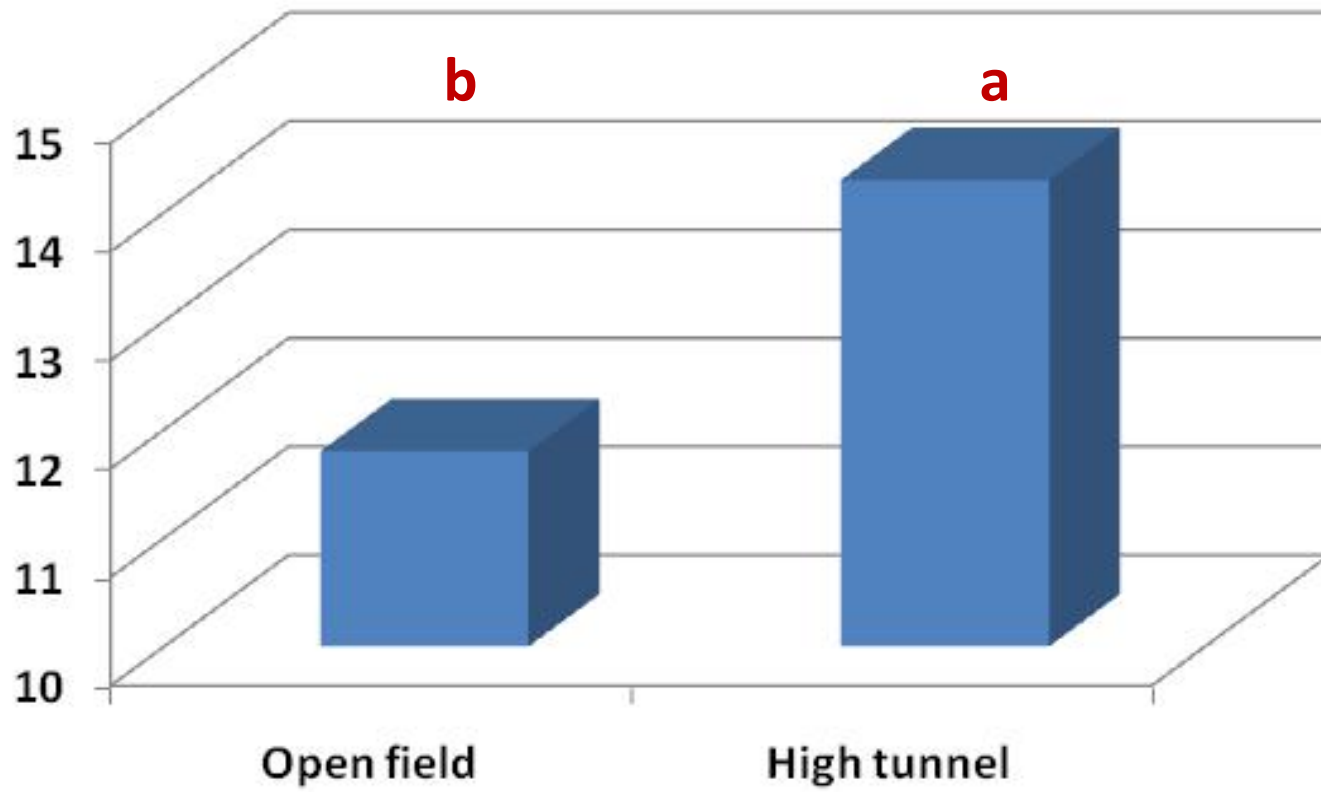
1 ton/acre = 0.9 t/ha

Fruit yield (ton/acre)



1 ton/acre = 0.9 t/ha

°Brix





- Study in a grower field (2009-10).
- 2 environments and 2 cultivars.
- RCB design with 5 replications.



Environments	Early yield	Remarks
Open fields	4.5 ton/acre	March-April
High tunnels	0	15-20% water volume



- **Study at GCREC (2009-10).**
- **Determinate specialty ‘Tasti-Lee’ tomato.**
- **“Soilless trench system”.**
- **RCB design with 5 replications.**

'Tasti-Lee' Tomato Yields (2009-10)

In-row distances	Marketable yield
inches	ton/acre
12	42.6 a
16	39.6 a
20	39.8 a
24	40.0 a
Average	40.5
Significance ($P < 0.05$)	NS
Open field in Florida	15.0

1 ton/acre = 0.9 t/ha

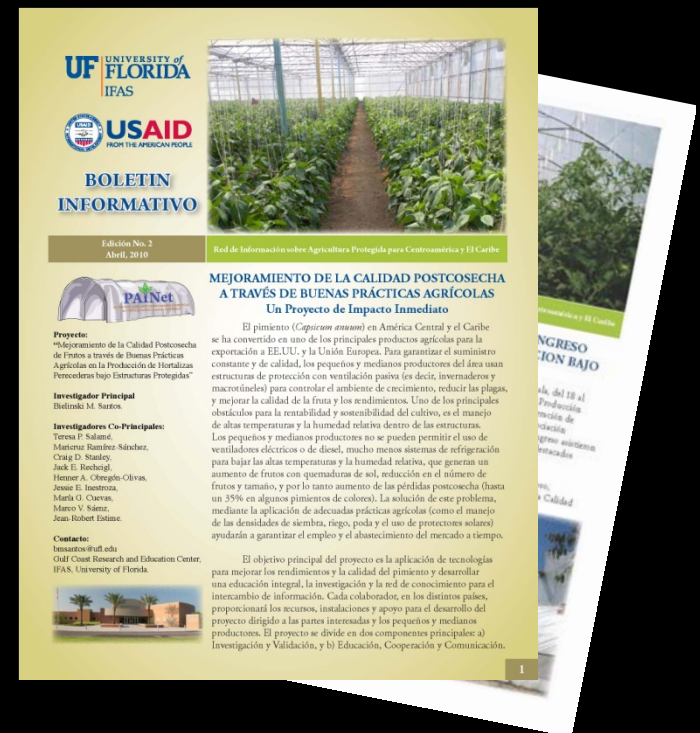
PAINet: Protected Ag Information Network for Central America and the Caribbean

- Initiative: Gulf Coast REC, IFAS, Univ. of Florida.
- Guatemala, El Salvador, Nicaragua, Costa Rica, Honduras, Dominican Rep., and Haiti.
- Sustainable.
- Free education, information and research exchange.



PAINet: Protected Ag Information Network for Central America and the Caribbean

- Horizontal communication: Most members are growers and exporters.
- Country and grower-driven.
- Open to new members!!!





Thanks!!
Questions?
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