

NC STATE UNIVERSITY



Grafting and High Tunnels for Organic Heirloom Tomato Production at CEFS

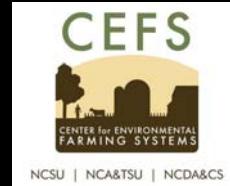
Suzanne O'Connell and Cary Rivard

November 12th, 2008
Heirloom Tomato Grafting Workshop
Pittsboro, NC

CEFS Research

2006 SR-SARE R&E Grant

- Compare production dynamics of tunnel vs field production
 - Environment
 - Disease
 - Productivity
 - Economics
- Optimize cultural practices for high tunnels
 - Nutrient inputs
 - Planting date
- Investigate the role of grafting for field and tunnel production
 - Beaufort
 - Maxifort
 - Rootstock / scion combinations



Research Team 2007



Top Row: Frank Louws, Chris Harlow, Cary Rivard, Steve Moore
Bottom Row: Mary Peet, Suzanne O'Connell, Josh Moore

Research Team 2008



Seth Avis, Ryan Faulk, Suzanne O'Connell, Cary Rivard, Carolyn Lowry

Outline

- Life on the farm
- Environmental Analysis
- Systems Experiment
- Results – Crop Productivity and Nutrient Uptake



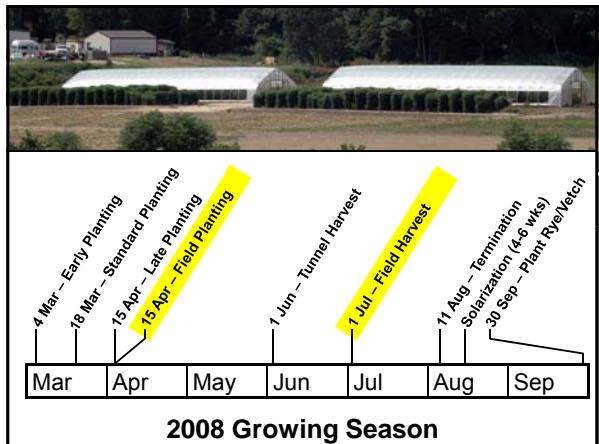
Life on the Farm

- Life on the farm
- Environmental Analysis
- Systems Experiment
- Results – Crop Productivity and Nutrient Uptake



Construction





Cultural Methods



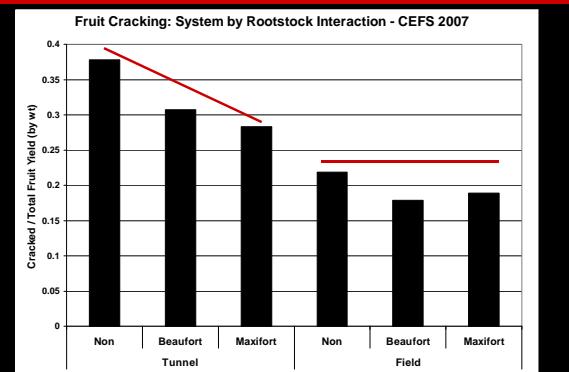
Twin leader in tunnel



Stake-and-weave in field



Fruit Cracking



Integrated Pest Management

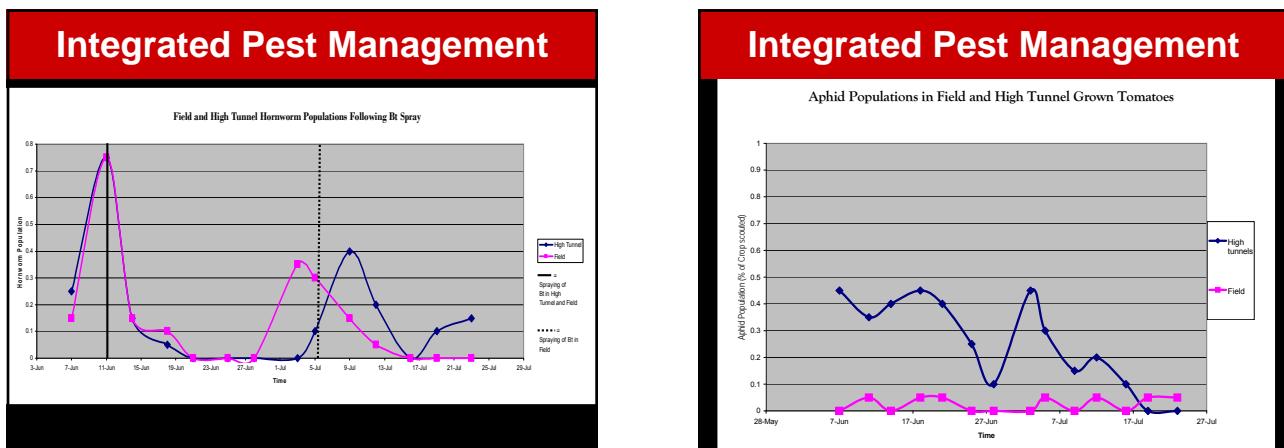
- IPM Scouting Protocol
 - 2007 CEFS Intern project
- Pollinators



Aphelinus ervi



Aphidoletes





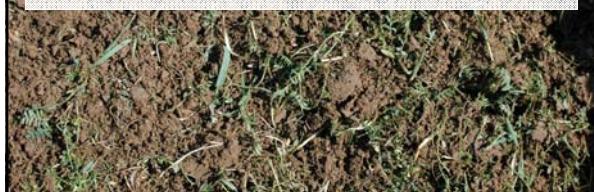
Rye/Vetch cover crops inside the high tunnel



Rye/Vetch incorporation inside the high tunnel

Cover Crops

	Biomass (lbs/acre)		C:N	Available N (lbs/acre)
	Rye	Vetch		
High Tunnel	3749.4	329.4	9.8	83.2
Field	721.8	1589.1	8.5	54.2



Environmental Analysis

- Life on the farm
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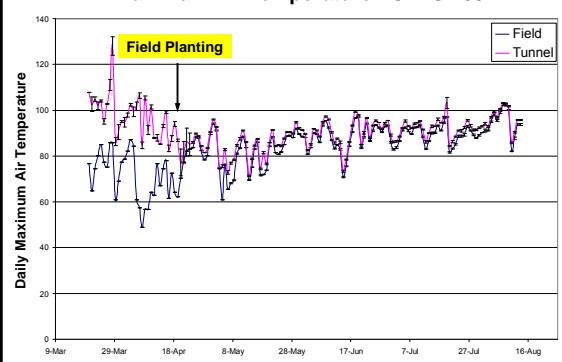


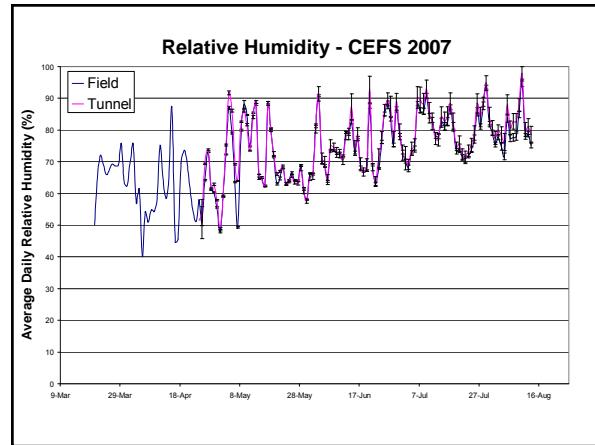
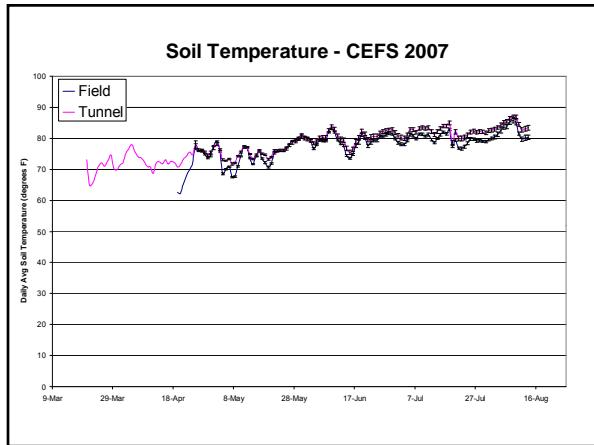
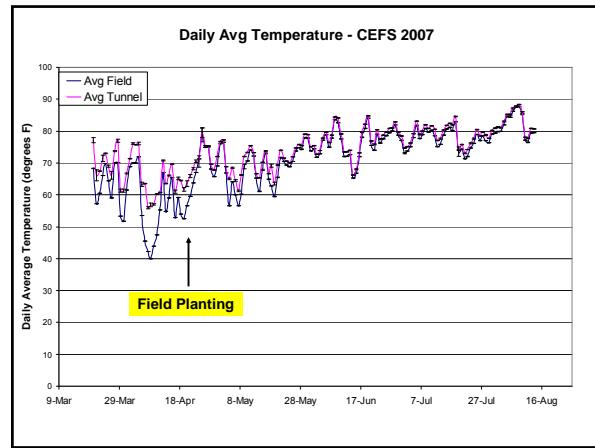
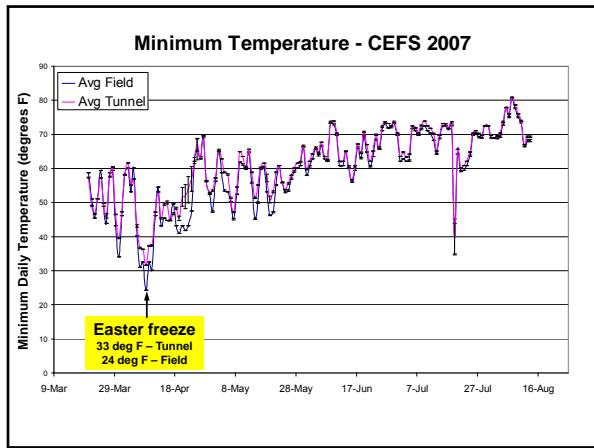
Environmental Analysis

- Systems Comparison
 - Air temp, soil temp, soil moisture, leaf wetness, relative humidity



Maximum Air Temperature - CEFS 2007





Systems Experiment

- Life on the farm
- Environmental Analysis
- Systems Experiment
- Results – Crop Productivity and Nutrient Uptake

CEFS
CENTER for ENVIRONMENTAL FARMING SYSTEMS
NCSU | NICA|TSU | NCDA&CS

CEFS 2008

NE High Tunnel 2008	SE Field Plot 2008
D7	D11
D6	D14
D8	D12
D5	D108
D2	D105
D3	D102
D1	D103
D4	D101
C12	D112
	D111
C13	D113
C9	D109
C11	D109
C10	D110
	C107
C11	C106
C10	C108
C9	C105
C11	C104
C10	C103
C9	C101
C11	C102

Legend:

- Cher. Purple on 'Maxifort'
- Cher. Purple on 'Beaufort'
- Self-grafted Cher. Purple
- Non-grafted Cher. Purple

D7 = Rep. D, Treatment 7
(Self-grafted Cherokee
Purple with a medium level
of fert. inputs 100LbsN/A)

Results

