GRAFTING BELL PEPPERS TO IMPROVE HIGH TUNNEL PRODUCTION

- David Loewen & Dr. Cary Rivard -
SOLANACEOUS GRAFTING

• The Tom-Tato / Ketchup ‘n’ Fries
• Eggplant
• Purpose-bred interspecific hybrids for both peppers and tomatoes
THE SOLANACEOUS FAMILY

Solanaceae (Nightshade Family)

Four Others

Petunioideae
(Petunia)

Nicotianoideae
(Tobacco)

Solanoideae

Others
Genus Physalis
SPECIES
- Ground Cherries

Genus Capsicum
SPECIES
- C. annuum (Bell Pepper)
- Around 25 other species of pepper

Genus Solanum
SPECIES
- Nightshade
- Horse Nettle
- Tamarillo
- Eggplant
- Potato
- Tomato
PEPPER GRAFTING PROCESS

Splice Grafting

Healing Chamber Management similar to tomatoes

First 48 hrs = dark, 90% humidity

Day 3 = start to reduce humidity to around 65-70%

Wilt on Days 4-6 (like tomatoes)

After wilt, wean off to regular humidity and light levels of the greenhouse

12-14 days in chamber (9-10 for tomatoes)

About 93% Success Rate
STUDY DESIGN

ROOTSTOCKS

Scarface (Pepper):
Performance / Nematode resistance

Maxifort (Tomato):
Yield / Disease resistance

Nongrafted Control
Karisma – Disease Resistant Avg Size, Robust Plants

LOCATIONS
OHREC High Tunnel
JCPHC Field Plot
Maxifort rootstock performed poorly, lost several of the plants. Why?

Yields not significantly different for Scarface and Nongraft

High Tunnel yields higher
FRUIT MORPHOLOGY

Maxifort (Tomato) rootstock had significantly smaller fruit.

Fruit Size not significantly different for Scarface and Nongraft.

High Tunnel fruit size higher.
ABOVE-GROUND MORPHOLOGY

Maxifort Significantly Smaller
Scarface had high compactness

![Graph showing distribution of VAR27](image)

Karisma (Nongraft)
Maxifort (Tomato Rootstock)
Scarface (Pepper Rootstock)
Below-ground morphology

Little difference in below-ground biomass

Distinct visual differences at graft union
CONCLUSIONS AND QUESTIONS

Intergeneric grafting between the Solanum and Capsicum genera is possible

Commercial potential?

Reciprocal grafting, other rootstocks/scions

Grafting Peppers onto Scarface rootstock may increase plant compactness without a significant yield loss

Potential for greater planting density/higher yield per square foot?
BIG THANKS TO THESE PEOPLE

Dr. Jason Griffin
Kimberly Oxley
Paul Andersen
Zach Hoppenstedt

Funding for this Project
Provided by NIFA SCRI