# Influence of Grafting on Yield of Canning Tomatoes: 2016 Progress Report


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# Premature vine senescence

**66 days before harvest**

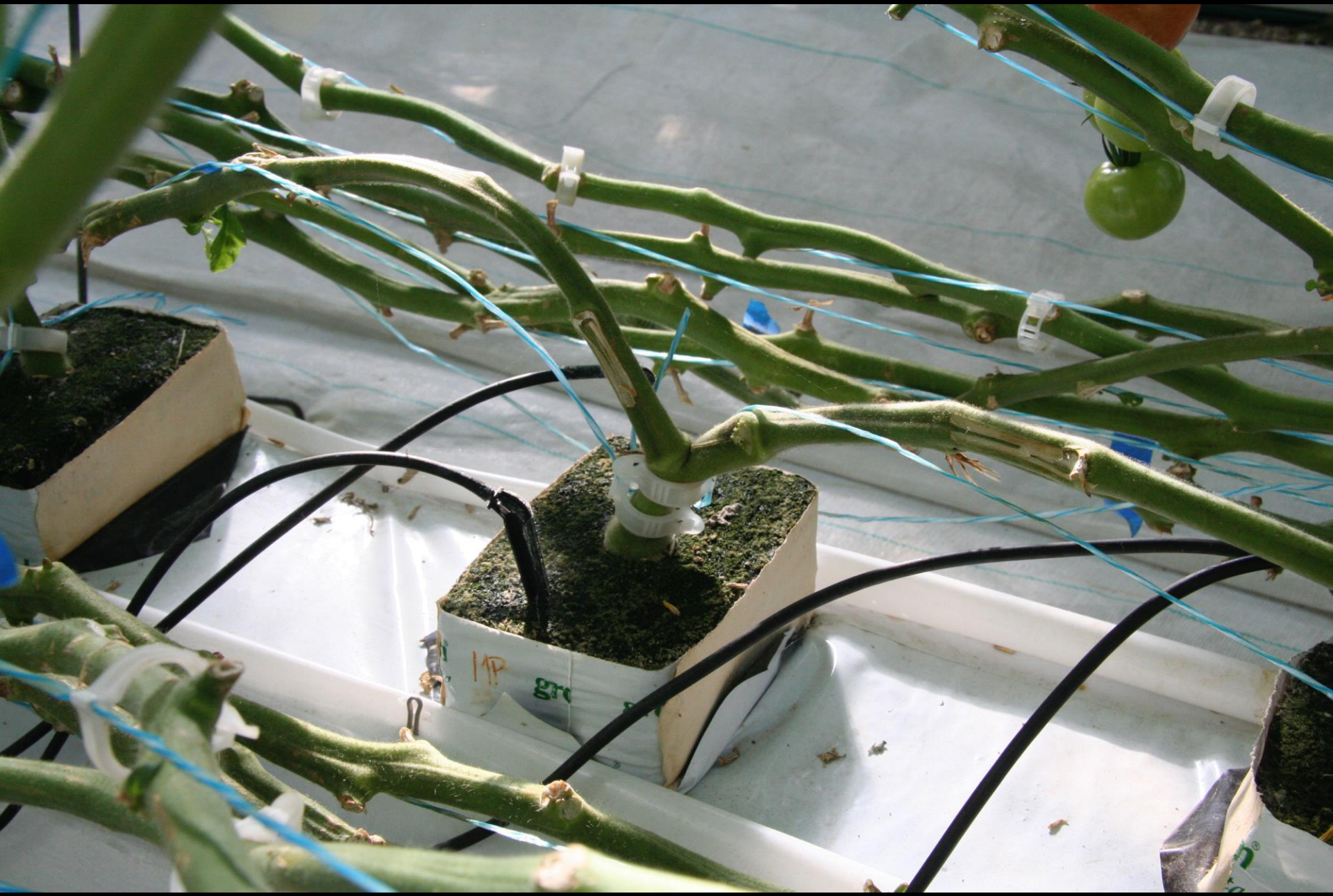
fruit sizing

**18 days before harvest**

fruit ripening

**8 days before harvest**

approaching harvest



Slides: Brenna Aegerter

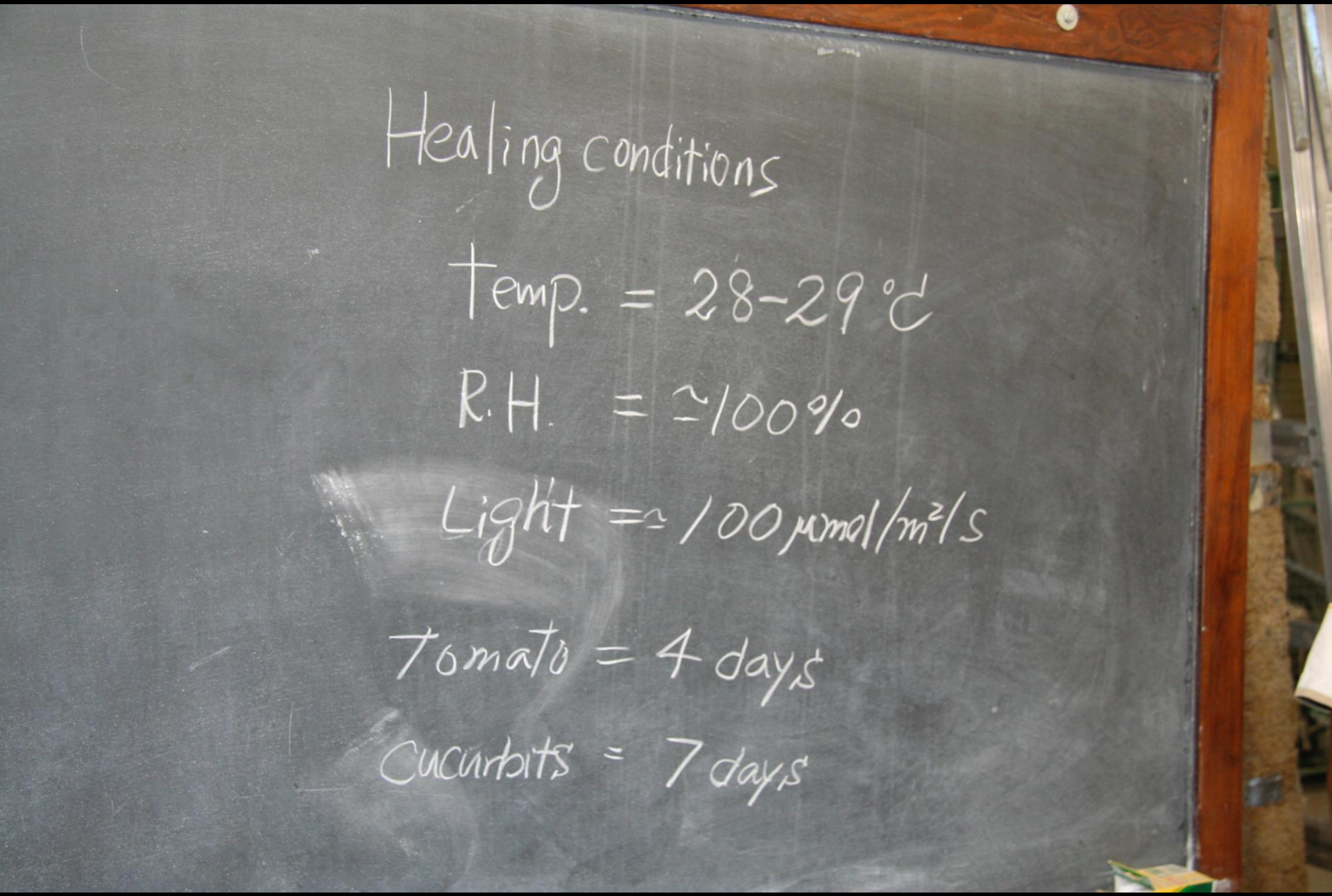
1) Sterile trays & sterile media seeded 5 weeks before grafting

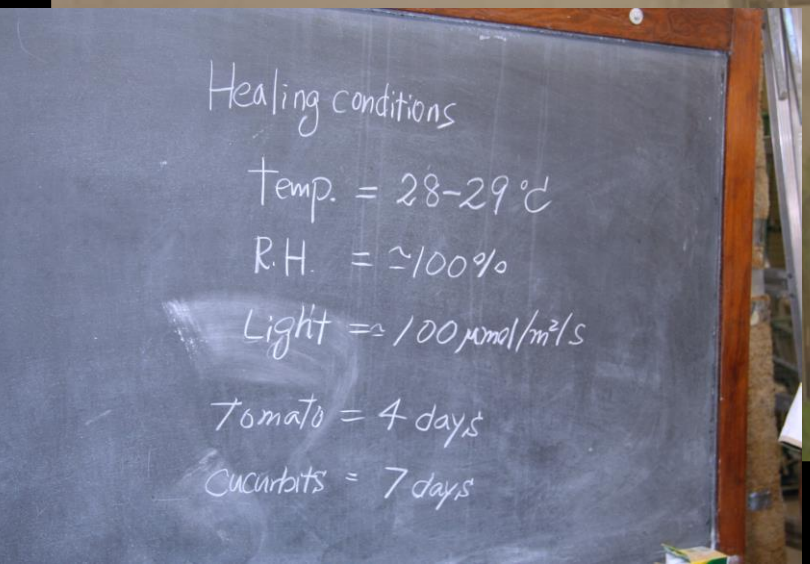
3) Grafting clips positioned half-way on rootstock stems

2) Both rootstock & scion plant stems clipped at ~45º angle

4) Scion stems align to rootstock angle with attention to match stem diameter


1
2
3


Healing conditions
Temp. = 28-29°C
R.H. = ≃100%
Light = ≃100 μmol/m²/s
Tomato = 4 days
Cucurbits = 7 days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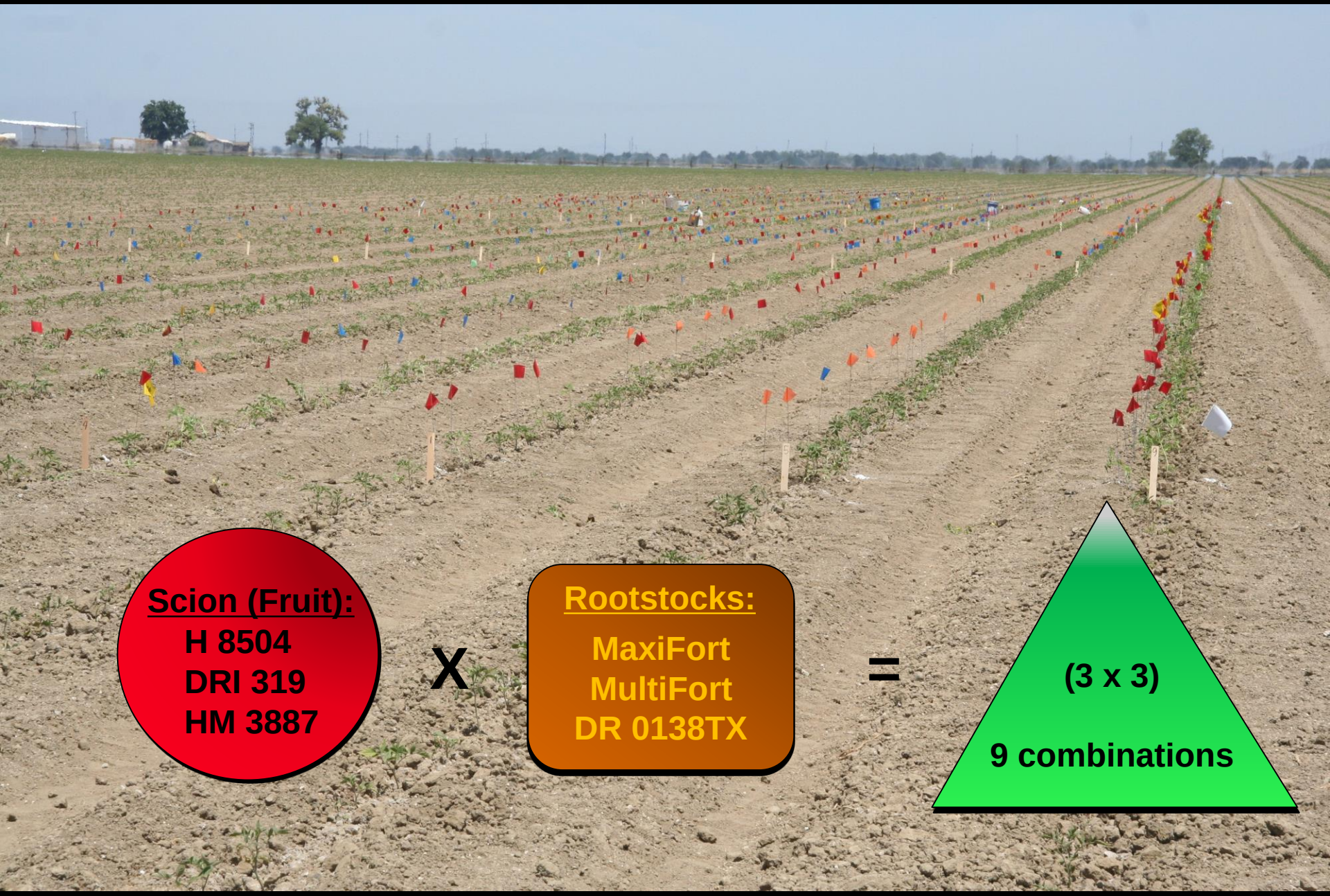
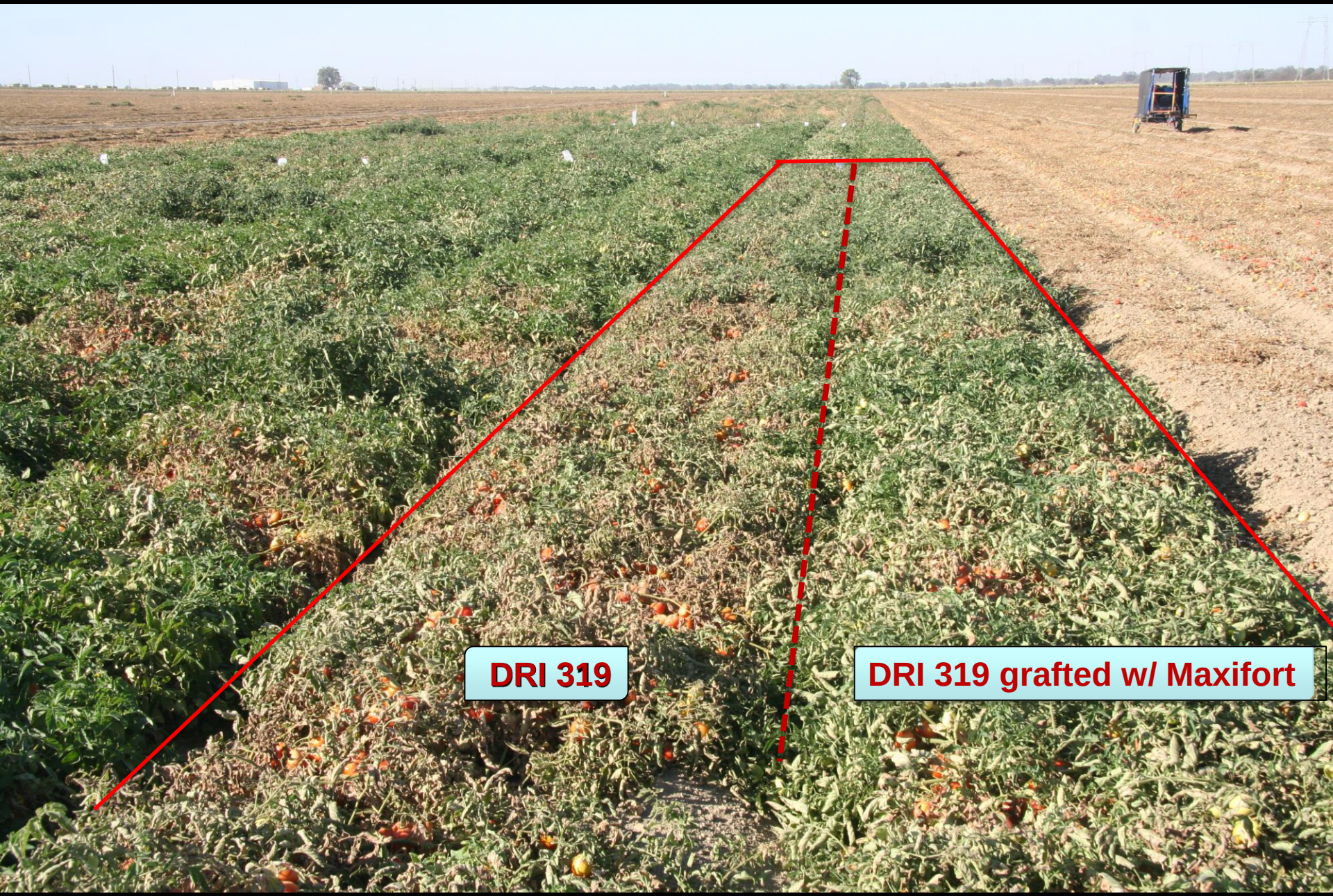

Scion (Fruit):
H 8504
DRI 319
HM 3887
X
Rootstocks:
MaxiFort
MultiFort
DR 0138TX
=
(3 x 3)
9 combinations


Growers Transplanting, Inc. supported

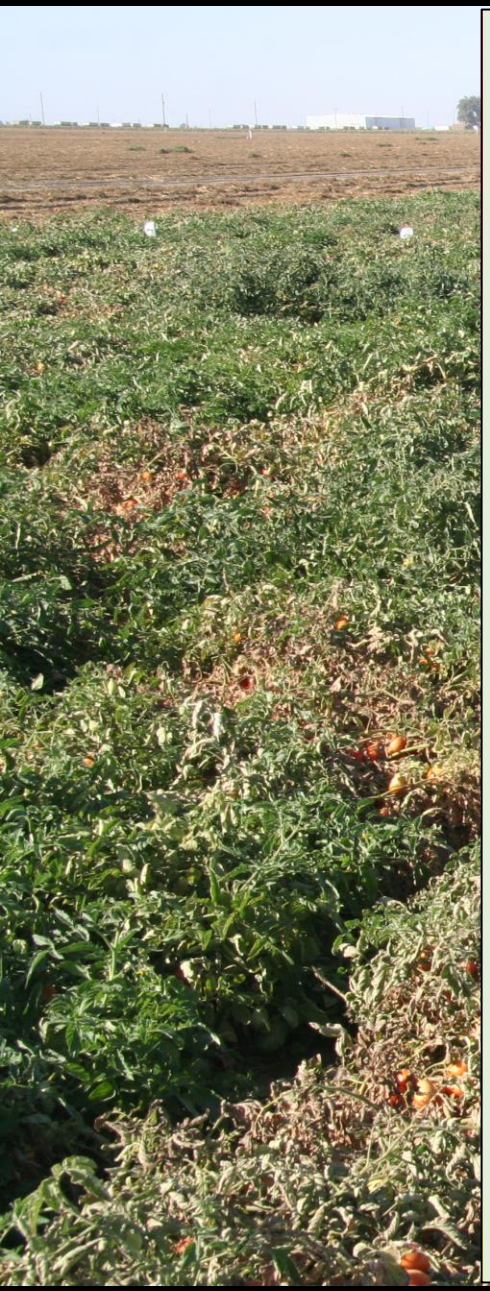

DRI 319
DRI 319 grafted w/ Maxifort

# Grafted rootstocks for processing tomatoes, Harlan Family, Woodland, 2016

| | Rootstock | Scion | Marketable yield Tons/A | non-grafted yield (%) |
|---|---|---|---|---|
| 1 | - | H 8504 | 48.6 | - |
| 2 | MaxiFort | H 8504 | 52.1 | 107 |
| 3 | MultiFort | H 8504 | 52.3 | 108 |
| 4 | DR 0138TX | H 8504 | 56.0 | 115 |
| 5 | - | DRI 319 | 54.9 | - |
| 6 | MaxiFort | DRI 319 | 62.4 | 114 |
| 7 | MultiFort | DRI 319 | 62.6 | 114 |
| 8 | DR 0138TX | DRI 319 | 63.3 | 115 |
| 9 | - | HM 3887 | 62.1 | - |
| 10 | MaxiFort | HM 3887 | 63.5 | 102 |
| 11 | MultiFort | HM 3887** | 65.5 | 106 |
| 12 | DR 0138TX | HM 3887 | 66.0 | 106 |
| | average | | 59.1 | |
| | LSD 5% | | 6.0 | |
| | %CV | | 7 | |
| **CLASS COMPARISONS:** | | | | |
| | Grafted vs | | 60.4 | 110 |
| | non grafted | | 55.2 | 100 |
| | Probability | | 0.001 | |

** variety mix-up on fruiting scion on 3 plots

# Grafted rootstocks for processing tomatoes, Harlan Family, Woodland, 2016



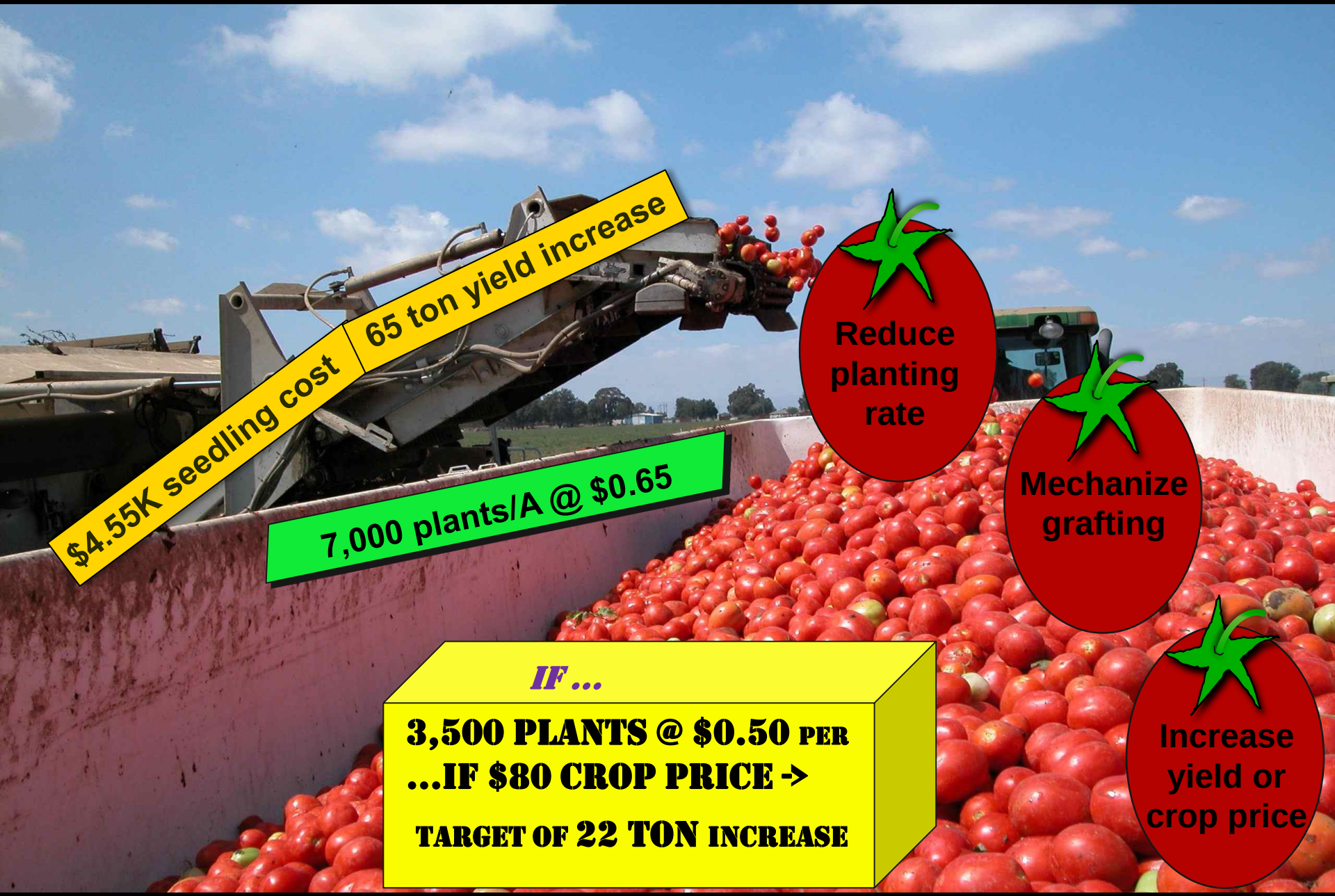
| FACTORS | | Marketable yield Tons/A | | non-grafted yield (%) |
|---|---|---|---|---|
| A. *Variety (scion)* | | | | |
| | HM 3504 | 53.5 | b | 110 |
| | DRI 3319 | 62.7 | a | 114 |
| | HM 3887** | 65.0 | a | 105 |
| Probability | | 0.000 | | |
| LSD 5% | | 3.57 | | |
| B. *Rootstock* | | | | |
| | MaxiFort | 59.3 | | 108 |
| | MultiFort** | 60.2 | | 109 |
| | DR 0138TX | 61.8 | | 109 |
| Probability | | NS | | |
| LSD 5% | | | | |
| C. *Interaction (probability)* | | | | |
| Variety x Rootstock | | NS | | |
| % CV | | 7 | | |

** variety mix-up on fruiting scion on 3 plots

# Some Challenges

- High establishment costs  > $0.65 @
- No rootstocks with resistance to:
  Fusarium wilt race 3 or
  Verticillium wilt race 2
- ~~Location of graft union relative to soil surface~~
- ~~Variability, rootstock x scion interactions~~
- Coordination of rootstocks w/ scion plants- doubling greenhouse space

From: Brenna Aegerter


$4.55K seedling cost
65 ton yield increase
7,000 plants/A @ $0.65
Reduce planting rate
Mechanize grafting
Increase yield or crop price
IF …
3,500 PLANTS @ $0.50 PER
…IF $80 CROP PRICE ->
TARGET OF 22 TON INCREASE

**Year 2016 Cooperators:**

Blake Harlan
Harlan Family Farm, Woodland

Growers Transplanting Inc.
Josh Chase
Joan Venegas

California Tomato Research Institute

**Future Improvement:**

Brenna Aegerter coordination of project with USDA, multi-year grant