

# Vegetable Grafting

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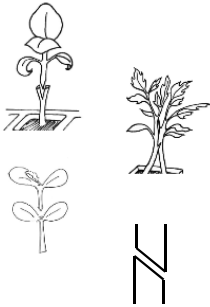


# What is Grafting?

- The process of joining 2 or more different, closely related plants to grow together as one unified organism
- It is traditionally done with fruit trees, grapes, landscape trees, and more recently vegetables
- Grafting is NOT creating a hybrid
  - A hybrid results from controlled breeding
    - And ends up with hybrid seeds



# Methods



- There are many suitable methods
- Cleft Graft
- Side Graft
- Hole-insertion
- Splice Graft
- Others



Source: Washington State University Fact Sheet FS062E

# Terms to Know



Scion: shoot, upper portion of graft

Stock or Rootstock: Lower portion of graft, root system



# Why Graft Vegetables?

- To overcome disease problems
- Size control Improve vigor
- Rootstock tolerance to adverse soil conditions
- Improve yield
- Reduce pesticide use
- Lengthen harvest



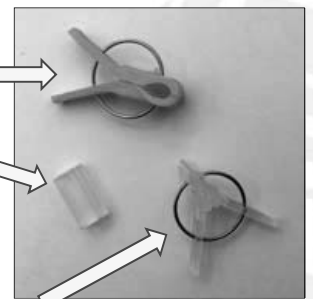
# Tools

## Grafting clips

- Spring Clip- large

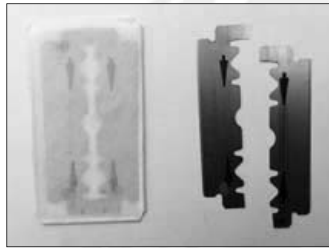
- Silicone clip\*

- Spring clip – small/medium

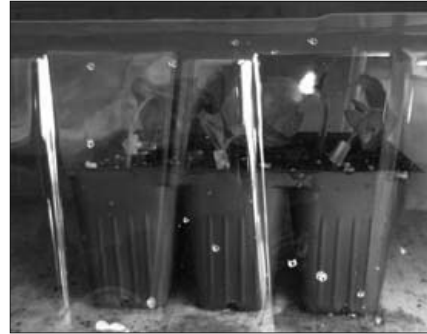


## Tools

- Double-edge razor blade
  - Broken in half, while still in the package



## Healing Chamber



Tall clear domes can be used, as can plastic bags, etc.

## Procedure

- Select appropriate rootstock and scion
  - Usually seeds
  - Start them about 3 weeks before you plan to graft
  - Stems on rootstock and scion should be close in size

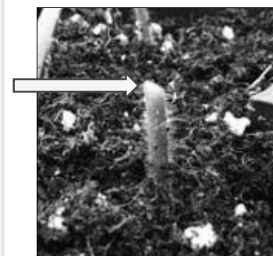
## Procedure

- Prepare your healing chamber
  - This can be a clear plastic sack, tall humidome, or bell jar, etc.
  - Needs to be warm with low light
  - Needs 80-90% humidity while grafts heal

## Procedure

- Prepare a clean area for grafting
  - Preferably indoors
  - No fans or drafts
  - Clean table area with disinfectant wipes
  - Wash hands and use rubber gloves
  - Use new razor blades and clips

## Procedure



Notice angled cut

- Make sure rootstock and scion are clearly labeled!
- Cut rootstock at a 45° angle below cotyledons
  - Throw the top away

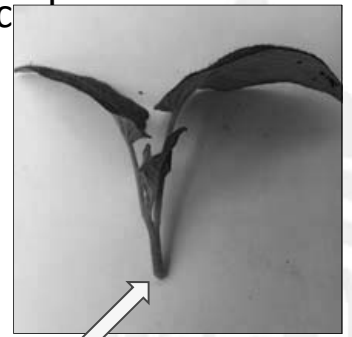
## Procedure

- Place grafting clip halfway onto rootstock



## Procedure

- Cut scion at 45° angle
  - Cut at a place where the stem is the same diameter as your cut rootstock
  - Throw away the rootball

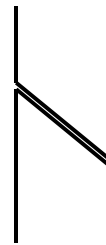


Notice angled cut



- Cut 1 or 2 of the largest leaves off the scion
- Slide the scion in to the grafting clip on the rootstock

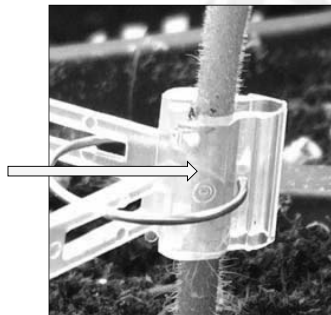
## Procedure



- Make sure the angles from the 2 cut stems match up
  - Any air gaps or dirt between the 2 cut surfaces will cause the graft to fail

## Procedure

- Make sure cut ends line up



## Healed union on tomato



## Procedure

- This is as far as we will practice in this workshop
- If we were growing them on we would
  - Mist the plants lightly
  - Place in healing chamber
  - Keep in very low light for 3 days



## Procedure

- Gradually decrease humidity until you can remove chamber completely without plants wilting
- Don't allow any roots from the scion to get into the soil

## Procedure

- If plants need water during the healing process, water from the bottom
- Remove any suckers that form on the rootstock
- Silicone clips will fall off naturally
  - Spring clips need to be removed when grafts are healed
- Acclimate to outdoor growing conditions

## Procedure

- Plant in the garden at the existing soil line
  - You CANNOT plant grafted vegetables deep and bury the stem
  - This will result in the scion rooting and the effect of the rootstock will be lost

## Choosing a Rootstock

- Some specifically bred hybrid rootstocks are available for tomatoes, watermelon, etc.
  - Seed is expensive
  - 50 cents to \$1.00 per seed
- You may also wish to try your own favorite hybrid tomatoes as rootstocks
  - Catalogs will usually publish the things they are resistant to: V, F1, F2, N, T
  - MUCH cheaper



## GRAFTED MELONS?

Sherman Thomson & James Barnhill

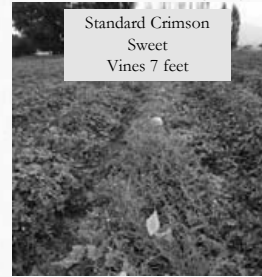


## Sudden Wilt



- Soil and seed born pathogens (thought to be several species of fungi)
- Can survive many years without a host, however rotation has been an important tool
- Plants wilt about the time the fruit is reaching maturity
- Discoloration of vascular tissue
- Squash varieties with some resistance to particular pathogens are available (*Fusarium*)
- **Will melons grafted onto a squash root be resistant?**

July 29, 2014



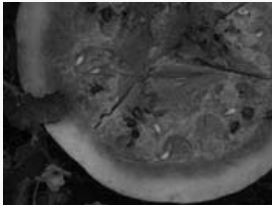
Standard Crimson Sweet  
Vines 7 feet



Grafted Crimson Sweet  
Vines 15 feet

July 29, 2014  
Non-Grafted

Grafted



## Results from Three Replications

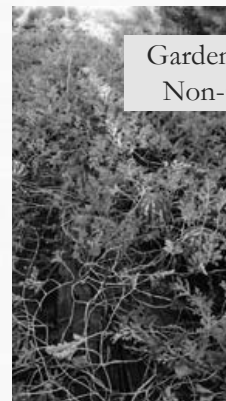
Grafted	Standard	Grafted	Standard
Number melons	Number melons	Size melons	Size melons
16	14	22 cm	20.2 cm
26	18	20.7 cm	18.6 cm
20	12	20.6 cm	21 cm
<b>means</b>			
20.7 melons/37 ft	14.7 melons/37 ft	21.1 cm diameter	20.27 cm diameter

## Grafted Melon Trial Conclusions



- Grafted plants have longer, healthier, more vigorous vines
- Standard non-grafted plants set and ripen earlier
- Grafted plants produce more melons (*21.7 vs 14.7 per 37 foot of row*)
- Grafted plants produce larger melons (*21.1cm vs 20.3cm*)
- Grafted plants died easier, so were thinner, but still out produced Standard melons (*13 of 87 grafted melons died while all 40 standard melons lived*)
- Sudden wilt did not occur, so could not be evaluated

## Garden Crimson Sweet Trial Non-Grafted vs. Grafted



## Garden Comparison

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Upper Ambrosia  
Cantaloupe were grafted

The lower Ambrosia  
Cantaloupes were not  
grafted

