
Tomato Grafting

A photograph of several young tomato seedlings growing in a black plastic nursery tray. The seedlings have green leaves and stems. Some of the stems are wrapped in white tape, likely to protect the graft union. The soil in the tray is dark and moist. The background is slightly blurred, showing more seedlings and a hint of a greenhouse or nursery environment.

Grafting Vegetables?

- Grafting is an ancient practice used to speed fruit production, retain plant traits, or impart a rootstock benefit.
- Vegetable grafting is a more recent application of this technique.
- Horticulturalist in Asia have led the way in grafting vegetables, but it is catching on in many areas.
- Many vegetables are grafted to impart resistance to soil borne disease or tolerance of poor soil conditions.

Benefits of grafting Tomato

- Tolerance of poor soil drainage or flooded soil conditions (“Eggplant roots can survive for days underwater.” AVRDC)
- Soil-borne diseases:
 - Bacterial Wilt
 - Fusarium Wilt
- Resistance to Root-knot nematodes
- Increased plant vigor (vegetative rootstocks)
- Increased fruit production (generative rootstocks)

The Process

1. Sow rootstock and scion seeds (stagger depending on vigor)
2. Prepare healing chamber and grafting materials
3. Graft scions onto rootstocks
4. Place grafted plants in healing chamber-Cover chamber with shade cloth
5. Reduce heavy shade to partial shade after 3-4 days
6. Reduce partial shade to light shade after 2-3 days
7. After 2-3 days, move healed plants to full sun conditions in greenhouse for about 7 days
8. Plants should be ready for field planting

Materials Needed

- Grafting clips or surgical tubing/latex tubing
- Razor blades-double edged thin razor
- Isopropyl alcohol
- Tags and marking pen
- Clean surface in a cool, shaded location for grafting
- Healing chamber
 - Plastic over wire hoops or pvc frame, clips to hold plastic...some setups use a humidifier
 - Clear plastic cups, plastic bottles work for small numbers of plants
- Shade materials to regulate shade over healing chamber

Rootstock and Scion plants

- Tomato is graft compatible with other Solanaceous plants such as eggplant and other Solanaceous spp.
- Commercial rootstock varieties are available-most are hybrids of tomato and wild tomato relatives
- At ECHO we have tried several commercial rootstock cultivars
 - Maxifort
 - Estimado
- AVRDC is researching eggplant as a rootstock as well as night-shade and other Solanaceous plants (*Solanum torvum*)

Timing of Rootstock and Scions

- Testing the germination rate of seeds is important before sowing
- It is also helpful to know the relative vigor of your rootstock and scions
- Some documents recommend sowing rootstocks 2-5 days before scions
- Some recommend planting both on the same day
- ECHO Observations:
 - Maxifort rootstock growth was slower in a deep cell compared to scion growth in plug cells
 - Everglades was slow to germinate
 - Eggplant seed for rootstock should be planted 2 weeks before tomato scions

When to graft

- Seedlings can be grafted after developing 2-3 true leaves
- Stem diameter should be 1.6-1.8 mm at the point of excision
- Smaller plants are more difficult to manipulate and easier to damage
- Small plants also seem to heal very quickly
- Larger plants are more prone to moisture stress that occurs during the grafting process

Grafting Method

- Critical to match up stem diameter!
- Use proper size clip or tubing!

Prepare scion and rootstock:

- Cut scion at 45° angle above cotyledons
- Cut rootstock at 45° angle below cotyledons
- Match cut surfaces and secure with silicone clip





Observations...

- Experiment with timing of sowing scions and rootstocks, record growth rates.
- Scions and rootstocks may grow at roughly the same rate, however, soil volume and watering can affect rate of growth.
- Smaller grafts heal faster, while larger grafted plants may need more time in the indoor healing chamber.

Worth trying...

- Do not water rootstocks 1-2 days before grafting
- Experiment with oxygen tubing and surgical tubing for graft clips
- Graft onto local nightshade species



















Resources:

- [Techniques for Tomato Grafting](#) - Purdue
- [Tomato Grafting: The Process](#) - Kansas State
- [Grafting Tomatoes for Production in the Hot-Wet Season](#) - AVRDC
- [Grafting Sweet Peppers for Production in the Hot-Wet Season](#) - AVRDC