

The Ohio State University - OARDC/OSUE Cleft Graft Quick Guide



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I. Preparation (before sowing seed)

- A. Rootstock and scion varieties must be genetically compatible. Therefore, select varieties proven to be compatible through experience or research.
- B. Note that all the seed that are sown will not result in a grafted plant suitable for field use. Account for four types of plant loss when sowing seed:
 - 1. lack of emergence,
 - 2. seedling quality and survival (some seedlings may perish before grafting or be unsuitable for the process),
 - 3. graft survival (some grafts will be unsuccessful) and
 - 4. graft quality or survival (some grafts are successful but the grafted plant is not suitable for field use).

Anticipate these losses and correct seed sowing rates or the number of plants purchased.

- C. The following facts influence when and how many seed should be sown:
 - 1. seedlings grow at different rates depending on variety,
 - 2. rootstock stem diameter must reach a minimum size to graft and
 - 3. rootstock and scion seedling stem diameters must be similar.

Therefore, early and repeated sowings are recommended.

- D. Assemble the following:
 - 1. labor
 - 2. scion and rootstock plants (some grafters pre-sort plants according to size to save time)
 - 3. new razor blades or scalpel
 - 4. clips
 - 5. sanitation supplies (e.g.. alcohol, Physan 20, detergent, oil burners, Clorox, gloves, bench paper, Green Shield).
- E. Set aside special, clean, climate-controlled spaces to:
 - 1. produce seedlings,
 - 2. assemble grafts and
 - 3. heal and acclimate grafted plants.

II. Sanitation

- A. Minimize the onset of seed-borne disease; use clean, high-quality, treated seed and avoid tobacco use. Seed suppliers and farmers can treat seed using recommended methods involving, for example, hot water and/or chlorine.
- B. Minimize the transmission of disease; keep seedlings in a properly sanitized space and always wash hands before and after touching seedlings to prevent the mechanical spread of pathogens.
- C. Minimize the transmission of disease while grafting; always keep work-spaces clean with detergents and alcohols, wear gloves while grafting and use new or cleaned implements.

III. Grafting Process

- A. Select healthy rootstock and scion seedlings of a similar stem diameter.
- B. Using a new, clean razor blade, decapitate rootstock seedling with a horizontal cut approximately 5 mm below cotyledons.
- C. Bisect the truncated rootstock stem at its widest diameter to a depth of 4 mm.
- D. De-root scion seedlings with a horizontal cut approximately 5 mm above the cotyledons.
- E. Trim the cut surface of the scion seedling to the shape of a wedge containing sides approximately 4 mm long. (In the two cut process two diagonal cuts at a 65 deg angle are made that simultaneously separate the scion from its roots and forms the wedge).
- F. Insert the trimmed scion into the vertical slit of the rootstock.
- G. Secure graft with a clip.

IV. Healing and Acclimation

- A. Place new grafts in a climate controlled chamber with humidity at 90% (maintained by plastic), light reduced by 50 % (maintained by shade cloth) and a temperature range of 65-70 deg F (day) and 60-65 deg F (night) for 5-7 days. Bottom watering is suggested in order to reduce stress on the graft union and limit the chance of decay.
- B. Place week-old grafts in a second post-graft chamber with humidity at 50% (maintained by plastic), light increased by the removal of shade cloth and a temperature range of 65-70 deg F (day) and 60-65 deg F (night) for 5-7 days. Bottom watering is still important to reduce stress on the graft union.
- C. Place two-week-old grafts in an area with humidity, light and temperature ranges recommended for acclimating tomato seedlings prior to planting.

V. Planting

- A. Plant the grafted plant so that the graft union remains at least 2.5 cm (1 in.) above the soil line. A rule of thumb is "don't bury the clip," if it remains. Proper placement of the plant limits root formation from the scion.
- B. Grafts may develop shoots from the roostock and/or roots from the scion. Observe plants after planting and prune, as needed.