



Grafting Tomatoes

Tomato aficionados relish the subtle qualities of their favorite heirloom tomato varieties such as 'Cherokee Purple', 'Red Brandywine', and 'German Red Strawberry'. However, heirloom tomatoes often have lower resistance to soilborne diseases such as bacterial wilt, southern blight, fusarium, and root knot nematodes. Modern tomato breeding programs have increased the tomato plant's tolerance of these diseases, but have also led to changes in flavor and texture of the fruit. Producers have started grafting heirloom tomatoes onto disease resistant rootstocks not only addressing the disease problem, but also increasing yield.

The most common method of tomato grafting is called "Japanese top-grafting" or "tube grafting". This technique is very fast and large numbers of grafted seedlings can be easily managed during the healing process. Each seedling is severed just above the cotyledons with a sanitized single-edged razor blade. The above-ground portion (scion) of the heirloom variety is secured to the root system (rootstock) of the disease-resistant seedling. The attachment is done with small silicon clips which are available from some vegetable seed catalogs.

Grafted transplants are immediately placed in a healing chamber that is kept between 70 and 80 degrees F, at 80 – 95% humidity, having minimal direct sunlight. A simple healing chamber consists of a frame covered by polyethylene sheeting, which keeps the humidity level high during the healing process. The floor of the chamber should hold water. Humidity can be maintained by using a cool-water vaporizer and air exchanged by opening the chamber to outside air twice per day. During the first days after grafting, an opaque covering is used to keep all light out of the chamber.

After the plants no longer show signs of wilting, the opaque covering can be removed. The plants should still not receive any direct sunlight. Irrigation is supplied by flooding the floor of the chamber. The healing process is critical and requires continued attention to heat, light and humidity. Typically, the grafts will require two days at medium light and humidity levels before they can be moved into a low-humidity and high-light environment: preferably a greenhouse. It is still best to water the plant from the bottom to prevent any physical damage to the graft union. Once the grafted transplants have recovered in the greenhouse for five to seven days, they can be transplanted to a larger pot or planted in the field or greenhouse.

When planting the transplants, make sure the graft union is well above the soil line. Many tomato growers hope to give transplants an advantage by burying transplants deep into the ground with the stem bent. This practice is not recommended with grafted transplants as the scion tissue may be exposed to soilborne pathogens below ground. Be sure to remove any suckers that form below the graft union.

Tomato grafting sounds easy, and, in general, it is. Here are a few additional pointers. Sanitize tools and the work area with isopropyl alcohol to minimize disease introduction. Select the heirloom tomato scion based on your personal preferences. Select the rootstock based on the necessary disease resistance and desired vigor. For outdoor tomato production in Arizona, we do not have high incidences of soilborne bacterial and fungal pathogens, but we do have root knot nematodes in some areas. Keep good records so that you can reproduce successes and troubleshoot failures.

Detailed instructions for tomato grafting, including an inexpensive healing chamber are available from the North Carolina State University website at:

<https://cefs.ncsu.edu/wp-content/uploads/Tomato-Grafting-Technique.pdf?x47549>

July 17, 2024

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