

Graft in the Tomato Patch

By Gil Medeiros, Fairfax Master Gardener

This is not a tale of corruption in the garden. It describes an approach you might want to consider if you like growing heirloom tomatoes, but your soil contains pathogens that frustrate your efforts.

Heirloom tomato varieties, such as Brandywine, Cherokee Purple, and Mortgage Lifter, are known for the quality of the fruit they produce, particularly the flavor. This is what makes them popular with gardeners. The problem with heirlooms is that they are prone to soil-borne diseases that inhibit production. The common problems are fusarium wilt, verticillium wilt, bacterial wilt, tomato mosaic virus and root-knot nematodes. These microbes are either taken up by the roots of the tomato plant and cause the plant's demise through clogging of its vascular system, or they directly damage the roots. If water and nutrients cannot be transported from the roots to the leaves, the plant cannot produce sugars through photosynthesis. Eventually, it will wilt and die.



Brandywine tomatoes

photo: Rutgers, New Jersey Agricultural Experiment Station, photo by Peter Nitzsche, County Agricultural Agent



Cherokee Purple tomato

photo: Rutgers, New Jersey Agricultural Experiment Station, photo by Peter Nitzsche, County Agricultural Agent

Modern hybrid tomatoes have been bred for resistance to soil pathogens but often lack the flavor of the heirloom varieties. What if we could combine the best characteristics of the heirlooms – great tasting tomatoes – with the disease resistance of the hybrids? We would really have something, no?

For centuries, growers have grafted the tops of woody plants such as apple trees to vigorous rootstocks. Seldom is an apple produced anywhere in the world that is not from a grafted tree. Early in the 20th century, horticulturalists in Asia began to graft watermelon plants with some success. Over the years, they learned how to graft other cucurbits and eventually solanaceous plants such eggplants, peppers and

tomatoes. In Japan and Korea, this has become a mainstream farming technique, particularly for crops that are grown in greenhouses.

In recent years, grafting vegetable plants has become popular in European commercial horticulture, but it has been slow to take hold in the United States. Do commercial tomato growers have a less severe problem with soil-borne pathogens than farmers in other parts of the world? The answer is no. In the U.S., however, farmers still use methyl bromide gas to combat these diseases. Methyl bromide is a soil fumigant that was banned by international agreement in 2005 because it has a similar effect on the ozone layer as the old Freon that was commonly used in air-conditioning systems up to a few years ago. Our U.S. Environmental

Protection Agency continues to grant agricultural exceptions to the methyl bromide ban because no effective method to control soil pathogens has been developed. Other countries have not been so generous in granting exceptions to their farmers. Therefore, the farmers have embraced the more expensive grafting approach.

Now grafted tomato plants are available to everyone — commercial farmers and backyard gardeners alike — from such vendors as Burpee, Territorial Seeds, and Johnny’s. Expect to pay a whopping \$8 to \$10 per grafted seedling. (That is not a misprint; they are very dear.) With a small investment in tools and a steady hand, you can make the grafted plants yourself. Johnny’s and other sources sell the tools inexpensively. Grafting instructions are widely available; but beginners should expect a high percentage of failures at the outset.



Cutting for grafting

photo: North Carolina State University
Cooperative Extension

Why should you care?

If you have a small garden and cannot do the recommended five-year or three-year crop rotations (See fairfaxgardening.org vegetable gardening), you might be interested in using grafted tomatoes. Although some garden writers such as Barbara Damrosch have written skeptically about grafted tomatoes, some extension services have verified that grafted heirloom tomato plants produce significantly higher yields of tomatoes than the straight heirlooms. Noted heirloom-tomato expert and author Craig LeHoullier calls grafted tomatoes, “promising.” The grafted plants are also better at using water so they do not need to be watered as often. In other cases, depending on the rootstock, they extend the growing season because the roots are not as sensitive to extremes of heat and cold.

Are grafted tomatoes for you?

Grafted tomatoes are in no way a panacea for all tomato problems. Grafted tomato plants remedy nasty problems such as fusarium wilt, verticillium wilt, tomato mosaic virus, root-knot nematodes, and bacterial wilt. However, they are no more resistant to leaf diseases such as septoria leaf spot, early blight, or late blight than regular tomato plants. And, as noted above, they are expensive.

References

- Grafting for Disease Resistance in Heirloom Tomatoes, NC State University Cooperative Extension
- Epic Tomatoes*, by Craig LeHoullier
- In Defense of Grafting*, by Anne Raver, NY Times, May 29, 2013



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An herb that is member of the mint family (*Lamiaceae*), and the *Lavandula* genus, lavender includes more than 450 cultivars. Foliage color ranges from green to gray-green to silver, with some cultivars offering variegated leaves. Flowers come in a spectrum of blue, purple, white and pink. There are dwarf varieties but some lavenders can grow to more than 4 feet tall and wide.

Native to southern Europe and the Mediterranean region, lavender must have full sun and well-drained, alkaline soil, which isn't found naturally in our region. To compensate for poor drainage, some people recommend creating a mound for planting; however, mounding may result in soil washing away and exposing plant roots. An easier method is to dig a good-sized hole and add an ample amount of gravel or an amendment, such as Perma-Till or Vole Bloc, mixed with compost. (Perma-Till and Vole Bloc resemble gravel but are made from volcanic rock and help provide drainage in heavy, clay soils. Both products are available at local nurseries.)

Once established, lavender is drought tolerant and needs very little water. If the plant was started in soil containing organic matter, such as compost, it will not need fertilizer; however, a small bit may help get new plants off to a good start. If you do use fertilizer, choose one that it is low in nitrogen. Too much will result in bushy plants with few flowers. Lavender grows best in soil that has a pH of 6.5–7.5. Plants will benefit from a small amount of lime and compost added in the fall.



Lavender is neither aggressive nor invasive, and once established, is both deer and rabbit resistant. It works well with other drought-tolerant plants and herbs, but needs room to spread. Lavenders reach full size in about five years, so be sure to plan for your plant's mature size.

Besides correct planting, another key for lavender success is proper pruning. Left on its own, lavender will quickly grow into a woody, scraggly plant with very little foliage and few flowers. Lavender is hard to rejuvenate at that stage, so avoid it by pruning the plants vigorously for the first two years. Lavender uses a lot of energy to produce blossoms; therefore, in the first year, prune off

the first flush of flowers. Depending on the cultivar, you may get a second flush, which you should then prune off at the end of the season. In the second year, once the plant breaks dormancy, prune off all new growth. This will encourage more growth and flowers that you can enjoy until the end of the season, at which point you should prune the plant into a tight mound. Starting in the third year, trim the flowers and stems in the fall, cutting the plant back by at least one-third, but making sure to leave at least three sets of leaf nodes on each stem. Keeping plants compact will protect them in colder months and against snow and frost.

Choosing a cultivar will depend on your growing conditions, especially the cold hardiness zone and summer humidity. Because we live in an area with four seasons, hardy lavender such as *Lavandula augustifolia* and *Lavandula x intermedia*, which are the most widely grown, are good choices. Any cultivars within those species will be hardy, but among the types of *L. augustifolia*, 'Buena Vista,' 'Folgate,' 'Imperial Gem,' 'Maillette,' and 'Royal Velvet' are especially able to withstand cold and return consistently. Among the *L. intermedia* types, the commonly seen 'Grosso' and 'Provence' stand up particularly well to our hot, humid summers, and they are highly fragrant, too.

Preferred fragrance may also be a consideration when choosing cultivars. For example, *Lavandula augustifolia* has a sweet, floral scent, while *Lavandula x intermedia* is more woody. Factors that affect

fragrance include soil, moisture levels and plant age. Here is where visiting a local garden or arboretum can be helpful; see what lavenders they plant for hardiness and decide which flowers and fragrances you prefer.

You can propagate lavender by seeds or cutting, but seeds may not come true if the plant has cross-hybridized. You can get a duplicate of the parent plant by rooting hardwood or softwood cuttings.

References and Resources

The Lavender Lover's Handbook, by S.B. Bader

Lavender, Cornell University

Lavender History, Taxonomy, and Production, Joe-Ann McCoy

Lavender: The Grower's Guide, by V. McNaughton