

Bark grafting native persimmon seedlings or... How to spend the summer of a Pandemic!

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September 2020
Pomona Newsletter

I grew up on a southwest Missouri cattle and hay farm and along our fence rows or drainage areas you could find an occasional persimmon tree. In the fall, it was always fun to harvest the ripe orange fruit, eat them on the spot, and see if you could accurately spit and hit your brother or Kansas City cousin with a propelled persimmon seed!

Later, I learned that persimmons (*Diospyros virginiana*) are native trees and the fruit is packed with healthy antioxidants and now fits with the Grow Native/Grow Local food trends. Since it is adapted to our area, many Missouri farmers have wild seedlings scattered on their property. I became interested in their genetics, history, grafting, and breeding enhancements. I then wanted to explore strategies that could promote and advance the growth and use of native American fruit trees like persimmon. I learned that there are already several improved varieties (larger fruit, fewer seeds, tastier) available that do fit our state.

Our current farm is covered with persimmons in the pastures and along creeks and border areas. Rather than mow these down, I have decided to improve (by grafting) the individual trees and manage the persimmon patches. Eventually the fruit can be provided to local farmers markets/wineries and/or scions picked for other growers wanting to improve their stands.

To help with this effort, I applied and was approved for a SARE (Sustainable Agriculture Research & Education) grant titled INCREASING UTILITY OF NATIVE STANDS OF PERSIMMONS. These programs are for farmers/ranchers to explore innovative sustainable agriculture solutions to production or marketing problems. SARE (www.northcentralsare.org) was created in 1988 and is funded by the USDA and the National Institute of Food and Agriculture (NIFA).

My project is addressing both a problem and an opportunity. The opportunity is that persimmons are highly adapted to our state and many landowners already have persimmon seedlings on their property (planted and fertilized by wildlife for free!). The problem is that wild persimmons are inconsistent producers of small, seedy fruit with a short shelf life.

Grafting improved varieties to existing seedlings can improve production because: 1) the fruit will have marketable value, 2) selected scions are all female and will bear fruit, 3) the rootstock is well adapted to the site, and 4) this is a low cost and sustainable method. However, most grafting systems work best on small seedlings. Wild persimmon trees vary in size and to take advantage of the well-established root systems it would be best to also graft to larger sized trees.

Accordingly, my 2020 project was designed to test and demonstrate grafting of large diameter persimmon native seedlings (.5 to 4.0-inch diameter) and measure comparative success. A second objective is to provide a preliminary economic comparison of grafting native seedlings compared to purchased nursery trees.

For these larger persimmons (anything larger than .5 inch) seedlings I used a bark grafting approach.

Photo 1 (G1)

The system I personally utilized is a combination of the arrowhead technique taught by Dr. Bill Reid (retired) at Kansas State University and the method promoted by Oklahoma State Extension.

<https://Northernpecans.blogspot.com>

<https://youtu.be/sqsZcubCnrk>

Both systems were used and demonstrated primarily on pecans, so I made some minor adjustments to persimmons and their characteristic bark. For this article, I will mainly focus on my experiences this spring/summer and not teach the actual grafting techniques. The sites above give detailed directions and demonstrations (from the experts) on how to perform these grafts.

After completing my bark grafting this spring, I would make these general suggestions:

- Invest in a bark lifter or a grafting knife with a built-in bark lifter
- A stool or chair will save your back some strain if you plan to work up a lot of trees
- Do some whittling practicing ahead of time to perfect your scion shaping as fitting to the cut rootstock is critical
- It is important to use whatever methods/material you prefer (aluminum foil, plastic coverings, wax/bark healing compound) to protect the scion and rootstock from drying out after grafting. When you are using the bark approach with larger trees you will be exposing significant plant tissue to the elements
- Tendonitis in your wrist could happen!

I grafted over 150 persimmon native large diameter seedlings this spring between May 5 and June 8. What else was I going to do during the COVID-19 pandemic? Over 80% of those grafts were successful (meaning at least one bud had developed a branch). Of course, I expect some of the weaker ones may not survive the winter—but it is a good start! Here are some pictures:

Photo 2 (G2)

Here is a picture of a large diameter trees I grafted in 2018. This one is better than average but it gives you an idea how quickly you might get to fruit production when you start with a larger tree and root system.

Photo 3 (G3)

I also took ratings early this Fall and the following table is the summary:

| Diameter | # of trees | % success | Vigor rating (1-5) | Growth (inches) |
|------------|------------|-----------|--------------------|-----------------|
| < 1.0 inch | 26 | 81 | 3.7 | 9 |
| 1 - 2 inch | 53 | 85 | 4 | 16 |
| 2- 3 inch | 73 | 83 | 4.2 | 20.7 |
| 3- 4 inch | 27 | 74 | 4.1 | 21.2 |
| > 4 inch | 9 | 58 | 3.7 | 17 |

*Note that %success does include wind breakage during the summer. Actual grafting success is about 5 points higher. The robust scion growth does create opportunity for snapping of long bud growth. I did tie up most (and pruned some), but I did not get to some before wind damage occurred.

My preliminary (will take more readings next spring) observations/conclusions would be:

- Bark grafting will work quite well on 1 to 3.5 inch native American persimmon seedlings
- Because of the large root system, you can expect excellent vigor and significant bud and branch growth from scion in the first year
- Because of the fast growth, fruit production will likely occur in 2-4 years after grafting
- The economical nature of grafting and quick growth and fruit production make this an attractive option to purchased seedlings
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This project has been very enjoyable on many fronts. Spending time outside in the spring and just *being* in the middle of Mother Nature (plants and animals) coming to life was a calming and reassuring way to endure the COVID chaos as the pandemic raged. And, I really believe there are many rural area landowners that could benefit from utilizing existing trees on their property. This work may give persimmon growing a little momentum going forward.

There have also been some side benefits to this project. This spring (to the chagrin of their grandmother) I taught two of my grandchildren to accurately spit persimmon seeds 6 feet or further! That way they can socially distance and still practice a new craft that does not require a handheld device.

Finally, I want to thank and acknowledge others who helped me design the project. These folks provided support, scions, and guidance: Dr. Howard Roberts, Jerry and Barbara Lehman, Dr. Ramon Arancibia, Sara Jean Peters, Andy Thomas, Patrick Byers.