



# Washington Rootstock Field Day

Inland Desert Nursery – Washington State University Viticulture Extension  
*Sponsored by: Western SARE (Sustainable Agriculture Research and Education)*

Friday, July 15  
9:00 AM to 12:00 PM

**Where:** Inland Desert Nursery, 32508 W Kelly Rd, Benton City, WA 99320

## AGENDA

- |                         |   |
|-------------------------|---|
| <b>8:45 – 9:00 AM</b>   | Arrival and Check-in  |
| <b>9:00 – 9:20 AM</b>   | Opening Remarks <ul style="list-style-type: none"><li>• What is a Western SARE Producer Grant? <i>Kevin Judkins</i> (Inland Desert Nursery)</li><li>• Why Rootstock Trials Are Best Done Locally. <i>Michelle Moyer</i> (Washington State University)</li></ul> |
| <b>9:20 – 9:30 AM</b>   | <i>Walk to Rootstock Trial vineyard</i>   |
| <b>9:30 – 10:15 AM</b>  | What it Took to Establish a Rootstock Trial. Tips, Tricks, and Things Learned. <i>Kevin Judkins</i>   |
| <b>10:15 – 10:45 AM</b> | <i>Walk to Registration; Refreshment Break (Sponsored by Wilbur Ellis)</i>  |
| <b>10:45 – 11:15 AM</b> | Research or Demonstration Trial – Which Is Best For You? <i>Michelle Moyer</i>  |
| <b>11:15 – 12:00 PM</b> | <b>Open Time for Questions on Rootstocks</b>  |

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## Conducting a Grape Rootstock Trial?

### *Things to observe*

There are many observations that one can make when conducting a rootstock trial. The key is to focus on observations (collecting data) that reflect the vine properties that are most important to you. Are you interested in the timing of budbreak because you are concerned about spring frosts? Are you interested in the timing of ripening? Do you want higher yields, or greater drought tolerance? Are you interested in root-borne pest management? Ultimately, the best observations are those that actually are made, so keep your rootstock trial simple.

### **1<sup>st</sup> year (Planting)**

Information you may wish to record in the first year includes: (1) Date of planting; and (2) Initial growth differences in the scion (if there are any). Given that vine establishment can be chaotic, most observations should be delayed until after the first winter (i.e., starting at 2<sup>nd</sup> leaf).

### **Spring - Beginning of 2<sup>nd</sup> year**

**Vine survival.** This is a good observation to make after the first winter. It is a simple count: which vines survived and which did not. If only doing this once, we recommend recording the survival of all the vines planted in the rootstock evaluation block. This might include differentiating between whole vine survival, or rootstock vs. scion survival.

### **Spring to Summer - 2<sup>nd</sup> year**

**Scion phenology.** Tracking the vine's development through the growing season can help answer questions on whether the rootstock is imparting attributes like early/late budbreak, or advanced/delayed fruit ripening. There are two ways to collect this information: either scout on a single day and record the different stages of development that you see (repeat this during key times), or scout more regularly during a key phenological stage, and record the date that a particularly important stage of development (budbreak, bloom, etc) is observed. The former approach tends to be more time-efficient, whereas the latter makes it easier to see whether a rootstock is fundamentally changing the timing of vine development. For the observations listed below, we recommend making them on at least 3 vines per rootstock, and on at least 10 buds / clusters / shoots per vine, unless otherwise noted.

**Canopy.** Common phenological points include budbreak (when 50% of the buds have visible leaf tips) and cane browning (periderm formation) in the fall. Early in vineyard establishment, it may be helpful to record things like shoot length, or number of vines that made it to the training wire, as this can be interpreted as early-establishment vine vigor.

**Fruit.** Common fruit phenology includes bloom (50% of the clusters at 50% cap fall), fruit set (>2 mm berries), bunch closure, and véraison (50% of the clusters at 50% softening / color change).

**Plant parasitic nematode management.** To monitor for effects of rootstocks on plant parasitic nematodes, collect a fall soil sample from around the root system of each rootstock. Fall (September – October) is the best time to sample for nematodes of interest in Washington. Sampling strategies for plant-parasitic nematodes can be tricky. Please consult WSU Viticulture Extension on the most appropriate sampling plan / number of vines that need to be sampled.



### **3<sup>rd</sup> year and Beyond**

**Scion cold damage.** After a winter cold event, recording the number of primary buds that are damaged in a block, by rootstock, can help you determine whether a rootstock is influencing the scion's cold acclimation. Rootstocks typically do not influence maximum mid-winter cold hardiness but can influence the rate at which vines acclimate in the fall and deacclimate in the spring. You can also simply record "scion survival" in the spring.

**Scion phenology.** See above.

**Scion nutrient status.** Rootstocks can alter the water and nutrient uptake of the vine. Tissue tests for nutrient status can help you tailor a nutrient program to meet the needs of vines grown on different rootstocks. Within the season, make observations once (either at bloom or véraison), and while you can take measurements annually, every other year is effective for tracking long-term trends. It is advisable to wait until the vineyard is in the 3<sup>rd</sup> leaf to make these observations. This ensures that nutrient issues that might be observed are truly related to the rootstock, and not related to issues in vineyard establishment or poor graft unions.

**Sucker development.** Sucker removal from the base of rootstocks can be labor intensive. Recording which rootstocks produce prolific suckers might inform your selection of rootstock in the future. Observations only need to be made once per season and can be a simple count of rootstocks that are producing suckers, or a count plus a categorization of the growth of those suckers (short, medium, long). While sucker observations can occur in the 2<sup>nd</sup> year, most newly-planted grafted vines won't produce a lot of suckers until the 3<sup>rd</sup> year or beyond.

**Fruit quality.** Once the vines produce fruit, you can assess, at harvest, potential differences in fruit quality through either basic (Brix, TA, pH) or advanced (phenolics, tannins, aromatics, color) measurements. We recommend collecting observations from a combined 10 clusters per vine, on a minimum of 3 vines per rootstock.

**Wine quality.** Winemaking to assess rootstock effects is helpful with the caveat that the wine must be made from fruit from the same vineyard (i.e., you cannot compare rootstock effects if the rootstocks are grown at different locations). Winemaking must also be standardized (i.e., no adjustments to account for potential basic fruit chemistry metrics).

**Plant parasitic nematode management.** See above.

**Additional resources** (available at: <https://pubs.extension.wsu.edu>):

- Field Guide for Integrated Pest Management in Pacific Northwest Vineyards – 2<sup>nd</sup> Edition (PNW644)
- Assessing and Managing Cold Damage in Washington Vineyards (EM042e)
- Vineyard Nutrient Management in Washington State (EM111e)
- Annual Pest Management Guide for Grapes in Washington (EB0762)
- On-Farm Vineyard Trials: A Grower's Guide (EM098e)

# Tips for Planting Grafted Grapevines in Washington

## Introduction

Historically, the majority of vineyards in Washington State have been planted to own-rooted, non-grafted grapevines. There are a few key differences in how to approach receiving, and planting, non-grafted grapevines and grafted grapevines. As Washington State begins to plant more vineyards with grafted planting stock, these differences need to be carefully considered in order for that new vineyard establishment to be successful.

## Before You Plant

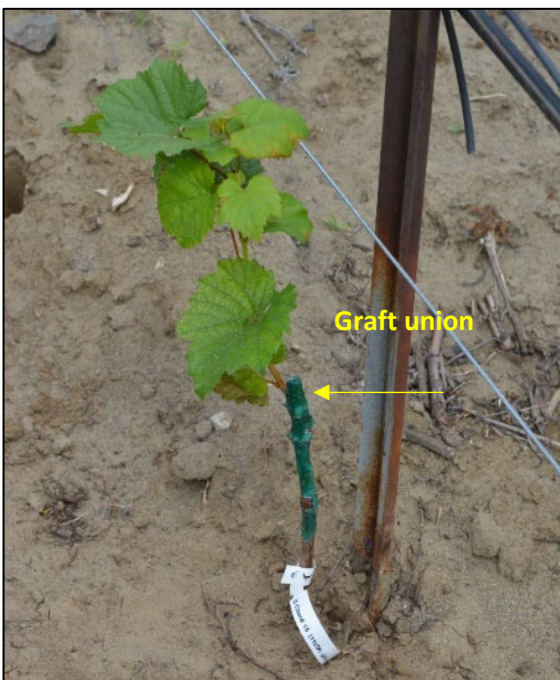
**Plan your planting timeline.** Vines need enough time to grow and develop a root system for the winter. Avoid planting grafted materials – either dormant or green-growing plugs, after 1 July in Washington. Not only will they not have enough time in the ground to sufficiently develop, the typical July and August heat spikes in eastern Washington can be detrimental to young vines. A late delivery might also be indicative of a delayed or poor grafting process. If plants are delayed in delivery for planting, you may consider holding those vines to receive as dormant plant material the following spring.

**Quality control before you plant.** Whether the vines are green-growing plugs / potted vines, or dormant bareroot, check the quality of the graft union at the time of delivery by placing slight pressure on it. A good graft union should be solid, and not break. If you have

extra vines, it is also advisable to cut through the graft union to ensure a healthy connection is made (**Figure 1**).



**Figure 1** - Necrosis around the graft union could mean that the graft union will fail if put under physical (wind) or drought stress.



**Figure 2** - Ensure graft unions are above the soil line, otherwise the scion will root!

## During Planting

**Graft unions should be above the soil line.** Plant vines with the graft union well above the soil line (**Figure 2**). If you are planting green-growing plugs, the top of the soil line in those plugs is a good height to consider for the top of your soil like on the graft. For dormant rooted cuttings, consider having the soil line 1 inch above the root crown, provided the graft union is still exposed. If you plant too deep, you risk having the scion root, which negates the positive effects of having a rootstock.

**Do not remove grafting wax.** While it might be tempting to peel of graft union wax, avoid that temptation. The wax protects that union while it is still healing – it will naturally slough off in the vineyard.

**Keep roots intact (green-growing plug / potted vines).**

While it might be tempting to loosen roots in plugs or coming out of pots, it can be very disruptive to that young root system and could reduce planting success. If you are concerned about the root's ability to push through the fabric of the plug, you can score the plug prior to planting.

**Shorten roots if they are too long (dormant, bare-rooted vines).**

If you are fortunate to receive dormant bare-rooted vines with an extensive root system, you might wish to shorten that system prior to planting, to avoid J-root (Figure 3). This can be done by chopping the roots to approximately 8 to 12 inches in length and ensuring that once the dormant cuttings are placed into a planting hole, they are gently pulled upwards to ensure roots are straight.



**Figure 3** - J-rooting is common planting problem with dormant bare-rooted vines.

## After You Plant

**Keep those graft unions exposed.** Just like at the time of planting, it is important to keep the graft union exposed during the growing season. This is especially true if you practice routine hilling for winter cold damage mitigation, or routine in-season hilling or disking for weed control. Make sure your in-row hills (or berms) are not slowly creeping up in height over time.

**Water those vines.** Making sure newly-planted vines are well-watered is important in any vineyard establishment scenario. Grafted vines, however, might not have a fully-connected vascular system, so it is very important they have access to ample water while that connection is healing.

**Nutrient management will be different.** While own-rooted grapevines can do well in eastern Washington alkaline soils, most rootstocks are better-suited for more acidic soils. This means that their interaction with the soil, and ability to take up nutrients in an alkaline soil environment, will be different than what you are used to. Keep this in mind when scouting for post-planting nutrient deficiencies. You might consider using acid forms of fertilizers when available, such as products that are formulated with additional sulfur, or modifying the soil pH through drip-applied soil acidifiers.

## Conclusion

Establishing a vineyard with vines grafted on a rootstock has a few key differences than establishing an own-rooted vineyard. Most of these differences are related to making sure the graft union is functional and the vines have limited stressors at the time of planting. Keeping these differences in mind should help optimize establishment of your grafted vines.

## Resources

Stafne, E. Planting Grapevines. eXtension.org. Online: <https://grapes.extension.org/planting-grapevines/>