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## PROJECT BACKGROUND

Much of what we know about viticulture and wine making tactics in Washington is based on our knowledge of growing own-rooted vines. While this makes Washington unique, it also makes us vulnerable - there is a reason why the use of rootstocks is the global norm.

Non-*vinifera* rootstocks have many positive attributes, and over the last 100+ years, they have been selected for their ability to overcome multiple biotic (phylloxera, nematodes) and abiotic (environmental; e.g., salt, pH, drought) stresses. Regions around the world have guidelines for which rootstocks work best for their area, as they have had decades of practice to get things right.

Washington does not have the same level of historical rootstock information - but there is no time like the present to get started collecting it!



The experimental rootstock block was established in summer 2021 at Inland Desert Nursery in Benton City, Washington. The rootstocks used in the trial are listed in Table 1 below. The scion is *Vitis vinifera* 'Chardonnay 15'.

## ROOTSTOCKS SELECTED

Rootstock trials are expensive, especially if you do them right. The rootstocks that made the final cut for the trial (Table 1), are all easily propagated, and readily available. Many also have a number of published trials indicating their performance in other regions. This will allow us to compare our results to those existing trials, to see where things are similar, and where things may differ specifically to Washington. That information will help us determine where we might be able to source information from (in the absence of Washington-specific data), as well as better focus on rootstock selections that might prove useful in the state.

**Table 1 - Rootstocks selected for the trial.** While phylloxera resistance was the main selection criteria, ease of propagation and general use rates were also considered in the selection process.

Rootstock	Selection Reasoning	Other Attributes*
<b>3309 Couderc</b> ( <i>riparia</i> x <i>rupestris</i> )	Low to moderate nematode resistance. Reported crown gall resistance.	May be sensitive to water stress. Good uptake of magnesium, potentially poor uptake of potassium. Low vigor.
<b>101-14 MGT</b> ( <i>riparia</i> x <i>rupestris</i> )	Moderate to high nematode resistance. Reported crown gall resistance.	Tends to low vigor and earlier ripening. Lower drought resistance. Medium salinity tolerance. (Not planted until 2022).
<b>1103 Paulsen</b> ( <i>berlandieri</i> x <i>rupestris</i> )	Susceptible to dagger nematode, mod. to high root-knot nematode resistance.	Tends to high vigor, but is relatively drought resistant. Medium salinity tolerance. Tends for lower potassium and zinc absorption.
<b>Schwarzman</b> ( <i>riparia</i> x <i>rupestris</i> )	Moderate to high nematode resistance	Moderate drought tolerance, and moderate to high salt tolerance. Readily uptakes potassium. Typically prefers deeper soils.
<b>S04 (Oppenheim #4)</b> ( <i>berlandieri</i> x <i>riparia</i> )	Moderate to high nematode resistance.	Low to moderate drought tolerance. Lower vigor. Tends to readily absorb potassium.
<b>Own-Rooted</b> ( <i>vinifera</i> )	WA-industry standard. Susceptible to nematodes and phylloxera.	Low salinity tolerance. Adapted to neutral to more alkaline soils.

\*Rootstock Resources: (1) <http://iv.ucdavis.edu/files/24347.pdf> (2) <https://www.inlanddesert.com/category/rootstock/> (3) <http://www.novavine.com/media/11790/Rootstock-Chart-.pdf> (4) <https://www.sunridgenurseries.com/index.php/clonal-selections/rootstock-chart>

### Interested in your own on-farm rootstock trial?

We can help! As a part of this trial, we will be conducting workshops in 2022 and 2023, which include how to plan for your own on farm research or demonstration trial. Check out the Washington State University Events webpage in the spring of 2022 for more details as to when these workshops will occur.

<https://wine.wsu.edu/events/>

# Change can be good.

Rootstocks not only offer protection from phylloxera and nematodes, they provide useful viticultural tools to maximize grape quality.

## PROJECT RESEARCH FOCUS

Like any good research field trial, this one is replicated. Whole rows (approx. 40 vines) are dedicated to each rootstock, grafted to *V. vinifera* 'Chardonnay 15'. The rootstocks are replicated 5 times across the site. Over the duration of the project (2021-2024), we plan to collect the following data on vine growth and development:

- 1. Vine survival** after planting, and again in the spring of 2022, 2023, and 2024 to see if there are any particular rootstocks that may be less suited for our colder winters.
- Timing of key **phenological dates**, such as budbreak, bloom, and onset of periderm formation to determine if the rootstocks enhance or slow-down vine development. Timing of fall lignification will also be observed.
- 3. Foliar nutrient status** (late summer) to understand nutrient uptake differences
- Dormant cane diameters and (when available) pruning weights to determine compare rootstock-induced **vigor differences**.
- Late fall and late winter **bud cold hardiness** to determine if there are any rootstock-associated determinant effects.
- In 2023, we will also collect fruit to see if rootstock has an influence on basic **yield components** and **fruit composition** at harvest.

## PROJECT EXTENSION PROGRAMMING

### Field Days

In the summers of 2022 and 2023, we will hold field day tours of the rootstock trial at Inland Desert Nursery.

These field days will allow participants to directly see how the vines are doing, and ask their questions regarding establishing and managing a vineyard grown on rootstock.



### Workshops

We plan to host at least 2 workshops where participants will learn to design their own on farm trials.

Workshops will explain the difference is between research and demonstration trials and cover how to select rootstocks. Participants will also design an actual trial for their farm.



## ADDITIONAL RESOURCES

- Phylloxera - Washington State University Webpage, including rootstock resources: <https://wine.wsu.edu/extension/grapes-vineyards/grape-pests/phylloxera/>
- Western SARE Farmer/Rancher Grants: <https://western.sare.org/grants/farmer-rancher/>

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