



Red Alder Clones

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Red Alder Clones

Background

- What are clones?
Genetically identical organisms (trees)
- Why use clones in forestry?
Trees selected for superior traits – reproduce performance (see agricultural crops like grapes, apples, etc.)
- How are red alder clones made?
Rooted cuttings (& grafting)
- Who selected the trees to be worth cloning due to superior performance?
Weyerhaeuser (WeyCo) in 1990s and 2000s





WASHINGTON STATE UNIVERSITY

How We Make PARENT PLANTS

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Small axillary buds are forced to grow on the stems of five to eight year old selected trees—or are forced on older stems.



Initially we tried rooting small shoots from the branches by tissue culture, but found that rooting as micro-cuttings was easier and faster.



The rooted cuttings are then potted out and grown for a year to get the stems to an adequate girth to support "hedgehogging".



The best parent plant has multiple primary and secondary branches, producing many tertiary and quaternary branches. We don't take cuttings off other branches as the rooting drops significantly after quaternary branches.



We remove the top of the plant and allow multiple shoots to form. These are pruned back further to form more shoots until the top looks like a "hedgehog". We then take cuttings from the multiple secondary and tertiary branches.

The cuttings are taken and must be over 2 mm in stem diameter and have the leaves cut to a spear shape leaving as much mid rib as possible with as few cuts as possible.



The cutting is dipped in rooting powder and stuck about 3/4-inch deep in the media. It is misted for four to six weeks with the misting time slowly being reduced. It is transplanted once rooted.



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Background (continued)

- Washington Hardwoods Commission (WHC) inherited rights to clonal material from WeyCo via Washington State University
- Hardwood Silviculture Coop (HSC) has a formal agreement with WHC to work with the clonal material and its off-spring
- HSC established a clone bank at ODF Schroeder seed orchard complex
- HSC established a test site in NW Oregon (near Clatskanie) six years ago
- Test site measured at age 5 (winter 2024/25)



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What's a Clone Bank (clonal archive)?

A living repository where genetically identical copies of specific trees are planted and maintained in one location. Unlike traditional seed banks that freeze and store seeds, a clone bank consists of living, growing plants.



Red Alder Clonal Test Site



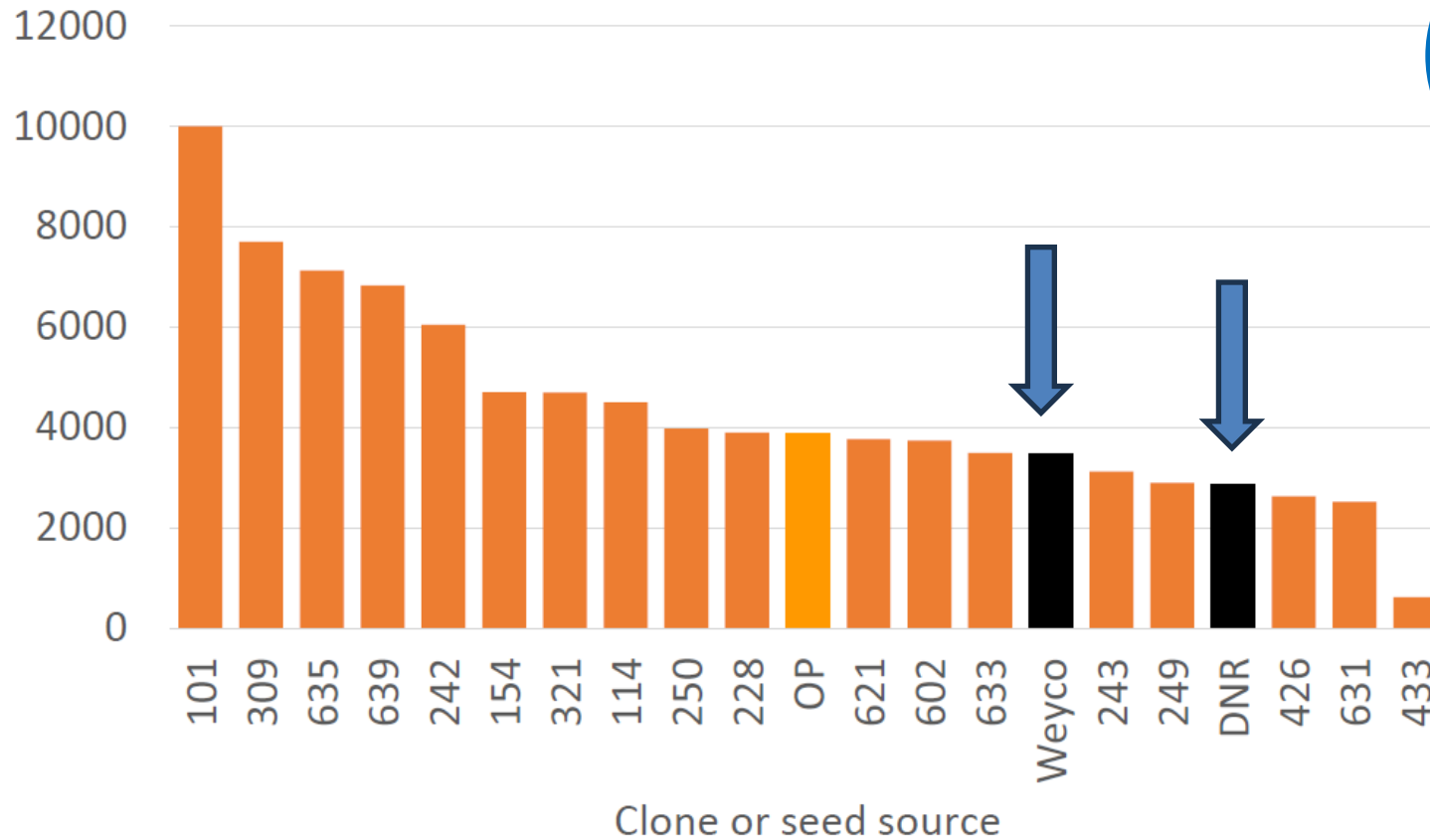
OSU property west of Clatskanie, OR
elevation 830-1070'; east aspect for red alder;
south aspect for Douglas-fir
Photos: Age 5



Red Alder Clonal Test Site



Red alder clone trial stem volume year 5 (cubic cm)



Clone	Stem Volume	Volume vs woods run
101	9,994	315%
309	7,696	242%
635	7,123	224%
639	6,822	215%
242	6,044	190%
321	4,699	148%
154	4,692	148%
114	4,497	142%
250	3,969	125%
228	3,897	123%
OP	3,864	122%
602	3,763	119%
621	3,738	118%
633	3,484	110%
Weyco	3,459	109%
249	3,119	98%
DNR	2,890	91%
243	2,849	90%
426	2,626	83%
631	2,516	79%
433	613	19%



Red Alder Clone Bank

- Collected OP cones from 9 clones in 2025
- Pruned clones back in January 2026
- Goal is to maintain tree height 12-14'



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Next Steps (HSC)

- Locate missing clones and add to clone bank
- Collect additional cones from clone bank (missing clones)
- Re-measure clonal test site at age 10 (2029)

Potential Future Projects

- Test OP seed from clones in small plots across WA and NW OR
- Make specific crosses between clones
- Establish a secondary clone bank in WA

Questions

