A review of a successful seed orchard at Cherrylane

March 28, 2017
Moscow, Idaho

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My Background:

- Graduate of Washington State University, BS Forest Management
- Employed by USFS White River Ranger District during college
- Hired as Assistant Seedling Production Supervisor for Potlatch Greenhouse in 1990
- Promoted to Seedling Production Supervisor in 1993
- Potlatch Greenhouse closed January 2009
- Promoted to Silviculturist in 2010
- Current responsibilities include seed and seedling procurement and seed orchard management
Outline:

• Benefits
• Location
• Overview
• Species
• Management
Benefits of Cherrylane Seed Orchard

• Improved seed with high genetic gain
• Steady supply of seed
• Families cover Potlatch Ownership
• One cone collection site
• Sale of surplus seed
Cherrylane Seed Orchard.....Why There??

- Located close to Lewiston
- Easy access
- Flat
- Well drained soil
- Water
- Long growing season
- No off site pollen contamination (except for Ponderosa Pine)
- Minimal chance of conifer disease
Overview of Cherrylane Seed Orchard

• Approximately 40 acres, not all available for seed production

• Seven species present on site
  • Western White Pine
  • Douglas Fir
  • Western Larch
  • Western Red Cedar
  • Lodgepole Pine
  • Ponderosa Pine
  • Grand Fir
Western White Pine

- Orchard originally started as Western White Pine Seed Orchard
- Focused on different resistance than Bingham Seed Orchard
- WWP seed from CLSO was operationally sown and planted on Potlatch land from 1991 to 1995. CLSO plantings were only 10-20% of total WWP plantings during those years.
- Original WWP Orchard removed in 1999
- Current WWP Block represents 3 of 4 mechanisms for resistance to WWP Blister Rust:
  - Bark Reaction
  - Short Shoot
  - Needle Shed
Douglas fir

- A real life example of Tree Improvement in action
- 1979-1980, Parent tree selection
- 1980-1981, Seed collected from parents
- 1982-1984, Progeny tests planted
- 1989-1992, Grafted top 30% of parents into Cherrylane Seed Orchard
- 1997, First significant cone crop
Douglas fir – Continued…..

• Seven, overlapping elevation zones
• Elevation from 2,300 feet to 4,700 feet
• Cones collected and stored by Family
• Seed blended annually to cover sowing needs
• Seed production varies by year and zone, but ranges from 0 lbs to over 100 lbs
• Currently meeting all Potlatch needs for elevation zones
Woods Run vs Cherrylane Seed Orchard Douglas Fir Seedlings

- Woods Run DF
- CLSO DF
Western Larch

- Four Western Larch blocks currently at CLSO
- Block 1, earliest block, was established in 1993
- Two elevation bands, Low and High
- All Families collected and stored as one collection per year
- Seed yield is variable. Have tried several methods to stimulate flower production, but no home run
- Not currently meeting Potlatch seed needs
Western Red Cedar

- Block 1 established in 2000
- Block 2 established in 2013
- Represents all elevation zones to 5,000 feet
- Cones are picked and stored as one seed-lot each year
- Supplying all of Potlatch’s WRC seed needs
Lodgepole Pine

- Established in 1996
- 4 elevation zones
- Small collections of seed have been blended and used for operational planting
- Not currently meeting Potlatch’s annual seed needs
Ponderosa Pine

- Established in 1997
- Four elevation zones
- No significant cone crop to date
Grand Fir

• Established in 2014
• No grafts, all from seedlings
Seed Orchard Management

- Potlatch practices intensive management of Cherrylane Seed Orchard for tree health and seed production. Including:
  - Irrigation
  - Fertilization
  - Control of cone and seed insects
  - Vegetation control
Seed Orchard Management – continued…

• Species composition of Orchard changes over time to meet management objectives
  • For example:
% Seedlings Planted at 10 Year Intervals

- Douglas Fir
- Ponderosa Pine
- Western White Pine
- Western Larch

Intermountain Forestry Cooperative, March 28, 2017
Seed Orchard Management – continued…

• Seed Orchard Managers have to predict species specific seed needs based on current and future management plans

• New Seed Orchard blocks take 5-10 years to develop and start producing seed (if genetic material is available)

• Space is limited, so Orchard composition, over time will change.
**Seed Orchard Management – continued…**

- Future direction for Cherrylane Seed Orchard:
  - Continue management and seed production for:
    - Douglas Fir
    - Western Larch
    - Western Red Cedar
  - Monitor, evaluate and improve seed production in:
    - Lodgepole Pine
    - Ponderosa Pine
    - Grand Fir
  - Maintain Gene Bank and WWP Block
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“Whooooo” has questions?