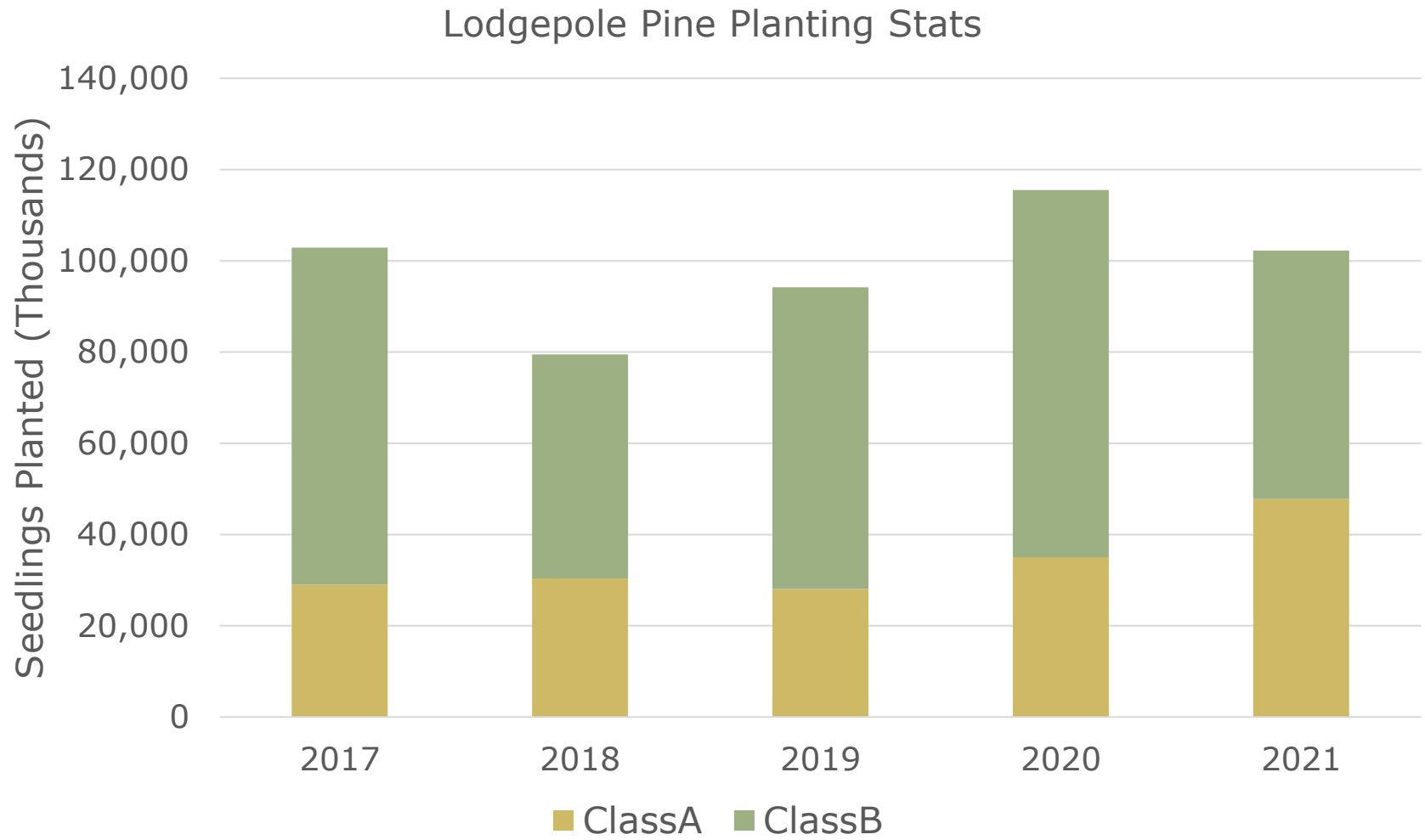


Lodgepole Pine

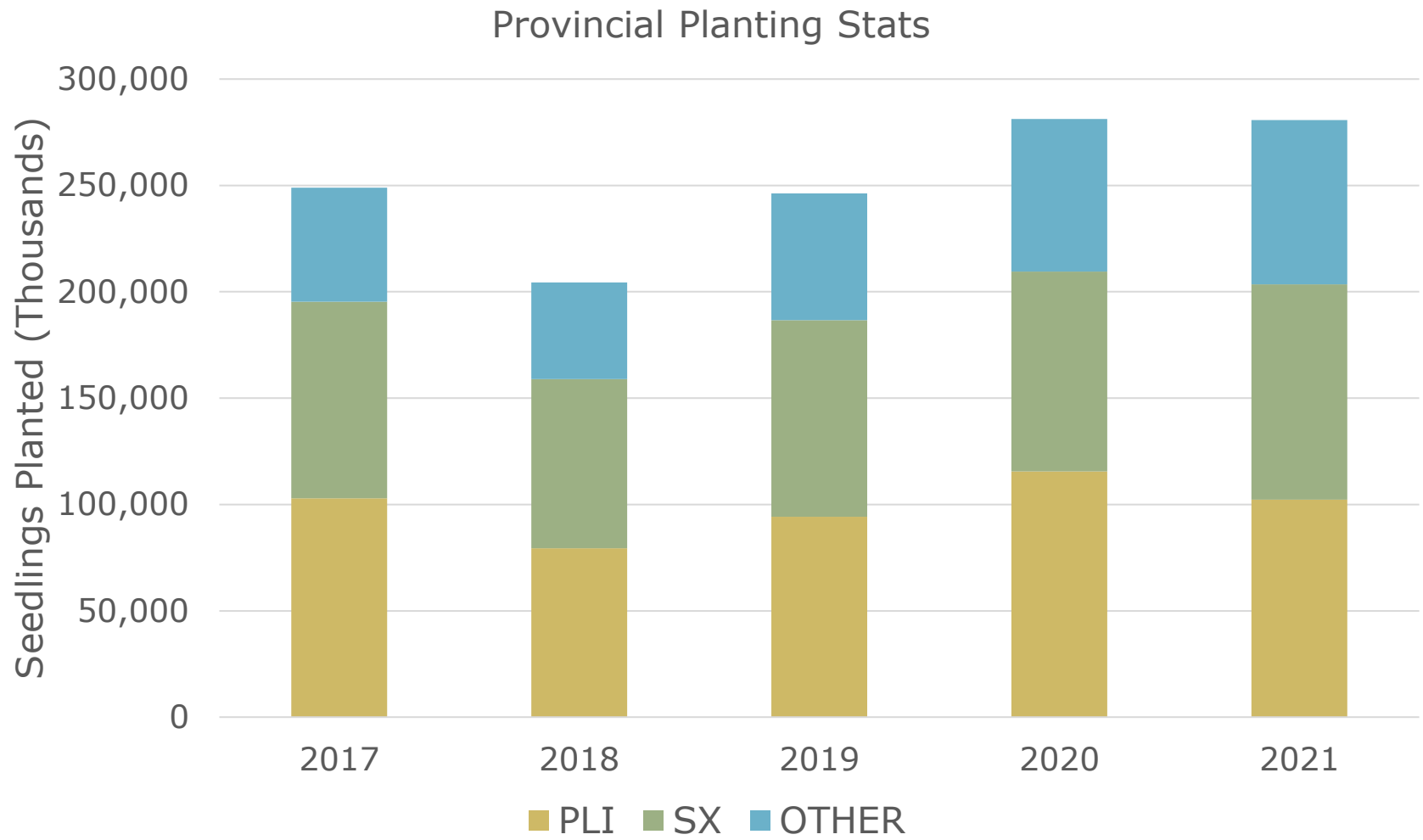


Ministry of
Forests, Lands and
Natural Resource Operations

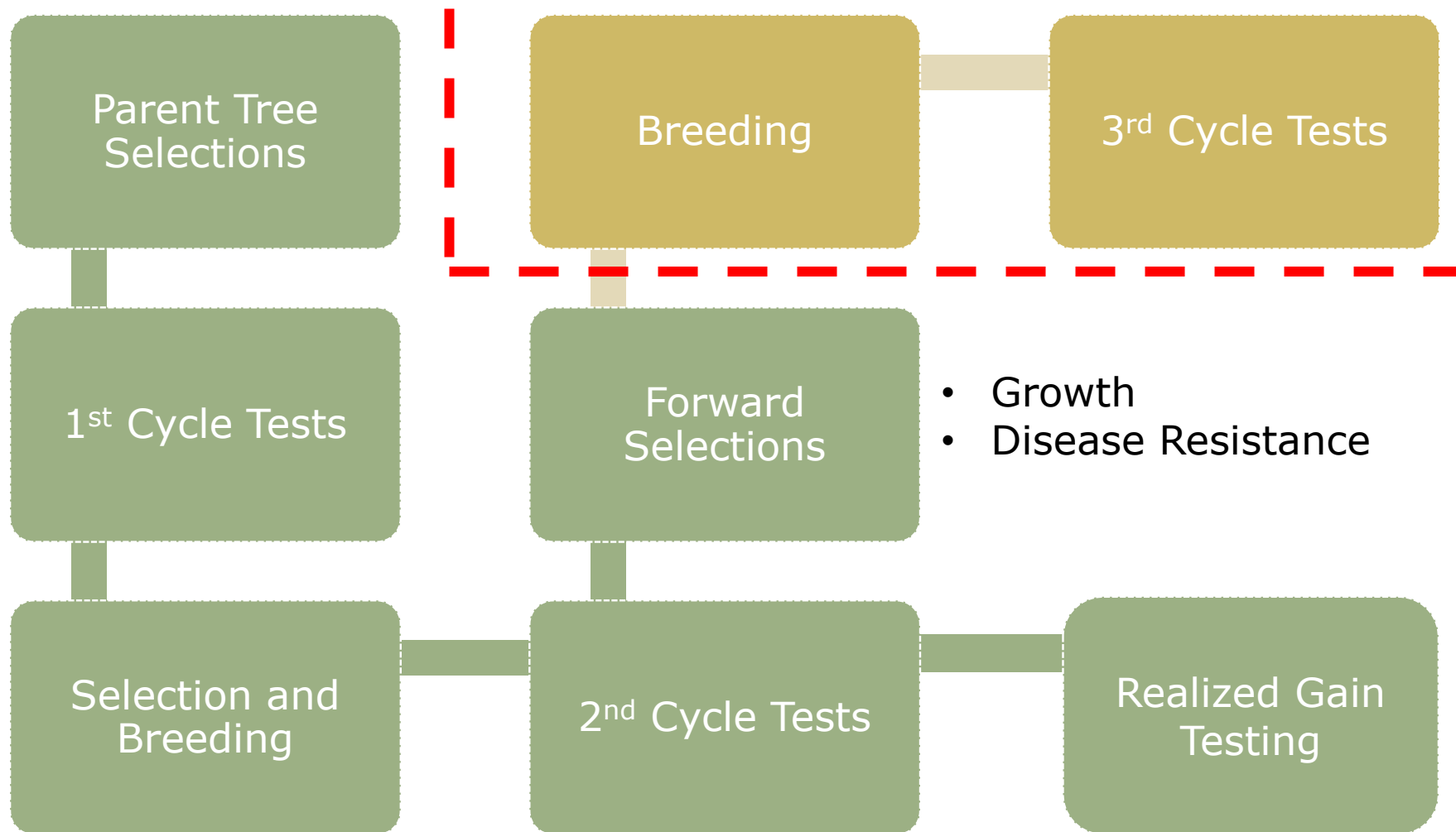
Planting Stats



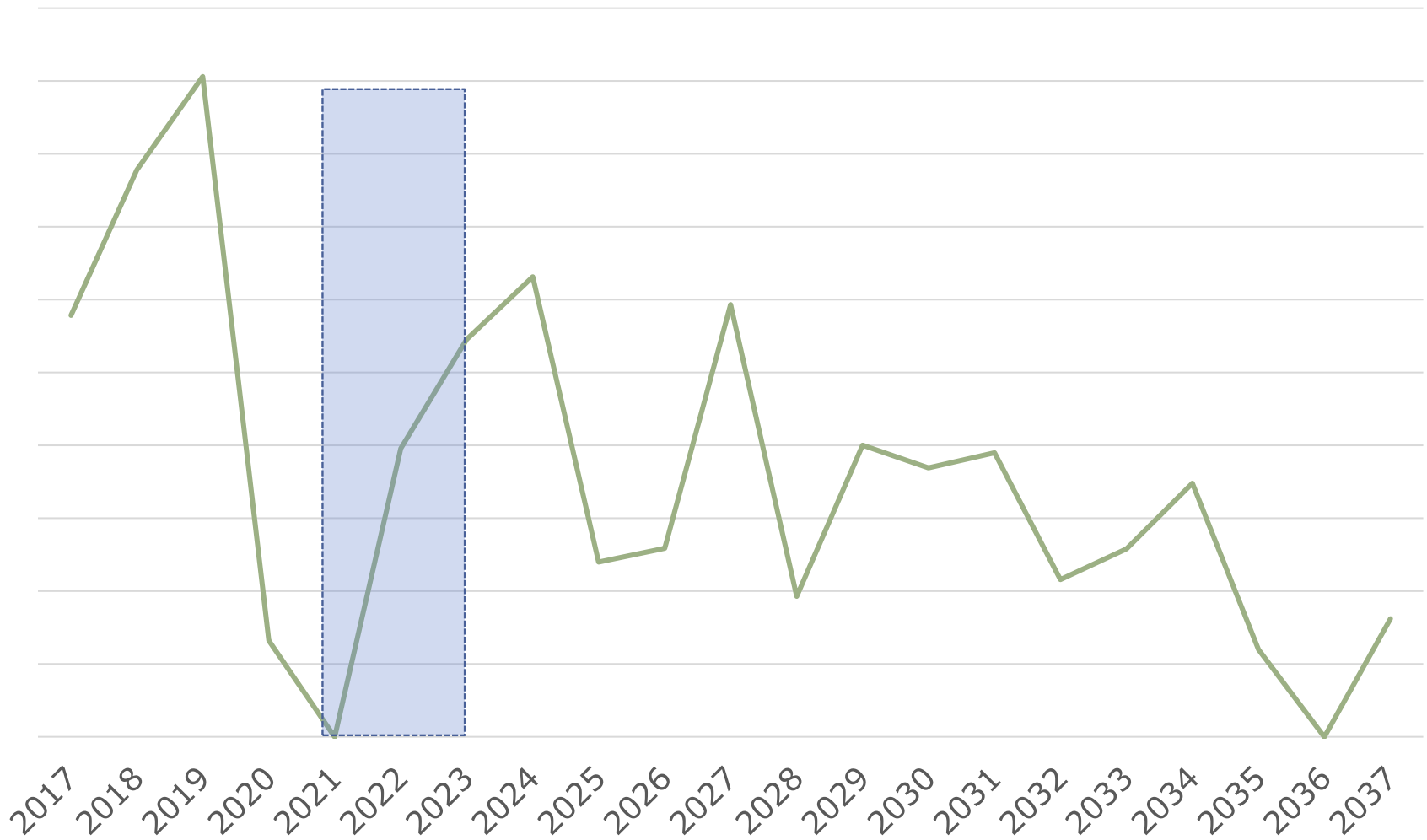
Planting Stats



Pli Program Overview



Pli Cost Trends 2017 to 2037



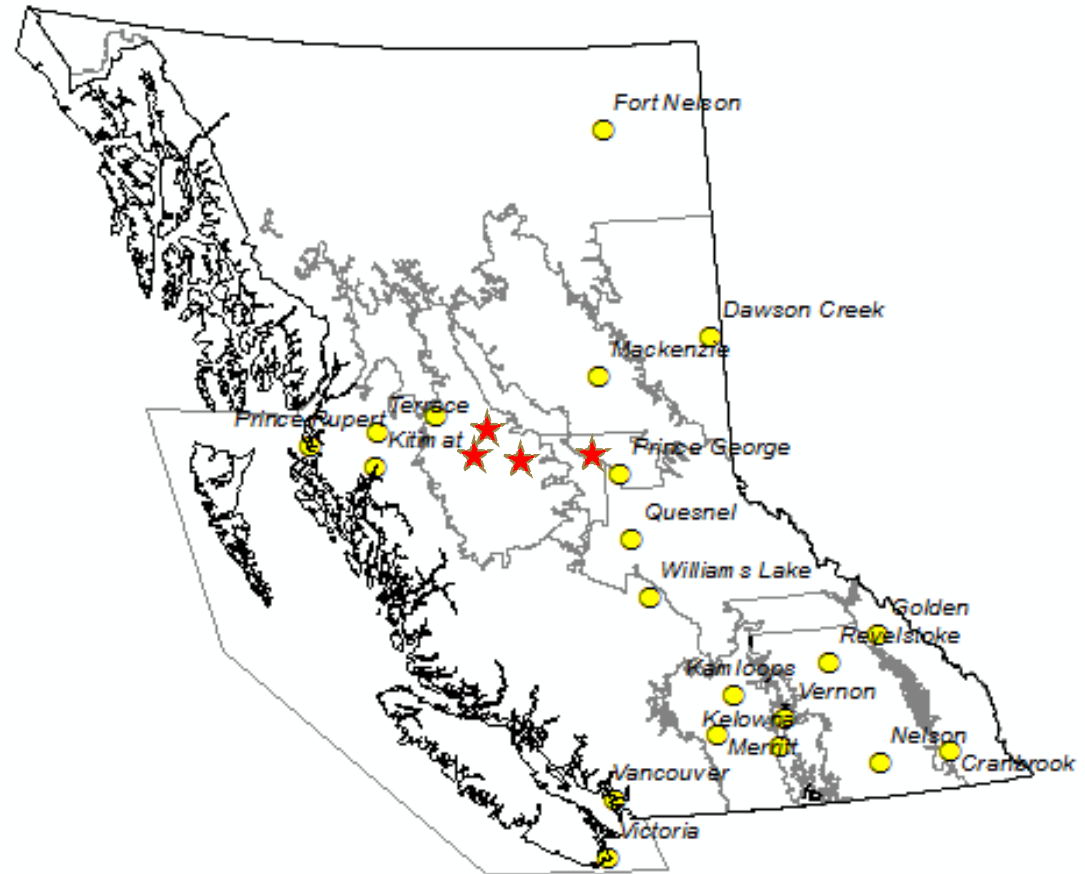
Comandra Resistance Orchard

2022: Comandra Resistance Orchard Project



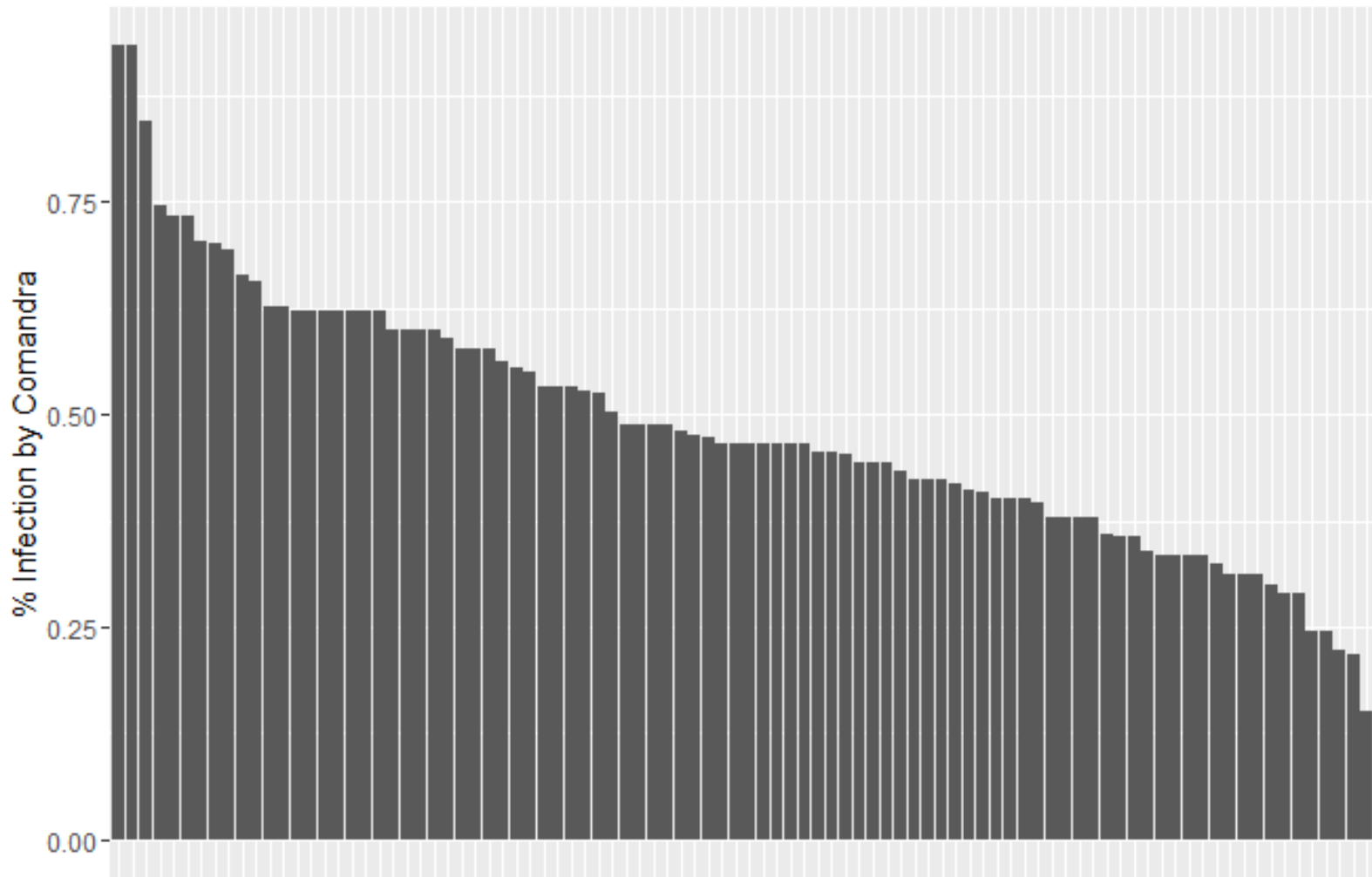
Comandra Resistance Orchard

- Four sites
- 135 parent trees
- 28,000 trees
- Acknowledgment:
 - Data collection by Richard Reich and his students



Comandra Resistance Orchard

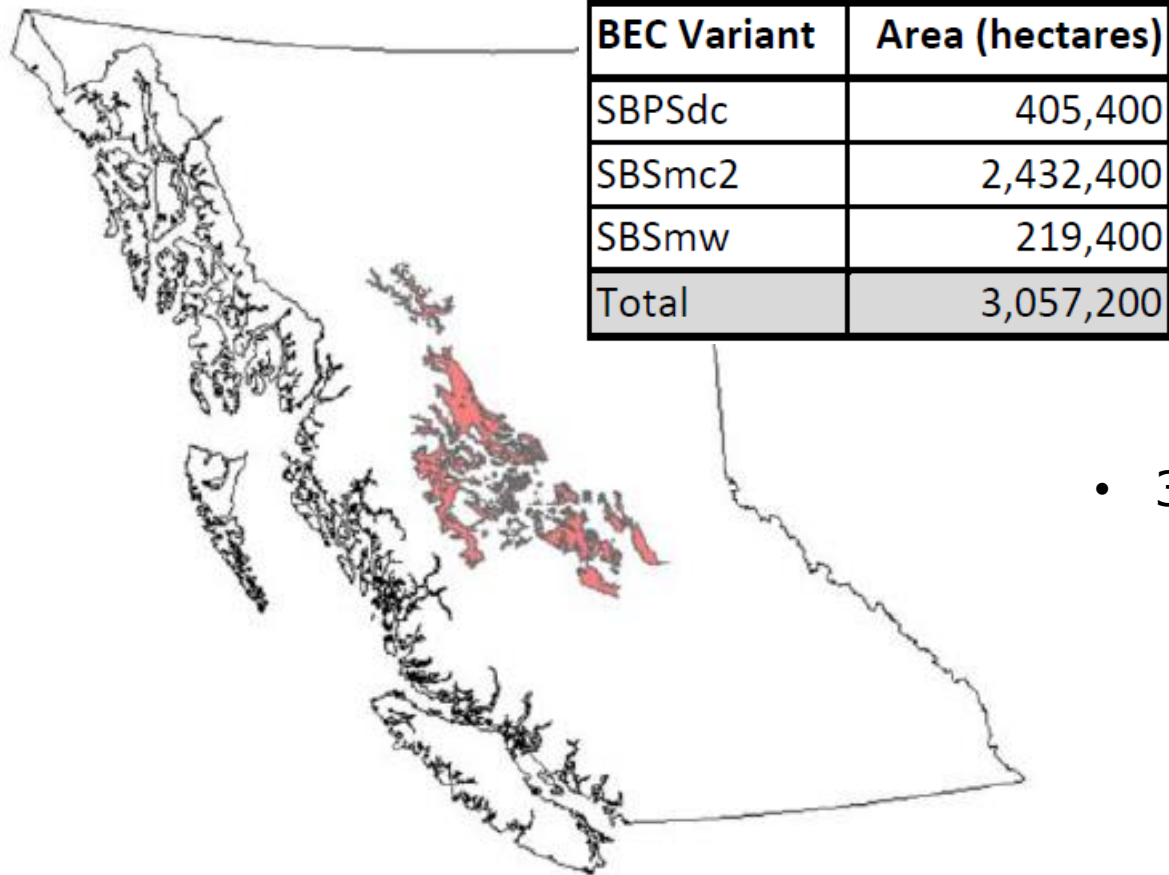
Comandra Infection at Chief Lake by Parent



Comandra Resistance Orchard

- Q1: Is susceptibility or resistance heritable?
 - YES: heritability is 0.26
- Q2: Is susceptibility and resistance consistent across sites?
 - YES: Type B genetic correlation = 0.81
- Q3: What is the relationship with growth?
 - No strong relationship
- Q4: How much resistance?
 - Top 40 families: $GWr = 71$
 - Top 20 families: $GWr = 79$

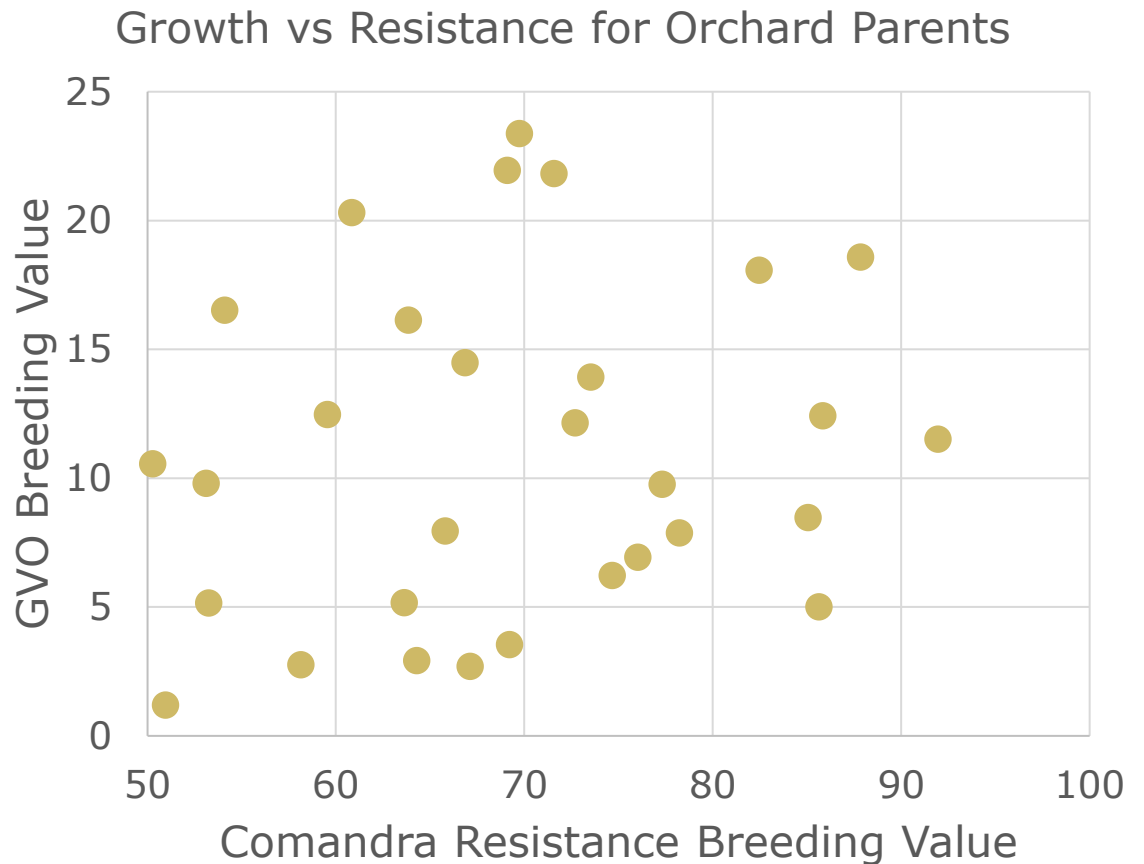
Comandra Resistance Seed Orchards



- 3,600 ramets total

Comandra Resistance Seed Orchards

	Target	Actual
Clones	30	30
GVO	13	11
DSC	71	69
Ne	23	30
Grafting		
2022	1,800	1,674
2023	1,800	



2023 Plans

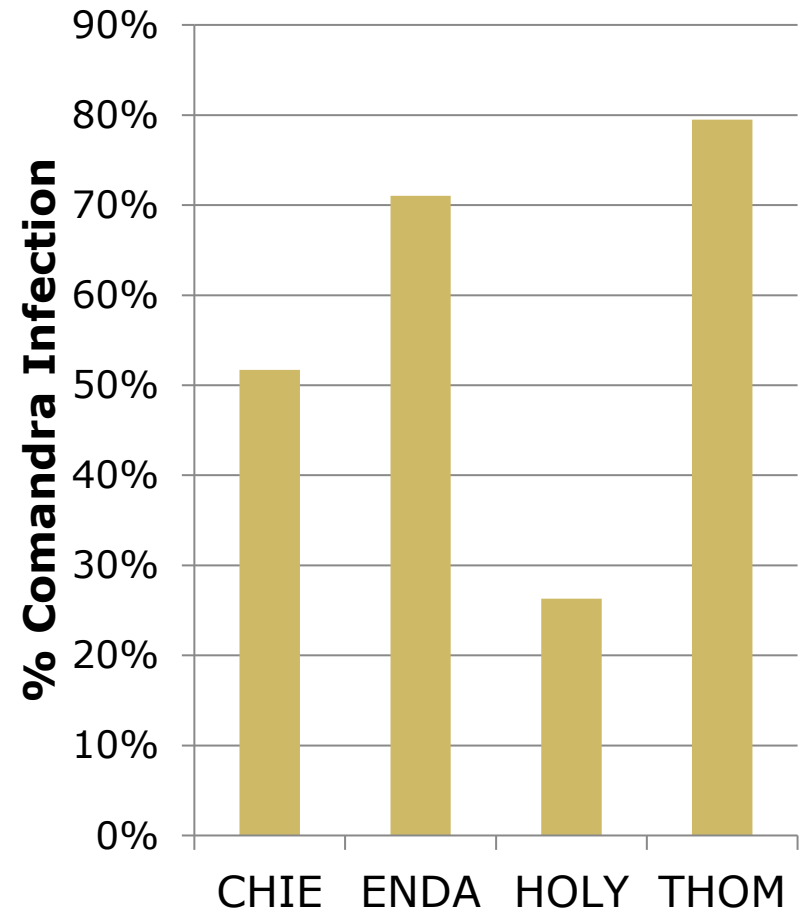
- 2023 Planning
 1. Year 2 Comandra Orchard Grafting
 2. Comandra Resistance Trials
 3. Forward Selections
 4. Collect Wood Quality Data
 5. Breeding

Comandra Resistance Trials

Comandra Resistance Screening

	CHIE	ENDA	HOLY	THOM	S1	S2
CHIE	92	28	29	29	16	19
ENDA	28	67	67	67	15	12
HOLY	29	67	69	69	15	13
THOM	29	67	69	72	15	13
S1	16	15	15	15	149	27
S2	19	12	13	13	27	98

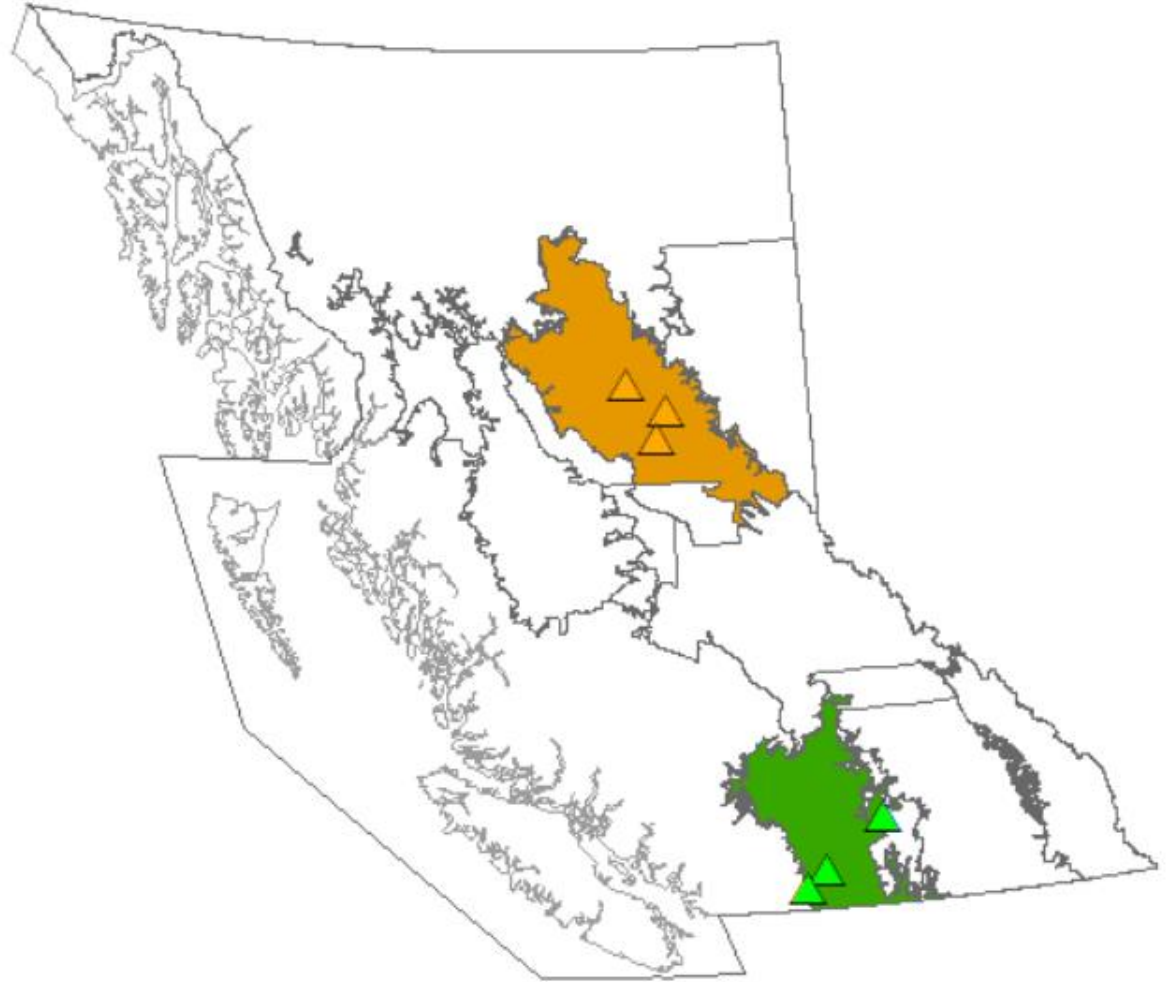
- 349 Next Gen Parents
 - 135 with comandra data
 - 214 with no comandra data



Forward Selections

Forward Selections

- Thompson-Okanagan
- Central Plateau



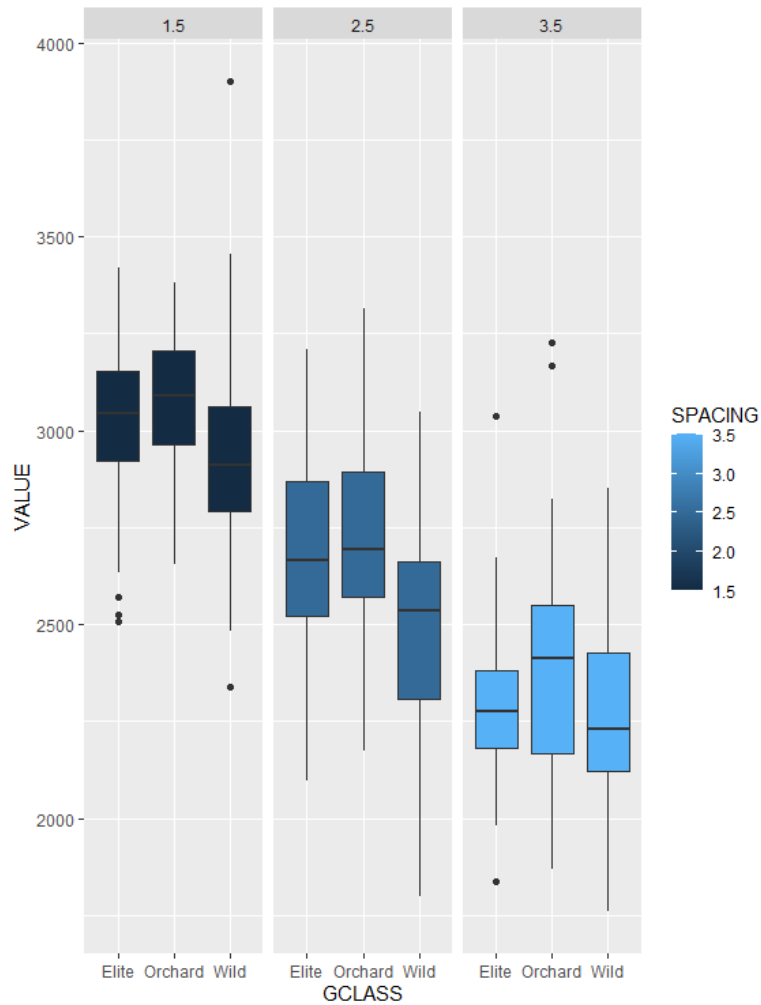
Wood Quality

Wood Quality

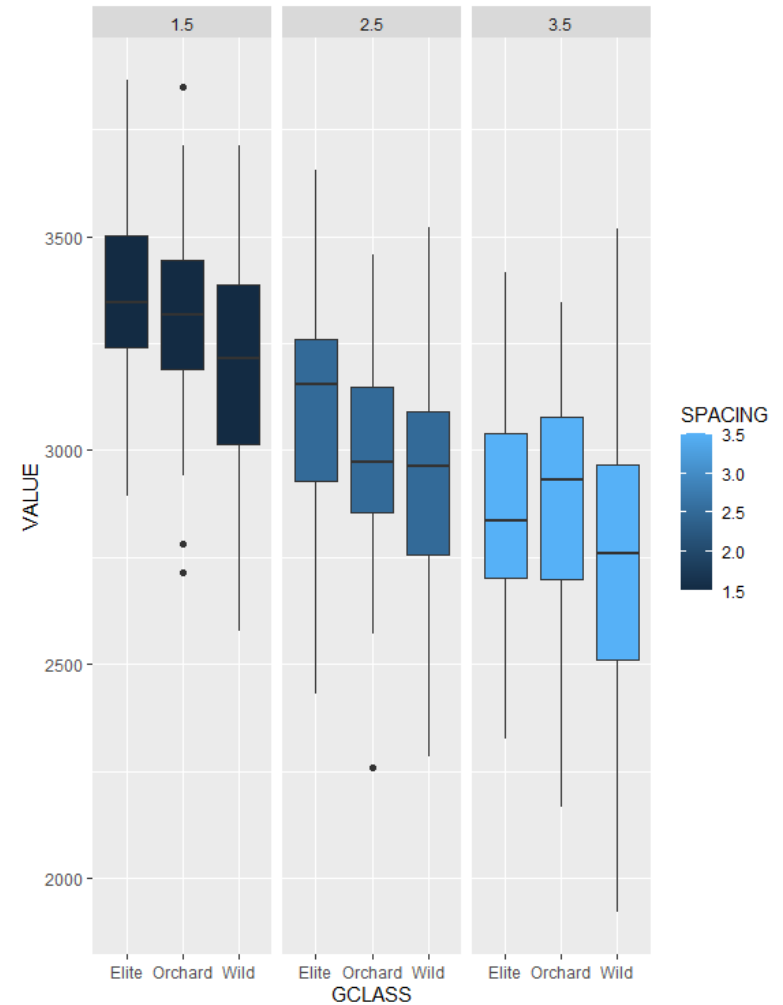
- Measured using acoustic velocity
 - Speed of sound wave passing through the wood
 - Faster acoustic velocity means stronger wood
- Direct measure in the field
 - No need for lab work
- Wood strength is influenced by wood density and microfibril angle

Wood Quality

Acoustic Velocity



Acoustic Velocity



Wood Quality

	Trait	Value
Heritability	Acoustic Velocity (AV)	>0.5
Genetic Correlations		
	AV x HT10	0.37
	AV x Resistograph	0.45
	AV x Pilodyn	-0.31
Phenotypic Correlations		
	AV x HT21	0.42
	AV x DBH	0.12

Wood Quality

Measure AV

- Goal: estimate breeding values for:

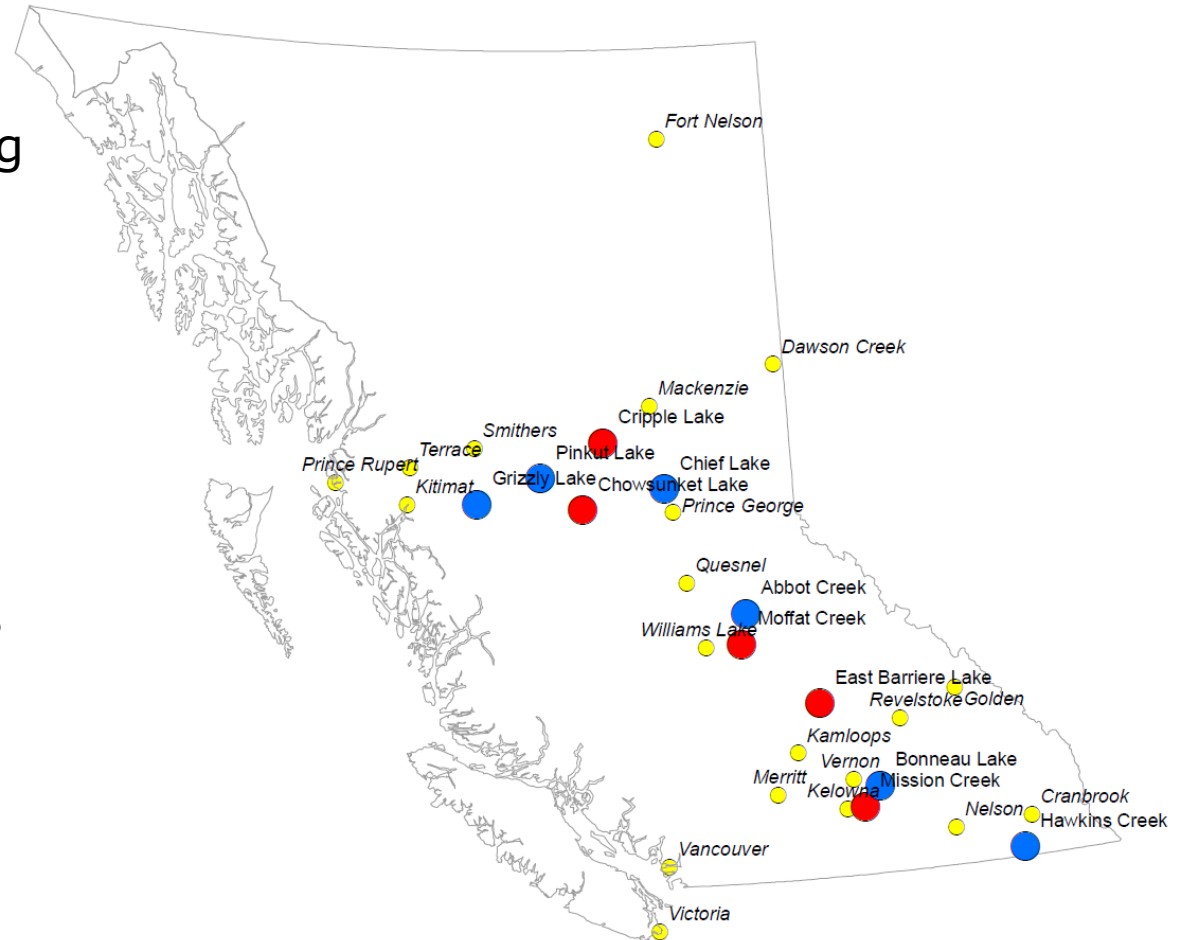
- 349 parent trees

- All forward selections

- Measure select families

- 5 first-cycle sites

- 6 second-cycle sites

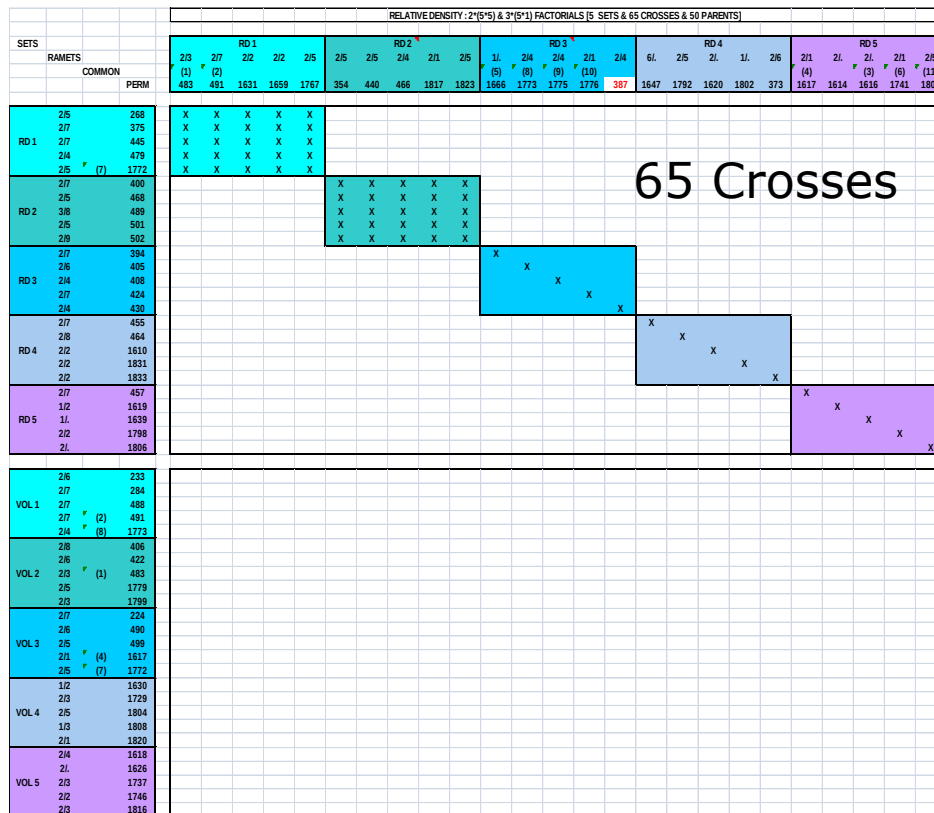


Breeding

1st Cycle – Open pollinated families

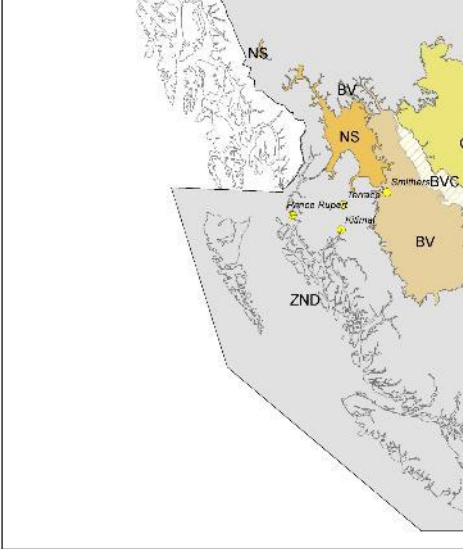
2nd Cycle – Crosses for growth and wood quality

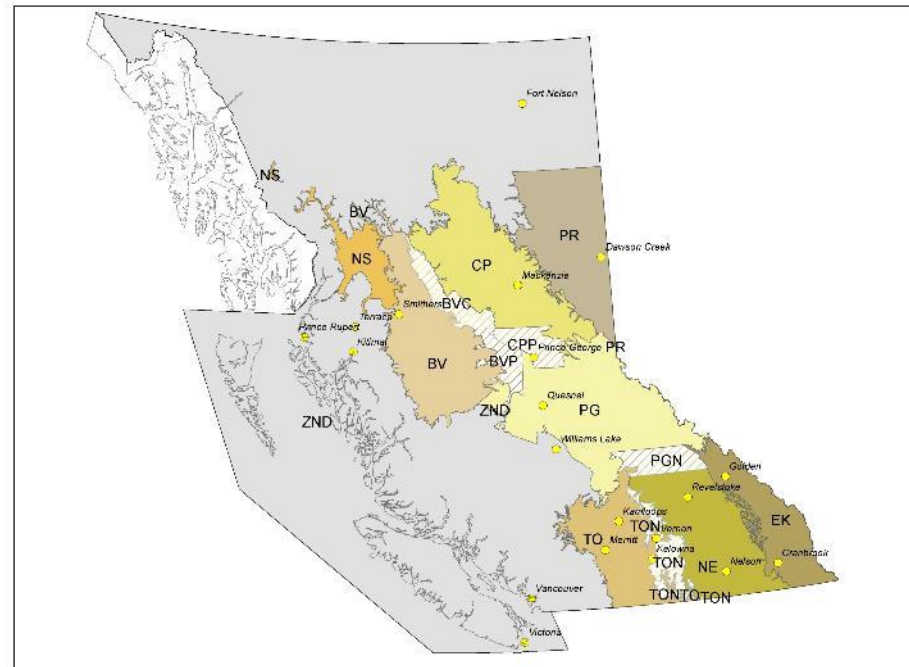
Growth



Breeding

3rd Cycle Breeding and Testing

- Traits:
 - Growth
 - Wood Quality
 - Disease Resistance
 - Gall Rust, Comandra, Dothistroma, Etc...
 - Challenges:
 - How to integrate so many traits.
 - How to structure breeding and testing under CBST.
- 

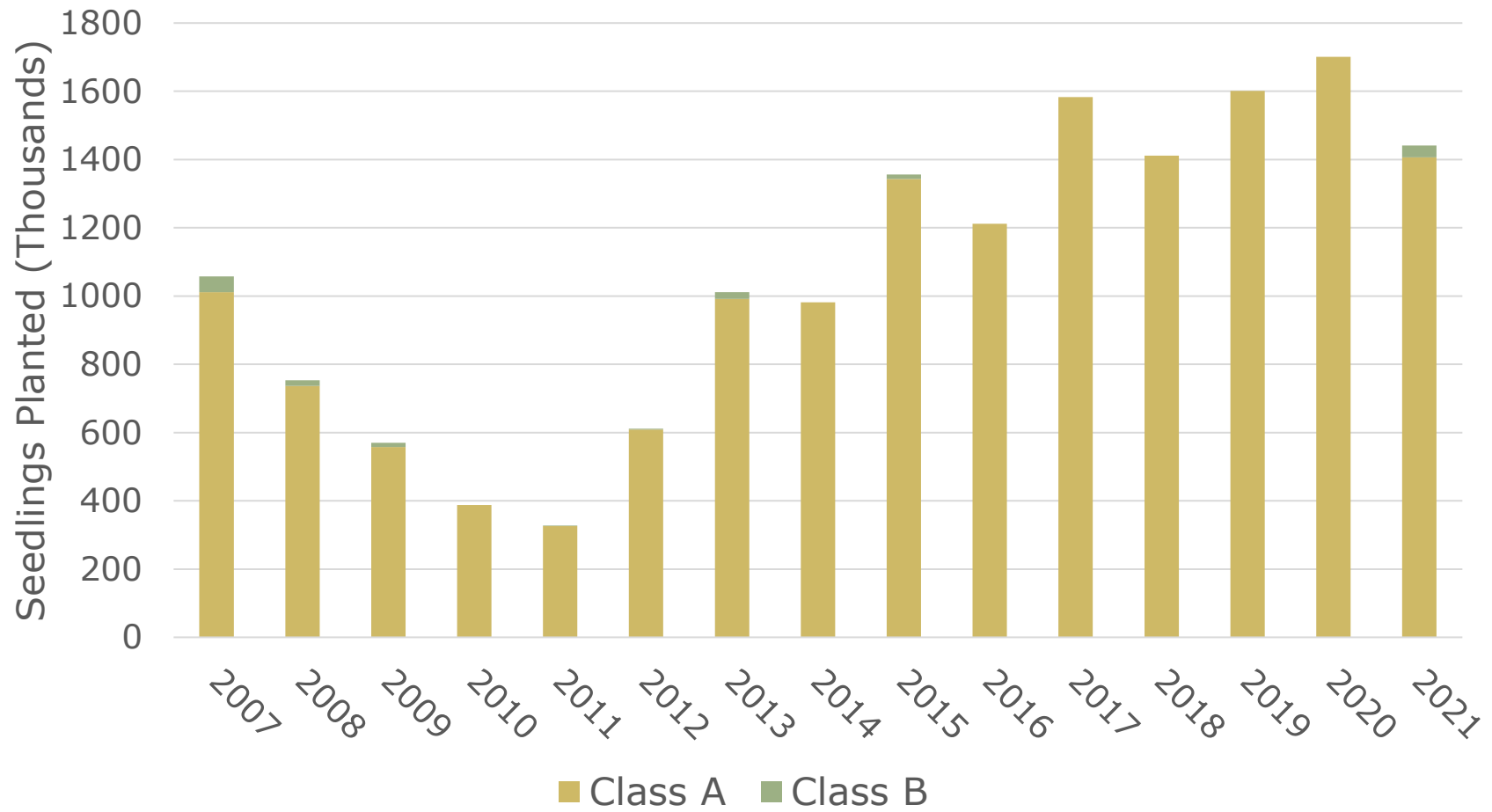


Western White Pine



Planting Stats

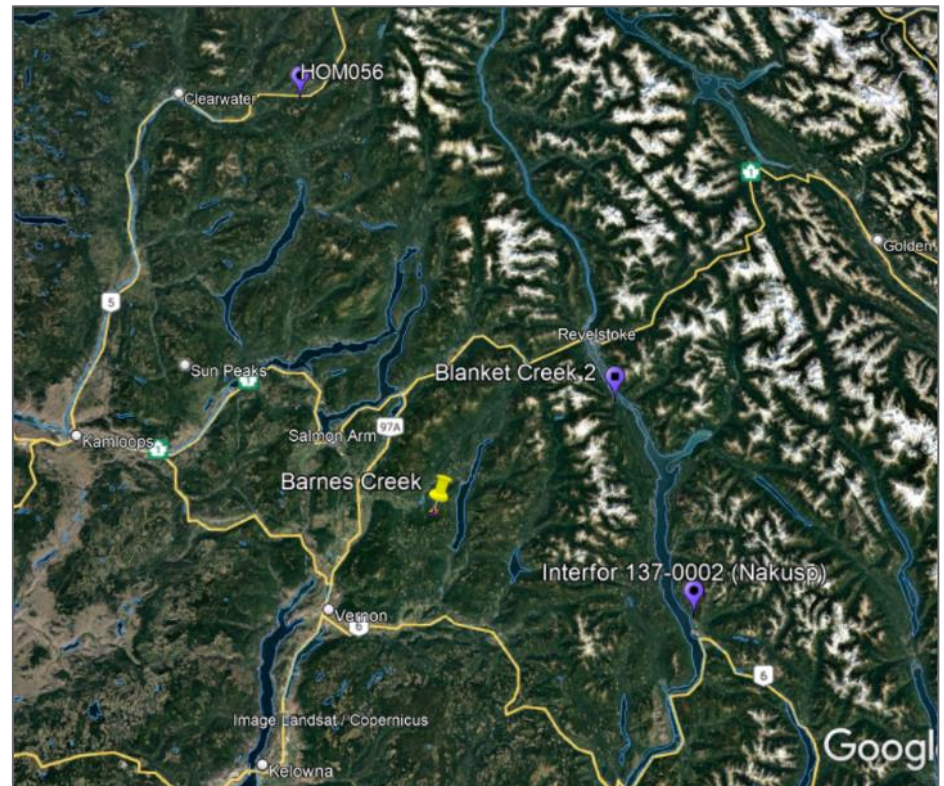
Western White Pine Planting Trends



Year in Review 2022-2023

2022-2023 Work

- Routine maintenance and measurements
 - Major maintenance at Pemberton Series 5 site
- Series 1 interior progeny tests
 - Plant 2 trials



Progeny Testing Plan

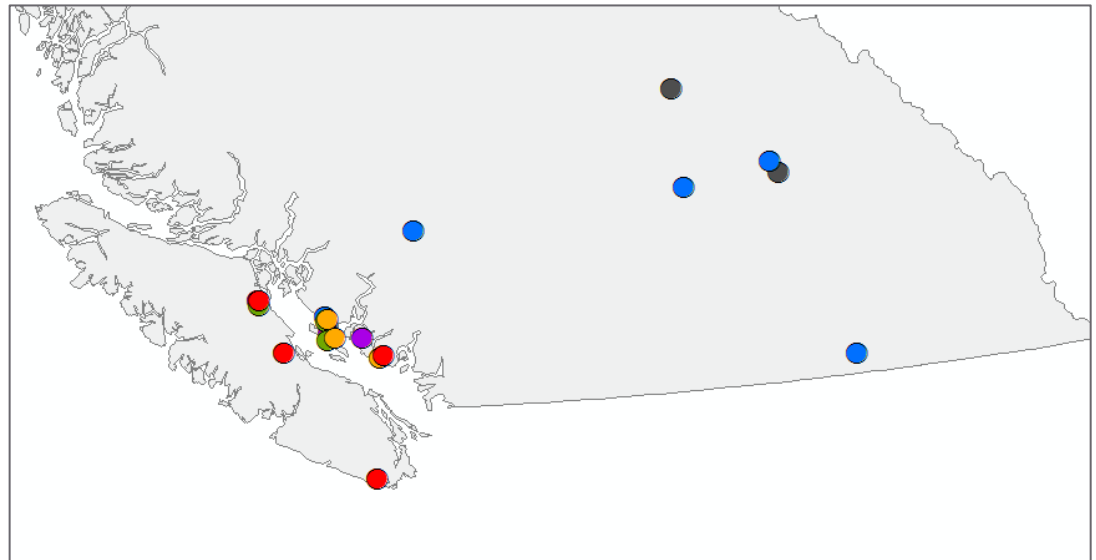
	Coast					Interior				
	2001	2004	2005	2006	2015	Series 1	Series 2	MGR	WS1	WS2
2001	73	16	15	21	12	8	1	0	1	0
2004	16	52	36	43	33	15	3	2	0	0
2005	15	36	52	44	30	12	1	0	0	0
2006	21	43	44	61	34	19	3	2	0	0
2015	12	33	30	34	69	30	5	4	3	3
Series 1	8	15	12	19	30	88	24	15	15	15
Series 2	1	3	1	3	5	24	62	5	10	10
MGR	0	2	0	2	4	15	5	28	13	13
WS1	1	0	0	0	3	15	10	13	150	24
WS2	0	0	0	0	3	15	10	13	24	151

2022 2025

Planned Work

Plans for 2023-2024

- Sow and grow series 2
- Assess growth and blister rust at Pemberton site



Paper Birch

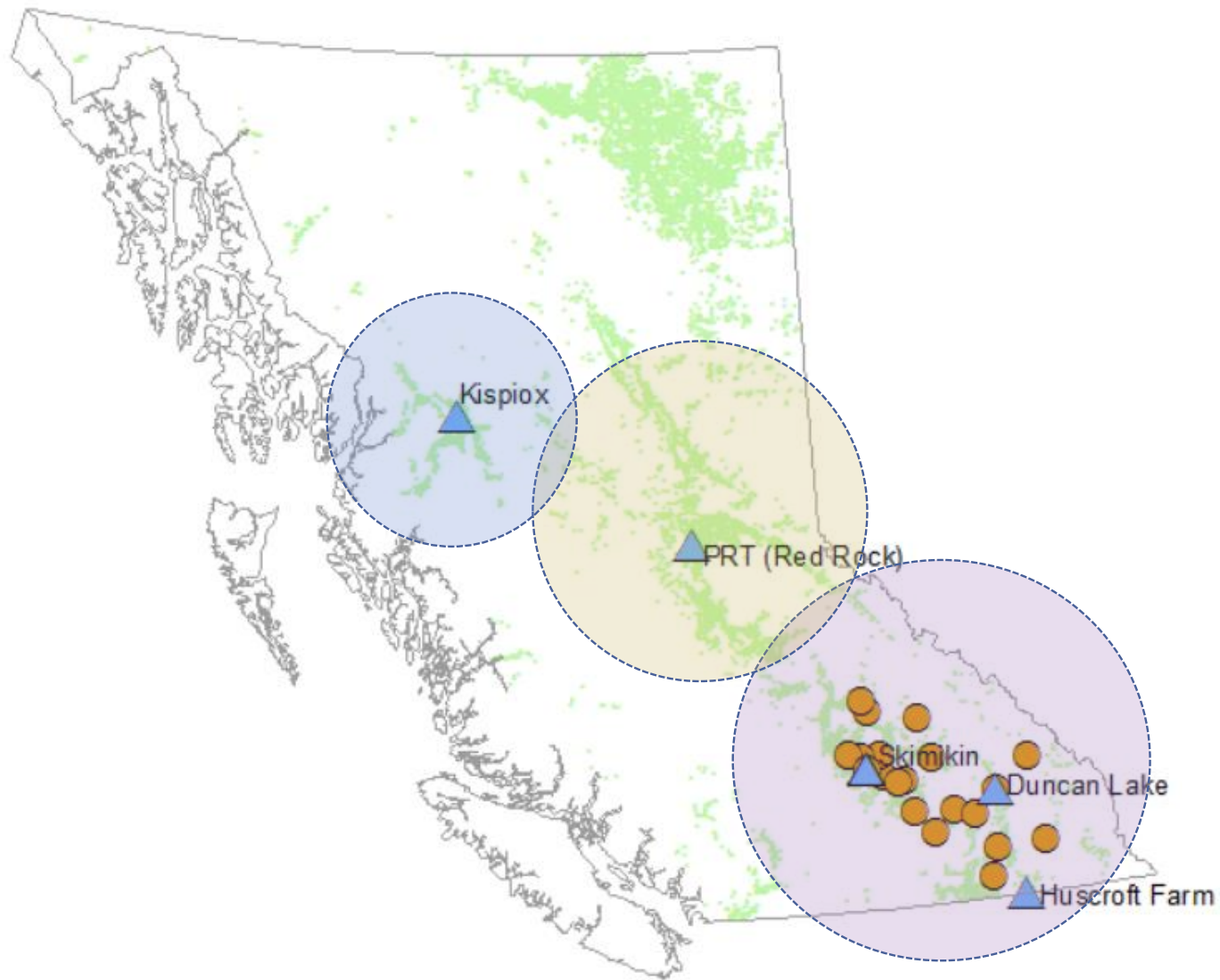


Program Overview

Paper Birch Genetics Program

- EP1069.11
 - Provenance test across BC
 - 5 sites and 18 populations from Kootenays
- EP1069.12
 - Progeny test at Skimikin Nursery site
 - 191 families from 19 populations from the Kootenays
- EP1069.13
 - Genecology transect study
 - 3 sites (PG, Skimikin, Idaho)
 - 3 nurseries (Red Rock, Skimikin, Idaho)
- Seed orchard for the southern interior

Program Overview



Planned Work

Plans for 2023-2024

- Plant grafted selections into a clone bank



Hybrid Poplar



Program Overview

- Breeding program
 - Two sites for testing
 - Red Rock and Hushcroft farm in Creston
 - Local black cottonwood and hybrids
- Proof of concept trial
 - Commonage effluent irrigation – Carlson Park
- Stool bed for cuttings
 - 11 Hybrids
 - BC x WA; BC x Japan; WA x MN; WA x WA
 - 27 local black cottonwood
 - Southern interior populations

