

Coastal White Pine



Ministry of
Forests, Lands and
Natural Resource Operations

Outline

1. MGR Pollen Orchard Update
2. Rootstock Resistant
Phytophthora Screening
3. Interior Progeny Tests – Update
4. Forward Selections



MGR Pollen Orchards



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MGR Pollen Orchard

- 28 MGR clones grafted in 2018
- 12 copies per clone
- Establishing orchards at 2 locations
 - Coast – Cobble Hill – in progress
 - Interior – Skimikin – planted in 2019

Screening Rootstock for Phytophthora Resistance



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Phytophthora Resistant Rootstock

- Screen families for resistance to phytophthora
- Location: Saanich Seed Orchard
- Series 1:
 - 20 Crosses
 - Screen 40 trees per cross
 - Coastal crosses
 - Method development
- Plant in 2021



Progeny Testing in the Interior



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Progeny Testing – Series 1

- New progeny tests
- Goals:
 - Blister rust resistance breeding values for parent trees in the orchard
 - New forward selections
 - Growth breeding values
- 124 families and seedlots
- 3 sites

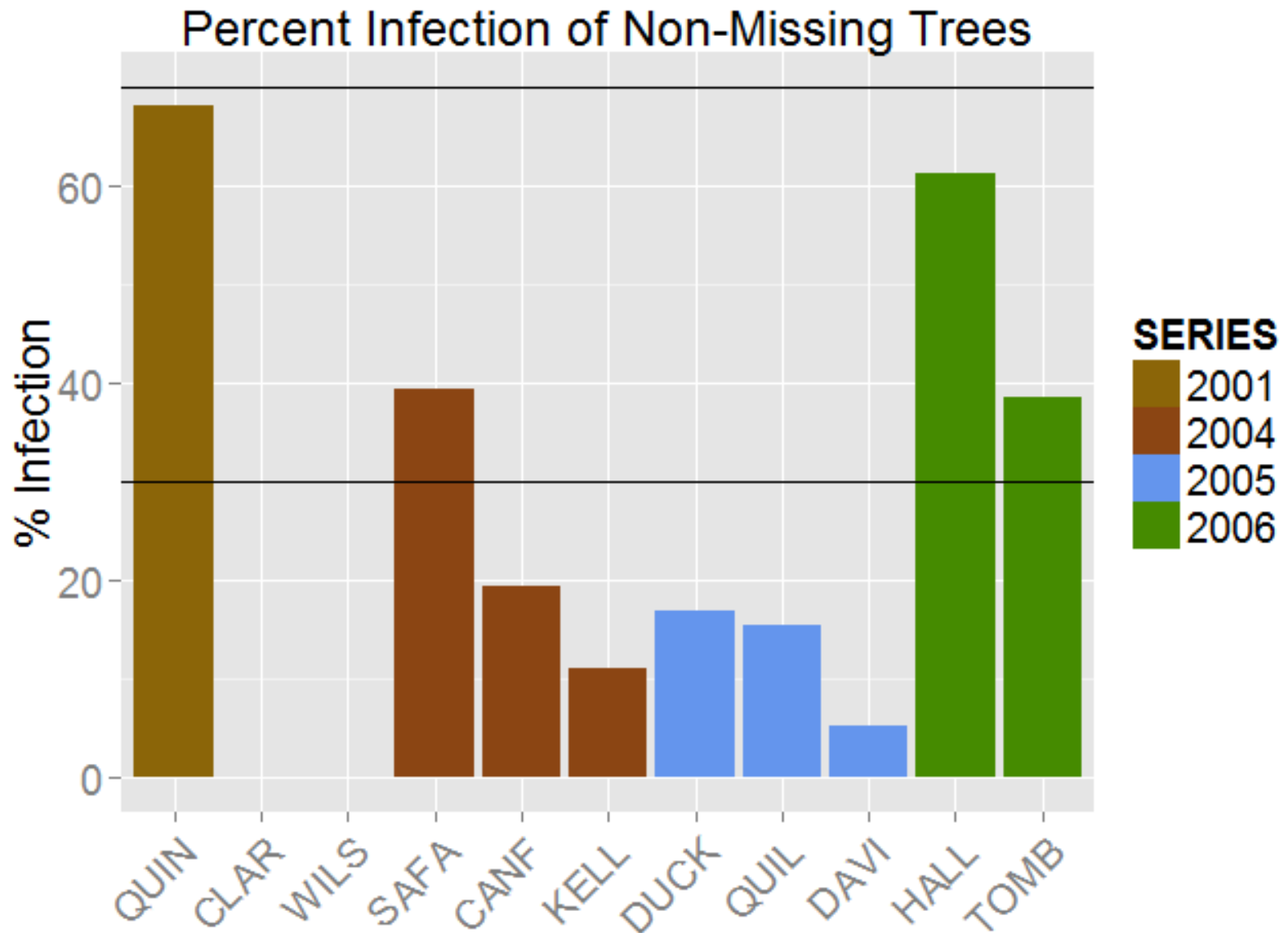
COAST OVERLAP	12
COAST	12
CONTROLS	16
A-Class	8
B-Class	8
INTERIOR OVERLAP	20
BC X BC	10
IDAHO X IDAHO	10
TEST TREES	76
BC X BC	15
BC X IDAHO	11
IDAHO X IDAHO	50
TOTAL	124

Forward Selections and the Cobble Hill Orchard



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Forward Selections



Forward Selections

	CLAR	QUIN	WILS	CANF	KELL	SAFA	DAVI	DUCK	QUIL	HALL	TOMB
CLAR	73	73	72	15	16	16	15	15	15	21	21
QUIN	73	73	72	15	16	16	15	15	15	21	21
WILS	72	72	72	15	16	16	15	15	15	21	21
CANF	15	15	15	45	45	45	31	31	31	38	38
KELL	16	16	16	45	52	50	35	36	34	43	43
SAFA	16	16	16	45	50	50	34	34	33	42	42
DAVI	15	15	15	31	35	34	51	51	50	44	44
DUCK	15	15	15	31	36	34	51	52	50	44	44
QUIL	15	15	15	31	34	33	50	50	50	44	44
HALL	21	21	21	38	43	42	44	44	44	61	61
TOMB	21	21	21	38	43	42	44	44	44	61	61

Forward Selections

- Q1: Is susceptibility or resistance heritable?
 - YES: heritability is 0.26
 - Sites range from 0.15 to 0.34
- Q2: Is susceptibility and resistance consistent across sites?
 - YES: Type B genetic correlation = 0.84
- Q3: What is the relationship with growth?
 - ???
- Q4: How much gain was present in the test population?
 - Not sure... no good controls included
 - Look at realized gain data

Forward Selections

Group	Mean BV	Min BV	Max BV
Backward Sels	57	19	94
Top 20	86	80	94
Top 40	80	68	94
Puckle	61	23	92
Sechelt	58	23	92
Mt Newton	64	31	88
Forward Sels	70	32	91
Coombs Old Orchard	59		
Coombs New Orchard	78		
Coombs MGR	73		

Forward Selections

Orchard Composition – Preliminary Plan

1. Backward selections – 75%
 - Tested parents with good breeding value estimates
 - From orchards and clone banks

2. Forward selections – 25%
 - Select from parents that we don't have access to
 - From sites with >75% infection frequency

Pwc Future Plans

- F1 field trials
 - Maintenance
 - Assess for blister rust
 - Measure growth traits
- Forward Selections
 - Select when site infection rates > 75%

Budget FY20/21

Details	Activity	KPI	Total
Series 3 Assessment	Measurement	3	\$9,000
Series 5 Assessment	Measurement	2	\$4,000
Forward Selections		10	\$1,000
Phyto Screening	Grow Stock	20	\$10,000
CLRS Station Support	Tech Support		\$10,000
Total			\$34k