

SPU # 8

Western White Pine

Maritime

1 - 1000m

Breeding and orchard production

Seedling need (million)*: 0.6

Program category: Advanced-generation

* estimated need with resistant stock; includes GL zone

filename: 08 Pw M-SM all Sept 2017.xlsx

STRATEGY

Development of an F1 population from slow canker growth (SCG) and difficult to infect (DI) parents based on open pollinated progeny from all existing test programs (CFS, Texada Island, and better material from Idaho and Dorena programs for comparison). Best selections will be put in open-pollinated seed orchards. MGR backcrossing program for well adapted trees with MGR.

TRAITS

Primary: Rust resistance **Secondary: Stem form, wood properties**

TESTING AND PRODUCTION

Production Year (July 1 to June 30) -- (Cone harvest year shown)

	'17	'18	'19	'20	'21	'22	'23	'24	'25	'26	'27	'28	'29	'30	'31	'32	'33	'34	'35	'36
Parents in progeny test:																				
Open pollin.	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300
Polycross																				
Clonal																				
F1	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200
F2																				
F3																				

Production forecast (million plantables)

Orchards (#, owner)

175 FLNRO (Puckle Rd)	0.1	0.1	0.1	0.1	0.2	0.3	0.4	0.5	0.6	0.6	0.7	0.7	0.8	0.9	1.0	1.2	1.3	1.5	
403 TW (Mt Newton)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8

Vegetative prod.:

Phase 1

Phase 2

Estimated gain in primary trait

Orchards (#, owner)

175 FLNRO (Puckle Rd)	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
403 TW (Mt Newton)	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%

Gains in blister rust resistance are quantified Genetic Worth values for resistance to white pine blister rust (GWr). GWr values are estimated for individual seedlots.

Vegetative prod.:

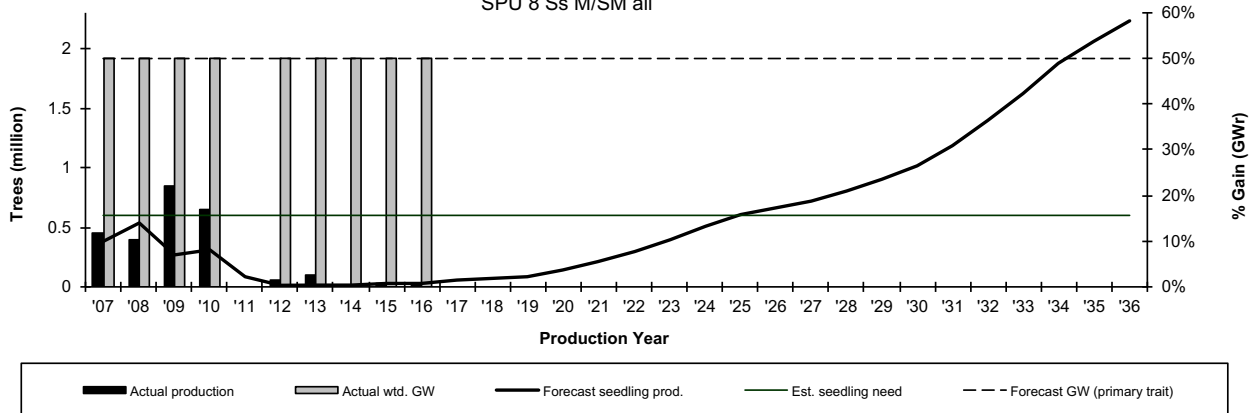
Phase 1

Phase 2

Total Production	0.1	0.1	0.1	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.7	0.8	0.9	1.0	1.2	1.4	1.6	1.9	2.1	2.2
Total gain	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%

Estimated orchard gain and production

SPU 8 Ss M/SM all



The above forecasts are based on orchard status, seed inventories and seed use as of June, the year of publication, and are subject to change. Refer to the seed Planning and Registry System (SPAR) or contact the orchard manager for current seed inventories. Contact the Forest Improvement and Research Mgt. Branch, Ministry of Forests, Lands, Natural Resource Operations and Rural Development, to confirm data if used for silviculture or timber-supply planning.

Western White Pine Maritime 1 - 1000m Conservation -- Seed Orchards -- Seedling Use

SPU #8

GENETIC CONSERVATION STATUS**Conservation statistics**

Seed planning unit (SPU) area	6,542,815	ha
Area protected within SPU	609,531	ha
Percentage of SPU area protected	9%	
Estimated genetic reserves with >5000 mature trees based on botanical sample data	>2	
Confirmed genetic reserves with >5000 mature trees based on forest inventory data	2	

Conservation status

Current in-situ protection status: **Adequate**
 Probability of maintaining > 3 protected areas with adequate population size given natural disturbance regimes: **High ***

* Ground truthing required as inventory data are less reliable for this species

For further information visit <http://www.genetics.forestry.ubc.ca/cfgc/>

ORCHARD STATUS

Orchard location	Orchard number	Number of parents	Mean BV	# of ramets currently established	# of ramets planned for final orchard size	Target Seed production kg/y at maturity	Total Seedling Prod. million seedlings
FLNRO (Puckle Rd)	175	113	R	220	512	68.1	1.28
TW (Mt Newton)	403	32	R	234	300	39.9	0.75
Total ramets				454	812	Total production	2.03
Vegetative propagation						Stecklings/Emblings	0.0
						Total production	2.0

Seed and Nursery Factors

Expected annual average seedling production per ramet = 2,500
 Seed weight (seeds/gram) = 47
 Seedling recovery factor (seedlings/seed) = 0.40
 Seedling recovery factor (seeds/seedling) = 2.50

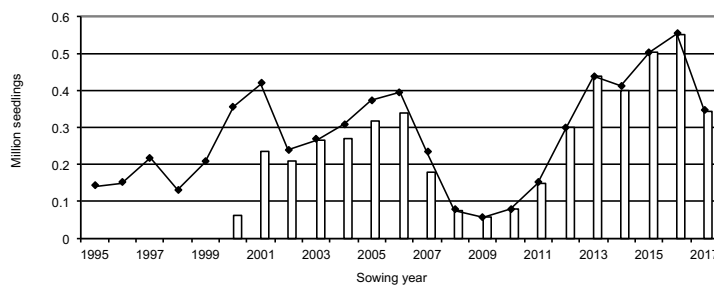
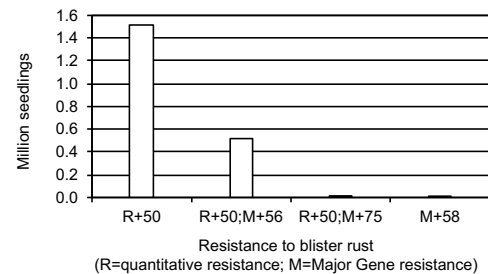
Estimate of Required Orchard Capacity

Annual planting (million seedlings) **	0.6
Planned over-production factor	1.3
Ramets required	240
Ramets required with over-capacity	312
Projected necessary expansion	0

** Assumed demand with seed of high blister rust resistance

SEEDLING USE AND SEED IN STORAGE

Average 5-year seedling use from SPAR (2013 - 2017) 0.45 million
Estimated years of class-A seed in storage 4.6 years

Seedling Use Trend - 1995 to 2017**Class A Seed in Storage**

Notes:
 - Seedling use data include 1/2 of adjacent overlap zones, where applicable
 - Sowing year: Aug 1 to July 31 (i.e. 2017 sowing year starts Aug 1, 2017)

Notes:

- "Reserve" and "Available" seed in the Seed Planning and Registry System (SPAR) are included.
- Class A = seed orchard; Class B+ = superior provenance; Class B = wild stand seed.
- Genetic Wroth (GW) for growth means the projected additional wood volume available at rotation compared to using Class B seed.

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