

SPU # 15	Western White Pine	Kootenay/Quesnel	500 - 1400m
Breeding and orchard production			
Program category: Advanced-generation			Seedling need (million)*: 1.1
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STRATEGY Selection of parents exhibiting rust resistance in wild stands. Extensive ex-situ rust screening and in-situ field testing in Canadian Forest Service and USDA Idaho operated breeding programs. Realized-gain testing to confirm orchard values. Establish OP and F1 field tests to confirm breeding values and provide material for future orchards. MGR backcross program to produce well adapted trees with MGR.

TRAITS	Primary:	Rust resistance	Secondary:	Stem volume
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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.	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350
Polycross																				
Clonal																				
F1													200	200	200	200	200	200	200	200
F2																				
F3																				

Production forecast (million plantables)

Orchards (#, owner)																				
335 FLNRO (Kalamalka)	1.4	1.4	1.4	0.6	0.6	0.6	0.7	Orchard to be retired												
609 FLNRO (Skimikin)	0.3	0.3	0.3	0.3	Orchard to be retired															
351 FLNRO (Skimikin)	0.0	0.1	0.1	0.1	0.2	0.3	0.5	0.7	0.9	1.1	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3

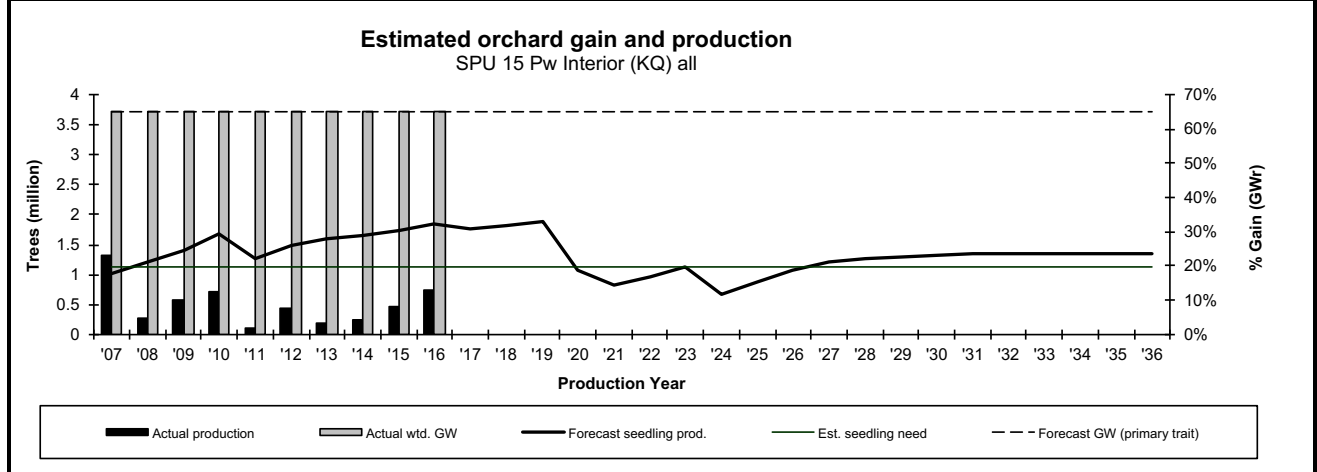
Vegetative prod.:
Phase 1
Phase 2

Estimated gain in primary trait (GWr - resistance to blister rust)

Orchards (#, owner)																					
335 FLNRO (Kalamalka)	65%	65%	65%	65%	65%	65%	65%														
609 FLNRO (Skimikin)	65%	65%	65%	65%																	
351 FLNRO (Skimikin)	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%

Vegetative prod.:
Phase 1
Phase 2

Total Production	1.8	1.8	1.9	1.1	0.8	1.0	1.1	0.7	0.9	1.1	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Total gain	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%



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 Kootenay/Quesnel 500 - 1400m
Conservation -- Seed Orchards -- Seedling Use

SPU #15

GENE CONSERVATION STATUS

Conservation statistics

Seed planning unit (SPU) area	4,566,546	ha
Area protected within SPU	411,038	ha
Percentage of SPU area protected	9%	
Estimated genetic reserves with >5000 mature trees based on botanical sample data	>1	
Confirmed genetic reserves with >5000 mature trees based on forest inventory data	23	

Conservation status

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

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 (Kalamalka)	335	296	R+65	1,084	500	39.1	0.75	
FLNRO (Skimikin)	609	family	R+65	223	0	0.0	0.00	
FLNRO (Skimikin)	351	69	R+65	896	908	70.9	1.36	
				Total ramets	2,203	1,408	Total production	2.11

Vegetative propagation		Stecklings/Emblings	0.0
		Total production	2.1

Seed and Nursery Factors

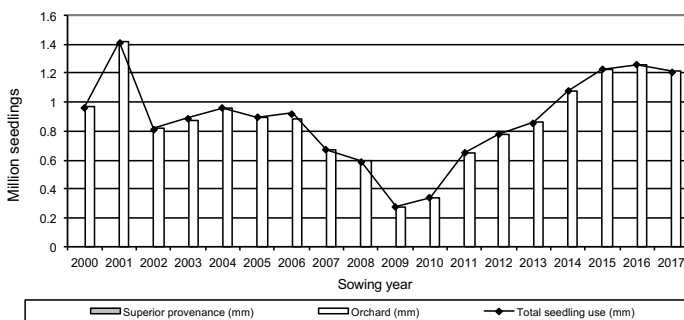
Estimate of Required Orchard Capacity

Expected annual average seedling production per ramet = 1,500	Annual planting (million seedlings)*	1.1
Seed weight (seeds/gram) = 48	Planned over-production factor	1.3
Seedling recovery factor (seedlings/seed) = 0.40	Ramets required	752
Seedling recovery factor (seeds/seedling) = 2.50	Ramets required with over-capacity	978
	Projected necessary expansion	0

SEEDLING USE AND SEED IN STORAGE

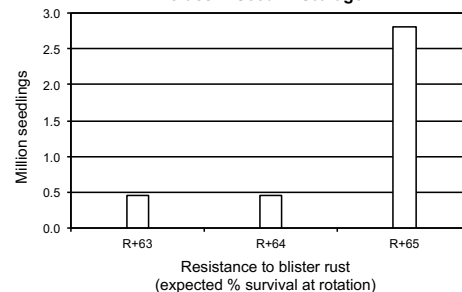
Average 5-year seedling use from SPAR (2013-2017) **1.1 million**
Estimated years of class-A seed in storage **3.3 years**

Seedling Use Trend - 2000 to 2017



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)

Class A Seed in Storage



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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