

SPU # 4 **Interior Spruce** **Nelson** **1000-1700m**

Breeding and orchard production

Adjusted for new Parent Tree Area of use. Previously 1000-1500m

Seedling need (million): 9.2

Program category: Advanced-generation

filename: 4 Sx NE mid July 12 2015

STRATEGY Parent tree selection in wild stands; polycross and open-pollinated progeny tests for old Shuswap Adams and West Kootenay zones. Focus on stem volume, wood density, and weevil resistance. Backward selection of best parents to open-pollinated seed orchards.

TRAITS **Primary: Stem volume** **Secondary: Wood density, weevil**

TESTING AND PRODUCTION **Production Year (July 1 to June 30) -- (Cone harvest year shown)**

	'15	'16	'17	'18	'19	'20	'21	'22	'23	'24	'25	'26	'27	'28	'29	'30	'31	'32	'33	'34
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Parents in progeny test:

Open pollin.																				
Polycross	374	374	374	374	374	374	374	374	374	374	374	374	374	374	374	374	374	374	374	374
Clonal																				
F1	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
F2																				
F3																				

Production forecast (million plantables)

Orchards (#, owner)	'15	'16	'17	'18	'19	'20	'21	'22	'23	'24	'25	'26	'27	'28	'29	'30	'31	'32	'33	'34
301 FLNRO (Skimikin)	1.8	2.1	2.5	2.8	3.0	3.2	3.4	3.4	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
305 FLNRO (Kalamalka)	4.3	4.6	5.0	5.2	5.3	5.4	5.4	5.5	5.6	5.6	5.6	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7
304 FLNRO (Kalamalka)	Orchard retired																			
New F1 orchard																				

Seed from orchards 301 and 305 may be used down to 800m elevation (also see SPU #44 Sx NE) low

Vegetative prod.:

Phase 1

Phase 2

Estimated gain in primary trait

Orchards

301 FLNRO (Skimikin)	15%	15%	16%	16%	17%	17%	18%	19%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
305 FLNRO (Kalamalka)	19%	19%	20%	20%	21%	21%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%

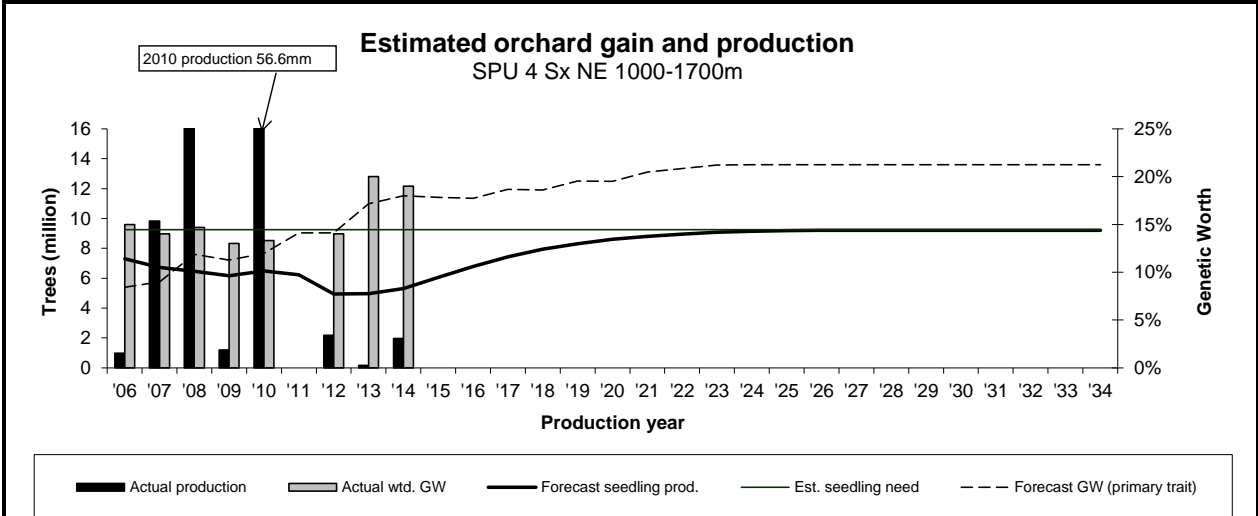
Vegetative prod.:

Phase 1

Phase 2

Total Production	6.0	6.8	7.4	7.9	8.3	8.6	8.8	9.0	9.1	9.1	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2
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Total gain	18%	18%	19%	19%	20%	20%	20%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%	21%
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Seed production estimates are subject to change. When using this information for silviculture planning or timber supply analysis, contact the Tree Improvement Branch of the Ministry of Forests, Lands and Natural Resource Operations to confirm data. See SeedMap on www.for.gov.bc.ca/htl/seedmap for current inventory by Seed Planning Unit

GENETIC CONSERVATION STATUS

Conservation statistics

Seed planning unit (SPU) area	2,110,271	ha
Area protected within SPU	119,217	ha
Percentage of SPU area protected	6%	
Estimated genetic reserves with >5000 mature trees based on botanical sample data	>9	
Confirmed genetic reserves with >5000 mature trees based on forest inventory data	32	

Conservation status

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

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

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 (Skimikin)	301	44	17%	586	900	28.8	5.40	
FLNRO (Kalamalka)	305	47	22%	934	934	29.9	5.60	
FLNRO (Kalamalka)	304 *			0	0	0.0	0.00	Retired in 2010
Total ramets				1,520	1,834	Total production	11.00	
Vegetative propagation							Stecklings/Emblings	0.0
							Total production	11.0

Seed and Nursery Factors

Estimate of Required Orchard Capacity

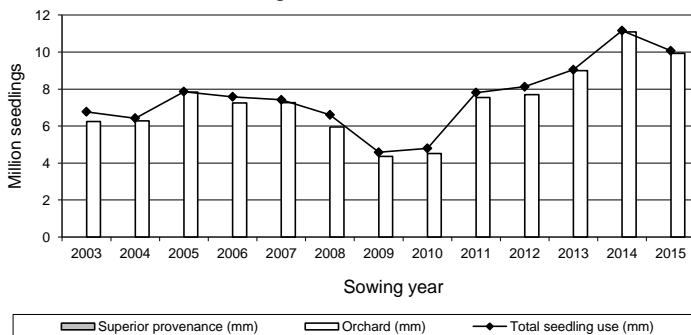
Expected annual average seedling production per ramet = 6,000	Annual planting (million seedlings)	9.2
Seed weight (seeds/gram) = 417	Planned over-production factor	1.2
Seedling recovery factor (seedlings/seed) = 0.45	Ramets required	1,540
Seedling recovery factor (seeds/seedling) = 2.22	Ramets required with over-capacity	1,848
	Projected necessary expansion	14

* Orchard 304 also produced seed for NE low and the N-EK overlap zone.

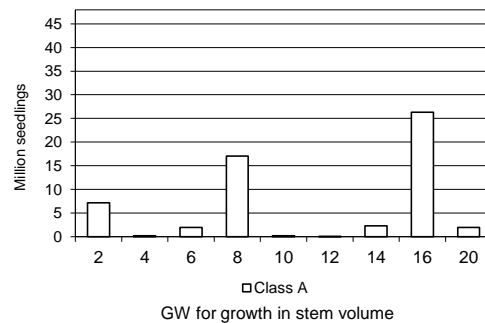
SEEDLING USE AND SEED IN STORAGE

Average 5-year seedling use from SPAR (2011 - 2015) 9.2 million
Estimated years of class-A seed in storage 6.2 years

Seedling Use Trend - 2003 to 2015



Seed in Storage by GW class



Notes:
 - Seedling use data include 1/2 of adjacent overlap zones, where applicable
 Sowing year: Aug 1 to July 31 (i.e. 2015 sowing year starts Aug 1, 2014)

Notes:
 - Seed held in both "reserve" and "available" status in the Seed Planning and Registration (SPAR) system is included
 - Seed inventories change with new orders. Data presented here are based on a June sample.
 - For up-to-date information use SPAR, or contact the Tree Improvement Branch of the Ministry of Forests and Range

Seed production estimates are subject to change. When using this information for silviculture planning or timber supply analysis, contact the Tree Improvement Branch of the Ministry of Forests Lands and Natural Resource Operations to confirm data.
 See SeedMap on www.for.gov.bc.ca/hti/seedmap for current inventory by Seed Planning Unit