

**SPU # 35**      **Interior Spruce**      **Bulkley Valley**      **500 - 1400m**  
**Breeding and Orchard Production**

**Seedling need (million): 12.4**

**Program category: Advanced-generation**

filename: 35 Sx BV low Sept 2017.xlsx

**STRATEGY**      Selection of parent trees in wild stands. Open-pollinated progeny tests from two test series (established in 1967 and 1973). Focus on stem volume, wood density and weevil resistance. Some provenance testing information also available. Seed orchard establishment and roguing based on progeny test data.

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

**TESTING AND PRODUCTION**      **Crop 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
<b>Parents in progeny test:</b>																				
Open pollin.	294	294	294	294	294	294	294	294	294	294	294	294	294	294	294	294	294	294	294	294
Polycross																				
Clonal																				
F1	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68
F2																				
F3																				

**Production forecast (million plantables)**

Orchards (#, owner)	'17	'18	'19	'20	'21	'22	'23	'24	'25	'26	'27	'28	'29	'30	'31	'32	'33	'34	'35	'36
249 FLNRO (Skimikin)	7.4	7.9	8.4	8.9	9.3	6.1	6.2	0.0	0.1	0.4	0.9	1.7	2.5	3.7	5.2	7.0	9.2	11.1	12.9	14.0
620 FLNRO (Kalamalka)	1.4	1.5	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
243 VSOC (Vernon)	0.1	0.2	0.5	1.1	1.9	2.7	4.0	5.6	7.4	9.5	11.3	12.7	13.6	14.0	14.1	14.1	14.1	14.1	14.1	14.1

**Vegetative prod.:**

Phase 1  
Phase 2  
Estimated gain in primary trait

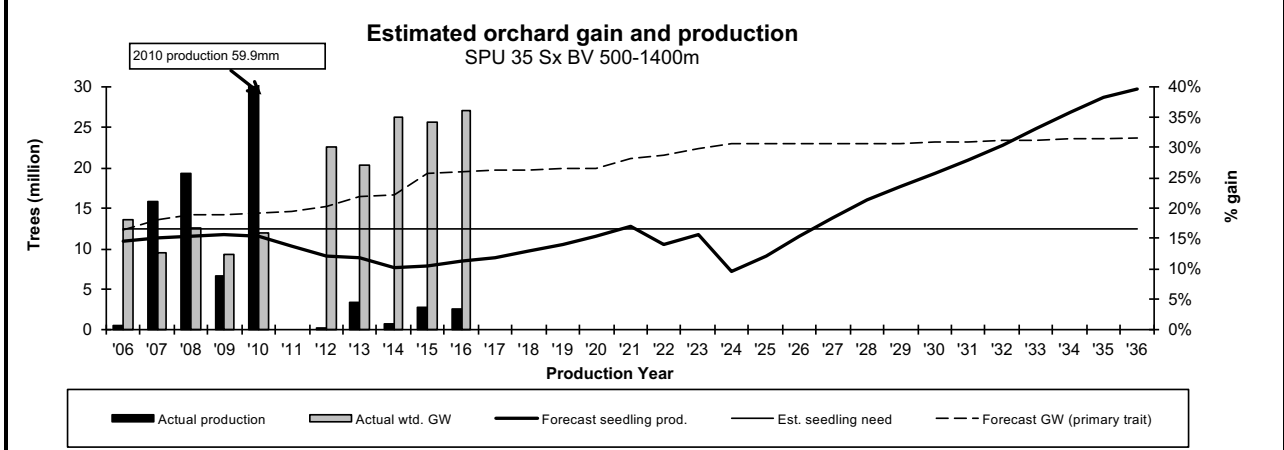
**Orchards**

249 FLNRO (Skimikin)	25%	25%	25%	25%	27%	27%	29%	29%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%
620 FLNRO (Kalamalka)	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%
243 VSOC (Vernon)	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%

**Vegetative prod.:**

Phase 1  
Phase 2

<b>Total Production</b>	8.9	9.6	10.5	11.6	12.8	10.4	11.8	7.2	9.1	11.5	13.8	16.0	17.7	19.3	20.9	22.7	24.9	26.9	28.6	29.7	
<b>Total gain</b>	26%	26%	26%	27%	28%	29%	30%	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%	32%	32%



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.

**Interior Spruce Bulkley Valley 500 - 1400m**  
Conservation -- Seed Orchards -- Seedling Use

**SPU #35**

**GENETIC CONSERVATION STATUS**

**Conservation statistics**

Seed planning unit (SPU) area	<b>2,262,320</b>	<b>ha</b>
Area protected within SPU	<b>357,859</b>	<b>ha</b>
Percentage of SPU area protected	<b>16%</b>	
Estimated genetic reserves with >5000 mature trees based on botanical sample data	<b>&gt;1</b>	
Confirmed genetic reserves with >5000 mature trees based on forest inventory data	<b>16</b>	

**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 (Skimikin)	249	87	25%	1,238	2,450	82.5	14.70	Micro-orchard
FLNRO (Kalamalka)	620	28	33%	534	550	18.5	3.30	
VSOC (Vernon)	243	30	30%	577	1,177	39.6	7.06	
Skimikin orchards 207, 208, and 229 merged to orchard 249								
<b>Total ramets</b>				<b>2,349</b>	<b>4,177</b>	<b>Total production</b>	<b>25.06</b>	
Vegetative propagation						<b>Stecklings/Emblings</b>	<b>0.0</b>	
						<b>Total production</b>	<b>25.1</b>	

**Seed and Nursery Factors**

<b>Expected annual average seedling production per ramet = 6,000</b>
<b>Seed weight (seeds/gram) = 392</b>
<b>Seedling recovery factor (seedlings/seed) = 0.45</b>
<b>Seedling recovery factor (seeds/seedling) = 2.20</b>

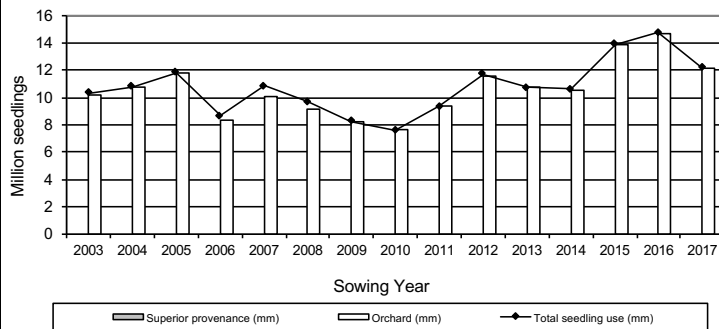
**Estimate of Required Orchard Capacity**

<b>Annual planting (million seedlings)</b>	<b>12.4</b>
<b>Planned over-production factor</b>	<b>1.2</b>
<b>Ramets required</b>	<b>2,075</b>
<b>Ramets required with over-capacity</b>	<b>2,490</b>
<b>Projected necessary expansion</b>	<b>0</b>

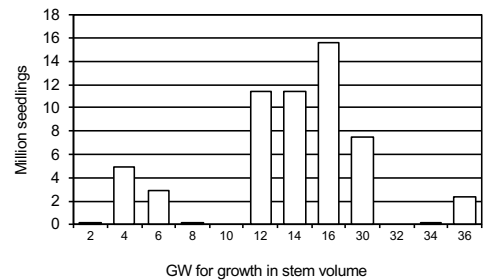
**SEEDLING USE AND SEED IN STORAGE**

**5-year average seedling requests to SPAR (2013 - 2017)** **12.4 million**  
**Estimated years of class-A seed in storage** **4.5 years**

**Seedling Use Trend - 2003 to 2017**



**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. 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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