SPU # 14	Interior Spruce	Prince George	600 - 1400m

Breeding and orchard production

Adjusted for new Parent Tree Area of use. Previously 600-1200m

Seedling need (million): 39.2

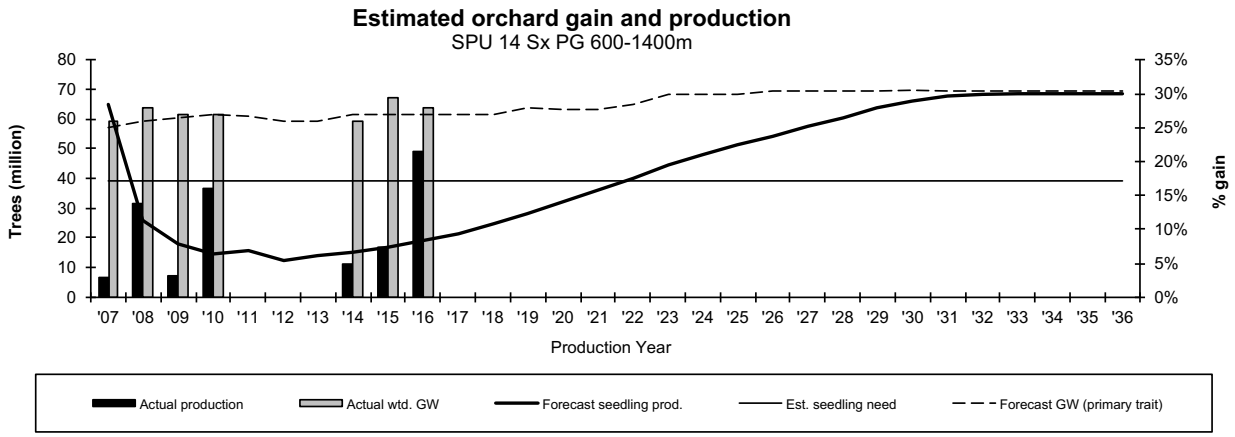
Program category: Advanced-generation

filename: 14 Sx PG low Sept 2017.xlsx

STRATEGY Parent tree selection in wild stands; open-pollinated progeny tests on multiple sites. Several test series combined for selection of best parents for seed orchards and for advanced-generation breeding population. Focus on stem volume, wood density, and weevil resistance. Open-pollinated seed orchards, with specific parental collections.

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

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.	1136	1136	1136	1136	1136	1136	1136	1136	1136	1136	1136	1136	1136	1136	1136	1136	1136	1136	1136	1136
Polycross																				
Clonal																				
F1	231	231	231	231	231	231	231	231	231	231	231	231	231	231	231	231	231	231	231	231
F2	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200	200
F3																				
Production forecast (million plantables)																				
Orchards (#, owner)																				
211 VSOC (Vernon)	19.1	20.9	22.6	24.4	25.8	26.6	27.2	27.7	28.3	29.0	29.9	31.2	32.4	33.7	34.6	35.0	35.2	35.2	35.2	35.2
247 VSOC (Vernon)	2.3	3.7	5.3	7.5	10.4	13.7	17.2	20.4	23.0	25.3	27.5	29.5	31.3	32.5	33.2	33.4	33.4	33.4	33.4	33.4
Vegetative prod.:																				
Phase 1																				
Phase 2																				
Estimated gain in primary trait																				
Orchards (#, owner)																				
211 VSOC (Vernon)	27%	27%	28%	28%	28%	29%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
247 VSOC (Vernon)	27%	27%	27%	27%	27%	27%	30%	30%	30%	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%	31%
Vegetative prod.:																				
Phase 1																				
Phase 2																				
Total Production	21.4	24.6	28.0	32.0	36.2	40.3	44.5	48.1	51.3	54.3	57.4	60.6	63.7	66.2	67.7	68.4	68.5	68.5	68.5	68.5
Total gain	27%	27%	28%	28%	28%	28%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%



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.

14 Sx PG low Sept 2017.xlsx

Interior Spruce Prince George 600 - 1400m

SPU #14

Conservation -- Seed Orchards -- Seedling Use

GENE CONSERVATION STATUS

Conservation statistics

Seed planning unit (SPU) area	**6,972,597**	**ha**
Area protected within SPU	**224,719**	**ha**
Percentage of SPU area protected	**3%**	
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	**45**	

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/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	
VSOC (Vernon)	211	56	27%	2,230	2,930	198.3	**35.16**	primarily weevil resistance
VSOC (Vernon)	247	54	31%	1,780	2,780	188.2	**33.36**	
			Total ramets	**4,010**	**5,710**	**Total production**	**68.52**	

Vegetative propagation	**Stecklings/Emblings**	**0.0**
	Total production	**68.5**

Seed and Nursery Factors

Expected annual average seedling production per ramet =	**12,000**
Seed weight (seeds/gram) =	**390**
Seedling recovery factor (seedlings/seed) =	**0.45**
Seedling recovery factor (seeds/seedling) =	**2.20**

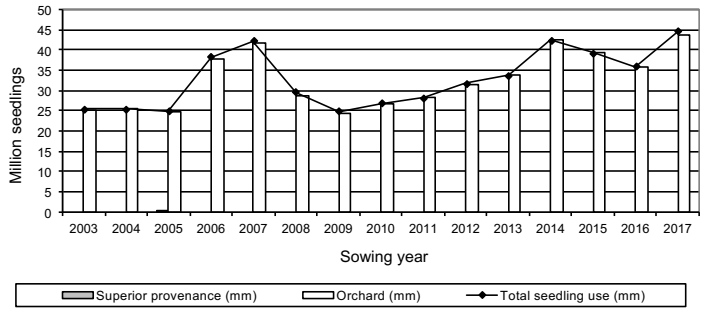
Estimate of Required Orchard Capacity

Annual planting (million seedlings)	**39.2**
Planned over-production factor	**1.2**
Ramets required	**3,266**
Ramets required with over-capacity	**3,920**
Projected necessary expansion	**0**

SEEDLING USE AND SEED IN STORAGE

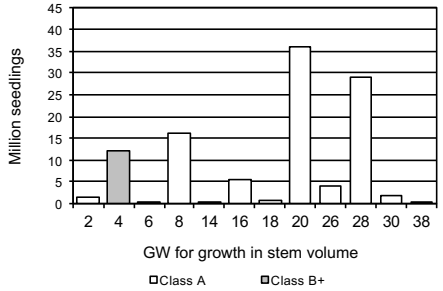
Average 5-year seedling use from SPAR (2013 - 2017)	**39.2**	**million**
Estimated years of class-A seed in storage	**2.4**	**years**

Seedling Use Trend - 2003 to 2017



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)

Seed in Storage by GW class



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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