SPU # 6	Sitka Spruce	Maritime	1 - 500m

Breeding and orchard production

Seedling need (million)*: 1.5

Program category: Advanced-generation

* estimated need with resistant stock; includes GL zone

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STRATEGY Initial selection and breeding for resistance to weevil. Tandem selection for good growth, form and wood quality characteristics will follow. Currently developing an F-1 population of resistant genotypes. Selections of best parents for seed orchards.

TRAITS **Primary: Weevil Resistance/growth** **Secondary: Stem form, Wood quality**

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**
Parents in progeny test:																				
Open pollin.	700	700	700	700	700	700	700	700	500	500	500	500	500	500	500	500	500	500	500	500
Polycross																				
Clonal	680	680	680	680	680	680	680	680	680	680	680	680	680	680	680	680	680	680	680	680
F1 (weevil pop.)	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300
F2 (growth & value)	100	200	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300
F3																				
Production forecast (million plantables)																				
Orchards (#, owner)																				
172 WFP (SFC)	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
195 YPP (Yellow Pt)	2.1	2.1	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Northern orchards; no weevil resistance (GWgrowth shown)																				
192 WFP (SFC) - QCI	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
144 YPP (Yellow Pt)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Vegetative prod.:																				
Phase 1																				
Phase 2																				
Estimated gain in primary trait (GWr)																				
Orchards (#, owner)																				
172 WFP (SFC)	84%	86%	86%	86%	86%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
195 YPP (Yellow Pt)	87%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%
Northern orchards; no weevil resistance (GWgrowth shown)																				
192 WFP (SFC) - QCI	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
144 YPP (Yellow Pt)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Vegetative prod.:																				
Phase 1																				
Phase 2																				
Total Production	6.3	6.3	6.4	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
Gain (resistant orch.)	86%	88%	88%	88%	88%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%

Estimated orchard gain (resistant orchards) and production

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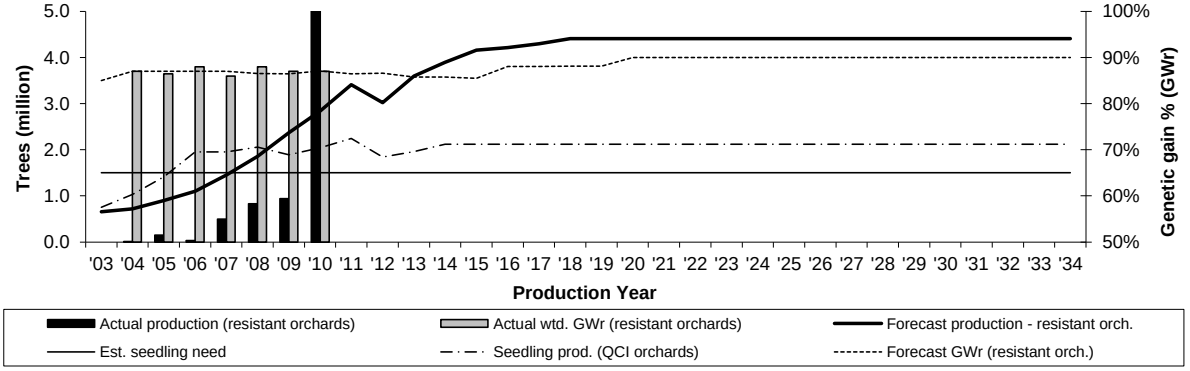
Resistance values shown are orchard average BVr; a relative measure of resistance to weevil attack, where 100 = fully resistant, and 0 = susceptibility equivalent to the least resistant natural populations, such as those in the Queen Charlotte Islands



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

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Sitka Spruce Maritime 1 - 500m

SPU #6

Conservation -- Seed Orchards -- Seedling Use

GENETIC CONSERVATION STATUS

Conservation statistics

Seed planning unit (SPU) area	**8,424,849**	**ha**
Area protected within SPU	**804,589**	**ha**
Percentage of SPU area protected	**10%**	
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	**63**	

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 BVr	# of ramets currently established	# of ramets planned for final orchard size	Target Seed production kg/y at maturity	Total Seedling Prod. million seedlings	
WFP (SFC)	172	85	84%	345	280	7.5	**1.68**	
Yellow Pt. Prop.	195	47	87%	396	360	9.7	**2.16**	
			BVg					
WFP (SFC)	192	22	6%	103	100	2.7	**0.60**	North coast/Haida Qwaii
Yellow Pt. Prop.	144	120	2%	296	250	6.7	**1.50**	North coast/Haida Qwaii
			Total ramets	**1,140**	**990**	Total production	**5.94**	
Vegetative propagation						**Stecklings/Emblings**		
						Total production	**5.9**	

Seed and Nursery Factors

Expected annual average seedling production per ramet =	**6,000**
Seed weight (seeds/gram) =	**391**
Seedling recovery factor (seedlings/seed) =	**0.57**
Seedling recovery factor (seeds/seedling) =	**1.75**

Estimate of Required Orchard Capacity

Estimated ann. planting (million seedl.)*	**1.5**
Planned over-production factor	**1.3**
Ramets required	**250**
Ramets required with over-capacity	**325**
Projected necessary expansion	**0**

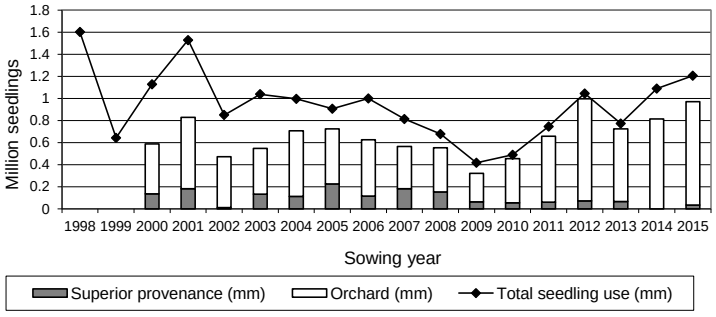
* Estimated demand with more weevil resistant stock.

SEEDLING USE AND SEED IN STORAGE

Average 5-year seedling use from SPAR (2011 - 2015) **1.0** **million**

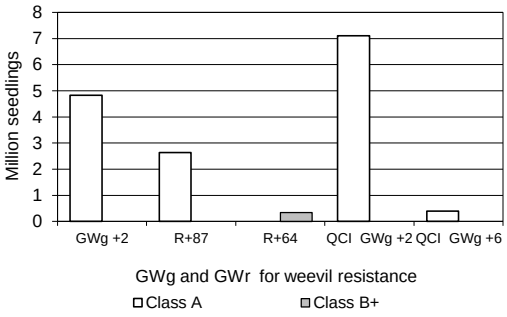
Estimated years of class-A seed in storage **10.4** **years**

Seedling Use Trend - 1998 to 2015



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)

Seed in Storage by GW class



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

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