



Forest Genetics Council of BC Business Plan 2011 / 12

Budgets list only funds provided by the
provincial Land Base Investment Strategy
Tree Improvement Program

**Budgets approved
by the Forest Genetics Council of BC on
March 16, 2011**

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FGC Program Manager

Message from the FGC Co-Chairs

We are pleased to present the 11th consecutive annual business plan prepared by the Forest Genetics Council of BC (FGC) and its technical advisory committees. This plan describes activities funded through the Land Base Investment Strategy (LBIS) and supported by various agencies who contribute to FGC's strategic goals and objectives.

As in past years, this 2011/12 Business Plan outlines a balanced set of activities to enhance the conservation, resilience, and value of BC's forest genetic resources. These activities are grouped into subprograms, including select seed production, tree breeding, genecology, genetic conservation, cone and seed pest management, decision support, and extension. LBIS budget allocations and performance indicators are included for most of these subprograms and projects. Species plans, which constitute the bulk of this plan, identify current status and future projections for breeding programs, seed orchards, seed quality, and seed use by seed planning unit.

LBIS funding, plus on-going public and private sector investments in seed orchards and seed management, continue to increase the average genetic quality and total quantity of select seed used for reforestation in BC. As a result, provincial tree improvement activities are responsible for over half of the future timber supply gains expected from incremental silviculture investments, as identified in the Ministry of Forests, Lands and Natural Resource Operations service plan.

Responding to climate change continues to be a priority this year. Research efforts are focused on understanding the patterns of genetic diversity of our commercial tree species, and how to better match seed sources with current and anticipated future climates. Policies that guide operational seed production, registration, and use will also be reviewed in consideration of new scientific information and to support the advancement of professional reliance. An updated forest genetic conservation strategy is also underway. Workforce demographics, restructuring and economic pressures in the private and public sectors, however, continue to present challenges. Council members will work to address these issues where they can, in order to keep us on track with meeting FGC's objectives.

Finally, this plan represents a collaborative effort by many people working in government, the private sector, and universities throughout the province. Cooperation and hard work are the hallmarks of this program and, in large measure, the basis of its success. We would like to thank all the people who contribute to the provincial forest genetics conservation and management program. Your service is greatly appreciated.

Kerry McGourlick, RPF
FGC Co-chair
Western Forest Products Ltd.

Brian Barber, RPF
FGC Co-chair
Ministry of Forests Lands and
Natural Resources

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1.0 Introduction

This section overviews the relationship between the multi-stakeholder Forest Genetics Council and its co-operators in the planning and implementation of forest genetic resource management activities in British Columbia, and for the management and allocation of funds under the Land Base Investment Strategy (LBIS) Tree Improvement Program.

1.1 Forest Genetics Council of BC

The Forest Genetics Council of BC (FGC) is a multi-stakeholder group representing the forest industry, Ministry of Forests Lands and Natural Resource Operations (FLNR), universities and the Canadian Forest Service. Council's mandate is to lead a provincial tree improvement and forest genetic resource management (GRM) program that encompasses the conservation, controlled use, and value-enhancement of the genetic resources of forest tree species, and to advise the Provincial Chief Forester on forest genetic resource management policies.

The FGC reports to the Provincial Chief Forester, and provides a forum for stakeholder representatives to set objectives and to oversee the development and delivery of a cooperative Business Plan to fulfill these objectives. The vision statement and objectives set out in the FGC Strategic Plan for the period 2009 to 2014, are:

Vision statement:

BC's forest genetic resources are diverse, resilient, and managed to provide multiple values for the benefit of present and future generations.

Objectives:

1. Adequately conserve the genetic diversity of key populations of all forest tree species native to BC by 2015, through a combination of in situ, ex situ, and inter situ conservation.
2. By 2020, high-quality genecology research information will guide operationally efficient climate-based seed transfer policy and practice for all trees planted in BC.
3. Increase the average volume gain of select seed used for Crown land reforestation to 20% by the year 2020.
4. Increase select seed use to 75% of the provincial total sown by 2014.
5. Coordinate stakeholder activities and secure the resources needed to meet Business Plan priorities.
6. Monitor and report progress in genetic resource management activities.

This Business Plan defines the annual set of activities and budgets needed to achieve these objectives.

1.2 A Co-operative Effort

Forest genetic resource management in BC is a co-operative effort. The FLNR leads tree breeding activities, while both private industry and the FLNR manage seed orchards for the operational production of select seed. Genecology research is undertaken by the FLNR and by universities in support of seed transfer policy, climate-change response, and genetic conservation. Industry provides logistical support for field trials and input on the development of priorities. Research in the areas of pest management and other GRM activities is carried out by universities, the FLNR Tree Improvement Branch, and the Canadian Forest Service. Policy development for Crown lands is the responsibility of the FLNR, with advice provided to the Provincial Chief Forester through the FGC.

1.3 Land Base Investment Strategy; Tree Improvement Program

The LBIS encourages investment in the forest resource that maximizes productivity and value while supporting forest resilience. The Tree Improvement Program supports specific implementation priorities related to timber supply, fast-growing forests, and adaptation to climate change.

LBIS objectives call for 7.1 million cubic meters of additional annual timber supply provincially in 65 years. Of this, 4.3 million cubic meters are expected to be provided through the LBIS Tree Improvement Program. Investments to meet this objective are made in accordance with program and budget recommendations developed by the FGC through an annual business planning process. FGC objectives are aligned with FLNR objectives, and are set out in the FGC Strategic Plan for 2009 to 2014. The FLNR administers funding through the subprogram areas identified in the FGC Strategic and Business Plans (Figure 1).

Business planning carried out through the existing FGC-led process, includes Technical Advisory Committees (TACs) undertaking specific planning activities, developing budgets, and making operational recommendations (Figure 2). The FGC reviews and makes final recommendations for subprogram budgets and activities, and ensures the overall program meets FLNR and LBIS objectives and administrative requirements. The program is managed and coordinated by the FGC Program Manager on behalf of the FGC, with substantial input from FGC Co-Chairs, Technical Advisory Committee (TAC) Chairs, and others.

In addition to LBIS Tree Improvement Program investments and FLNR direct program investments through staff and in-kind support, private companies also fund activities under Council's Business Plan. The species plans found in Appendix 3 outline general strategy, predict orchard seed production and gain, summarize conservation status, and provide key seed-use and availability statistics for individual species and seed-zone combinations known as seed planning units (SPU).

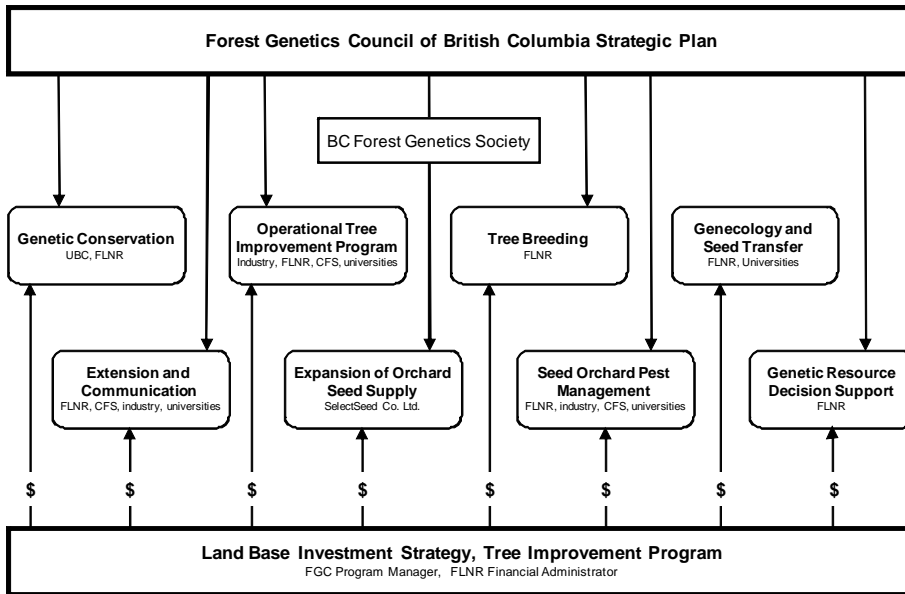


Figure 1 Relationship between the FGC Strategic Plan, Land Base Investment Strategy Tree Improvement Program, and business plan development through FGC subprograms.

2.0 Process for Business Plan Development

2.1 The Role of Council and its TACs

FGC members, representing the FLNR, forest companies, universities, and the Canadian Forest Service, provide strategic direction to the provincial forest genetic resource management program. FGC Technical Advisory Committees provide technical and policy information to Council and contribute to the development of FGC plans and associated budgets. The FGC Business Plan consolidates the subprogram plans and budgets into a comprehensive set of activities that address Council’s objectives.

Council’s seven TACs lay the groundwork for the FGC Business Plan:

- The Coastal and Interior TACs, through their Species Committees, review and advise on Tree Breeding, Operational Tree Improvement Program (OTIP), and the Expansion of Orchard Seed Supply (SelectSeed Company Ltd.) subprograms.
- The Genetic Conservation TAC (GCTAC) advises Council on issues related to genetic conservation and genetic diversity, and identifies required activities and budgets under the Genetic Conservation Subprogram.
- The Seed Transfer TAC develops strategy and activities for genecology research and climate-based seed transfer policy.
- The Extension TAC (ETAC) is responsible for developing a strategy and annual activity plans for the Extension and Communication Subprogram.

- The Pest Management TAC (PMTAC) identifies information and research needs, and guides both research and extension activities, for the control of insect and disease pests impacting seed orchards and seed production.
- The Genetic Resources Decision Support Steering Committee oversees the development of activities and budgets for the Genetic Resource Decision Support Subprogram.

In addition to the seven advisory committees, Council establishes other committees as needed to advise on shorter-term projects.

Program financial administration is led by the FLNR Tree Improvement Branch. Program management, including business plan and annual report compilation, is led by SelectSeed Company Ltd. (SelectSeed), on behalf of Council.

Council reviews all strategies, plans, or recommendations from its TACs and from SelectSeed for approval (or revision) before incorporating them into the FGC Business Plan. Figure 2 illustrates this hierarchical structure and the link between FGC objectives, planning processes, and the seven subprograms through which it is implemented. The process by which the Council Subcommittees or other agencies define activities and budgets for each subprogram is discussed in Section 3. Subprogram leaders are authorized to reallocate funds within their subprograms as necessary throughout the fiscal year, subject to limits and review process.

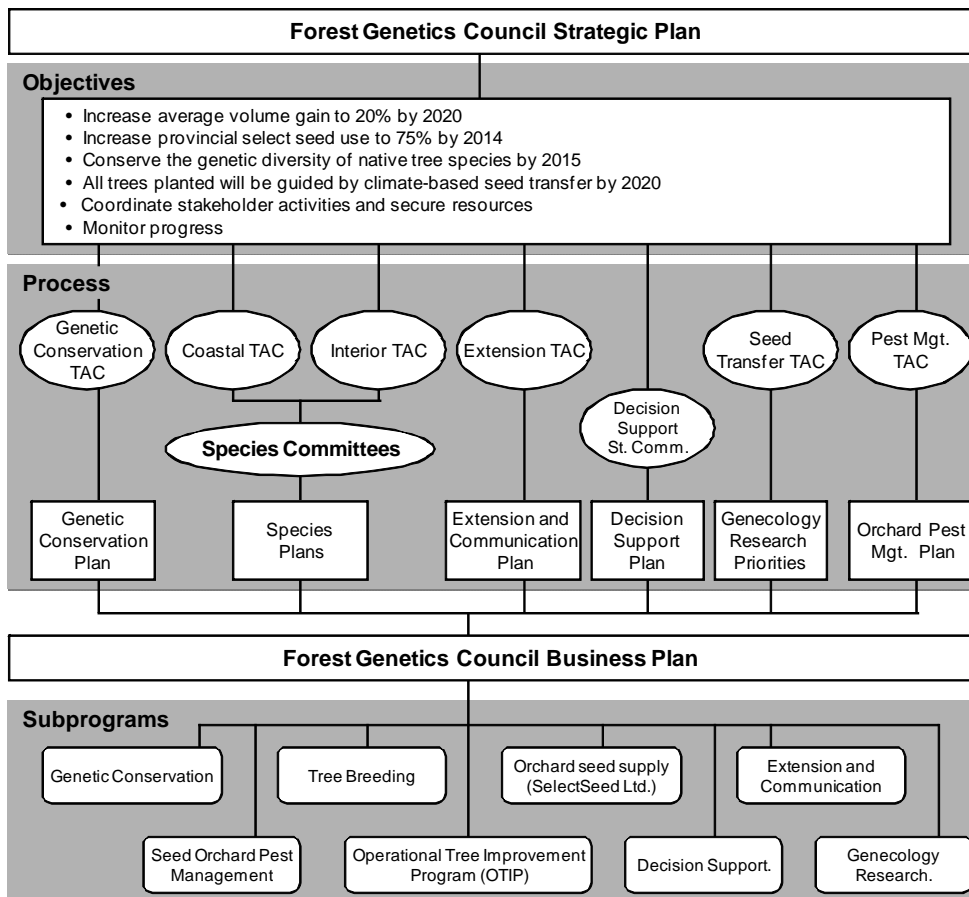


Figure 2 Link between FGC objectives, planning processes, and the subprograms of the FGC Business Plan

3.0 Subprogram Planning and Management

3.1 Genetic Conservation Subprogram

Genetic conservation activities monitor and catalogue genetic resources for indigenous tree species, research conservation methods and needs, provide background genecology information for non-commercial species, and provide guidance to the FGC and the FLNR on policy development.

3.1.1 Planning

Genetic conservation activities are developed through the FGC Genetic Conservation TAC (GCTAC), with programs and spending approved by the FGC.

3.1.2 Management

Subprogram delivery is primarily shared by the Centre for Forest Conservation Genetics at the University of BC (CFCG) and the Tree Improvement Branch of the FLNR. The Provincial Tree Seed Center (Tree Improvement Branch) provide *ex situ* seed inventory and collection planning. The GCTAC sets broad objectives and provides budget recommendations to the FGC.

The CFCG receives funding through a Transfer Agreement with the FLNR under the LBIS Tree Improvement Program. In addition, the Centre collaborates with other groups and agencies, and seeks funding from other sources as opportunities arise. Significant adjustments in technical objectives or budgets for projects funded through the LBIS must be approved by the GCTAC.

3.1.3 Activities and Budget

The Centre for Forest Conservation Genetics will help identify specific *in situ* and *ex situ* conservation needs and strategies, and will assist with forest certification and climate change issues as they relate to genetic conservation and management. Investments through the CFCG also allow leveraging of funds with other provincial, national, and international agencies in the area of conservation genetics. Centre staff continue to develop and manage the ClimateBC model that is now widely used for understanding climate-change impacts in forest ecosystems.

In the 2011/12 fiscal year, the Centre will receive \$113,000 for projects listed in Table 1. In addition, the Centre will continue to provide expertise on climate change impacts, seed-transfer options, and ongoing planning and policy developments related to climate change. The ClimateBC model, which is extensively used for non-genetics applications, will continue to be developed and managed with support from this budget as well as an a research grant from another agency.

A budget of \$92,000 is allocated to the Tree Improvement Branch for projects listed in Table 1, including testing of the *ex-situ* conservation seedlot collections held at the Provincial Tree Seed Centre.

Table 1 Conservation subprogram budget for 2011/12. Only activities funded by the Land Base Investment Strategy account are shown here.

Project	Budget	Products
UBC Center for Forest Conservation Genetics		
Projects leveraged with the ADAPTREE Genome Canada grant		
Climate Modelling	\$ 55,000	1 report
Seed Orchard –Adaptive Diversity	\$ 16,630	1 report
Computing / web updates	\$ 7,000	1 report
Climate change and genetic conservation	\$ 2,000	1 report
Non-commercial species	\$ 6,000	1 report
Interior spruce	\$ 10,000	1 report
General CFCG expenses	\$ 8,000	
Subtotal	\$ 104,630	
8% UBC overhead	\$ 8,370	
Total for the Centre for Forest Conservation Genetics	\$ 113,000	
FLNR Tree Improvement Branch		
Ex situ conservation		
Seed procurement for priority species, including relevant documentation	\$ 29,500	1 report
Seed processing to spec for TSC storage	\$ 8,000	1 report
In situ conservation		
Population genetic analyses of model species to develop conservation guidelines for minor species lacking genetic data	\$ 43,000	1 report
Report summarizing results of catalogue field verification	\$ 500	1 report
inter situ conservation		
Technical report summarizing status of MFLNR genecology programs for 10 non-commercial tree species	\$ 3,500	
Meetings, travel, etc.	\$ 2,500	
Provincial Tree Seed Center		
Testing of conservation seed collection	\$ 5,000	
Total for FLNR Tree Improvement Branch	\$ 92,000	
TOTAL BUDGET	\$ 205,000	

3.2 Tree Breeding Subprogram

The Tree Breeding Subprogram focuses on the continued development of parent trees selected for traits that will enhance timber supply and stand resilience. Selected parent trees are used for the production of seed and vegetative material. Tree breeding activities include selecting parents in wild stands, propagation, field-testing offspring, mating, establishing/maintaining/measuring trials, and support research. For most provincial programs, selection from wild stands is largely complete. Breeding strategy and level of advancement vary, but all breeding programs are well into field testing and selection at either the first or second generation. This Subprogram also includes realized-gain trials that quantify area-based gains in timber production, and support research on pests and other issues that impact the achievement of genetic gains in timber supply and quality. Some genecology research associated with progeny tests is also carried out. The tree breeding subprogram is implemented by the FLNR Tree Improvement Branch.

3.2.1 Planning

Priorities for breeding activities are set among seed planning units using value traits (mean annual increment, level of planting), expected future impact under climate change, and logistical considerations such as ease (cost) of operating breeding and seed orchard activities. Breeding, genecology, and genetics research strategies developed by FLNR tree breeders were reviewed by FGC Interior and Coastal TACs, and direction was given to ensure alignment with FGC strategic objectives and with ongoing operational needs and programs.

Tree Breeding Subprogram budgets were developed at the SPU level by the RLNR breeder responsible, and reviewed by TAC members. These budgets were then adjusted by the Manager, Forest Genetics, FLNR Tree Improvement Branch, with input from the FGC Program Manager, to find efficiencies and to meet the total expected Subprogram budget allocation. A budget recommendation was reviewed by the FGC on March 16, 2011 and adjusted as necessary to meet the overall budget allocation.

3.2.2 Management

The FLNR manages Tree Breeding Subprogram activities, with progress reported to cooperators through the FGC. The Manager of Forest Genetics, FLNR Tree Improvement Branch, has authority for project re-allocations in support of FGC objectives. Substantial re-allocations between seed planning units or from breeding activities to technical support activities require the agreement of the Director, Tree Improvement Branch and the FGC Program Manager.

3.2.3 Activities and Budget

The 2011/12 budget for the Tree Breeding Subprogram is \$1.156 million, including support for clonebank maintenance at the Cowichan Lake Research Station. Table 2 summarizes budgets and key performance indicators (KPI) for breeding activities by SPU and activity.

3.3 Operational Tree Improvement Program (OTIP)

The OTIP subprogram supports FGC objectives to increase the quality and quantity of select seed produced from existing private and FLNR seed orchards. It also provides technical support for orchard production and management.

3.3.1 Planning

OTIP investment is based on input from the Interior and Coastal TACs (see Appendix 3) and on species plans that outline seed production strategies within each SPU. Based on these strategies, and on priority lists approved by the TACs, a formal call for proposals is issued.

FGC committees review and rank all proposals against FGC objectives and SPU priorities, based on technical merit, impact, value, and cost. OTIP projects are selected to increase the genetic gain in seed made available for reforestation and to increase the quantity of seed produced from existing orchards. They support FGC short-term objectives for gains in the growth rate, pest resistance, and wood quality of reforestation materials. They also support FGC long-term objectives through the replacement of trees in existing seed orchards with trees of higher genetic value. The total budget allocation for OTIP is recommended by the FGC to the provincial Chief Forester and LBIS administrators in the FLNR.

3.3.2 Management

The FLNR Tree Improvement Branch administers OTIP in accordance with recommendations from the FGC. Requests for re-allocations or for new funding are handled by the FLNR Tree Improvement Manager of Business Operations in consultation with the appropriate TAC and the FGC Program Manager. All projects report on key performance indicators to enable tracking of planned activities.

3.3.3 Activities and Budget

The 2011/12 OTIP budget is \$765,000, with allocations of \$116,000 to coastal orchards and \$649,000 to interior orchards. Table 3 outlines approved OTIP budgets and performance indicators for all seed planning units.

3.4 Expansion of Orchard Seed Supply Subprogram (SelectSeed Co. Ltd.)

This subprogram was established in 1999 to address a need for seed orchard capital investment to meet FGC objectives. For seed planning units (SPU) with insufficient orchard capacity, as determined by the ITAC and CTAC at the time, orchard-development investments were initiated through SelectSeed Company Ltd. using competitive bids and long-term contracts.

SelectSeed is wholly owned by the Forest Genetics Council through the B.C. Forest Genetics Society. All Society members are on Council. The SelectSeed Board of Directors is elected by Society members (Figure 3). SelectSeed’s mission is to “support Forest Genetics Council objectives for the development of seed orchard facilities to meet the provincial demand for high quality, genetically adapted tree seed through investments, cooperative work with FGC members and effective program management.”

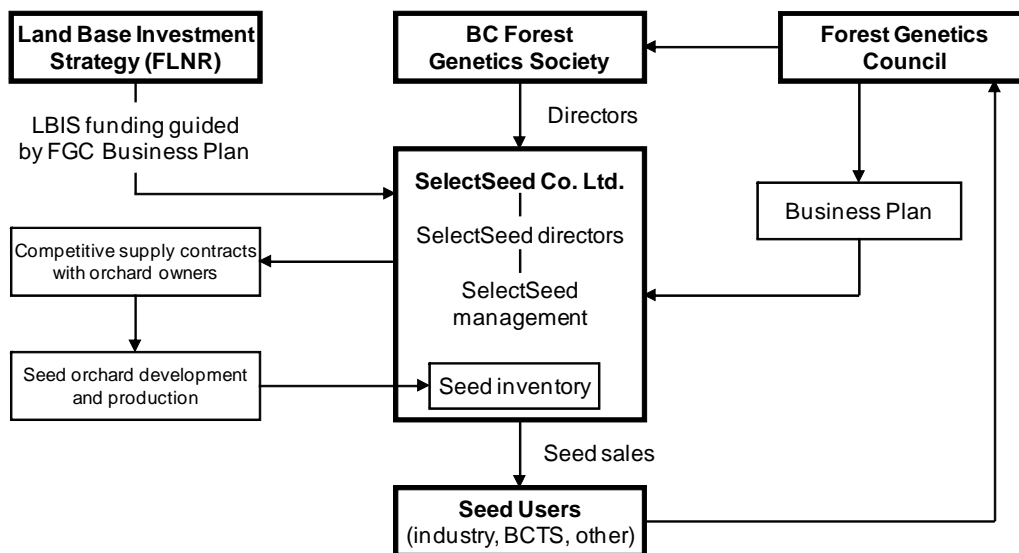


Figure 3 Organizational relationships among SelectSeed Ltd., Land Base Investment Strategy, Forest Genetics Council, and the B.C. Forest Genetics Society

3.4.1 Planning

SelectSeed's Business Plan and investments are based on the long-term and annual business plans prepared by the FGC and its associated committees. Species plans (Appendix 3) contain analyses of projected orchard expansion needs that guide SelectSeed investments. Specific technical advice is sought as required from Species Committees or others.

3.4.2 Management

Management discretion for spending lies with the SelectSeed Board of Directors, and is limited by the terms of the SelectSeed Multi-Year Agreement with the FLNR. Investments in new orchards will be approved by the FGC and follow FGC and TAC guidance, with emphasis on both the technical quality of developments and on cost. SelectSeed's annual business plan was approved by the Forest Genetics Council on March 16, 2011.

3.4.3 Activities and Budget

In 2011/12, SelectSeed will continue to focus on the management of 11 long-term orchard agreements covering the operation of 14 orchards (Table 5). No new orchard agreements are anticipated during the year.

Seed orchard management and development activities for the fiscal year include planting 450 ramets in three orchards, and propagating and holding 600 ramets. A total of 35,147 ramets are planned across all 14 orchards. The total number of established ramets is approximately 34,600, with ongoing mortality due to pests and other causes removing approximately 150 ramets per year. All grafting and holding work is done through contracts. Seed production for 2012 is forecast at 42 kilograms of lodgepole pine, 25 kilograms of Douglas-fir, and 10 kilograms of spruce. Expected gross revenue from seed sales are forecast at \$451,000.

Other activities will include program management on behalf of the Forest Genetics Council, including Business Plan and budget development, committee support, managing program development and subprogram interactions, and preparation of mid-term and annual reports.



**Table 2 2011/12 budgets (\$ x 1000) and KPI by seed planning unit for tree breeding and associated technical support activities.
See Species Plans (Appendix 3) for more detail on seed planning units.**

Seed Planning Unit				220 Selection and Breeding								230 Progeny testing								240 Technical Support								Total \$ x 1000		
				211		221		222		223		231		232		233		234		235		240-1		240-2		240-3			240-4	
				# genotypes selected		# genotypes establ. in arboreta/		# genotypes maint. in breeding		# crosses made		# test sites sown		# progeny sites establ./prepped		# progeny test sites maintained		# of progeny sites assessed		# of test sites analyzed		Projects								
#	Spp.	SPZ	Elev (m)	KPI	\$	KPI	\$	KPI	\$	KPI	\$	KPI	\$	KPI	\$	KPI	\$	KPI	\$	KPI	\$	KPI	\$	KPI	\$	KPI	\$	KPI	\$	
1	Fdc	M	1-700	20	6	100	2	100	2	10	2	2	2	3	12	36	6	20	4	25									95	
2	Cw	M	1-600			100	3	450	2	200	10	3	10	3	20	12	35	8	40			1	12						132	
3	Hw	M-S	1-600	25	1	125	1	150	1						6	36			9	1	5	7							47	
4	Sx	NE	1000-1500							100	5																		5	
5	Sx	NE	1500-1900																										0	
6	Ss	M	1-500	200	2										12	18	3	18			1	10	1	12					60	
7	Pli	NE	700-1400					160	10						8	23	1	4											37	
8	Pwc	M/SM	1-1400	200	9					100	12	3	3				15	33	3	15									72	
9	Ba	M	1-1000																										0	
10	Pli	TO	700-1400	40	16																								20	
11	Yc	M	1-1100			100	2	300	3					2	10	9	45			1	4								60	
12	Pli	PG	700-1200	100	28										3	10	3	11											49	
13	Lw	NE	700-1400					2,000	20	100	5																		25	
14	Sx	PG	600-1200												4	11	5	32			4	23	5	25	60	5	1	8	104	
15	Pwi	KO	500-1400					40	5						3	10	3	7											22	
16	Pli	TO	1400-1600																										0	
17	Pli	BV	700-1200														8	4											4	
18	Pli	CP	700-1100														1	12											12	
19	Fdc	SM	400-1200															18											18	
20	Pli	NE	1400-2000																										0	
21	Fdi	NE	400-1000							100	5				4	12	4	18			1	2							37	
22	Fdi	NE	1000-1600							100	5																		5	
23	Sx/Ss	SM/NST	all																										0	
24	Hw	M	600-1100												4	20													20	
25	Sx	EK	750-1700			2,000	10																						10	
26	Pli	PG	1200-2000																										0	
27	Cw	SM	200-1000												2	5	2	6											11	
28	Sx	TO	1300-1900																										0	
29	Pli	EK	1500-2000																										0	
30	Sx	TO	700-1300																										0	
31	Fdc	M	700-1200																										0	
32	Pli	EK	800-1500												2	4	2	15											19	
33	Cw	SM	600-1500												2	5	2	6											11	
34	Lw	EK	800-1500							100	5																		5	
35	Sx	BV	500-1200																										0	
36	Bg	M	1-700	18	0																								0	
37	Fdi	QL	700-1200																										0	
39	Fdi	EK	700-1400												4	8	4	20											28	
40	Sx	PR	650-1200																										0	
41	Fdi	PG	700-1000																										0	
42	Sx	PG	1200-1550																										0	
43	Fdi	CT	600-1200												3	6	3	15											21	
44	Sx	NE	1-1000							35	2																		2	
45	Pli	BB/CHL	all																										0	
46	Bl	all int.	all																										0	
47	Bn	M	all																										0	
48	At/Ep/Ct	interior	all			10	1	50	6																				7	
49	Dr/Ct/Mb	Coast	all					145	7	25	2				2	5	2	10			1	10							34	
50	Lw	NE	1200-1800																										0	
51	Yp	S.Int.	300-1200																										0	
Clonebank maintenance and upgrades at the Cowichan Lake Research Station																													25	
To be allocated																														160
Totals				603	62	2,485	19	3,395	56	870	53	8	15	8	30	92	289	73	293			13	64	6	37	60	5	1	8	1,156



Table 3 2011/12 budgets (\$ x 1000) and KPI by seed planning unit for OTIP projects. See species plans (Appendix 3) for SPU detail.

Seed Planning Unit				320 Quality / Quantity Boosts														340 Pest Management						350 Tech Support		Total \$x1000		
				321 Grafting (# grafts)		322 Hold grafts (# ramets)		323 Replacement (# ramets)		324 Roguing (# rogued)		325 SMP/CP (# ramets)		326 Induction (# ramets)		327 Orch mgt. (# ramets)		331 Cutting donors (# cuttings)		341 Insect control (# ramets)		342 Disease control (# ramets)		343 Monitoring (# ramets)			# of reports	
#	Spp	SPZ	Elev (m)	KPI	\$	KPI	\$	KPI	\$	KPI	\$	KPI	\$	KPI	\$	KPI	\$	KPI	\$	KPI	\$	KPI	\$	KPI	\$	KPI	\$	
1	Fdc	M	1-900	1	3	1247	4	429	3	220	1	919	4	945	1	8471	16			4694	4	5213	1			1	8	44.8
2	Ow	M	1-700	60	0	609	1	30	0			352	5	188	0	592	3			780	2			240	0	1	5	17.2
3	Hw	M	1-600																									0.0
4	Sx	NE	1000-1700			103	0	89	1	400	12					279	1			2118	7	2118	1	2050	1	1	14	37.3
5	Sx	NE	1700-2100			8	0	73	1	350	10					252	1			1941	6	1941	1	1941	1			20.0
6	Ss	M	1-500							100	1					551	2			551	2							4.2
7	Pi	NE	700-1600			208	1	35	0	20	0	3493	5			1681	3			25299	38	4772	2	14666	9	2	27	85.7
8	Pv	M/SM	1-1000	120	1											652	3											3.8
9	Ba	M	1-1000																									0.0
10	Pi	TO	700-1400					50	0	50	1	6442	4			753	2			9106	6	4906	1	9106	5	2	1	20.6
11	Yc	M	1-1100													4717	3	16440	11	5837	0					2	17	31.2
12	Pi	PG	700-1400	1500	14	2000	4	1688	20	80	0	14648	14			696	3			30828	51	5453	2	20725	7			115.9
13	Lw	NE	700-1600													462	1			1847	2	1847	1	1847	1			3.7
14	Sx	PG	600-1400							1000	21									2079	1			2079	1	1	8	31.6
15	Pw	KQ	500-1400	200	2	159	1	34	1			1870	3			496	1			5895	21	3130	1	5114	4			33.1
16	Pi	TO	1400-1600							396	10	3504	3			1	0			11801	32			12564	7			52.1
17	Pi	BV	700-1400	2200	21	4000	6	1257	17	50	0	12563	17	200	1	1062	2			21134	25	2532	1	29400	13	1	1	103.9
18	Pi	CP	700-1300							30	0	13882	15	150	0	650	2			13536	11	830	0	12888	6			34.1
19	Fdc	SM	200-1000	200	2	159	1					743	1			584	3			743	0							7.4
20	Pi	NE	1600-2000																									0.0
21	Fdi	NE	400-1200									1200	2	1700	3	729	1			2187	8	2187	1	1200	1			16.1
22	Fdi	NE	1000-1800									1420	3	473	1	811	2			3243	13	3243	1	2000	1			21.4
23	Sx/Ss	SMNST	all																									0.0
24	Hw	M	600-1100													455	3			520	0							3.3
25	Sx	EK	750-1900																									0.0
26	Pi	PG	1400-2000																									0.0
27	Ow	SM	200-1000																									0.0
28	Sx	TO	1300-2100											1000	3	1508	0			1508	1	1508	0	1508	1			5.9
29	Pi	EK	1500-2000																									0.0
30	Sx	TO	700-1500																									0.0
31	Fdc	M	900-1200	40	0	35	0	35	0							247	1			282	0							2.1
32	Pi	EK	800-1500									1623	3			606	1			2935	5	2423	1	2512	2			12.4
33	Ow	M	700-1500																									0.0
34	Lw	EK	800-1700																									0.0
35	Sx	BV	500-1400	100	1	121	0	132	1	200	6	524	2	175	1	178	0			3246	4	3246	1	3246	1			17.7
36	Bg	M	1-700																									0.0
37	Fdi	QL	700-1400									4	3	538	2					1185	1							5.6
39	Fdi	EK	700-1400									1	1			278	1			1112	3	1112	0	1112	1			5.7
40	Sx	PR	650-1200	150	1	150	0	96	1											3776	2	3776	1	3776	1			7.0
41	Fdi	PG	700-1200									7	5	460	1					1265	1							7.5
42	Sx	PG	1200-1550																	1017	1							1.3
43	Fdi	CT	600-1400									3	2	450	1					962	1							4.1
44	Sx	NE	1-1000									2	1			225	1			900	4	900	0	900	1			6.1
45	Pi	BB/CHL	all																									0.0
46	Bl	all int.	all																									0.0
47	Bn	M	all																									0.0
48	At/Ep/Ct	interior	all																									0.0
49	Dr/Ct/Mb	Coast	all																									0.0
50	Lw	NE	1200-1800																									0.0
Totals				4571	46	8799	19	3948	46	2896	63	63200	92	6279	16	26936	54	16440	11	162327	254	51137	18	128874	64	11	81	762.9
Risk managed																										0		
Total																										\$ 762.9		

Spending for 2011/12 is projected at \$1,015,000, of which \$454,000 will be supported through LBIS funds allocated in 2011/12, \$451,000 from seed sales, and the remaining \$110,000 from cash reserves and return on investments. Seed production forecasts are based on long-term production curves for similar orchards, but annual production can vary widely.

Table 4 SelectSeed Company Ltd. 2011/12 budget by category

Category	Total projected expenses / income
Expenses	
Orchard management costs	567,000
Propagation and holding	13,000
SelectSeed management and FGC support	256,600
NSERC Industrial Chair support	55,000
Crop production / seed extraction	123,400
Total Expenditures	\$1,015,000
Income	
Seed sales	451,000
Interest from investments	10,000
Total Income	\$461,000
Carry-over cash from prev. year	\$100,000
Total MYA support	\$454,000

Table 5 Orchards under contract to SelectSeed Company Ltd.

<i>Seed planning unit</i>				
SPU#	Species	Seed zone	Planned # ramets	Location
21	Fdi	NE low	2187	Armstrong - Grandview
37	Fdi	QL	776	Vernon
41	Fdi	PG	786	Vernon
28	Sx	TO high	1056	Armstrong - Eaglerock
30	Sx	TO low	454	Armstrong - Eaglerock
7	Pli	NE low	1000	Armstrong - Grandview
10	Pli	TO low	4796	Armstrong - Grandview
12	Pli	PG low	4884	Kettle Valley
12	Pli	PG low	4500	Vernon
16	Pli	TO high	3508	Armstrong - Eaglerock
17	Pli	BV low	3000	Vernon
17	Pli	BV low	3100	Sorrento
18	Pli	CP low	2000	Sorrento
18	Pli	CP low	3100	Kettle Valley
TOTAL			35,147	

3.5 Extension and Communication

The Extension and Communication Subprogram supports FGC goals and objectives through:

- extension (providing client-focused solutions and training to seed users and tree improvement specialists),
- communication (developing and disseminating information on the program and its activities to all FGC target audiences),
- training.

3.5.1 Planning

Extension and communication activities are developed and guided by the FGC Extension Technical Advisory Committee (ETAC). ETAC includes representatives from the FLNR, forest licensees, and the private consulting community.

The ETAC extension and communication strategy is based on three broad goals:

1. To work closely with Council and its TACs to coordinate and manage extension efforts in support of Council's provincial genetic resource management program.
2. To provide information and policy advice to Council on issues related to extension
3. To act as a forum for user feedback.

3.5.2 Management

ETAC identifies goals and audiences for extension, communication and education activities, and with the assistance of an Extension Coordinator from the FLNR – Tree Improvement Branch, develops a business plan. The Coordinator is responsible for the management of ETAC activities, and the coordination of ETAC work in conjunction with Council and other committees of Council. Projects are undertaken through contracts or through direct delivery by cooperators. Budget development for LBIS funds is first done by the ETAC, with final approval by the FGC. Project spending is approved by the ETAC Chair and the FGC Program Manager, and must meet administrative guidelines set out for LBIS funds. ETAC reports to Council on activities, progress, and spending at mid-year and year end.

3.5.3 Activities and Budget

The extension and communication budget for 2011/12 is \$20,000. In-kind, staff time and other contributions by affiliated agencies and companies are incremental to this amount and are not listed. Projects and budgets are summarized in Table 6.

Table 6 Extension and communication projects and budgets for 2011/12

Project	Budget (\$)
Client survey of extension needs	3,000
Workshops (to be determined from the following topics):	9,000
Nutrient analysis for seed orchards	
Cone collection methods for non-orchard forestry staff	
Seed and seedling workshop	
Seed orchard pest management workshop	
Extension meeting and presentation	
Support for other groups with topics relevant to FGC needs	
Whitebark Pine Ecosystem Foundation meeting Lillooett	1,000
Publications (TICtalk, Extension Notes, generic presentation for use at educational events and with new employees)	3,500
Administration, opportunities, travel	3,500
Total	\$20,000

3.6 Genetic Resource Decision Support Subprogram

The Genetic Resource Decision Support Subprogram (GRDS) supports FGC goals and objectives through the development of genetic information management systems. These systems assist clients in decision making, seed policy and planning, seed use (registration, storage, selection & use, and transfer), timber supply analysis, effectiveness evaluation and monitoring and other GRM activities.

3.6.1 Planning

GRDS projects are developed and guided by the Genetic Resource Decision Support steering committee comprised of ministry, industry and academic representatives.

3.6.2 Management

The GRDS Steering Committee identifies short- and long-term goals that support clients GRM information needs. Significant project changes or re-allocations of funds from the approved Business Plan require approval of the Steering Committee and the FGC Program Manager on behalf of the FGC.

3.6.3 Activities and Budget

Priorities for the 2011/12 fiscal year relate to the production of information in support of the collection of cones and seed needed for significant reforestation efforts related to the mountain pine beetle epidemic and to large fires in central BC. Climate-based seed transfer policy development and associated information systems for operational use are also a priority. A total of \$60,000 is allocated to these projects.

3.7 Cone and Seed Pest Management Subprogram

The Pest Management Subprogram supports FGC objectives by reducing orchard seed losses to insect and disease pests through research, technical support, and the development of integrated pest management strategies in conjunction with orchard managers and pest management research and extension specialists.

3.7.1 Planning

The Subprogram is guided by a Pest Management Technical Advisory Committee (PMTAC), with membership from industry, the FLNR, the Canadian Forest Service, and universities. Issues are identified and ranked by the PMTAC based on perceived impact on seed losses, and the effect of these seed losses on FGC objectives. The TAC also makes recommendations to Council regarding subprogram organization, management, and budgets.

3.7.2 Management

With direction from the PMTAC, research proposals were developed by the pest management scientist and pest management specialists supported through the subprogram. These were subsequently reviewed by Pest Management TAC members, and recommendations made for project modifications and acceptance.

The FLNR Tree Improvement Branch manages budgets and the financial administration of projects recommended by the PMTAC and approved by the FGC. Significant priorities and changes during the fiscal year are made in consultation with the TAC and the FGC Program Manager.

3.7.3 Activities and budget

The total Pest Management subprogram budget for 2011/12 is \$130,000. In-kind, staff time and other contributions by affiliated companies and agencies are incremental to this amount. Projects and budgets are summarized in Table 7.

Table 7 Cone and Seed Pest Management Subprogram projects for 2011/12.

Project	Species impacted	Budget (\$)	Products
Operational support for FLNR cone & seed pest biologist	All species	\$ 26,325	Progress report
Operational support for FLNR cone & Seed pest research laboratory	Sx, Fdi, Fdc, Lw, Pw	\$ 26,775	Progress report
Pesticide trials to identify new pesticides and to develop data for their registration for use on cone and seed pests	Fdi, Sx	\$ 29,400	Progress report
Contarinia/Leptoglossus visual foraging Cues project	All except Cwr & Yc	\$ 47,500	Progress report
Total budget		130,000	

3.8 Genecology and Seed Transfer Subprogram

The purpose of the Genecology and Seed Transfer Subprogram is to effectively direct funding to priority genecology and seed transfer projects in support of FGC strategic objectives and provincial seed transfer policy development.

3.8.1 Planning

The subprogram is guided by the Seed Transfer TAC (STTAC), with representation from FLNR, industry, and university stakeholders. Priorities for genecology and seed transfer information needs are set within the context of other work currently underway, such as in the Breeding Subprogram, existing genecology trials, and seed transfer policy needs. The STTAC reviews priorities and projects set out by FLNR Tree Improvement Branch (TIB) scientists, leads the development of a call for proposals for non-FLNR projects, and makes recommendations to the FGC regarding budgets, priorities, and delivery process.

3.8.2 Management

The STTAC developed a list of priorities for genecology and seed transfer projects by species and type of work. Based on these priorities, a business plan was compiled by TIB scientists and reviewed by the STTAC. In addition, a call for proposals was released by the TIB on behalf of the STTAC and proposals were screened by a review committee of the STTAC. Funding recommendations were made to the FGC

The FLNR Tree Improvement Branch manages financial administration for approved projects through either direct spending within the Branch or through contracts with successful project proponents. Project financial and progress reporting is managed through the TIB, and incorporated in annual FGC reports.

3.8.3 Activities and budget

The total budget allocated to the Genecology and Seed Transfer Subprogram for 2011/12 is \$620,000. This amount falls into three primary categories:

1. Proposals that were successful in a call for proposals open only to proponents outside the FLNR, totaling \$99,796 (Table 8).
2. Projects led by scientists from the FLNR TIB totaling \$287,200 (Table 9),
3. Assisted Migration Adaptation Trial investment led by the FLNR TIB and totaling \$233,000 (Table 9),

Table 8 Genecology and Seed Transfer Subprogram projects led by non-FLNR proponents and approved through a call for proposals.

Species	Project Title	Budget	Performance indicator
Sx, Pli	Assessing the adaptive portfolio of reforestation stocks for future climates: Common garden experiments	\$34,812	1 report
All	Development of a climate-based seed transfer system for changing climates	\$44,076	1 report
Cwr;Lw	Climatic response of western redcedar and western larch seed sources using controlled climate chambers.	\$10,908	1 report
Fdi	Using dendroecology of Interior Douglas-fir to quantify critical seed transfer distance	\$10,000	1 report
Total		\$99,796	

Table 9 FLNR Tree Improvement Branch Genecology and Seed Transfer Subprogram projects, recommended funding, and performance indicators (KPI).

Species	Genecology research priority	251		252		253		254		255		256		257		Species total (\$ x 1000)
		Seed procurement: # sources		Seedling production: # seedlings x 1000		Trial establishment: # test sites		Trial maintenance: # test sites		Trial measurement: # test sites		Trial Assessment: # test sites		Analysis of trials: # trials		
		KPI	\$	KPI	\$	KPI	\$	KPI	\$	KPI	\$	KPI	\$	KPI	\$	
Pti	High	250	15													15.0
Fdi	High							9	35.0	6	30.0					65.0
Ow c	High			20	10.0			6	7.5	6	7.5	6	3.0			28.0
Fdc	High															0.0
Sx	High							18	15.0			6	4.0	16	6.0	25.0
Hw	High							12	18.0	2	4.0			2	0.5	22.5
Bl	Medium							8	18.0	2	2.5					20.5
Lw	Medium															0.0
Cw i	Medium							8	14.5			8	3.5			18.0
Ba	Medium							4	9.0	5	12.5					21.5
Pw	Medium											8	10.0			10.0
Yc	Medium							5	6.5	5	8.5					15.0
Ss	Low							4	4.0	6	6.0	6	2.0			12.0
Dr	Low	40	5.0					3	5.0							10.0
Ep	Low															0.0
Bg	Low									4	4.0					4.0
At	Low															0.0
Act	Low			4	5.0	1	5									10.0
Fy	Low															0.0
Mb	Low							4	10.0							10.0
Bn	Low							5	8							8.0
Risk managed																-7.3
AMAT*				52	28	12	182	24	10	24	9		4			233.0
Totals		290	20	76	43	13	187	110	161	60	84	34	27	18	7	520.2

* Assisted Migration Adaptation Trial; includes multiple species.

3.9 Administration

Administration of the LBIS Tree Improvement Program is provided by the Tree Improvement Branch of the FLNR. There are three components to this work:

- the administration of LBIS funds allocated to subprograms managed by the FLNR, including Tree Breeding, OTIP, Genecology and Seed Transfer, Extension and Communication, Pest Management, and Genetic Resource Information Management,
- the administration of contracts with successful proponents through the OTIP, Genecology and Seed Transfer proposal calls, and with universities and SelectSeed Company Ltd.,
- support for the business of the FGC, including scheduling meetings, assistance with information distribution, and dealing with queries and planning.

3.9.1 Costs

FLNR administration costs are reviewed by the FGC, and a recommendation is made for support under LBIS. The administration budget is approved by the FGC in conjunction with other LBIS Tree Improvement Program budget items.

3.9.2 Management

Overall program management is carried out on behalf of the Forest Genetics Council by the FGC Program Manager working for SelectSeed Company Ltd. This work includes planning, coordination of committees, Business Plan development, reporting, correspondence, and representing the FGC in daily business. The FLNR Tree Improvement Branch provides administrative support, overall financial management, and assistance with the coordination of FGC business.

3.9.3 Activities and Budget

The 2011/12 budget for the Administration Subprogram is \$30,000. This amount includes all program administration costs incurred by the FLNR Tree Improvement Branch.

3.10 Applied Tree Improvement and Biotechnology

The Applied Tree Improvement and Biotechnology research program carried out at the University of British Columbia received funds through the LBIS Tree Improvement Program. A steering committee provided review of ongoing research proposed through this project and advice on implementation. The total funding allocation for 2011/12 is \$137,000. Projects include estimating parental gametic contributions in western larch and Douglas-fir seed orchards seed orchards, estimating of non-orchard pollen contamination levels in coastal Douglas-fir, and better understanding pollination dynamics in redcedar orchards.

3.11 Budget Summary

A Land Base Investment Strategy Tree Improvement Program budget allocation of \$3.5 million is approved for the 2011/12 fiscal year, and is summarized in Table 10.

Table 10 2011/12 budget summary for LBIS Tree Improvement Program contributions to subprograms.

Subprogram	Allocation (\$ x 1000)
Genetic Conservation	205
Tree Breeding	1,156
Operational Tree Improvement Program (OTIP)	765
Extension and Communication	20
Genetic Resource Information Management	60
Cone and Seed Pest Management	130
Expansion of Orchard Seed Supply (SelectSeed Ltd.)	440
Genecology and Seed Transfer	620
Applied Tree Improvement and biotechnology (UBC)	137
Administration (Tree Improvement Branch)	30
Risk managed	-63
Total	3,500

4.0 Funding and Administrative Mechanisms

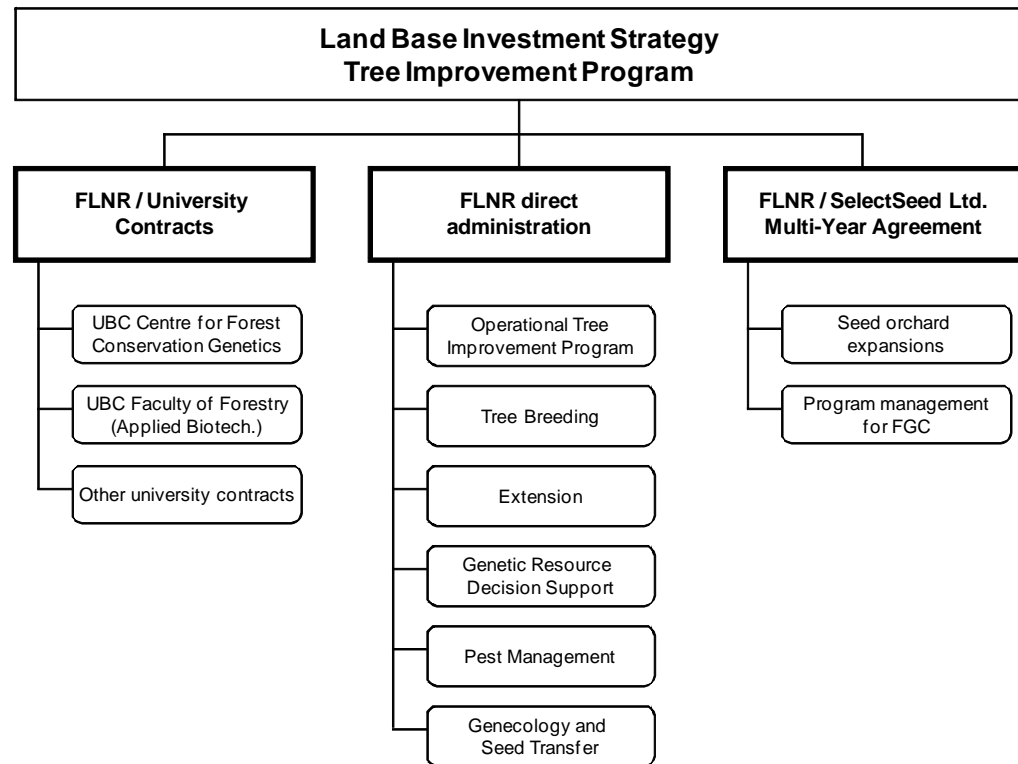
4.1 Funding Agreements

The Land Base Investment Strategy Tree Improvement program is administered by the Tree Improvement Branch of the FLNR. FGC Business Plan activities are supported through the following administrative mechanisms:

- FLNR/SelectSeed Co. Ltd. Multi-Year Agreement
- FLNR contracts
- FLNR/University contracts
- FLNR direct management and administration

The subprograms associated with each of the mechanisms are shown in Figure 4. Resources from other agencies include in-kind facilities, staff and direct funds. Seed sales from orchards also provide revenue to support seed production. Only Land Base Investment Program funding is detailed in this Business Plan.

Figure 4 Administrative mechanisms for the delivery of the LBIS Tree Improvement Program funding.



4.2 Monitoring and Reporting

Monitoring progress is an important objective of the FGC program. All LBIS funded activities report on performance relative to criteria. In addition, progress towards long-term objectives is measured at the provincial level for all FGC activities.

4.2.1 Project-Level Reporting

Projects from each subprogram provide reports to be published in the annual Tree Improvement Program Projects Report for 2011/12. Work quality will be periodically audited through Review Committees and site visits. Reports will be received and reviewed by Technical Advisory Committees or project steering committees, as appropriate, as well as by the FLNR Program Administrator and the FGC Program Manager. Quarterly reporting to the FLNR Program Administrator on spending and progress is required for all OTIP projects and for SelectSeed Ltd.

4.2.2 Provincial-Level Reporting

Progress towards FGC provincial objectives (see section 1.1) for increasing genetic worth of seedlots used, increasing the use of orchard seed, and climate-based seed transfer will be reported using provincial summaries of performance indicators. SelectSeed Company Ltd. will produce an annual report showing performance indicators, financial statements, and audit reports. Reporting requirements are identified in Table 11.

Table 11 List of reports, responsibilities, distribution, and preparation dates for LBIS-supported projects.

Type of report	Prepared by	Prepared for	Distribution	Dates due
Interim project status	Project leader	FLNR program administrators for early FY reallocations	On request	Aug 1
Project level	Project proponent	FLNR Program Administrator	On request	Oct 30 April 30
Annual reports and progress summary	FGC Program Manager, Program Administrator FLNR; project leader contributions	FGC; FLNR Chief Forester; TACs; general distribution	FGC members; TACs; FIA administrators; FLNR; general distribution; FGC website	April 30

* The Interim Project Status report is an informal report intended only to identify projects that are not progressing as planned, and for which funds may be re-allocated.

Appendix 1: Seed Planning Units and Categories

The following table lists seed planning units (SPU) and activity categories. All provincial SPUs are grouped to one of the four categories shown below using a protocol developed by the FGC Strategic Planning Committee. The protocol evaluates SPUs based on the net present value of tree improvement investments, feasibility criteria, uncertainty, opportunities, and seed transfer information needs. Listed SPUs have a Species Plan in Appendix 3, and only include SPUs falling into categories 1 to 3. Annual planting is the 5-year mean of 2007–2011 seedling requests to SPAR. Categorization for SPUs # 6, 8 and 15, are based on an expectation of increased planting with pest resistant material.

Program categories include;

1. Advanced-generation program,
2. First-generation program,
3. Genecology research only, and
4. No genetics program.

Seed planning unit (SPU)					Program	Seed planning unit (SPU)					Program
#	Species	SPZ	Elev. band (m)	category		#	Species	SPZ	Elev. Band (m)	category	
1	Fdc	M	1-900	1		27	Cw	SM	200-1000	2	
2	Cw	M	1-700	1		28	Sx	TO	1300-2100	2	
3	Hw	M	1-600	2		29	Pli	EK	1500-2000	2	
4	Sx	NE	1000-1700	1		30	Sx	TO	700-1500	1	
5	Sx	NE	1700-2100	2		31	Fdc	M	900-1200	2	
6	Ss	M	1-500	2		32	Pli	EK	800-1500	2	
7	Pli	NE	700-1600	1		33	Cw	M	700-1500	2	
8	Pw	M/SM	1-1000	1		34	Lw	EK	800-1700	1	
9	Ba	M	1-1000	3		35	Sx	BV	500-1400	2	
10	Pli	TO	700-1400	1		36	Bg	M	1-700	3	
11	Yc	M	1-1100	2		37	Fdi	QL	700-1400	2	
12	Pli	PG	700-1400	1		38	Hw	M north	1-600 (part of SPU 3)		
13	Lw	NE	700-1600	1		39	Fdi	EK	700-1400	2	
14	Sx	PG	600-1400	1		40L	Sx	PR low	<650	2	
15	Pw	KQ	500-1400	1		40	Sx	PR mid	650-1200	2	
16	Pli	TO	1400-1600	2		41	Fdi	PG	700-1200	2	
17	Pli	BV	700-1400	1		42	Sx	PG	1200-1550	2	
18	Pli	CP	700-1300	1		43	Fdi	CT	600-1400	2	
19	Fdc	SM	200-1000	2		44	Sx	NE	1-1000	1	
20	Pli	NE	1600-2000	2		45	Pli	BB/CHL	All	3	
21	Fdi	NE	400-1200	1		46	Bl	all int.	all	3	
22	Fdi	NE	1000-1800	2		47	Bn	M	all	3	
23	Sx/Ss	SM/NST	all	2		48	Broadleaves	Interior	-	3	
24	Hw	M	600-1100	2		49	Broadleaves	Coast	-	3	
25	Sx	EK	750-1900	2		50	Lw	NE	1200-1800	2	
26	Pli	PG	1400-2000	3		51	Py	S. Interior	300-1200	2	

Note regarding seed zone changes

Seed zones are adjusted from time to time based on new research information, or on administrative needs. For information updates on seed zones, please contact Lee Charleson of the Ministry of Forests and Range Tree Improvement Branch (lee.charleson@gov.bc.ca)

Appendix 2: Forest Genetics Council and Technical Advisory Committee Members

Forest Genetics Council of BC

Name	Affiliation	Representing
Brian Barber (Co-Chair)	FLNR Tree Improvement Branch	FLNR Co-Chair
Kerry McGourlick (Co-Chair)	Western Forest Products Inc.	Industry Co-Chair
Raoul Wiart	Canadian Forest Service	Canadian Forest Service
Dr. Rob Guy	University of BC	Universities
Scott King	Louisiana Pacific	Southern interior industry
Joe Leblanc	Interfor Ltd.	Coast industry
Tim Lee	Vernon Seed Orchard Co.	Interior Technical Advisory Committee
Al McDonald	BC Timber Sales	BC Timber Sales Ltd.
Larry Gardner	West Fraser Timber Ltd.	Interior industry orchard owners
Vacant	FLNR, Operations	FLNR
John Mitchell	TimberWest Forests Ltd.	Coast industry orchard owners
Barrie Phillips	FLNR Tree Improvement Branch	FLNR
Annette van Niejenhuis	Western Forest Products Inc.	Coastal Technical Advisory Committee
Gernot Zemanek	Roserim Forest Nursery	Woodlots and nurseries

Genetic Conservation Technical Advisory Committee

Name	Affiliation	Name	Affiliation
Dave Kolotelo (Chair)	FLNR Tree Imp. Branch	Jodie Krakowski	FLNR Tree Imp. Branch
Dr. Sally Aitken	University of BC	Dr. Michael Murray	FLNR SI Region
Charlie Cartwright	FLNR Tree Imp. Branch	Tory Stevens	Ministry of Environment
Lee Charleson	FLNR Tree Imp. Branch	Dr. Tongli Wang	University of BC
Dr. Scott Green	University of Northern BC	Jack Woods	SelectSeed Ltd. / FGC
Dr. Andreas Hamann	University of Alberta	Dr. Alvin Yanchuk	FLNR Tree Imp. Branch

Coastal Technical Advisory Committee

Name	Affiliation	Name	Affiliation
Annette van Niejenhuis (Chair)	Western Forest Products Inc.	Siroil Paquet	Sylvan Vale Nurseries Ltd.
Dr. Sally Aitken	University of BC	David Reid	FLNR Tree Imp. Branch
Charlie Cartwright	FLNR Tree Imp. Branch	Dr. John Russell	FLNR Tree Imp. Branch
Tim Crowder	TimberWest Forests	Brian Saunders	Island Timber Ltd.
Diane Douglas	FLNR Tree Imp. Branch	Dr. Michael Stoehr	FLNR Tree Imp. Branch
Dr. John King	FLNR Tree Imp. Branch	Dr. Joe Webber	ProSeed Consulting
Dave Kolotelo	FLNR Tree Imp. Branch	Dr. Chang-yi Xie	FLNR Tree Imp. Branch
Bob Merrell	BC Timber Sales Ltd.	Dr. Alvin Yanchuk	FLNR Tree Imp. Branch

Interior Technical Advisory Committee

Name	Affiliation	Name	Affiliation
Tim Lee (Chair)	Vernon Seed Orchard Co.	Mike Madill	FLNR, SI Region
Dr. Michael Carlson	FLNR, Research Branch	Anna Monetta	FLNR, NI Region
Krista Copeland	Tolko Ltd.	Wayne Nuyens	West Fraser Timber Ltd.
Vince Day	Canadian Forest Products Ltd.	Greg O'Neill	FLNR Tree Imp. Branch
Diane Douglas	FLNR Tree Imp. Branch	Roger Painter	SelectSeed Ltd.
Dan Gaudet	Vernon Seed Orchard Company	Doug Perdue	Dunkley Lumber
Hilary Graham	Pacific Regeneration Technologies	David Reid	FLNR Tree Imp. Branch
Barry Jaquish	FLNR Tree Imp. Branch	Chris Walsh	FLNR Tree Imp. Branch
Dave Kolotelo	FLNR Tree Imp. Branch		

Extension Technical Advisory Committee

Name	Affiliation	Name	Affiliation
Diane Douglas (Chair)	FLNR Tree Imp. Branch	Tim Lee	Vernon Seed Orchard Company Ltd.
Dr. Michael Carlson	FLNR Tree Imp. Branch	Roger Painter	SelectSeed Ltd.
Charlie Cartwright	FLNR Tree Imp. Branch	Debbie Poldrugovac	FLNR Tree Imp. Branch
Keith Cox	Retired from FLNR TIB	Kathie Swift	FORREX
Tim Crowder	TimberWest Ltd.	Dave Trotter	Min. of Agriculture and Lands
Peter Forsythe	Huckleberry Forestry Ltd.	Nick Ukrainetz	FLNR Tree Imp. Branch
Lauchlan Glen	BC Timber Sales Ltd.	Tia Wagner	Tolko Ltd.
Hilary Graham	Pacific Regeneration Technology	Jack Woods	SelectSeed Ltd. / FGC

Pest Management Technical Advisory Committee

Name	Affiliation	Name	Affiliation
Jim Corrigan (Chair)	FLNR, Tree Imp. Branch	Dr. Michael Stoehr	FLNR Tree Imp. Branch
Tim Crowder	TimberWest Forests Ltd.	Dr. Jean Turgeon	Canadian Forest Service
Dan Gaudet	Vernon Seed Orchard Company	Chris Walsh	FLNR, Tree Imp. Branch
Hilary Graham	Pacific Regen. Technologies Ltd.	Jack Woods	SelectSeed Ltd. / FGC

Decision Support Advisory Committee

Name	Affiliation	Name	Affiliation
Guy Burdikin (Chair)	West Fraser Timber Ltd.	Matt Leroy	FLNR Tree Imp. Branch
Lee Charleson	FLNR Tree Imp. Branch	Michael Postma	FLNR Tree Imp. Branch
Cathy Cook	Western Forest Products Inc.	Chris Runnals	FLNR SI Region
Vince Day	Canadian Forest Products Ltd.	Jack Woods	SelectSeed Ltd. / FGC
Dan Gaudet	Vernon Seed Orchard Company	Susan Zedel	FLNR Tree Imp. Branch

Seed Transfer Technical Advisory Committee

Name	Affiliation	Name	Affiliation
Lee Charleson (Chair)	FLNR Tree Imp. Branch	Dr. Greg O'Neill	FLNR Tree Imp. Branch
Dr. Sally Aitken	University of BC	Dr. John Russell	FLNR Tree Imp. Branch
Guy Burdikin	West Fraser Timber Ltd.	Nick Ukrainetz	FLNR Tree Imp. Branch
Diane Douglas	FLNR Tree Imp. Branch	Annette vanNiejehuis	Western Forest Products Inc.
Scott King	Louisiana Pacific Ltd.	Craig Wickland	FLNR Coast Region
Leslie McAuley	FLNR Tree Imp. Branch	Jack Woods	SelectSeed Ltd. / FGC

Appendix 3: Species Plans

Species plans present information for seed planning units with active or planned breeding programs, seed orchards, or genecology work, including SPUs that are not supported through LBIS Tree Improvement Program funding. Information presented includes breeding strategy (where applicable), seed orchard production forecasts, gain forecasts, historic seed use, seed in storage, genetic conservation status, and genecology/seed transfer projects. The plans are organized by species.

The species plans can be viewed at: <http://www.for.gov.bc.ca/hti/speciesplan/index.htm>