Forest Genetics Council of BC
Business Plan 2004 – 2005

Abbreviated version

Compiled and edited by

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FGC Program Manager

Message from the FGC Co-Chairs

We are pleased to present the 2004/05 Business Plan of the Forest Genetics Council of BC. This is the fifth annual comprehensive Business Plan prepared by Council and it's committees, and it represents a substantial co-operative effort by many people in government, industry, and universities throughout BC.

This Business Plan sets out a balanced set of activities, including gene conservation, tree breeding, seed production, quality and quantity boosts, technical support, and extension. It also details activities for Forest Investment Account (FIA) Tree Improvement Program spending. These funds leverage other investments by industry, government and universities, and are critical for facilitating integrated planning and other key activities.

Seed orchard production across most seed planning units in BC continues to increase in both quantity and genetic quality. This trend is the result of sustained efforts by FGC cooperators to bring needed orchard capacity on line, to rogue orchards for quality, and to improve cultural practices. Forest Investment Account support has been instrumental in assisting with this trend.

With increasing use of select seed, orchard operators are able to fund a greater proportion of their operations from seed-sale revenue. These increased revenues are partially off-setting reductions in program support from the provincial government, allowing a larger percentage of FIA Tree Improvement resources to be directed to breeding programs. This trend was anticipated in Council's 1998 Strategic Plan, although program reductions are making it difficult to complete all work needed to meet program objectives.

During 2004 and 2005, the new *Forest and Range Practices Act* will come into effect, along with the new Chief Forester Standards for Seed Use. Council was one of the primary stakeholder groups involved with the drafting of the Standards. The new Standards consolidate many existing policies and guidelines to a single comprehensive document. From an operational perspective, the status quo is maintained in most areas, however, additional flexibility and associated cost savings are built in for important areas such as seedlot choice and seed transfer. As provincial orchards push to meet the challenge of increasing genetic quality, the new Standards will require increased attention to balancing opportunities to improve genetic quality with cash-flow needs.

The forest industry in BC is increasingly challenged to stay competitive in global forest-product commodity markets. These challenges extend to all areas of operations, including gene resource management. It is critical that Council and affiliates retain their focus on the core principles of creating value, and seeking efficiency. We are confident that Council, the Technical Advisory Committees, and all co-operators will meet these challenges.

Finally, on behalf of the Forest Genetics Council, we thank all those on affiliated committees for their co-operation and hard work over the last year.

Shane Browne-Clayton, RPF
FGC Co-chair
Riverside Forest Products Ltd.

Dr. Dale Draper
FGC Co-chair
Ministry of Forests

Budgets list allocations of funds provided by the Forest Investment Account

Budgets in this Business Plan were approved
by the Forest Genetics Council of BC on
March 12, 2004

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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 gene resource management activities in British Columbia, and for the management and allocation of funds under the Forest Investment Account (FIA).

Section 2.0 outlines the process by which plans and budgets are developed for the FGC Business Plan.

Section 3.0 describes how the seven subprograms of the FGC Business Plan are planned and managed, and the major activities and budgets for each subprogram in 2004/05.

Section 4.0 identifies the agreements and administrative mechanisms by which the Forest Investment Account supports the FGC Business Plan.

Four appendices to the report include a summary of subprogram budgets, planning processes, and delivery mechanisms; a categorization of seed planning units (SPUs); Forest Genetics Council and committee members; and Species Plans for 49 SPUs in the province.

1.1 Forest Genetics Council of BC

The FGC is a multi-stakeholder group representing the forest industry, Ministry of Forests (MOF), and universities. Council's mandate is to champion forest gene resource management in British Columbia, to oversee strategic and business planning for a co-operative provincial forest gene resource management program, and to advise the Chief Forester on forest gene resource management policies.

The FGC provides a forum for stakeholder representatives to set goals and objectives and to oversee the development and delivery of a Business Plan to fulfill them. As stated in its newly developed Strategic Plan for the period 2004 to 2008, Council's goal is:

To lead the cooperative management of tree gene resources in British Columbia consistent with scientific and conservation principles, by:

1. Increasing the average volume gain of select seed used for Crown land reforestation to 20% by the year 2020.
2. Increasing select seed[1] use to 75% of the provincial total sown by 2013.
3. Supporting gene conservation research and the cataloguing of indigenous-tree genetic resources.
4. Coordinating stakeholder activities and securing resources to meet Business Plan priorities.
5. Monitoring progress in gene resource management activities.

The FGC Business Plan defines the annual set of activities and associated budgets to achieve these objectives.

[1] "Select" describes seed and vegetative material having a level of genetic gain (GW > 0). All seed and vegetative lots derived from orchards and production facilities (genetic Class A) and superior provenances (genetic Class B+) are considered to be select.

1.2 A Co-operative Effort

Forest gene resource management is a co-operative effort. The MOF leads tree breeding activities, while private industry and the MOF manage seed orchards for the operational production of reforestation materials. Universities, MOF Research Branch, and the Canadian Forest Service undertake research supporting gene resource management, while private institutions focus on applied research related to operational production.

1.3 Forest Investment Account Tree Improvement Program

Beginning in fiscal year 2003/04 the provincial government introduced the Forest Investment Account (FIA) as a mechanism for promoting sustainable forest management in British Columbia. FIA is founded on a Vote of the Legislature and includes three major objectives:

- Support sustainable forest management practices;
- Improve the public forest asset base;
- Promote greater returns from the utilization of public timber.

FIA is delivered through seven programs; including the FIA Tree Improvement Program.

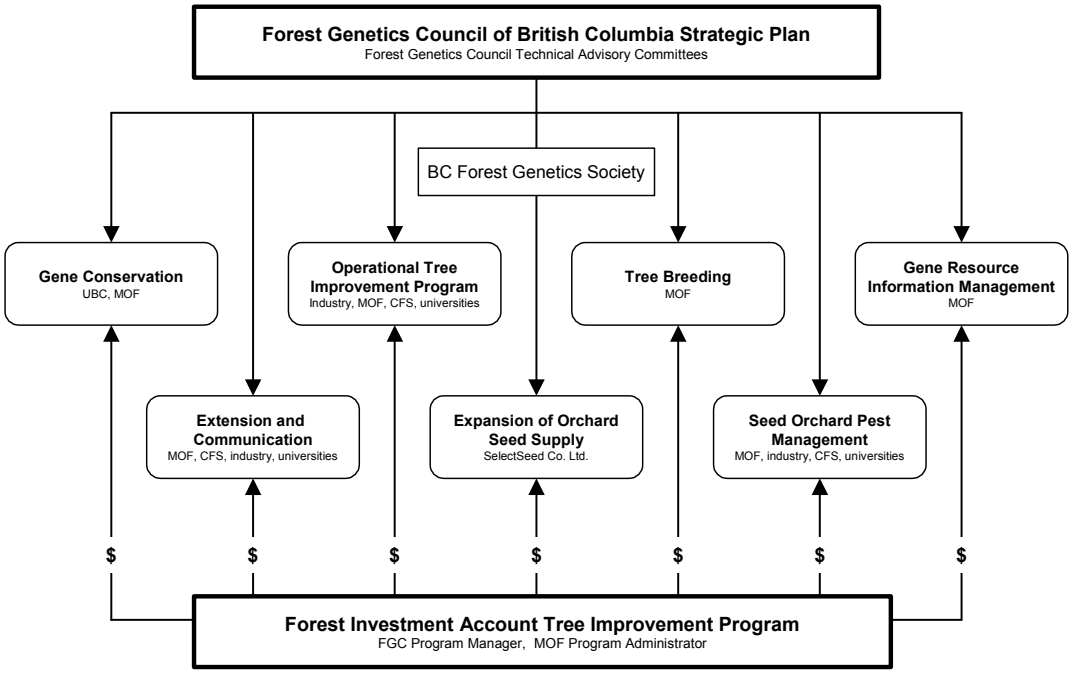
FIA investments are guided by the Forest Investment Council, and administered by the Ministry of Forests (MOF). The MOF has decision-making authority with respect to FIA expenditures, and, with assistance from other provincial government ministries, establishes objectives and delivery standards.

FIA Tree Improvement Program investments are made under the provincial Tree Improvement Program. The Forest Genetics Council has responsibility for setting priorities and developing an annual business plan to meet provincial objectives. The MOF administers funding through the subprogram areas identified in the FGC Strategic and Business Plans (Figure 1).

Business planning is carried out through the existing FGC-led process, with Technical Advisory Committees (TACs) undertaking specific planning activities, developing budgets, and making operational recommendations (Figure 2). FGC reviews and makes final recommendations for subprogram budgets and activities, and ensures the overall program meets FIA objectives and budgetary limits. The program is managed and coordinated by the FGC Program Manager on behalf of the FGC, and by the Tree Improvement Program Administrator on behalf of the Ministry of Forests.

In addition to FIA investments in gene resource management, MOF and private companies also fund activities under Council's Business Plan. The species plans found in Appendix 4 outline general strategy, predict seed orchard seed production and gain, and summarize conservation status.

Figure 1 Relationship between FGC Strategic Plan, Forest Investment Account TIP, and participants in the TIP subprograms.



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2.0 Process for Business Plan Development

This section outlines the link between FGC objectives, planning processes, and the FGC Business Plan.

2.1 The Role of Council and its TACs

FGC members, representing the Ministry of Forests (MOF), forest companies, universities, and the Canadian Forest Service provide strategic direction to the provincial forest gene resource management program. FGC Technical Advisory Committees (TACs) 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 package that addresses Council's objectives and maximizes the economic benefits from tree improvement.

Council's six TACs lay the groundwork for the FGC Business Plan:

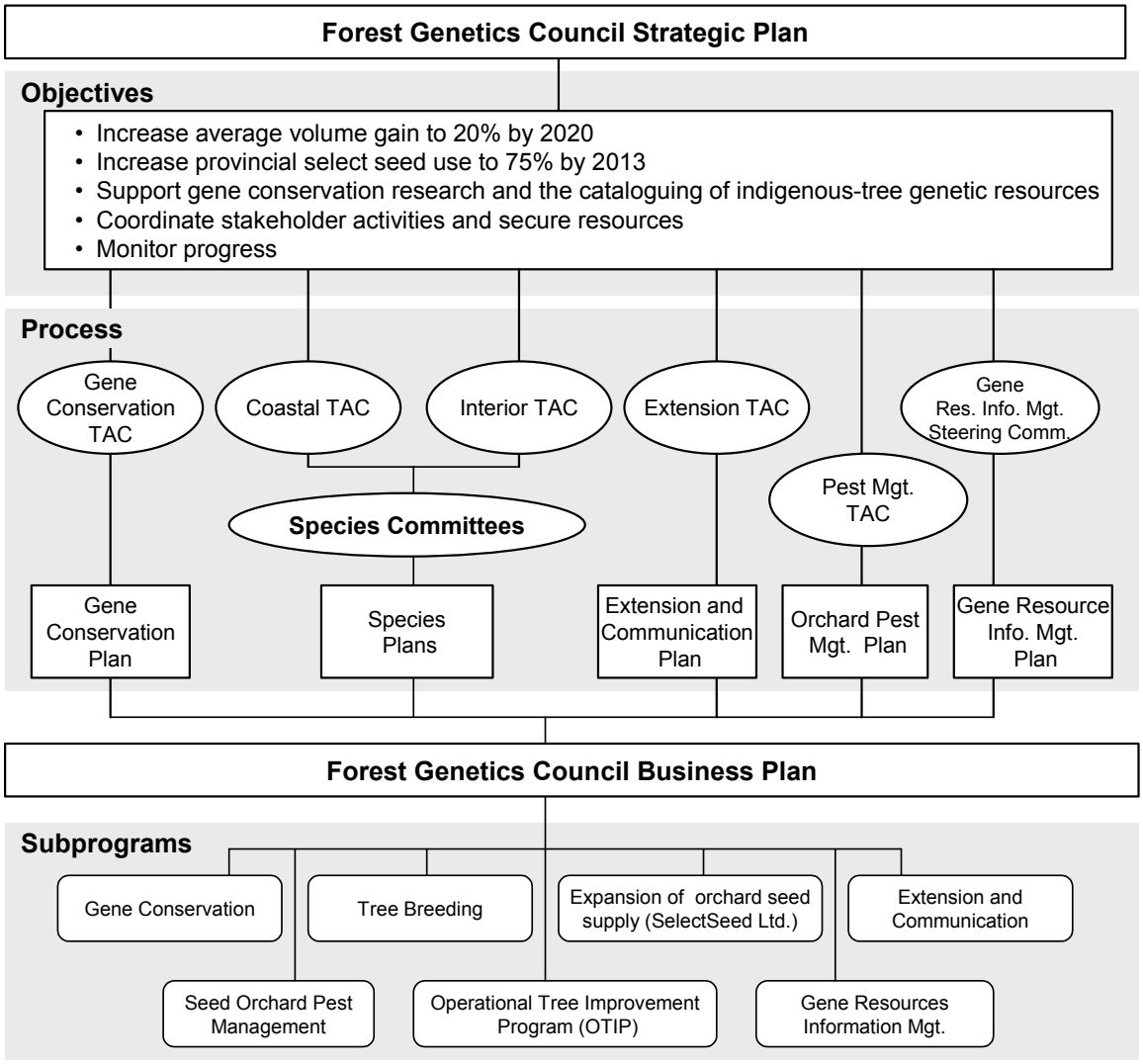
- The Gene Conservation TAC (GCTAC) advises Council on issues related to gene conservation and genetic diversity, and identifies required activities and budgets under the Gene Conservation Subprogram.
- The Coastal and Interior TACs, through their Species Committees, prepare Species Plans (Appendix 4) that outline strategy and activities for the Tree Breeding, Operational Tree Improvement Program (OTIP), and Expansion of Orchard Seed Supply (SelectSeed Company Ltd.) subprograms.
- The Extension TAC (ETAC) is responsible for developing a strategy and annual activity plan for the Extension and Communication Subprogram.
- The Gene Resources Information Management Steering Committee oversees the development of activities and budgets for the Gene Resource Information Management Subprogram.
- The Seed Orchard Pest Management TAC identifies information and research needs, and guides research activities needed to develop control strategies for seed orchard insect and disease pests.

The MOF Tree Improvement Branch, with input from the FGC and FGC Program Manager, develops activities and budgets for program administration.

Based on criteria set by the Interior and Coastal TAC's, SelectSeed Company Ltd. (SelectSeed) develops a business plan for the management of new orchards established to meet FGC objectives.

Council reviews all strategies, plans, or recommendations from the 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, development of the FGC Business Plan, and the seven subprograms through which it is implemented.

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



The process by which the Council Subcommittees or other agencies define activities and budgets for each subprogram is discussed in Section 3. Since it is often difficult to accurately predict project spending, the management authorities for each subprogram are authorized to reallocate funds within their subprograms as necessary throughout the fiscal year, subject to limits and review processes.

3.0 Subprogram Planning and Management

This section describes how subprograms are planned and managed, and the major activities and budgets for each subprogram in 2004/05. Appendix 1 contains a summary of subprograms and budgets for the 2004/05 FGC Business Plan.

3.1 Gene Conservation Subprogram

Gene conservation is a fundamental element of the FGC Strategic Plan. Gene conservation activities protect the gene pool needed for species to adapt to future environmental conditions, and ensure that genetic resources are maintained for future generations.

3.1.1 Planning

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

Subprogram delivery is through the Centre for Forest Gene Conservation at the University of BC (UBC) in the Faculty of Forestry, with the GCTAC setting broad objectives. The Centre will provide expertise, research, and strategic planning related to gene conservation, and will evaluate levels of protection of genetic diversity.

3.1.2 Management

The Centre receives funding through a Contribution Agreement with the Ministry of Forests Tree Improvement Branch under the FIA 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 must be approved by the GCTAC. Technical direction is reviewed through a Scientific Advisory Committee.

3.1.3 Activities and Budget

The Forest Gene Conservation Centre will help identify specific *in situ* and *ex situ* conservation needs and strategies to address these needs, and will assist with forest certification and climate change issues as they relate to gene conservation and management. It will also allow the leveraging of funds with other national and international agencies.

In the 2004/05 fiscal year, the Centre will receive $220,000 for staff, strategy development, and the continuation of several long-term projects to investigate and catalogue the genetic diversity of forest trees in B.C. Table 1 contains a Centre budget for 2004/05 FIA-funded activities. In-kind contributions from UBC will include staff time, lab and office space, and other support. Industry and MOF contributions will include staff time and other logistical support for specific projects.

Table 1 **Centre for Forest Gene Conservation budgets for 2004/05, by project. Budgets include only activities funded by the Forest Investment Account.**

Project	Budget ($)	Products
Theoretical framework document(s)	5,000	1 progress report
Genetic issues in certification	5,000	1update report
Cataloguing and documenting *in situ* protection	30,000	evaluate for genetic resource conservation: 53 SPUs and 90 landscape units
Sampling strategies and SPZs	1,000	3 scientific papers to be completed
Markers and theory for measuring diversity	15,000	1 final report on first phase
Whitebark pine diversity and conservation	30,000	1 progress report on genecology, inbreeding and *ex situ* seed storage
Genetic structure of minor species	17,500	2 scientific papers to by completed 1 working plan for new project on *Cornus nuttalli*
Climate change and gene conservation	22,000	1 high resolution climate model for BC 49 assessments of species and their protected area coverage 2 scientific papers to be completed
Other expenses		
Research associate	69,990	
Extension	5,000	100 clients serves / 1 website maintained
CFGC Expenses (office, computing)	9,034	
Subtotal	**209,524**	
5% UBC overhead	10,476	
Total approved 2004/05 budget	**220,000**	

3.2 Tree Breeding Subprogram

The Tree Breeding Subprogram focuses on the continued improvement of seed and vegetative materials for reforestation. Tree breeding activities include selecting parents in wild stands, propagation, testing offspring, mating, establishing/maintaining/measuring trials, and technical support. However, selections from wild populations are no longer being made, as all breeding programs have advanced substantially from that point. The Subprogram also includes applied genecology work by MOF geneticists to support the information needs of seed planning unit[2] (SPU) programs as described in Species Plans.

3.2.1 Planning

FGC Interior and Coastal TACs and their associated Species Committees again assisted with planning and strategy development for the Tree Breeding Subprogram. Through the development of species plans (Appendix 4), Committees estimated seed demand, orchard seed production, and program needs for each SPU. Breeding, genecology, and genetics research strategies developed by MOF tree breeders were reviewed, and direction was given to ensure close alignment with FGC strategic objectives and with ongoing operational needs and programs. Species Committees also review proposed budgets and progress reports for each SPU.

[2] Seed planning units—groupings by species, seed zone, and elevation band—form the basis for tree breeding and seed production planning.

The budget for the Tree Breeding Subprogram was developed for individual SPU by Species Committees in November 2003, and an approximate total of 2.4 million dollars was identified as the necessary sum to carry out all activities. This budget was then adjusted to meet the total expected Subprogram budget allocation by the Manager, Forest Genetics, MoF Research Branch, with input from MoF tree breeders, the FGC Program Manager and the MOF Tree Improvement Branch Director. Final programs and budgets were reviewed and approved by the FGC on March 12, 2004.

3.2.2 Management

The MOF manages Tree Breeding Subprogram activities, and reports to the FGC. The Manager of Forest Genetics, MOF Research 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 approval of the Director, Tree Improvement Branch and the FGC Program Manager.

3.2.3 Activities and Budget

The 2004/05 budget for the Tree Breeding Subprogram was estimated and approved at $2,124,000, which reflects a reduction of ~$167,000 from 2003/2004. This puts substantial pressure on some of our plans for establishing new trials, particularly for the final round of polymix testing in the redcedar program (SPU #2). Table 2 contains approved budgets and key performance indicators (KPI) for breeding activities by SPU. An additional $60,000 worth of projects will be risk-managed (largely the final round of the polymix redcedar tests) on the assumption that some planned work will not proceed due to unforeseen limitations. This year will see completion of most 2nd generation breeding, the establishment of several 2nd generation field tests, as well as realized gain trials in western larch. Maintenance still receives a high priority in the budget, as it is critical to protecting our past investments and the quality of future data and breeding value predictions.

3.3 Operational Tree Improvement Program (OTIP)

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

3.3.1 Planning

OTIP spending is based on two sources of input:

- Species Plans developed by the Interior and Coastal TACs and their Species Committees provide direction for increasing production in existing facilities,
- a formal call for proposals is issued, based on the priorities set in the Species Plans, to increase the quality and quantity of seed and vegetative material for reforestation. Technical support projects that help solve production problems are also approved through this process.

FGC Review 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 FIA administrators in the Ministry of Forests.

3.3.2 Management

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

3.3.3 Activities and Budget

The 2004/05 OTIP budget is $697,000. Table 3 contains approved OTIP budgets and KPI for all seed planning units.

Table 2 **2004/05 budgets ($ x 1000) and KPI by SPU for tree breeding and associated technical support activities. Salaries apply to all activities and are listed separately. See Species Plans (Appendix 4) for more detail. Category numbers relate to Work Breakdown Structure (Figure 5).**

Seed Planning Unit				220 Selection and Breeding						230 Progeny testing												240 Technical Support										250 Provenance testing										Total
				211		221		222		223		231		232		233		234		235		236		240-1		240-2		240-3		240-4		240-5		252		253		254		255		256		
				# fam. select.		# fam. establ. In breeding arboreta		# fam. maint. In breeding arboreta		# of crosses made		# of test series designed		# of progeny tests establ.		# of progeny tests maint.		# of progeny tests measured		# tests assess. for wood/ pests		# of test sites analyzed		Projects										# of prov. tests establ.		# of prov. tests maint.		# prov. Tests measured		# tests assessed for wood/ pests		# of test sites analyzed		
#	Spp.	SPZ	Elev	KPI	$	KPI	$	KPI	$	KPI	$	KPI	$	KPI	$	KPI	$	KPI	$	KPI	$	KPI	$	KPI	$	KPI	$	KPI	$	KPI	$	KPI	$	KPI	$	KPI	$	KPI	$	KPI	$	$,000
1	Fdc	M	< 700					200	6	150	4					10	28			15	15	5	2	4	11	4	12															78
2	Cw	M	< 600	20	0	80	0			100	8			6	108	15	24	8	20	1	10	1	5																			175
3	Hw	M	< 600	60	0	60	0	290	2	120	5	1	1	3	18	24	35	2	9			2	1	1	1	0	0			0	0	1	3			14	6	7	8			1	2	91
4	Sx	NE	1000-1500							50	2					3	10	3	20			3	0											10	20									52
5	Sx	NE	>1500							50	2																																	2
6	Ss	M	<750	24	0	24		500		100	2			4		24	35	8	29	3	6	1		1		1																	72
7	Pli	NE	< 1400									1	4	3	18																													22
8	Pw	M/SM	<1000	24	0	36	4	300		120	8			3	9	20	16	5	5	3	18	3		1	8																			68
9	Ba	M	< 1000																															6		11	3							3
10	Pli	TO	< 1400									1	4	3	18											8	8																	30
11	Yc	M	<1200	20	0	140	4	500	4	50	4					16	20	3	15			3	2	6	8	6	9	6	6															72
12	Pli	PG	<1200													3	3							6	17																			20
13	Lw	NE	< 1300					2,000	10	100	2													4	22																			34
14	Sx	PG	< 1200							20	1					8	16	5	20	2	0													8	15	3	20	2	0					72
15	Pw	KQ	<1400	50	0			75	5																																	5
16	Pli	TO	> 1400																																								-
17	Pli	BV	<1200											3	21			2	7																									28
18	Pli	CP*	<1100																	2	12																							12
19	Fdc	SM	200-1000													2	5	5	0																									5
20	Pli	NE	> 1400																																								-
21	Fdi	NE	< 1000							100	2															1,500	4																	6
22	Fdi	NE	> 1000							100	1																																	1
23	Sx/Ss	SM/NST	all	36	0	36		136		36						12	18	12	6			1		1																				24
24	Hw	M	> 600	30	0			40	1	30	0					4	4	4	6			1	1																					12
25	Sx	EK	< 1700													14	21	10	0			10	0	3	12																			33
26	Pli	PG	> 1200																																								-
27	Cw	SM	200-1000													6	6	2	5			1	2																					13
28	Sx	TO	1300-1850							75	1					1	3	1	4			1	0																					8
29	Pli	EK	> 1500																																								-
30	Sx	TO	< 1300							75	2					1	2			1	0																							4
31	Fdc	M	> 700	30	0																	2	1																					1
32	Pli	EK	< 1500															3	9																									9
33	Cw	M	> 600													6	6	2	5			1	2																					13
34	Lw	EK	800-1500							100	2					4	8	4	20			4	0	4	15																			45
35	Sx	BV	< 1200													3	2	3	13			3	0																					15
36	Bg	M	< 700																																								-
37	Fdi	QL	< 1200													4	10	4	20			4	0																					30
38	Hw	M	< 600																																								-
39	Fdi	EK	all																																								-
40	Sx	PR	650-1200					5,000	4							4	2	4	16			4	0																					22
41	Fdi	PG	< 1000													4	6	4	0			4	0																					6
42	Sx	PG	> 1200																																								-
43	Fdi	CT	< 1100																																								-
46	Bl	Prov																																		3	6							6
49	Dr	M/SM	all	600	4	600	12	600																1	3											2	2	2	6			2		27
50	Mb	M	all																																	3	4	3	3					7
51	Ct	M/SM	all											3	30																													30
* SPU 18			**Total**	894	4	976	20	9,641	32	1,376	46	3	9	28	222	188	280	94	230	27	61	54	15	32	97	1,519	33	6	6	-	-	1	3	24	35	36	41	14	17	-	-	3	2	1,152
< 900N of 56																																											Salaries		972
< 1600 S of 56																																										**Total**		2,124

Table 3 **2004/05 budgets and KPI by seed planning unit for Operational Tree Improvement Program (OTIP) projects.**
Category numbers relate to Work Breakdown Structure (Figure 5). See species plans (Appendix 4) for more program detail.

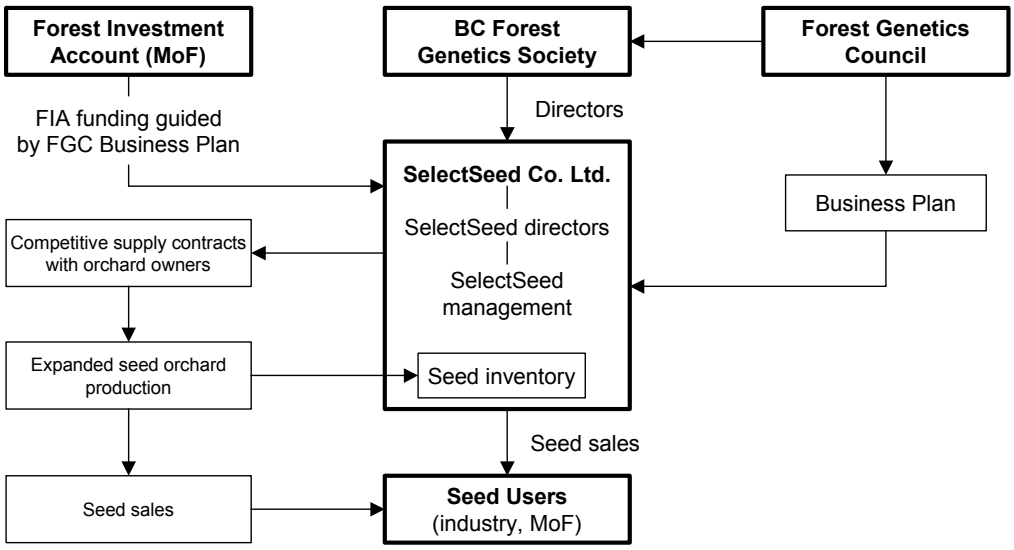
Seed Planning Unit				*320 Quality / Quantity Boosts*												*330 Cuttings*		*340 Pest Management*						*350 Tech Sup.*		
				321		322		323		324		325		326		327		331		341		342		343				Total $ x 1000
				# ramets grafted		# ramets in holding		# ramets replaced in orchards		# ramets rogued in orchards		# ramets treated with SMP or CP		# ramets induced for cone production		# ramets managed in orchards		# donor plants for cutting prod.		# ramets treated for insects		# ramets treated for disease		# ramets monitored for pests		# of projects		
#	Spp	SPZ	Elev (m)	KPI	$	KPI	$	KPI	$	KPI	$	KPI	$	KPI	$	KPI	$	KPI	$	KPI	$	KPI	$	KPI	$		$	$
1	Fdc	M	< 700	3148	4.5	2440	4.9	256	2.7	688	7.2	1051	33.7	1180	3.2	6057	5.7			6257	2.6					1	4.2	**68.7**
2	Cw	M	< 600	6573	23.5	4838	9.2	650	4.9	180	0.5	1923	12.4	180	1.3	2172	2.6			1678	0.3							**54.6**
3	Hw	M	< 600	181	1.0	226	0.4	82	0.8	70	0.5	1089	3.6	200	0.8	1571	1.7			1115	0.6					1	10.8	20.3
4	Sx	NE	1000-1500	330	2.9	560	2.2	210	2.5	51	0.7	581	1.5			239	0.4			2410	1.4	1612	0.3	2669	17.1	6	49.6	78.6
5	Sx	NE	>1500	448	4.0	519	2.0	128	1.5	40	0.5	486	1.4			175	0.2			2045	1.4	1347	0.3	2045	0.5			**11.8**
6	Ss	M	< 750	19	0.2	134	0.3	44	0.3			200	2.1			857	1.1			857	1.0					1	7.4	**12.4**
7	Pli	NE	< 1400	46	0.2							2874	11.0			1634	1.1			2975	3.8	1187	0.4	2975	0.5	3	72.8	**89.8**
8	Pw	M/SM	< 1000	670	5.3	600	1.7	500	2.5	100	0.8	1080	8.1			275	0.4			1030	1.3							**20.1**
9	Ba	M	< 1000									150	0.8			735	1.2			735	0.2					1	2.1	**4.3**
10	Pli	TO	< 1400									2319	4.2			2319	1.3			2319	3.5	2319	0.9	2319	0.5			**10.3**
11	Yc	M	<1200													12549	4.1	5004	11.5	12349	0.4					3	25.8	**41.8**
12	Pli	PG	<1200					1100	11.6			3440	13.7	250	0.8	1440	2.2			5829	4.5	1440	1.0	8	0.5			**34.4**
13	Lw	NE	< 1300	759	4.6	43	0.2	171	2.0	30	0.4	676	3.3			396	0.5			1583	0.8			1583	0.2	1	4.4	**16.5**
14	Sx	PG	< 1200																							1	14.3	**14.3**
15	Pw	KQ	<1400	178	1.9	239	1.2	41	0.5			1841	4.8			559	0.7			2677	2.3			2246	0.7			**12.0**
16	Pli	TO	> 1400									646	2.0			600	0.4			646	2.3	646	0.9					**5.6**
17	Pli	BV	<1200	410	2.3			410	2.0			6600	21.4	250	0.8	450	2.5			7450	3.6	1600	1.2					**33.8**
18	Pli	CP	<900 *	275	1.5			275	1.4			4000	12.9	250	0.5	280	1.6			5300	2.4	1000	0.8					**21.0**
19	Fdc	SM	200-1000													1037	2.2											**2.2**
20	Pli	NE	> 1400																									**0.0**
21	Fdi	NE	< 1000									1755	2.4													1	2.7	**5.1**
22	Fdi	NE	> 1000	100	1.1	67	0.3	77	0.9			2	1.2			2	0.0			1489	0.6			1489	0.2			**4.4**
23	Sx/Ss	SM/NST	all																									**0.0**
24	Hw	M	> 600	165	0.5	475	1.1	276	2.0			438	4.7	85	0.5	671	1.4			984	0.8							**11.0**
25	Sx	EK	< 1700					22	0.3	158	2.1									1797	1.5			1797	0.2			**4.1**
26	Pli	PG	> 1200																									**0.0**
27	Cw	SM	200-1000																									**0.0**
28	Sx	TO	1300-1850											576	2.8	150	0.5			1054	1.0			1054	0.2			**4.6**
29	Pli	EK	> 1500																									**0.0**
30	Sx	TO	< 1300																									**0.0**
31	Fdc	M	> 700							150	2.1			150	1.6													**3.7**
32	Pli	EK	< 1500	125	2.0	379	1.7	16	0.2							379	0.0			1422	0.5			1422	0.2			**4.7**
33	Cw	M	> 600																									**0.0**
34	Lw	EK	800-1500	481	3.4	16	0.1	126	1.5	295	3.9					374	0.4			1497	1.1			1497	0.2	1	29.9	**40.4**
35	Sx	BV	< 1200	485	4.8	1349	4.6	32	0.4	736	16.0	521	1.8	420	2.6	152	0.2			2626	1.2	2018	0.2	2626	0.2			**32.0**
36	Bg	M	< 700																									**0.0**
37	Fdi	QL	< 1200									300	2.2							351	0.8							**3.0**
39	Fdi	EK	all																									**0.0**
40	Sx	PR	650-1200									2736	1.1							2736	0.8			2736	0.2			**2.0**
41	Fdi	PG	< 1000									200	2.1							540	0.7	540	0.4					**3.3**
42	Sx	PG	> 1200							645	19.1			332	2.1					977	0.4	977	0.1	977	0.2			**21.9**
43	Fdi	CT	< 1100									600	2.9							1050	0.8	1050	0.4					**4.0**
			Totals	**14233**	**64**	**11885**	**30**	**4416**	**38**	**3143**	**54**	**35508**	**152**	**3873**	**17**	**35073**	**33**	**5004**	**11**	**73778**	**42.5**	**15736**	**6.7**	**27443**	**21.6**	**20**	**223.8**	**693.3**
																											Total FIA supported budget	**697**

3.4 Expansion of Orchard Seed Supply Subprogram

Seedling demand and orchard capacity needs for seed planning units (SPU) are estimated by Species Committees. For SPUs with insufficient orchard capacity, expanded seed supply needs are identified and made known to stakeholders. If no company or agency is willing or able to establish the needed orchards, then, following approval by the FGC, SelectSeed Company Ltd. will expand capacity through competitive seed supply contracts.

SelectSeed is wholly owned by stakeholders through the B.C. Forest Genetics Society, and under the control of the FGC (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, ecologically adapted tree seed through investments, cooperative work with FGC members and effective program management."

Figure 3 Organizational relationships among SelectSeed Ltd., Forest Investment Account, 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 it's associated committees. Species plans (Appendix 4) contain analyses of projected orchard expansion needs that guide SelectSeed investments. Specific technical advice is sought as required from Species Committees or others with the needed expertise.

3.4.2 Management

Management discretion for spending lies with the SelectSeed Board of Directors,[3] and is limited by the terms of the SelectSeed Multi-Year Agreement with the MOF. Investments in new

[3] The Board is comprised of representatives from the private sector, including one FGC Co-Chair.

orchards follow a request for proposal (RFP) process, with emphasis on both the technical quality of developments and on cost. A comprehensive Business Plan for SelectSeed was reviewed by the Forest Genetics Council on March 4, 2004, and approved by a formal resolution.

3.4.3 Activities and Budget

In 2004/05, SelectSeed will focus on the management of 11 long-term orchard agreements covering the development and operation of 14 orchards (Table 4). No new orchard agreements are anticipated during the year.

A total of 2,435 ramets are expected to be planted in orchards during the fiscal year. Propagation and holding for orchard expansion will continue, with approximately 3,100 grafts to be completed, and an additional 3,300 ramets to be held for orchard development. Ramets currently planted in the 14 seed orchards, combined with new planting during 2004/05, will result in approximately 34,945 ramets under management. Total completed size for SelectSeed contract orchards will be 35,300 ramets. All grafting and holding work will be done through contracts.

Other activities will include program management on behalf of the Forest Genetics Council, including Business Plan and budget development, managing all program aspects and subprogram interactions, planning, committee work, and general program administration.

Spending for 2004/05 is projected to be $950 thousand, down from $1.29 million in 2003/04, and $1.9 million in 2002/03. This reduction is the result of reduced orchard capital development costs relative to the previous two fiscal years. FGC program management costs have also gone down. Costs for this subprogram will continue to drop as new orchards begin seed production and seed sale revenue displaces costs associated with the SelectSeed Multi-Year Agreement.

Table 4 **Orchards under contract to SelectSeed Company Ltd. as part of the Orchard Expansion Subprogram.**

	Seed planning unit				
#	**Species**	**Seed zone**	**Planned # ramets**	**# ramets currently established**	**Location**
21	Fdi	NE low	2187	1914	Armstrong
37	Fdi	QL	975	886	Vernon
41	Fdi	PG	786	746	Vernon
28	Sx	TO high	1052	1 042	Armstrong
30	Sx	TO low	454	445	Armstrong
7	Pli	NE low	1000	902	Armstrong
10	Pli	TO low	4800	3 371	Armstrong
12	Pli	PG low	4871	4 436	Kettle Valley
12	Pli	PG low	4500	4 011	Vernon
16	Pli	TO high	3475	3 176	Armstrong
17	Pli	BV low	3000	2 849	Vernon
17	Pli	BV low	3100	3 095	Sorrento
18	Pli	CP low	2000	1 934	Sorrento
18	Pli	CP low	3100	2 997	Kettle Valley
		TOTALS	35,300	31 804	

3.5 Extension and Communication Subprogram

The Extension and Communication Subprogram supports FGC goals and objectives through three types of activities:

- 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 (fostering support for the education of tree improvement specialists and technologists, including continuing education)

3.5.1 Planning

Extension and communication activities are developed and guided by the FGC Extension Technical Advisory Committee (ETAC). ETAC includes representatives from research, operations, extension, training, and communications. Members are involved with forest gene resource management and the use of improved reforestation materials.

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 forest gene 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.

The committee's strategy outlines key audiences, messages, and delivery mechanisms.

3.5.2 Management

ETAC identifies goals and audiences for extension, communication and education activities, and, with the assistance of an ETAC–appointed Coordinator, 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. Project ideas or proposals from any interested party can be submitted to ETAC for consideration.

Projects are undertaken through contract delivery, or through direct delivery by cooperators. Budget development for FIA funds is first done by the ETAC, and finally approved by the FGC. Project spending is approved by the ETAC Chair and the FGC Program Manager, and must meet administrative guidelines set out for FIA 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 2004/05 is $40,000, plus Ministry of Forests salary support. In-kind, staff time and other contributions by affiliated companies and agencies are additional to this amount. Projects and budgets are summarized in Table 5.

Table 5. Extension and communication projects and budgets for 2004/05

Project	Budget ($)
Publication: TicTalk newsletter	5 000
Client Satisfaction Survey regarding information products	10 000
Workshops: 1 – 2 Tree Improvement Workshops on seed production and use	5 000
Extension note(s): Reproductive Biology of Lodgepole Pine	5 000
ETAC meetings	500
Administration and opportunities	14 500
Ministry of Forests salary support	86 000
Total FIA Tree Improvement Program Contribution	**126 000**

3.6 Gene Resource Information Management Subprogram

The Gene Resource Information Management Subprogram (GRIM) develops projects that support operational forest tree gene resource management (GRM) and planning, best practices, and conservation. Projects supported include the development of GRM standards, strategic analyses (forest productivity and health), effectiveness evaluation, and monitoring tools, as well as computer-based information systems, data repositories, and registries.

3.6.1 Planning

The primary objective of the GRIM Subprogram is to develop a provincial gene resource management framework for the delivery of an effective land-based GRM program that meets both short and long term gene resource management objectives. GRM objectives (stand and landscape level) are identified through: legislation and policy (seed selection, use and transfer); land use plans (gene resource features); timber supply assumptions (genetic gain); tree improvement, tree breeding and genecology (species plans); and, gene conservation strategies.

3.6.2 Management

The GRIM Subprogram is managed by the headquarters' gene resource management section of the Ministry of Forests Tree Improvement Branch. The Gene Resource Information Management Steering Committee develops multi-year subprogram plans, annual budgets and activities. The Steering Committee is comprised of ministry, industry and academic (UBC Centre for Forest Gene Conservation) representatives, and the FGC Program Manager. Significant project changes or re-allocations of funds from the approved Business Plan require approval of the Steering Committee and the FGC Program Manager.

3.6.3 Activities and Budget

Funding is shared between FIA and the Ministry of Forests. Total funding allocated from the FIA Tree Improvement Program will be $70,000 for 2004/05. A key initiative is the development of a Resource Information Strategy for gene resource management. The GRM RIS will be developed

to address: 1) FGC strategic planning goals; 2) Multi-stakeholder GRM objectives (forest practices, timber supply, forest health, tree improvement and gene conservation), 3) New information reporting requirements with the Forest and Range Practices Act; 4) GRM business mapping and information gaps; and 5) Effectiveness evaluation and monitoring program development.

New information systems development projects include incorporation of the Parent Tree Registry under the web-based SPAR[1] application. Additional work will be undertaken based on priorities identified under the GRM RIS. Projects may include development of spatial data, GRM gap analysis using GIS-based systems, and the integration of genetic gain with forest cover inventory updates. Further work may also be undertaken in the area of extension and training.

3.7 Pest Management Subprogram

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

3.7.1 Planning

The Subprogram is guided by a Pest Management Technical Advisory Committee with membership from industry and government orchards, the Canadian Forest Service, universities, and the Provincial Tree Seed Centre. Issues are identified and ranked by the TAC based on the perceived impact on seed losses, and the effect of these seed losses on FGC objectives. Probability of success and alternative pest management options are considered by the TAC when developing priorities.

A call for proposals was released to address issues outlined by the TAC. Projects are ranked by the TAC according to impact on the primary pest management issues, and probability of success. Projects are approved based on the ranking of the TAC, and on available funds.

Approved projects are applied research in nature, and are incremental to specific orchard management actions supported through OTIP or carried out independently by orchard managers.

3.7.2 Management

The MOF Tree Improvement Branch administers projects approved by the Pest Management TAC through contracts with proponents. Significant priorities and changes during the fiscal year will be dealt with through consultation with the TAC and approvals by the FGC Program Manager and the MOF Tree Improvement Program Administrator. All projects will report quarterly on spending, and at mid-year and year-end on progress.

3.7.3 Activities and budget

The total Pest Management subprogram budget for 2004/05 is $150,000. In-kind, staff time and other contributions by affiliated companies and agencies are additional to this amount. Projects and budgets are summarized in Table 6.

Table 6. Approved Pest Management Subprogram projects for 2004/05

Project	Species primarily impacted	Budget ($)
Conifer seed bug (*Leptoglossus occidentalis*): Identification of male-produced communication signals (continued project)	Pli, Fdi, Fdc, Pw	39 900
Fir coneworm (*Dioryctia abietivorella*): Identification of an effective sex pheromone lure and the demonstration of its efficacy in seed orchards (continued project)	Fdi, Fdc	5 000
Seed chalcids (*Megastigmus spp.*): Identification of seed chalcids infesting seed of BC conifers; distribution and natural enemies (continued project)	Fdi, Fdc, all spruces, Pw, Hw, Lw	8 505
Operational assay program for three primary fungal species impacting conifer seed in BC (continued project)	All species	15 000
Ministry of Forests salary support		81 595
Total FIA Tree Improvement Program Contribution		**150 000**

3.8 Administration

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

- the administration of subprograms managed through the Ministry of Forests, including Tree Breeding, OTIP, Extension and Communication, Pest Management, and Gene Resource Information Management subprograms,
- the administration of contracts for the Gene Conservation and Orchard expansion subprograms with the University of BC and SelectSeed Company Ltd., respectively,
- support for the business of the FGC, including scheduling meetings, assistance with information distribution, and dealing with queries and planning.

3.8.1 Costs

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

3.8.2 Management

Overall program management is done by the FGC Program Manager working for SelectSeed Company Ltd. This work includes all aspects of planning, coordination of committees, Business Plan development, reporting, correspondence, and representing the FGC in daily business. The MOF Tree Improvement Branch assists in this work by providing information services, administrative support, and FGC business coordination.

3.8.3 Activities and Budget

The 2004/05 budget for the Administration Subprogram is $33,000. This amount includes all program administration costs.

3.9 Subprogram Budget Summary

The total budget for the Forest Investment Account Tree Improvement Program is $4.37 million (Table 7).

Table 7 Budget summary for Forest Investment Account contributions to subprograms.

Subprogram	Budget ($)
Gene Conservation	220 000
Tree Breeding	2 124 000
Operational Tree Improvement Program (OTIP)	697 000
Extension and Communication	126 000
Gene Resource Information Management	70 000
Seed Orchard Pest Management	150 000
Administration (Tree Improvement Branch)	33 000
Subtotal	**3 420 000**
Expansion of Orchard Seed Supply (SelectSeed Ltd.)	950 000
Total FIA Tree Improvement Program Contributions	**4 370 000**

4.0 Funding and Administrative Mechanisms

This section outlines the agreements through which the Forest Investment Account Tree Improvement Program funds the FGC Business Plan.

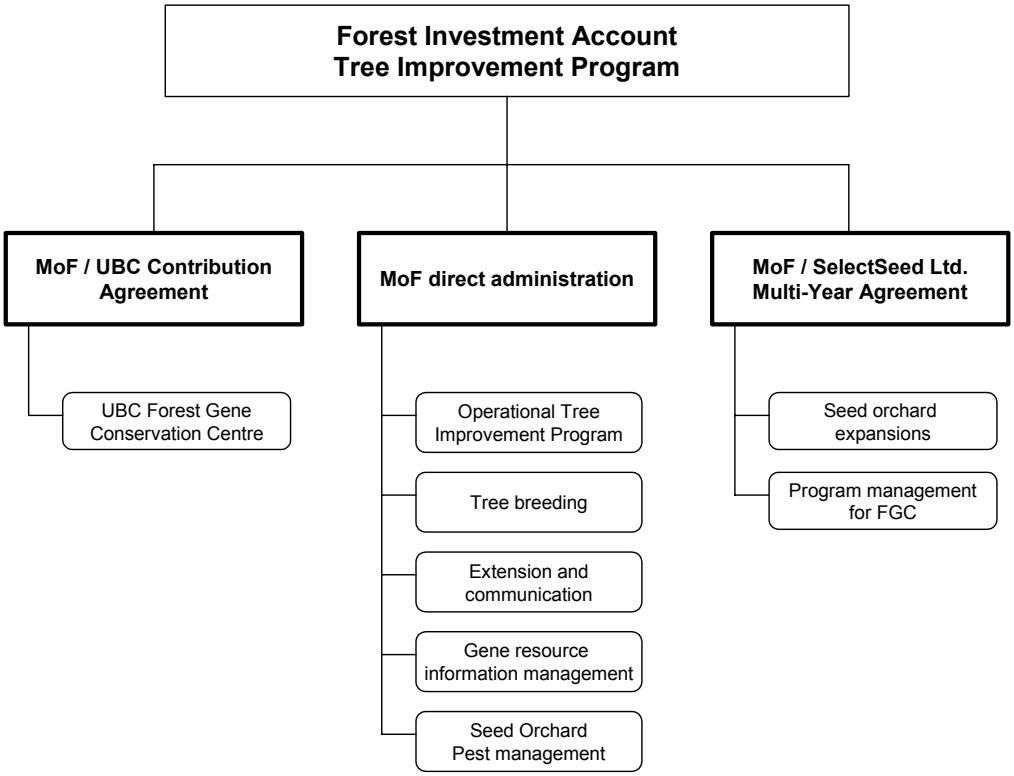
4.1 Funding Agreements

The Forest Investment Account Tree Improvement Program is administered by the Tree Improvement Branch of the Ministry of Forests. FGC Business Plan activities are supported through the following administrative mechanisms:

- MOF/University of BC Contribution Agreement
- MOF/SelectSeed Co. Multi-Year Agreement and Transfer Agreement
- MOF direct 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 Forest Investment Account funding is detailed in this Business Plan.

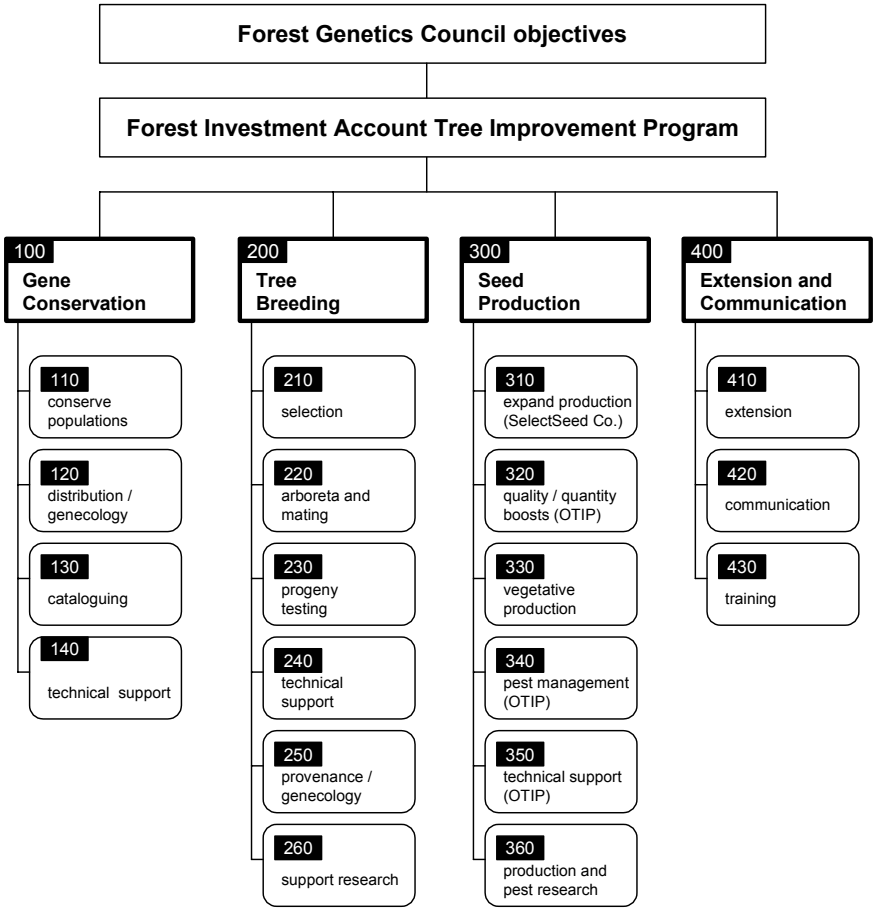
Figure 4 Administrative mechanisms for the delivery of the FIA Tree Improvement Program.



4.2 Monitoring and Reporting

An objective of the FGC is to monitor progress. Therefore, all FIA funded activities are monitored and report on performance relative to criteria. Progress at the provincial level for all FGC activities is measured to determine progress towards long-term objectives. To facilitate monitoring, activities are categorized using a work breakdown structure (Figure 5).

Figure 5 Work breakdown structure for program administration, monitoring and management.



4.2.1 Reporting for the Gene Conservation, Extension and Communication, and Gene Resource Information Management Subprograms

For the Gene Conservation, Extension and Communication, and Gene Resource Information Management subprograms, the TAC chair or subprogram leader will submit written reports on activities and spending to the FGC Program Manager on or before October 15, 2004 and April 20, 2005.

4.2.2 Reporting for the Tree Breeding, OTIP, and SelectSeed Subprograms

Progress for the Tree Breeding, OTIP, and Expansion of Orchard Seed Supply (SelectSeed) subprograms will be reported by spending and key performance indicators (KPI). The indicators simplify reporting for project proponents, and make it possible to summarize progress at the project, seed planning unit, and provincial levels. Progress towards FGC objectives 1 and 2 (increasing genetic gain, increasing use of orchard seed) will be reported using provincial summaries of orchard seed use and genetic worth.

Project-Level Reporting

Project activities are organized into the categories identified in the work breakdown structure (Figure 5) (e.g., 320 Quality/Quantity Boosts). Individual projects (e.g., 321 grafting for ramet replacement) will report on KPIs (e.g., number of grafts made) and spending for each year of implementation. Tree Breeding and OTIP project reports will be summarized to formats shown in Tables 2 and 3. Reporting for technical support projects, which are more variable in nature, will use indicators designed for each project. Where actual work or spending differs substantially from that planned, variance reports explaining the reasons will be required of project proponents. Work quality will be periodically audited through Review Committees and site visits.

Provincial-Level Reporting

At the provincial level, total activities and spending will be summarized using KPI and budgets from project-level reports. In addition, actual progress towards FGC objectives 1 and 2 will be summarized across all SPUs using SPU-level reports.

Table 8 identifies the reporting requirements for Tree Breeding and OTIP subprograms.

Table 8 List of reports, responsibilities, distribution and preparation dates for FIA-supported Tree Breeding and OTIP projects.

Type of report	Prepared by	Prepared for	Distribution	Dates due
Interim project status (breeding and OTIP)*	Breeder or OTIP project proponent	MOF program administrators for early FY reallocations	On request	Aug 1
Project level - Breeding	Breeder	MOF Program Administrator	On request	Oct 15 March 31
Project level - OTIP	Project proponent	MOF Program Administrator	On request	Oct. 15 March 31
Mid-Year Progress Report	Program Admin. MOF; FGC Program Manager	FGC; MOF	FGC; TACs; FGC website	Nov 1
Annual report and progress summary	FGC Program Manager, Program Administrator MOF; project leader contributions	FGC; MOF Chief Forester; TACs; general distribution	FGC members; TACs; FIA administrators; MOF; general distribution; FGC website	May 30

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

Appendix 1: Summary of Budgets, Planning Processes, and Delivery Mechanisms

Delivery mechanism	Subprogram	Budget ($ x 1000)	Description	Subprogram development and reporting process
MoF/UBC Contribution Agreement	Gene Conservation	**$ 220**	• Conservation of genetic diversity • UBC Centre for Forest Gene Conservation	• Gene Conservation TAC reporting to FGC • Program technical strategy developed by Centre with TAC input
TIB[4]/Research Br. MOU	Tree Breeding	**$ 2,124**	• Testing, breeding and selection of high value stock from natural populations • Technical support to understand genetic diversity and mechanisms	• FGC objectives • Strategies developed by MoF breeders and stakeholder committees • Technical Advisory Committee review • Reporting and monitoring using performance indicators
TIB Administration	Operational Tree Improvement Program (OTIP)	**$ 697**	• Support to boost orchard seed production and genetic quality • Technical support for orchard production and management	• FGC objectives • Open call for proposals • Formal stakeholder review of proposals • Reporting and monitoring using performance indicators
TIB Administration	Extension and Communication	**$ 126**	• Communication to identified client groups • Extension to seed users to provide training and solutions • Education to inform and garner support	• FGC Extension TAC develops and reviews program • Activities managed by Coordinator from MoF TIB under TAC direction
TIB Administration	Gene Resources Information Management	**$ 70**	• Projects to improve user access to gene resource mgt. information and for seed use	• Subcommittee development of priorities with client • delivery by the MoF TIB and contractors
TIB Administration	Orchard Pest Management	**$ 150**	• Research and information support for seed orchard pest management	• Pest Management Subcommittee reporting to FGC develops technical strategy • Call for proposals; formal review of proposals
TIB Administration	Administration	**$ 33**	• Costs for financial mgt. and administration of all components of FIA TIP funding	• Government financial controls and administrative systems
	Sub-total	**$ 3,420**		
SelectSeed Multi-Year Agr.	Expansion of Class A seed supply (SelectSeed Co. Ltd.)	**$ 950**	• Expansion of seed orchard production capacity • FGC program management	• FGC sets objectives; TAC's develop strategy, need, and technical standards • Long-term orchard development projects awarded through RFP • Quarterly reporting on spending and performance indicators
	Total	**$ 4,370**		

[4] TIB – MoF Tree Improvement Branch

Appendix 2: Seed Planning Units and Categories

The following table lists seed planning units and their activity category. All provincial SPUs were grouped to one of four categories 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 4, and only include SPUs falling into categories 1 to 3. Annual planting is the 5-year mean of 2000–2004 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, and
4. no genetics program.

Seed planning unit (SPU)				Annual planting	Program	Value
#	Species	SPZ	Elev. band (m)	(millions)	category	rank
9	Ba	M	<1000	1.6	3	41
36	Bg	M	<700	0.1	3	45
46	Bl	all int.	all	1.3	3	46
47	Bn	M	>600	0.1	3	47
2	Cw	M	<600	7.1	1	4
27	Cw	SM	200-1000	0.7	3	42
33	Cw	M	>600	1.1	2	27
1	Fdc	M	<700	8.9	1	1
19	Fdc	SM	200-1000	1.1	2	29
31	Fdc	M	>700	1.1	2	31
21	Fdi	NE	<1000	2.3	1	18
22	Fdi	NE	>1000	2.8	2	35
37	Fdi	QL	<1200	0.6	2	34
39	Fdi	EK	all	0.8	2	33
41	Fdi	PG	<1000	2.2	2	32
43	Fdi	CT	<1100	0.6	2	37
3	Hw	M	<600	1.9	1	10
24	Hw	M	>600	0.9	2	23
38	Hw	M north	<600	Part of SPU 3 Hw M low		
13	Lw	NE	<1300	2.8	1	14
34	Lw	EK	800-1500	1.7	1	21
7	Pli	NE	<1400	4.1	1	5
10	Pli	TO	<1400	11.5	1	12
12	Pli	PG	<1200	28.4	1	2
16	Pli	TO	>1400	6.5	2	25
17	Pli	BV	<1200	16.0	1	9
18	Pli	CP	<900 N of 56° <1100 S of 56°	8.7	1	8
20	Pli	NE	>1400	2.9	3	38
26	Pli	PG	>1200	3.8	3	40

Seed planning unit (SPU)				Annual planting	Program	Value
#	Species	SPZ	Elev. band (m)	(millions)	category	rank
29	Pli	EK	>1500	1.6	3	39
32	Pli	EK	<1500	2.1	2	30
45	Pli	BB/CHL	all	13.7	3	43
8	Pw	M/SM	<1000	0.3	1	13
15	Pw	KQ	<1400	1.0	1	16
6	Ss	M	<750	1.1	1	3
4	Sx	NE	1000-1500	2.5	1	11
5	Sx	NE	>1500	5.6	1	7
14	Sx	PG	<1200	26.3	1	6
25	Sx	EK	<1700	1.5	1	20
28	Sx	TO	1300-1850	3.2	1	19
30	Sx	TO	<1300	1.2	2	36
35	Sx	BV	<1200	8.7	1	15
40	Sx	PR	650-1200	7.9	2	22
42	Sx	PG	>1200	2.6	2	26
44	Sx	NE	<1000	0.9	2	28
23	Sx/Ss	SM/NST	all	0.6	3	44
11	Yc	M	<1200	1.3	1	17
48	Aspen/birch/poplar	Interior	-	NA	3	48
49	Alder/poplar/maple	Coast	-	NA	3	49

Note regarding pending Seed Planning Zone changes

Changes to both Seed Planning Zones (SPZ) and Seed Planning Units (SPU) are anticipated in late 2004 to coincide with the release (publication date - December, 2004; effective date - April, 2005) of the Chief Forester Standards for Seed Use. Changes are expected to the following:

- SPZ boundaries (SPZ/BEC boundary re-alignment), and
- SPU boundaries (tested parent tree 'Areas of Use' -- i.e. elevation and latitude ranges).

A SPZ Working Group will guide these changes and related map update projects. For more information, please contact Ron Planden, leader of the SPZ Working Group, at Ron.Planden@gems6.gov.bc, or by phone (250) 356-6207. Communiqués describing these SPZ/SPU changes are posted on the Tree Improvement Branch website at: www.for.gov.bc/tip.

Appendix 3: Forest Genetics Council and Technical Advisory Committee Members

Forest Genetics Council of BC

Name	Affiliation	Representing
Shane Browne-Clayton (Co-Chair)	Riverside Forest Products	Industry Co-Chair
Dr. Dale Draper (Co-Chair)	Ministry of Forests	Ministry of Forests Co-Chair
Dr. Sally Aitken	University of BC	Coastal Technical Advisory Committee
Dr. John Barker	University of BC	Coast industry orchard owners
Dr. Michael Carlson	Ministry of Forests	Interior Technical Advisory Committee
Frank Gundersen	Abitibi Consolidated	Northern interior industry
Dr. Chris Hawkins	University of Northern BC	University
Dr. Gary Hogan	Canadian Forest Service	Canadian Forest Service
Mark Hopkins	Ainsworth Forest Products	Southern interior industry
Walter Matosevic	Canadian Forest Products	Interior industry orchard owners
Diane Medves	Weyerhaeuser Canada	Coast industry
Ray Schultz	BC Timber Sales	Ministry of Forests and BCTS
Dr. Craig Sutherland	Ministry of Forests	Ministry of Forests
Dr. Alvin Yanchuk	Ministry of Forests	Ministry of Forests
Ken Baker (non-voting rep)	Ministry of Forests	Forest Investment Account

Gene Conservation Technical Advisory Committee

Name	Affiliation
Dr. Dale Draper (Chair)	Ministry of Forests
Dr. Sally Aitken	UBC
Dave Kolotelo	Ministry of Forests
Don Pigott	Yellow Point Propagation
Jack Woods	SelectSeed Ltd. / FGC
Dr. Alvin Yanchuk	Ministry of Forests
Dr. Cheng Ying	Ministry of Forests

Coastal Technical Advisory Committee

Name	Affiliation	Name	Affiliation
Dr. Sally Aitken (Chair)	University of BC	Don Pigott	Yellow Point Propagation
Patti Brown	Canadian Forest Products	David Reid	Ministry of Forests
Charlie Cartwright	Ministry of Forests	Dr. John Russell	Ministry of Forests
Tim Crowder	TimberWest Forests	Dr. Michael Stoehr	Ministry of Forests
Diane Douglas	Ministry of Forests	Annette van Niejenhuis	Western Forest Products
Dr. John King	Ministry of Forests	Dr. Joe Webber	Ministry of Forests
Dave Kolotelo	Ministry of Forests	Dr. Chang-yi Xie	Ministry of Forests
Diane Medves	Weyerhaeuser	Dr. Alvin Yanchuk	Ministry of Forests

Interior Technical Advisory Committee

Name	Affiliation	Name	Affiliation
Dr. Michael Carlson (Chair)	Ministry of Forests	Mike Madill	Ministry of Forests
Diane Douglas	Ministry of Forests	Anna Monetta	Ministry of Forests
Keith Cox	Ministry of Forests	George Nicholson	Riverside Forest Products
Nola Daintith	Ministry of Forests	Greg O'Neill	Ministry of Forests
Hilary Graham	Pacific Regeneration Technologies	Doug Perdue	Dunkley Lumber
Dr. Chris Hawkins	University of Northern BC	David Reid	Ministry of Forests
Barry Jaquish	Ministry of Forests	Chris Walsh	Ministry of Forests
Steve Jenvey	Canadian Forest Prod. Ltd.	Dr. Joe Webber	Ministry of Forests
Dave Kolotelo	Ministry of Forests	Debbie Zandbelt	Tolko Industries
Tim Lee	Vernon Seed Orchard Co.		

Extension Technical Advisory Committee

Name	Affiliation	Name	Affiliation
Dr. Chris Hawkins (Chair)	UNBC	Tim Lee	Vernon Seed Orchard Co.
Dr. Michael Carlson	Ministry of Forests	Jill Peterson	Ministry of Forests
Charlie Cartwright	Ministry of Forests	Don Pigott	Yellow Point Propagation
Keith Cox	Ministry of Forests	Doug Stables	Western Forest Products
Tim Crowder	TimberWest	Don Summers	DWS&Co
Diane Douglas	Ministry of Forests	Kathie Swift	FORREX
Peter Forsythe	The Pas Lumber	Dave Trotter	Phytofor Consulting
Lauchlan Glen	Glenviron Consulting	Dr. Joe Webber	ProSeed Consulting
Hilary Graham	Pacific Regeneration Technology	Jack Woods	Forest Genetics Council
Steve Jenvey	Canadian Forest Products Ltd.		

Pest Management Technical Advisory Committee

Name	Affiliation	Name	Affiliation
Dr. Robb Bennett (Chair)	Ministry of Forests		
Dr. Ward Strong	Ministry of Forests	Vacant	Canadian Forest Service
Dr. Staffan Lindgren	University of Northern BC	David Reid	Ministry of Forests
Tim Crowder	TimberWest	Dave Trotter	PhytoFor Consulting
Dan Gaudet	Vernon Seed Orchard Company	Jack Woods	Forest Genetics Council

Appendix 4: 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 FIA Tree Improvement Program funding. Information presented includes breeding strategy (if any), seed orchard information and production forecasts, gain forecasts, historic seed use, seed in storage, gene conservation status, and genecology/seed transfer projects. The plans are presented in the pages that follow, organized by species.

Note regarding pending Seed Planning Zone changes

Changes to both Seed Planning Zones (SPZ) and Seed Planning Units (SPU) are anticipated in late 2004 to coincide with the release (publication date - December, 2004; effective date - April, 2005) of the Chief Forester Standards for Seed Use. Changes are expected to the following:

- SPZ boundaries (SPZ/BEC boundary re-alignment), and
- SPU boundaries (tested parent tree 'Areas of Use' -- i.e. elevation and latitude ranges).

A SPZ Working Group will to guide these changes and related map update projects. For more information, please contact Ron Planden, leader of the SPZ Working Group, at Ron.Planden@gems6.gov.bc, or by phone (250) 356-6207. Communiqués describing these SPZ/SPU changes are posted on the Tree Improvement Branch website at: www.for.gov.bc/tip.