Interior TAC Meeting
Vernon, BC.
Best Western Vernon Lodge
November 4, 2004

Meeting started at 9:00 A.M.

Attendance: Roger Painter, Tania Johnson, Jack Woods, Keith Cox, Michael Carlson, Tim Lee, Mike Madill, Ron Planden, David Reid, Gary Giampa, George Nicholson, Joe Webber, Al McDonald, Andreas Hamann, David Kolotelo, Greg O'Neill, Guy Burdikin, Vincent Day, Debbie Poldrugovac, John Murphy, Dan Gaudet, Chris Walsh, Robert Dunsmuir, Debbie Zandbelt, Vicky Berger, Hilary Graham, Tia Heeley, Rick Hansinger, Craig Newton, Diane Douglas, Krista Copeland, Dennis Farquharson, Ward Strong, Robb Bennett.

Summary of Action Items:

Action Item	**Who**
The information from the Pli B+ stands will be given to Alvin for review. Jack Woods will report out on this at the next FGC Mtg. in December	Breeders/Jack
Issues related to custom seedlots and setting GW values are to be reviewed	Alvin, Brian, Jack and Barry

Summary of Motions:

Motion	
That the minutes of last year's mtg. be accepted.	Approved
That the motions, reports and recommendations from 2004 species committee mtgs. be accepted.	Approved
That ITAC endorses Robb Bennett's presentation to the FGC to support the establishment of a Seed Pest Management Research Program.	Approved

OTIP (Roger Painter, Barry Jaquish, Michael Carlson, Jack Woods)
The ITAC reviewed the motions put forth and passed at the northern and southern species committee mtgs. From this came the following approved motions:
In the North:
That the 2nd Generation trials in the PG spruce (SPU 35) be consider a priority for establishment. Jaquish/Lee. Passed

That the realized gain trials in the PG spruce (SPU 35) be consider a priority for establishment. Jaquish/Forsythe. Passed.

That the current elevational limit for PG Low Spruce be changed to 600meters to 1200 from 700 at the lower range.

That a new a zone for Spruce PG high with the elevational range of 1200 to 1500 meters be established.

In the South:

- **That the category SPU 44 be changed to a second generation program.**
- **That a new SPU zone be established for a high elevation larch zone from 1,200 meters to 1,550 meters.**

Breeders reports

Michael Carlson – see handout
In the Bulkley Valley, the 1st Gen. site at Chowsunket established in 1986 was assessed for rust resistance in Western gall rust. Overall southern sources had less galls per tree. Also some trees from east of the Rockies had a much lower number of galls per tree. Same families tested with elevation showed a similar relationship with low elevation having less. Longitudinally it showed that trees closer to the Rockies had less galls. At the family level, there is a lot of variation between source. The overall feel was that it may be possible to choose families for a rust resistant orchard.

Pli B+ seed sources: Mike described the use of these sources in his progeny trials. They originally came from original Provenance trials set up in the early 1970's. Unfortunately not many of these are from northern sources. Current B+ seed sources are set @ 3%. Mike is reviewing the current data on these provenances and will be reporting on the individual sources. The possibility exists that some may go up to 5% GW or higher. Data will be available by November 10. Concern was expressed that under the new Chief Foresters Standards that future planning problems could occur related to high GW B+ seed when Orchards come on line and seed the might not be used because B+ will be cheaper. Because B plus has broader transfer limits, it may not be as big of a problem as anticipated. Alvin Yanchuk stated that all these options were discussed and the CF made this decision. At present it is not possible to revisit this issue. Full analysis of BV's should be done.

Action: The information from the PLI B+ stands will be provided to Alvin for review as to their breeding value. Jack Woods will review this information and report back at the next FGC Mtg. in December.

Barry Jaquish
Gave a talk at Inland Empire meeting in February. (See notes from species committee mtg).

Barry reviewed requests for use of seed outside of the current SPU boundaries. Some jurisdictions want to use the seed but are concerned that the GW when it goes from one PSU to another has its Genetic Worth reduced from 20 to 2 (as an example). Barry stated

that this was the nature of the rules for setting genetic worth and that without the quantitative data the numbers cannot be changed. Barry suggests re-running quantitative tests looking at BV's.

Action: Issues related to custom seedlots and setting GW values will be reviewed by Alvin, Brian, Jack and Barry.

Seed Orchard Manager's Reports
Orchard managers from VSOC, Kalamalka, Skimikin, Pacific Regeneration Technology (Armstrong), Riverside, and Kettle Valley, gave reports. (See species committee mtg. minutes for detail).

Parent Tree Area of Use Tables (Michael Carlson)
Mike reviewed the information from the northern and southern species committee and the changes that were made to the parent tree area of use table. Everyone agreed to changes. They include:

Pli TO mid - removed.
Pli TO low should read 700 to 1400
Pli TO high should read 1100 to 1600
Sx TO mid removed.
Sx TO low should read 700 to 1300
Sx TO High should read 1300-1850
Sx NE mid should read 800-1500
Sx NE low removed..
Sx PG high is now 1200 to 1550.

Motion: To accept motions, reports and recommendations from species committee mtgs – Carlson/Lee - Motion carried.

Update on Extension Initiatives (Diane Douglas)
ETAC Chair – Chris Hawkins, Coordinator – Diane Douglas.
Don Summers was recognized for all his hard work and efforts. Extension notes are available on the FGC website. Extension Note 4 is having some printing estimates at the moment. Three more Extension Notes are in the process of being prepared.

Northwest Forest Genetics Tour (Kitwanga Oct 6/04) – Alvin Yanchuk, John King, Charlie Cartwright and Alex Woods headed this very successful tour. Ecologically complex zone. There is a recognition that there is a need to start putting trials in this area to get answers about species choice. Barry Jaquish has done some work on species trials in the area. It was noted that there was good representation by industry at the session.

New Tree improvement in BC brochure done, Roger had a new tree improvement cycle created and will be used hopefully for posters and other things.

TicTalk newsletter editorial committee – Peter Forsythe, Andreas Hamman, John Russell and Chris Walsh. This group met in June. Anyone who has ideas for articles or would like to write an article may forward to Diane. The intent is to produce one more issue before March 31.

TI Client Survey has been developed by Kathie Swift of the Forrex group. A draft of this survey is under review. Client contact list are to be developed for the survey. The ETAC meeting will be held next Tuesday (Nov 9th) in Kamloops. In February there will be a one day workshop to plan extension for the next 5 years with input from the Client Survey.

The MOF has agreed to support one more Seed and Seedling extension newsletter.

Scope of Genecology Work to Date (Jack Woods, Michael Carlson)
Genecology work – is there enough work being done? Concerns are to be discussed at both TACs. There is some work being done in the Interior (lodgepole pine and some Douglas fir). Mike Carlson is doing some work with Birch and a little with Ponderosa pine. Some work with Red Cedar on the Coast. There might be some information from a remnant of a testsite at Skimikin. Jerry Rehfeldt in Idaho has done considerable work on genecology. These studies have great value in trying to answer questions related to climate change in a number of species. The FGC has asked for feedback on this issue. Current feeling is that big species are covered well, and minor species probably enough information to proceed.

Integrated Pest Management Initiatives/Support Funding and Dimethoate Registration (Ward Strong, Robb Bennett)
Ward Strong

Dimethoate is used to control Dioryctria. Ward has developed a schedule for spraying using two applications of Dimethoate. Ward had a student working on a research project to develop a monitoring system - visual monitoring, pheromone was discovered for this and can now monitor the adults. Monitoring will involve a combination of visual observation and pheromone monitoring. There is a need for alternative pesticides as Dimethoate is a systemic chemical and kills almost everything it hits, and is expensive and might lose its registration in the future. He is hoping to find something that can be rotated with Dimethoate. Some possibilities include "Admire", "Success", "Confirm" and "Intrepid" The best possibility is a nicotinamide called Tristar is highly systemic and has good effectiveness against caterpillars. Success is produced by fermentation of a bacteria and has low mammalian toxicity, is non systemic. Confirm is non systemic, is not a nerve poison, hormone stimulates moulting, kills only caterpillars, has to go on the outside of the cone. Used in the apple orchards against codling moth which is a similar situation to Dioryctria. Will be testing some or all of these chemicals.

Robb Bennett
Robb reviewed the state of cone and seed pest management in BC. He stated there is a lack of research in the pest management program and that this is really holding

development of lasting answers. In the past CFS research program and BCFS ops/extension program was great and brought great program initiatives. There used to be 6 full time people working in this field which included much work on Douglas fir and spruce. Changing priorities and downsizing has eliminated CFS program and BCFS program. With all the orchards now in the ground the question needs to be asked Why is there no cone and seed pest research program in BC? All major conifers in BC have permanent research programs dedicated to their 'improvement'. However losses due to insects are destroying the gain that is being made. There have been some huge losses in Dioryctria and Leptoglossus. These catastrophic losses will continue. In 2004, there was an estimated $600,000 loss in 2 spruce orchards. This dollar amount is equivalent to a 5yr salary for 2 research scientists.

Robb is proposing that ITAC petition the FGC to provide financial support for a permanent cone/seed pest mgmt research program. Scenarios 1, endowed Chair at a BC university or community college, 2, Re-establish a position at pacific forestry centre and 3, Establish a BCFS. researcher and technician position($120,000 for one of each).

Vernon Seed Orchard noted that it will spend over $20,000 next year in spraying for pests. It was also noted that even with White Pine Blister rust that PFC has stated a strong reason is needed to continue or they are moving away from supporting research.

Discussion included recognition that there is a huge environmental pressure on orchardists to reduce chemical spraying and use more pheromone based research. There are some options available as FGC is funded through FIA, and an endowed chairs should consider funding from the orchards involved. And possibly they should be funding this research. Councils funding is based on FIA and how long it lasts is a question mark. It was noted that this will also be presented to CTAC for support..

Motion: That ITAC endorse Robb making a presentation to the FGC for support from FIA for further funding for the sub-committee on pest management – Kolotelo/Carlson – Motion carried.

Gene Conservation Issues (Andreas Hamann)
Andreas provided the meeting with an update on the cataloguing & climate change project and an overview on the science of climate change.
Cataloging – This includes modelling of species frequency for BEC variants and how to utilize inventory data. There are 49 species evaluated by BEC zones. There are 3 papers that summarize this research including "Cataloguing in situ protection of genetic resources for major commercial trees in BC (published)".
Climate change science – There are a lot of mixed messages in the media on climate change. Andreas reviewed some of the information including measurement of CO2 from trapped air in ice core, temperatures inferred from heavy isotope concentraton 2H based on Parmeson & Yohe (2003) Nature 421: 37-42 September issue of National Geographic: Global Warming. See http://www.brighton73.freeserve.co.uk/gw/paleo fpr greater detail, and "600-million-yr CO2 & Temp reconstruction (Royer et al. 2004) Geo.Soc.Am. 14: 4-10.

on the influence of Carbonic Acid in the Airr upon the Temperature of the Ground. By Prof Svend Arrrhenius (Phil.mag. 1896 41: 237-76) predicted a 3.5 and 5.5 degree celcius increase in MAT resulting from a 150 to 300 PPM rise in CO2.

Andreas' take on all this is:

- Something's going on (could be unknown natural cause)
- CO2 is a major driver at all timescales, but other causes definitely exist, also at all timescales
- Unlikely that doubling or tripling Co2 goes without consequences
- This impact would be big. 4 degrees Celsius warming (2085) sets us back about 20 million years
- At some point the natural carbon system may become unstable when forced (unpredictable).

For more information on climate change look at
http://genetics.forestry.ubc.ca/hamann/climate/

Business Planning Process and FGC Expectations/Progress Toward FGC Expectations/TAC Feedback (Jack Woods)

Jack Woods reviewed the business planning process for the FGC Tree Improvement Program and its purpose. He reviewed the various sub-programs and committees and how they feed into the FGC Business Plan. Jack reviewed the calendar related to the planning process which starts in October /November with Species committees followed by TAC meetings, Breeders presentations of their programs and budgets. This is followed by the December meeting of the FGC to discuss issues and processes. The OTIP call for proposals is issued in December with review of projects in January/February. This is followed with budget preparations for the sub-programs based on the FIC allocation. Jack noted that indications are that FGC receive the same amount of money as last year. In March the FGC meets to approve the proposed budget that is recommended to the MoF and FIC. In April the program officially begins implementation.. Jack briefly reviewed the work breakdown structure for OTIP and the Breeding program, touching on performance management.

FRPA CF Standards, Timelines and Issues (Brian Barber)
In process of legal review and put forward to new CF. April 2005 target. Training sessions being prepared, Diane working with Brian. For seed orchard mgrs and field staff. Jim Snetsinger new CF. Brian will bring forward the concerns raised at the mtg today regarding BV outside of SPZ's. Brian would like to thank Jim Chris, Diane, Jack and Greg for their help. 4 month notification period to have CF make a change. Is the variance process washed away? District manager does on block by block basis, 5% meant to give you slack without having a variance. Number of blocks continue to plant with code, 2 systems will be going on. No mechanism for DM to approve an alternative to an FSP. If licensee puts in FSP transfer guidelines, can't get an alternative to standards approved in an FSP.

GASP – Generally Accepted Scientific Principles (Jack Woods)
This document is associated with the CF Standards, extracted segment GASP will reside in a separate document and is owned by FGC. Report in preparation "Methods for Estimating Gamete Contributions to orchard Seed Crops in BC'. Stakeholder input, review and update through ITAC and CTAC, with FGC approval. A November 12th draft has been distributed. It will also be discussed on Nov 25th at CTAC, early December incorporate comments and distribute to ITAC and CTAC members, 2nd week of Dec discuss with FGC. Target completion at March 2005.

The FGC asked the TACs to review OTIP funding issues related to categories 325 and 327 and Roger related comments from the species committee held earlier this week: SMP should be available in early and maturing orchards. It was felt that review committee consist of a number of orchard managers and they have a good understanding of process. As to Orchard Management 327 – crown training, crop enhancement or quality. There was some discussion at the northern interior meeting of allowing nursery projects for multi sowing and testing. The suggestion was made to sow by family (strategy). Roger will also be taking this issue to the coast for their input.

GA Registration Joe Webber and Roger Painter began use of Ga4/7 in BC orchards back as far as 1979. It was always used as a research product and has never been registered. It is controlled under the pesticide control act. Robb Bennett has been asked to look into getting it registered. Process is relatively straightforward as long as manufacturer is in agreement. Robb has initiated first steps as well with dimethoate.

Mountain pine beetle (Dave Kolotelo)
Discussed the use of prescribed burns to regenerate Pli Stands. Reviewed the potential viability of seed that is sitting in trees over time. Discussion of seed viability from Dead Lodgepole pine Last year Northern Species committee had questions on the viability of seed from dead trees, considering the need for increased seed to regenerate beetle killed stands. Foresters are interested in using prescribed burns to regenerate certain stands and need to know how long the seed will remain viable. Dave Kolotelo prepared a report based on the average from 9 collections made from the Nadina Forest District. The results were based on half cone cuts, the number of non-germinated seed and on whether

the seed could be removed during processing. The seed potential was around 70- 75%. Seed yields may be lower but even trees with up to ten years of cones showed viable seed

Sx Climate Change Strategy and Climatypes (Greg O'Neill)
Adaptation Studies (Greg O'Neill)
Greg gave an update on his three projects with Climate Change:
Project #1 – **Extreme events** (O'Neill)
Objective: illustrate the impact that an increase of 3 ^{o}C will have on the frequency of extreme events.
Materials: weather records (January maximum temp, 1961-1990) from Kamloops.
Results: probability of a 1-in-50 year event (January maximum temp > 6 ^{o}C) will increase to 1-in-9 years.

Project #2 - **Mother of all Sx genecology studies** (O'Neill, Yanchuk, Jaquish)
Objectives: identify best seedlot for any site; predict performance in future climates; compare A and B seedlots.
Materials: 128 seedlots (98 'B'lots from western North America; 30 'A' lots from AB and BC). 15 planting environments (1 YK, 2 AB, 12 BC) to be planted in spring 2005.
Funding: Sx budget.

Project #3 - **Lodgepole pine climatypes** (O'Neill, Hamann)
Objectives: identify the extent and direction that Pli potential habitats (climate types) shift with global warming; identify change in magnitude of each habitat.
Materials: Illingworth provenance test data, Pli range maps, PRISM climate maps.
Results: most pl potential habitats will migrate northward, some as far as 1000 km by 2085. Potential habitats of some populations will increase in size by up to 10-fold. Others will decrease 10-fold. Significant implications for seed transfer and seed orchards.
Funding: Climate Change Action Fund ($50,000). Remainder – Sx budget.

Molecular Genetics Techniques and Services Available (Craig Newton)
Craig reviewed the need for work in applications of DNA markers in Seed Orchards. He noted that his company would not be supporting this in the future. It has great potential in Breeding Programs and for verification of clonal material as well in testing for seed quality from SMP.

Pw Program Assistance from CFS (status of) (Michael Carlson)
Funding restraints in CFS and Rich Hunt retiring mean funding for white pine may no longer be available.

Other Business
Jack Woods reviewed the Orchard Information System. The OIS has been around for a long time. It is out of date as it is based on FoxPro. Jack asked if there was enough collective interest to upgrade OIS. The basic message from members was that they would support this. Jack will take this back to the Gene Resources Information Management sub-group for discussion.

Michael Carlson – motion was put forward by the northern group that the sowing factor for pli 6.5 is too low. Variances suggest it should be higher. At present with no plans for new orchard or expanding orchards makes this a mote point at this time. Consideration should be given when and if the number of cones per tree and seeds per cone change. No action was taken.

Tim Lee reviewed the meeting and celebration that Vernon Seed Orchard Company held on Sept 15 and 16th. He said the discussion on the future of tree improvement and history of TI was very valuable. A Paper has been produced and is in draft and presented to the FGC for the next meeting.

Meeting adjourned 3:15 pm