ITAC Species Meeting Minutes – Dec 13, 2017

Location: Kalamalka Seed Orchards**,** 3400 Reservoir Rd. Vernon, BC

Participants:

FLNR Research Scientists:

Barry Jaquish; Trevor Doerksen; Nick Ukrainetz; Alvin Yanchuk; Michael Stoehr; Greg O'Neill

Seed Orchards:

FLNR - Stephen Joyce FLNRO, Gary Giampa, Kat Spencer Haley Walsh
VSOC - Dan Gaudet and Tia Wagner
PRT - Dan Livingston and Mike Brown
SelectSeed – Brian Barber; Hilary Graham; and Rick Hansinger
Coldstream – Barry Kasdorf

Forest Health:

Richard Reich CNC (via con call); David Rusch – FLNR Williams Lake; Michael Murray – FLNR Nelson; Ward Strong - FLNR

Seed Users:

Scott King – LP/ FGC; Lance Loggin - WF; Krista Copeland – Tolko; Kori Vernier - Canfor; Neil Hughes and Brendan Brabender – LBIS, FLNRO (via con call); Alan Ramussen – BCTS; David Jackson – Interfor.

Summary of action items:

1. Review species program categories and rankings at next ITAC business meeting.
2. Stephen to convey the recommendations to the CBST Policy Working Group where CBST results in a shortage or absence of Class A seed.
3. Brian to discuss CBST seed supply analysis and criteria with Margot Spence, and develop further with Greg, Scott, Kori, Stephen and Brendan.
4. Add kgs of seed to species plans.
5. Update expected annual seedling production per ramet – range, seeds/kg and production forecast by orchard in kgs
6. To prioritize forest health issues, vet data through and seek input from foresters with local experience before priorities are set by breeders. Foresters should connect with District and Regional Forest Health specialists as they create maps, analyze data which are used to set priorities.
7. Update SPAR query to find resistant seed.
8. Confirm with Susan if seedlots have been updated with new BEC and understand how changes in seedlot BEC will be tracked over time considering impacts on seed transferability.

Proceedings:

1. Agenda

Michael Stoehr, A/Manager, Forest Genetics Section, FIRM, welcomed participants, acknowledged hosts, and reviewed the agenda (see Appendix). Brian handed out the Forest Genetics Council 2017/18 Business Plan, which included update Species Plans, for reference.

2. Goals and Objectives

Kori Vernier, ITAC chair, outlined the following goals and objectives for the meeting:

1. To connect breeders, seed producers and seed users to openly discuss current issues with tree seed and achieving FGC objectives.
2. Review assumptions in species plans in light of changes in where we are logging, new reforestation programs and current orchard production.
3. Review impacts of Climate Based Seed Transfer (CBST), identify areas of concern/gaps in seed orchard coverage and develop plan to shift our programs and communicate to others.
4. Discuss forest health issues - what are main concerns, what agents are on current radar to incorporate into breeding program
5. Identify gaps in information and opportunities
6. Provide recommendations for Species Plans

3. Ponderosa Pine (Py)

Nick provided an overview of current Py genetics research and program status. Current demand increased from 1 million to 2 million seedlings/year. One orchard at Bailey is now producing registered seed. Gap in seed for Williams lake area. Some planting in Kalum and Nadina was noted. No progeny tests in place. Deployment area expands under CBST. Demand may increase. Need to review this species priority (#2).

Action: Review species program categories and rankings at next ITAC business meeting.

4. White pine (Pw)

Nick provided an overview of current Pw genetics research and program status.
to determine level of resistance. Seedlots currently registered with 65% tolerance to the blister rust – various resistance mechanisms (% survival at rotation). Current demand in interior 1 million seedlings, generally planted at a low % mix (10%). Seed from Bailey Road Orchard #335, new orchard at Skimikin #351 is replacing. Interfor also obtaining Pw seed from Inland Empire Seed Coop (IETIC) in Idaho which has been included in CBST.

Future research needs include progeny and provenance tests. Provenance site up the hill from Trinity Valley is an excellent site and a good field trip opportunity. Trees in orchards and clone banks subject to sudden die-back, more prevalent on Coast A possible root disease? Similar mortality not observed in plantations. It was noted bears do not damage Pw trees. Demand for Pw logs however in decline. First Nations also want some veterans left in stands for canoes. If major gene resistance (MGR) is relied on too heavily the pathogen can overcome the resistance.

5. Paper Birch (Ep)

Limited research and selections made by Mike Carlson. Small Ep orchard on Kal site – no seed registered or used to-date (no demand). Species readily managed as natural regen and often brushed to reduce competition to conifers. Birch decline (top dieback) noted in the interior N to Williams Lake. Causes unknown – drought?

6. Lodgepole Pine (Pli)

Approx. 100 Million planted annually, 90M in 2016 and trending downwards, and harvest area shift out of MPB damaged stands to Sx/Abies/Fdi stands. First time Sx has surpassed Pli orders. FCI has 70% pine orders due to fires/MPB.

Nick explained the two cycles of breeding programs underway. 1st cycle has well established sites which are good to evaluate forest health impacts so good to maintain long term, could potentially remeasure with lidar. 2nd cycle is 10-15 yrs old, from which next gen forward selections are made, these sites are only maintained to age 15 (BV, PG , NE, TO and CP). Other trials in place for dothistroma, Big Bar/Chilcoltin, TO High and rust screenings.

Nick presented proposed population groups and deployment areas for Pli under CBST – based on performance of progeny and climatic variables of the test sites and not on parents but built on the principles and data of CBST. Spatially defined areas will facilitate the integration of forest health. It will also assist in scaling and determining breeding values of parent trees tested in different areas. Proposed groupings and methodology currently undergoing peer review. Genomics studies not included at this time.

New grouping can be used to identify selections for new orchards for the North, including those for pest tolerance (rusts). More data required for Southern Pli orchards/populations. Although there was some resistance identified with MPB, no screening is possible at this timeas its too complex andimpossible to test epidemic level resistance with 60-year periodicity of infection compared to rusts or weevils that can be tested every year.

Nick and Richard Reich explained the progeny test transect screening. David Rusch suggested assessing health of all progeny test trees and offered to help train crews to improve pest and disease identification.

The impact on growth of incorporating pest resistance is not yet known. One perspective considers reduced growth likely because less genotypes will be available but so far there is no clear correlation with growth and disease and some have even identified a positive correlation.

Stephen presented some of the CBST deployment maps for Pli seed orchards, noting similarities and differences with current standards and SPUs. This led to a broader discussion on CBST. Question was raised if we can/should use Alberta seed in the Peace if BC orchard seed is unavailable. First need to evaluate BC orchard seed.

Action: to update SPAR query to find resistant seed.

7. CBST

The new CBST tool and some examples of seedlot and cutblock selection were provided. Kori also circulated tables compiled by Forsite that compare the deployment area gained and lost by species, management unit and BEC variant were distributed.

Dave Jackson pointed out a gap in A (and B) Fdi and Lw seed supply in the ICHxw – which is currently services by Nelson SPU orchards. This may require an override.

Action: Stephen to convey the following recommendations to the CBST Policy Working Group where CBST results in a shortage or absence of Class A seed.

1. Consult with ecologists on species suitability
2. Reduce genetic suitability for the species (e.g. 98 to 97), on a case-by-case basis
3. Implement a policy over-ride to provide use of Class A seed
4. If 2 or 3 not suitable, assess need for Class B seed collection.

Questions that arose that require further clarification, messages in future CBST extension:

1. What are the gaps in seed orchard coverage?
2. What are the areas of overlap between orchards?
3. What is the liability if trees planted under CBST die?
4. Does GW change under CBST?
5. Does B+ Pli seed have new GW or special status under CBST?

Future seed needs forecasting was also discussed – as species plans future demand is based on demand the past 5 yrs. Rick pointed out actual Pli seed production is well below the proposed targets (in Pli species plans).

Knowing the current planting #s by BEC variant would also be helpful. Greg provided an example of orchard BEC variant overlaps for Lw using the CBST outputs. It was agreed, Forsite would be better able to generate data and tables to identify seed needs and orchard coverage by BEC variant. Forecast seed needs are needed to determine # of orchard ramets required.

The analysis and criteria could include:

1. Past 5-year planting numbers by species and BEC variant from RESULTs data
2. BEC variants covered by existing seed orchards under CBST, and production capacity of each orchard (business plan estimates).
3. Compare 1 and 2 - compare past planting #s by spp and BEC variant with current orchard capacity under CBST.
4. Identity any orchard gaps and potential over-capacity under CBST - measured by # of seedlings and/or orchard ramets.
5. Forecast future seed needs by quantifying ha in THLB by BEC var (separate age class 3 and greater then add fire risk), estimating planting #s for each spp and BEC variant in 5-year increments – 1-5 yrs, 6-10 yrs, 11-15 yrs etc. Multiple scenarios can be considered if we use this format, such as what happens to seed demand if the average plant densities increase from 1400 to 1800. – in consideration of

a. TSR projections for each management unit (translate regeneration strategy in each analysis units to BEC Var),
b. Govt programs, changes to stocking standards, enhanced silviculture

6. Confirm estimated forecasted planting needs by BEC variant by circulating tables/assessment to seed users – users confirm increase, decrease or remain the same.
7. Use confirmed forecast planting projections to identify future seed orchard needs - # of ramets required for BEC variants and groups.
8. Model to include provision for sensitivity analyses – changes in seed production yields (e.g. seeds per orchard ramet), sowing factors, stocking standards etc

Action: Brian to discuss CBST seed supply analysis and criteria with Margot Spence, and develop further with Greg, Scott, Kori, Stephen and Brendan.

8. Western Larch (Lw)

Barry and Trevor provided overview of the Lw tree program and supportive research. Barry pointed out anomaly that Lw wood density increases with age until about age 15-20, after which its wood density values stabilize at about old growth levels – the pattern is opposite to other commercial conifers is BC.

2010 assisted migration was introduced. 7.5 million Lw seedlings planted per year, provincially lower in value but locally very valuable. NE high orchard seed can also be used in high elevation EK – and its frost hardiness has been noted by field foresters. Some ecologists concerned with use of Lw – does not provide adequate cover for ungulate winter range. However, not recommended for planting as monoculture.
CBST used Sx transfer functions for Lw. Does not align perfectly with L1/L3 and L2 deloyment areas. Over-rides may be required for certain BEC variants where warranted.

9. Douglas-fir (Fdi)

Class A seed use increasing to 20 Million per year. GW +25%. 8 orchards; 38 test sites, 300 k trees. TO orchards selected from existing breeding populations based on test sites. SM seed sources also doing well in the S. interior. Additional tests being established in 2018.

10. Seed Supply and Demand

Neil and Branden joined by conference call. Seedling demand was project to decline post MPB. However, 2017 wildfires and govt programs (FFT 28-30M, Forest Carbon (40-50M may shift 60-70M), FES, enhanced stocking standards) are expected to maintain seedling demand at or above 250 million per year for next several years. Currently overlaying GIS fire impact severity maps with openings, applying assumptions for natural regen to calculate seed needs which show shortfall in Fdi. Additional 14-15 million seedling required for restoring fires next 5-10 yrs. Seed planning and forecasts subject to additional planning at district level, as natural regen may be adequate. CBST lens not used yet.
Action: Brian to discuss seed needs analysis and criteria with Brendan prior to meeting with Margot.

11. Interior Spruce (Sx)

Barry provided overview of Sx breeding program, and advancement in testing for terminal weevil resistance. Currently only seed from PG orchard # 211 has high levels of weevil resistance. Seed orchard parents from southern seed orchards are currently being screened for weevil resistance and the Bulkley Valley population will be screened in future. Barry and Trevor "promised" to provide "R" breeding values for PG parents by January.

12. ITAC Business and Extension Meetings

Kori proposed holding the annual ITAC extension and business meetings Feb 6-7, respectively, in Vernon. A doodle poll will be conducted if these dates are not available.

It was also suggested CBST workshops could tagged onto upcoming SISCO (Kamloops) and NSC (PG) winter workshops to reach a wider audience and assist others with travel.

Minutes approved Feb 1, 2018 at ITAC business meeting (Joyce/Ukrainetz – CARRIED)

Agenda: December 13, 2017 at the Kalamalka Forestry Centre, Vernon

Time	Min.	Topic	Presenter
8:00	20	**Welcome, Introductions, Agenda Review**	Michael Stoehr
8:20	10	**Goals for the meeting** *ITAC Mandate*	Kori Vernier
8:30	15	**Py** *brief discussion to identify any concerns / thoughts*	Nick Ukrainetz
8:45	15	**Pw** *brief discussion to identify any concerns/thoughts*	Nick Ukrainetz
9:00	60	**Lodgepole Pine** *Breeder Update* *CBST Impacts, Issues* *Forest Health* *Seed Production* *Seed Demand*	Nick Ukrainetz Kori / Stephen
10:00	15	**Coffee Break**	
10:15	105	**Pli continued (list from above)**	Nick Ukrainetz
12:00	**60**	**Lunch – pack your own**	
1:00	60	**Sx** *Breeder Update* *CBST Impacts, Issues* *Forest Health* *Seed Production* *Seed Demand*	Barry Jaquish Trevor Doerkson Kori / Stephen
2:00	45	**Lw** *Breeder Update* *CBST Impacts, Issues* *Forest Health* *Seed Production* *Seed Demand*	Barry Jaquish Trevor Doerkson Kori / Stephen
2:45	15	**Coffee Break**	
3:00	45	**Fdi** *Breeder Update* *CBST Impacts, Issues* *Forest Health* *Seed Production* *Seed Demand*	Barry Jaquish Trevor Doerkson Kori / Stephen
3:45	15	**Next Steps, Follow-up**	Kori Vernier
4:00		**Adjourn**	