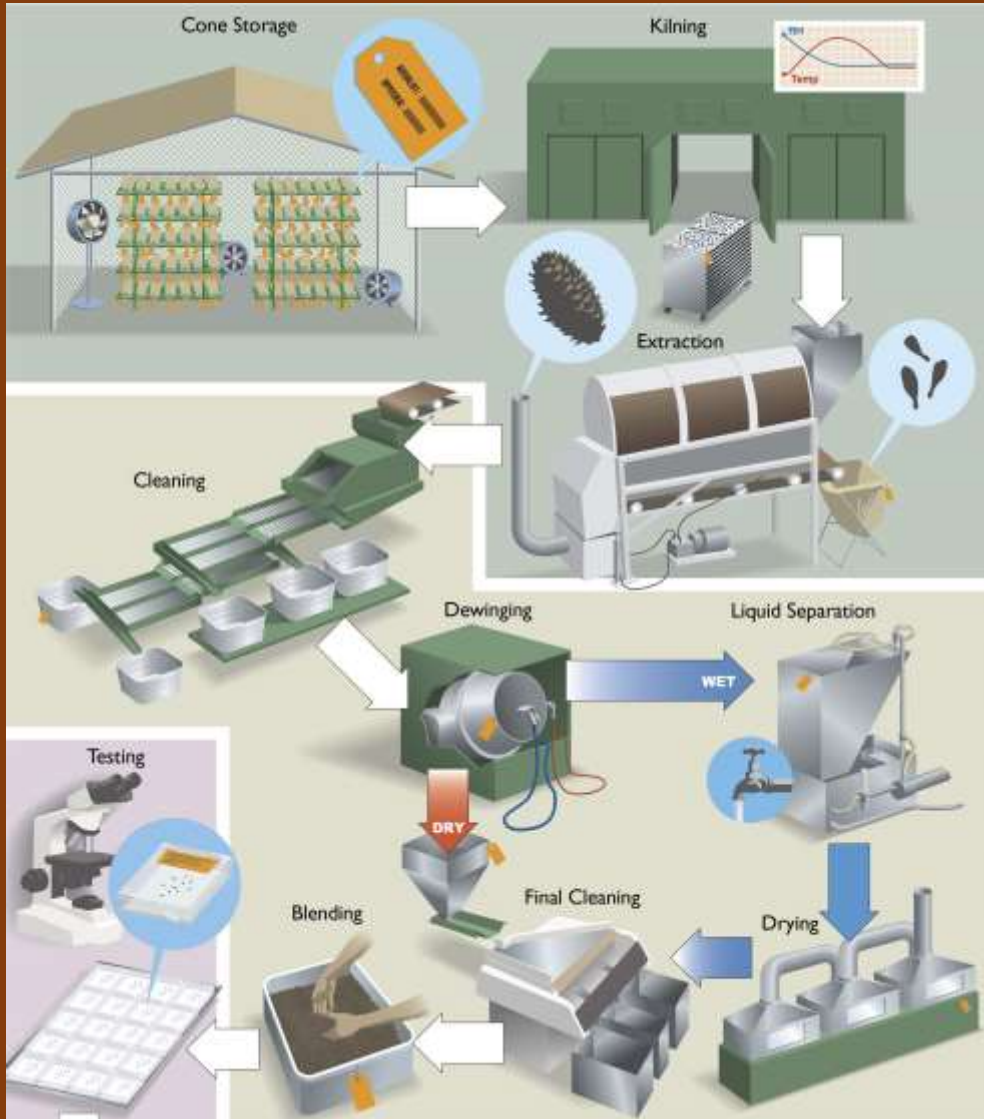


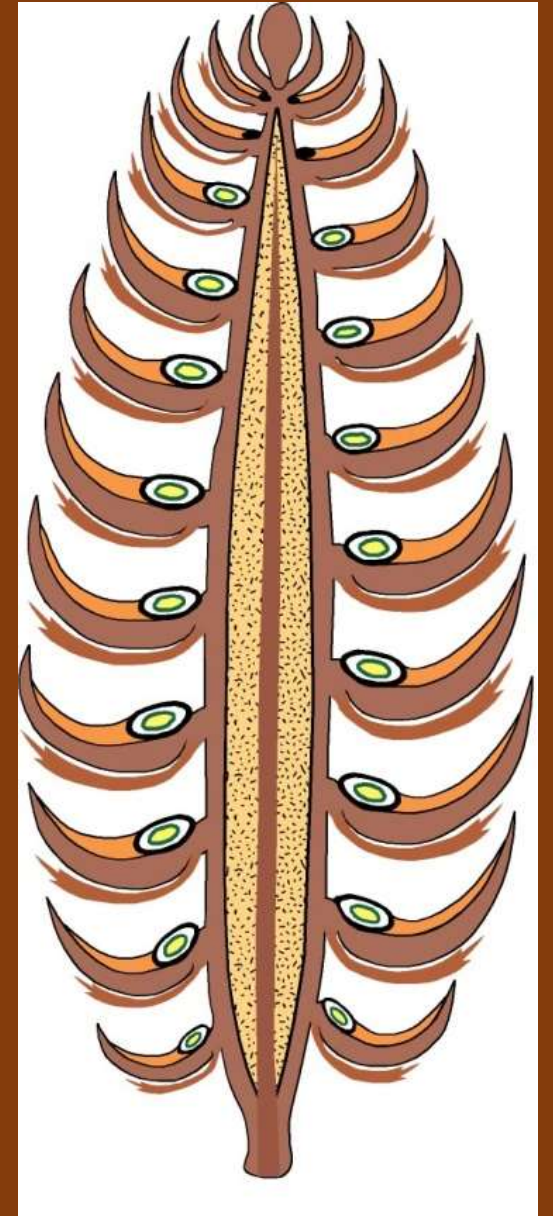
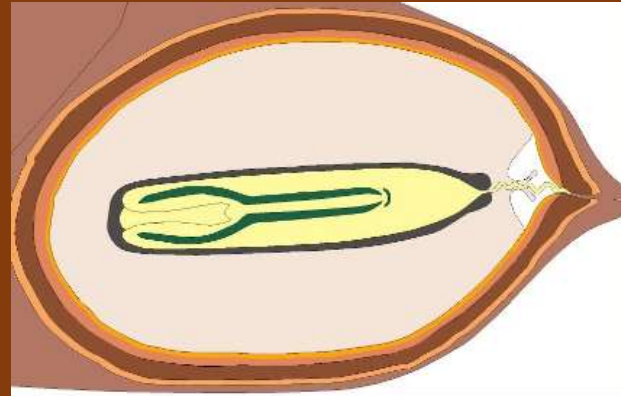
Tree Seed Centre Update



ITAC 2020 Extension Meeting

Topics

1. TSC Staffing / Capital / Safety
2. Priority Processing
3. Sx Extended Stratification
4. Lw Seed pathology issues
5. *Fusarium* molecular tools
6. Seed Bank Update
7. Extension



TSC Staffing / Capital / Safety

- **Michael Postma** – TSC Manager since January 2018
– long history with TSC – IT/ facilities
- **Laura Klade** – New Cone and Seed Processing Supervisor
- **Victoria Lei** – New Testing Supervisor
- New Seed Testing Technician – in the hiring process



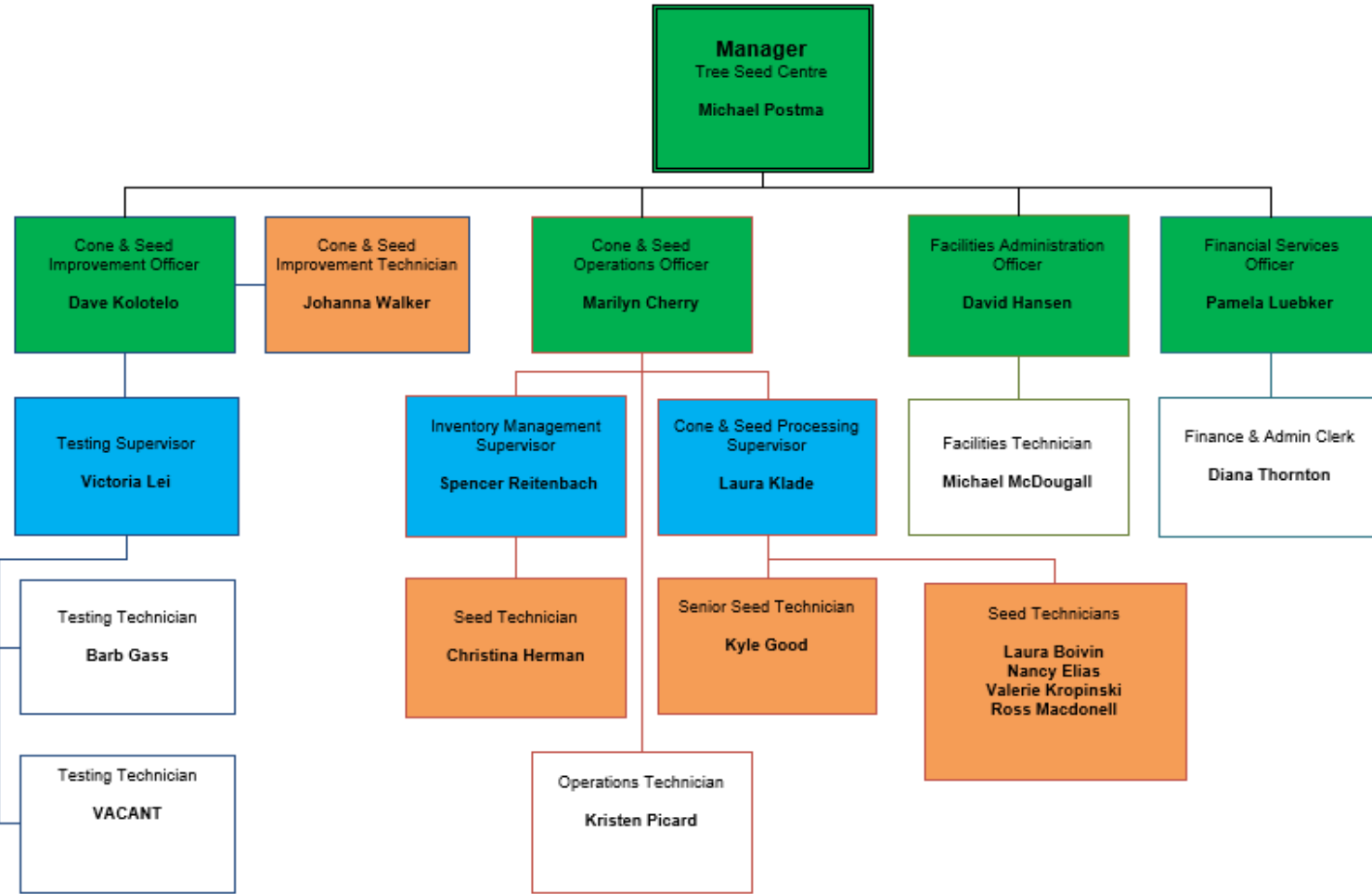
CAPITAL (33 yr old facility)

1. **Freezer re-build** – *no immediate threats, but reason for our Mission Critical status*
2. **Kiln improvements** (RH control / venting) – *large non-capital improvements in past year*
3. Pre-conditioning area (RH control); water recirculation/sanitation; cones for energy;

SAFETY

1. Gas safety - CO levels
2. Confined space evacuation plans/certifications – kiln – water systems
3. Racking regulations / forklifts/ dust level concerns - pesticide use [**MSDS sheets with crop**]

TSC Organizational Chart



TSC Management Team

Business Area contacts

Auxiliary employees

New Fee Schedule July 2019

https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/forestry/tree-seed/tree-seed-centre/seed-and-cone-fee-schedule/cone_and_seed_fee_schedule_october_2019_version_2.pdf

Tree Seed Centre Cone and Seed Services Fee Schedules

This schedule contains fees for the following services offered at the ministry's Tree Seed Centre:

1. Cone and Seed Processing
2. Seed Testing
3. Seed Preparation
4. Seed Withdrawal and Transport
5. Other Services

Priority Processing Process

- TSC estimates year's supply of surplus seed by SPU with GW>5 on August 1
- The seedlots on which priority processing is requested are then placed into categories based on FGC SPU seedling need estimates

1. Early sow species (Fd, Sx, Hw, Pw, Cw) < 1 year's supply

2. Late sow species (Pli, Lw, Py) < 1 year's supply

3. More than 1 year's supply

4. Family lots and trials

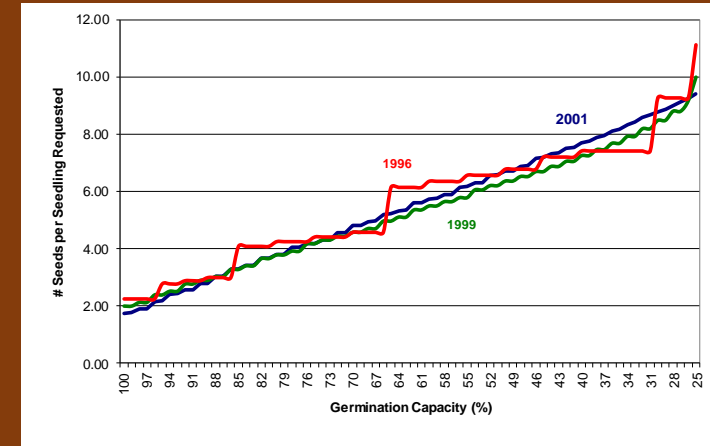
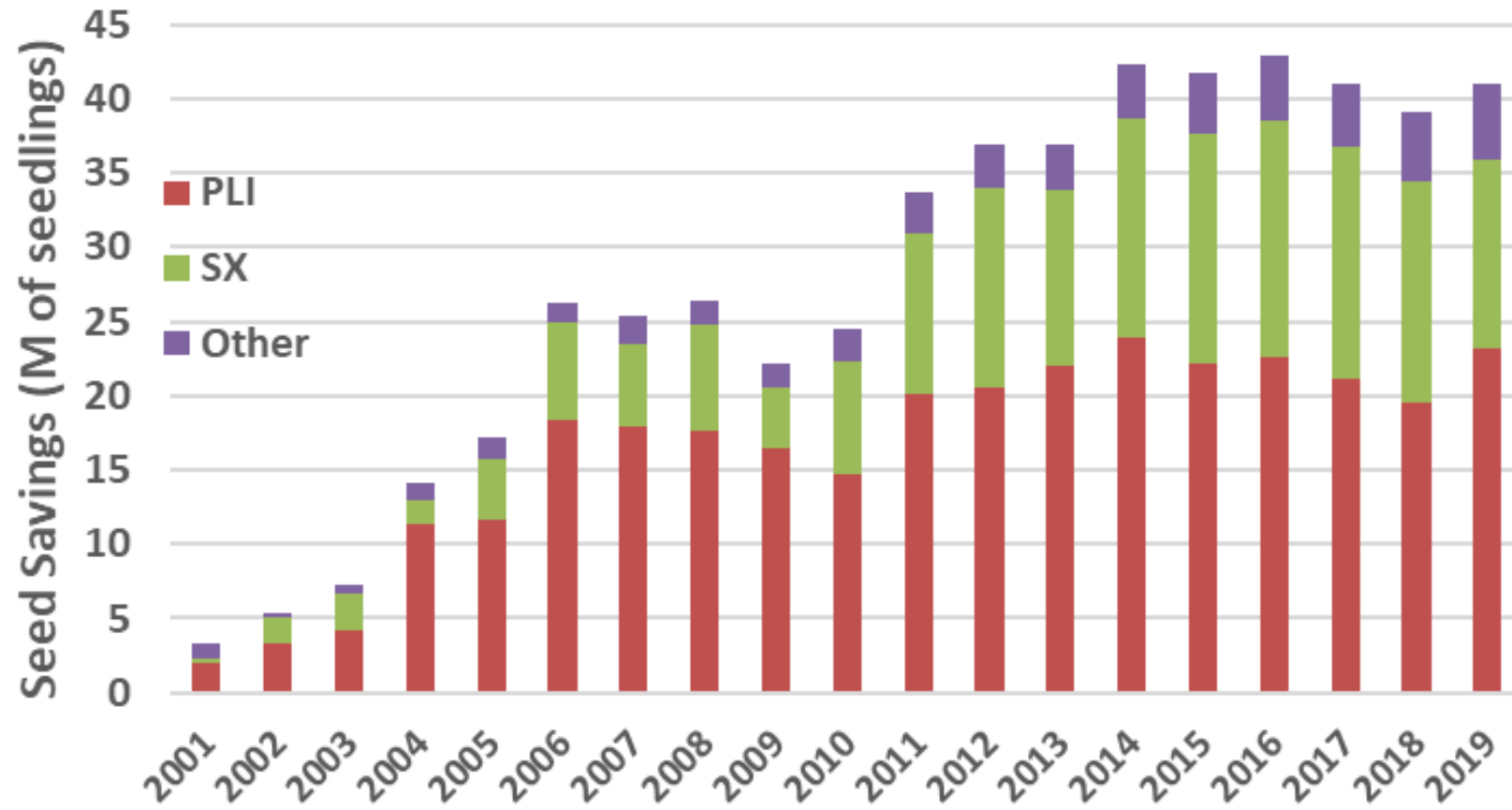
- BC Crown land reforestation
- Get 'A' seed back onto landscape ASAP
- Client balance

- *Pest or low dormancy issues (Cw, Hw, Dr) may increase priority status*
- *Cone+ Seed Processing and Testing are all priority activities*
- **Split large lots** – max size 150 hl Pli; all others 100 hl



Seed Efficiency Gains = seed savings

Difference between requested seedlings (SPAR default sowing guidelines) and calculated seedlings after gram reductions that SPAR users (nurseries or owners) input
Actual seedlings delivered???



Sx Extended Stratification

- **Goal** – improve the efficiency of Sx seedling production by increasing germination speed and in some cases capacity (**seed savings!**)
- **Issue** – five year average GC for seed orchard Sx is only 87% ! (**3.04 seeds/seedling**)
Nursery feedback on variable germination results (**VSOC**)
- **Basic Principles**
 - Extended stratification will increase the speed and uniformity of germination
 - Extended stratification will increase the ability for seed to germinate under suboptimal conditions
 - Extended stratification may increase the germination capacity
 - Extensive database on performance of returned seed performance indicates little to no risk
- **Decision** – All A-class 2020 Sx seedling request will be subject to 6 weeks of stratification (5 weeks at TSC, then shipped one week prior to sow date)

- **182 seedlots of A-class Sx derived from returned seedling requests**
 - Originally received 3 weeks stratification + 3 weeks in retesting + ??? (months)/
 - 55% of these still achieved 90%+ germination (remember 87% is species/A class average)
 - 94% of them achieved above 80% germination
- **Retesting Sx seedlots with 6-week stratification regime (G12 vs. G10 on SPAR)**
 - Focus on large seedlots and ones we still have time to adjust grams for 2020 SRQ's
 - Even without a G12 result, A-class seedlots will receive 6 weeks stratification
 - Will continue to perform G12 tests on A-class Sx seedlots

- 12 seedlot results to date

	G10 (3 wk)	G12 (6 wk)	Gain
GC%	87.4	89.8	2.4%
Peak value	6.6	7.5	9% at day 10



- 42 seedlots scheduled to obtain G12 tests
- 11 of these to get parallel G10 retests (old)
- More added over time

Lw Seed Pathology Issues

- Recently have had some seed pathology issues with Lw seedlots
- high proportions of abnormal germinants (primarily US seedlots)



- *Alternaria* spp. / *Convularia* spp. – generally weak pathogens ?
- Nursery experience limited – some seedlots doing better than lab GC, some nurseries routinely hydrogen peroxide soak Lw
- *Too moist test conditions ? Testing artifact or a production issue?*
- Increased 2020 QA-SRQ program – feedback appreciated

Fungal Assays / Fusarium Molecular Tools

- Michael Peterson who provided fungal assay services for \approx 25 years retired
- MOU with Ministry of Agriculture Plant Health Lab
 - 60 fungal assays per year
 - November to March opportunity window
 - Equipment to perform molecular diagnostics (q-pcr) / *inability to develop tools*
 - Greatly Increased efficiency
- Richard Hamelin lab at UBC (Nicolas Feau)
 1. Develop a Fusarium genus real-time PCR tool (all species) \$ - TSC
 2. Develop a Fusarium species specific real-time PCR tool for Fdc \$\$\$-NSERC
- **Information Change - % estimate to confidence the value is **above a threshold** and/or = 0.0**
- Also potential for sanitation method (i.e. styroblock) testing

Seed Bank – precursor to Tongli's talk

Genetic Conservation Seed Bank Interior priorities (eyes on the ground)

- 20 individuals per population (50 m apart) / good seed crops
 - *Pinus flexilis* (limber pine) – rare, priority needs MS and IDF BEC zones
 - *Cornus nuttalli* (western flowering dogwood)– IDF BEC zone
 - *Prunus emarginata* (bitter cherry) – ICH and PP BEC zones
 - *Betula occidentalis* (water birch) – BWBS and ICH zones
 - *Rhamnus purshiana* (cascara) – ICH and IDF BEC zones
- Subalpine larch and whitebark pine are seed collection priorities
- Jack pine and tamarack are also absent from the seed bank, but significant species with tree improvement programs in adjacent jurisdictions



2018 Whitebark pine Bumper Cone Crop

- Only endangered tree in BC
- We now have 29 seedlots and over 96 kg of seed in storage
- We have over 600 individual tree collections totalling over 167 kg of seed
 - Blister rust resistance testing
 - Anything requiring individual tree identity – you can't go backwards
- All seed received secondary processing (air separation) while most previous collections just had seed extracted from cones - huge increase in seed quality
- Very little Nursery experience with this species – that is changing
 - 9711 grams (11 requests) from operational seedlots
 - 15 579 grams from individual trees (171 withdrawals)
 - Five nurseries growing the species



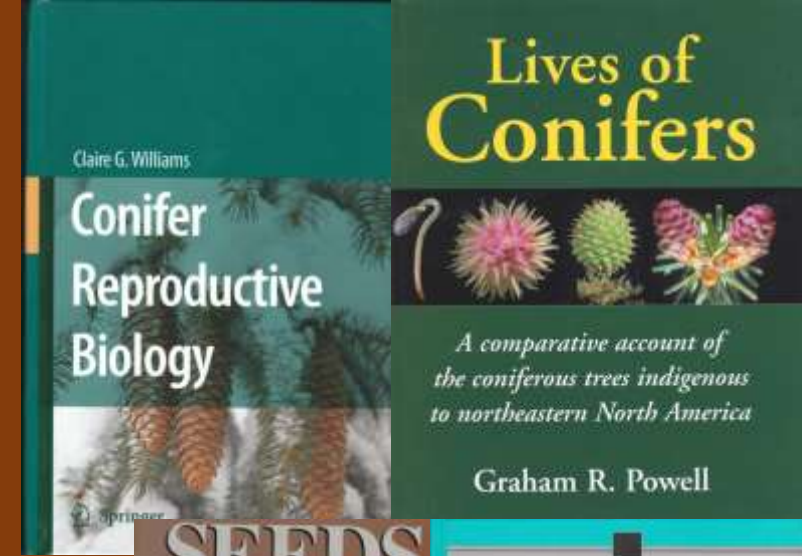
Extension

Cone collection workshops ??????

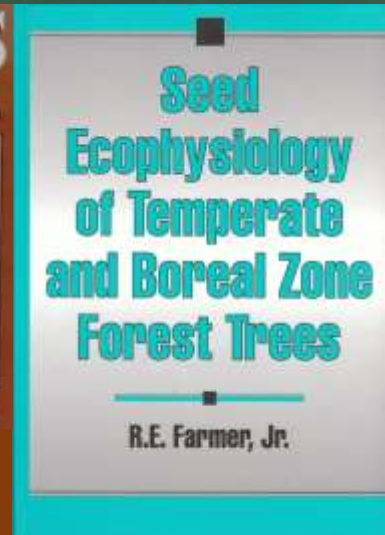
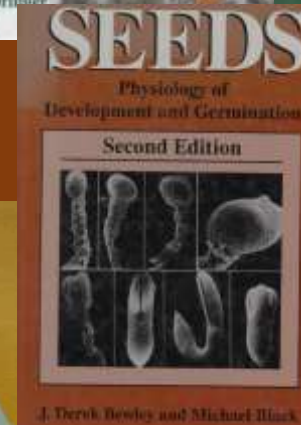
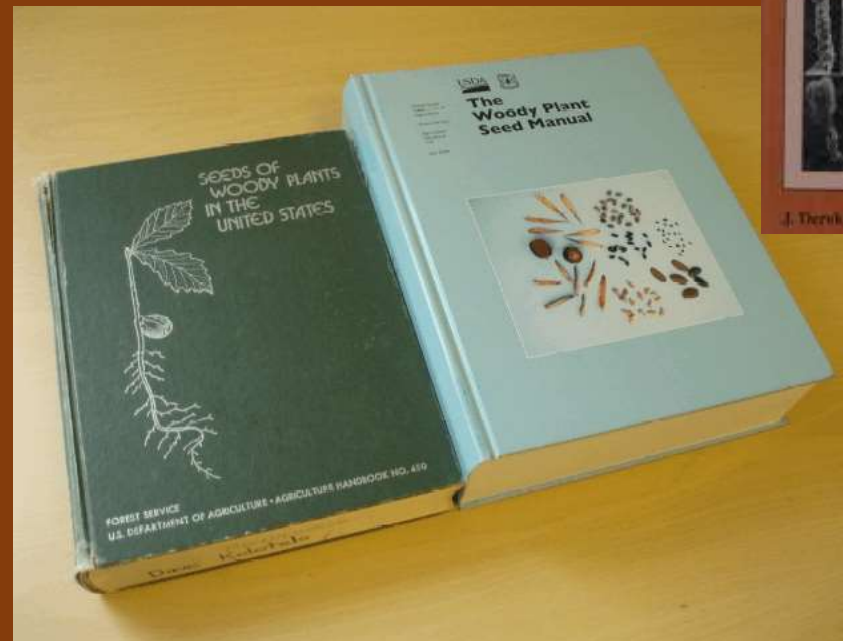
Tree Seed Working Group News Bulletin

Electronic News Bulletin distributed in July and January

E-mail Dave to get on distribution list



Woody Plant Seed Manual



Dave Kolotelo

Dave.Kolotelo@gov.bc.ca

778-609-2001

<http://www.rngr.net/publications/wpsm>

