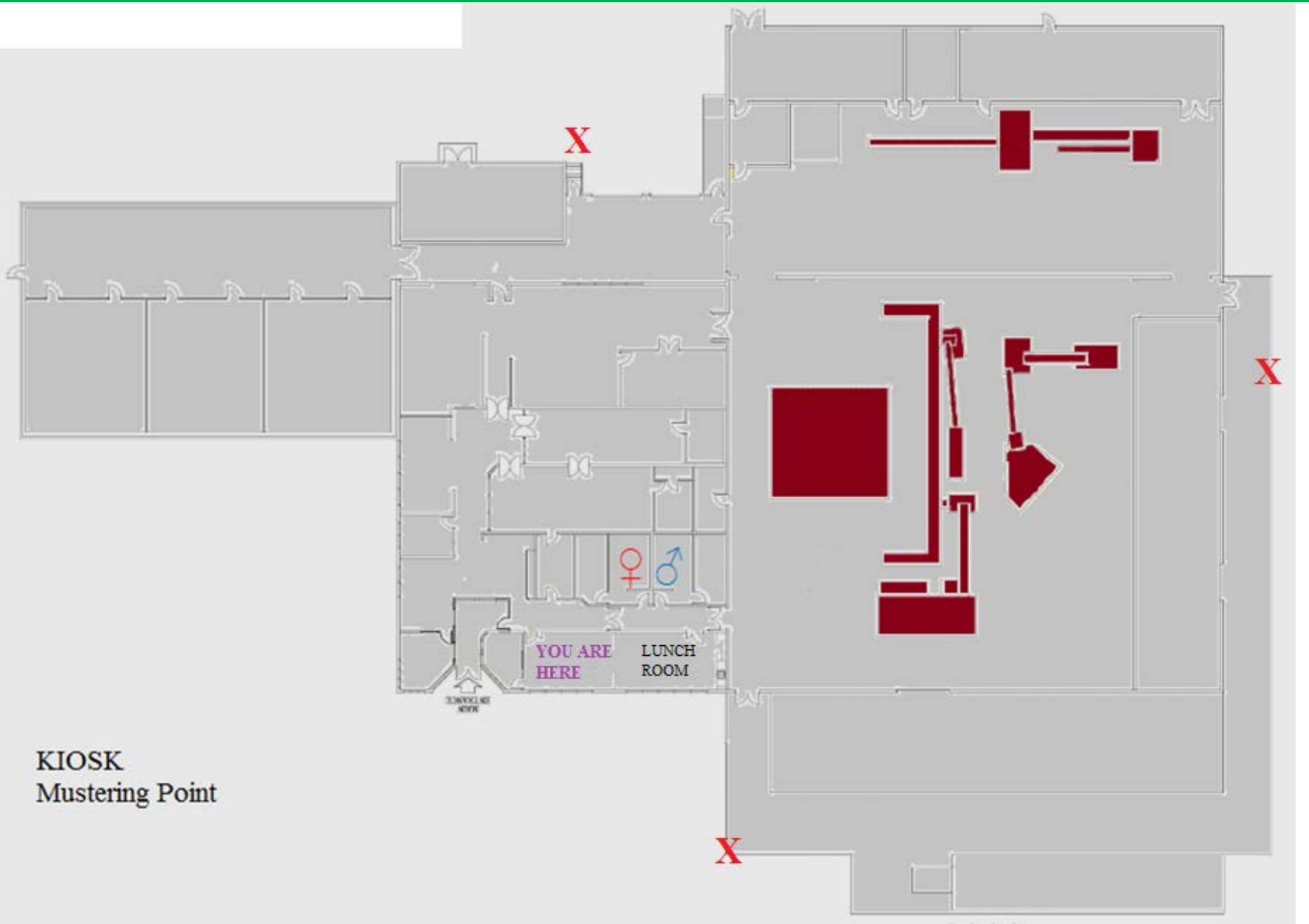


# Whitebark Pine Workshop

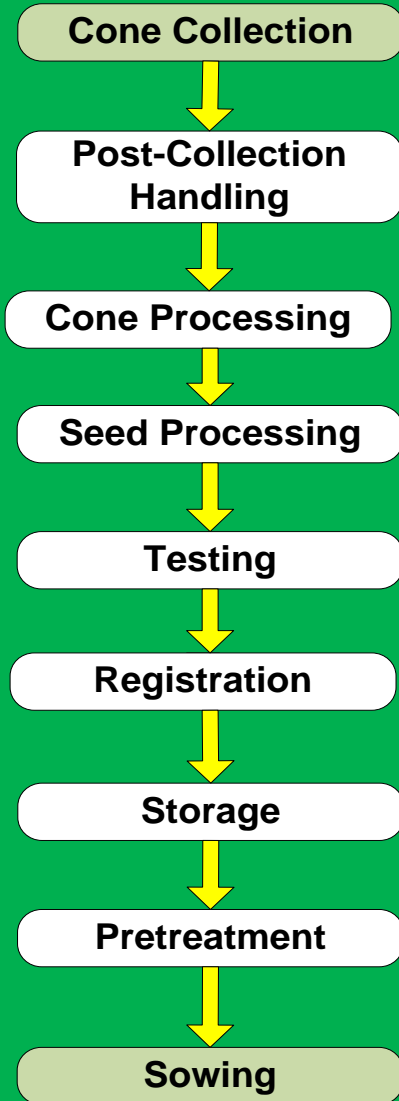
A celebration of our 60 years as a  
provincial Tree Seed Centre – we aren't  
only about 'commercial' forestry



KIOSK  
Mustering Point

# Seed Handling System

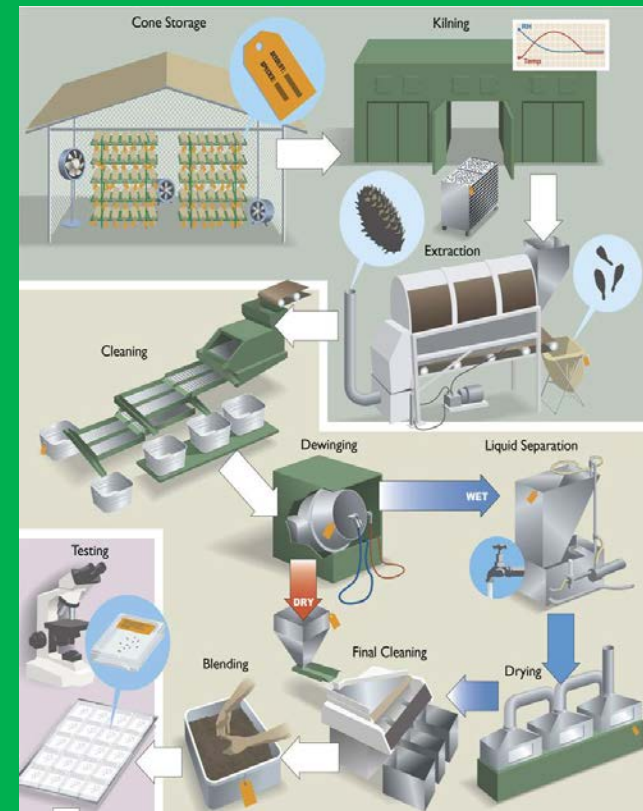
↑  
I  
n  
f  
o  
r  
m  
a  
t  
i  
o  
n  
  
M  
a  
n  
a  
g  
e  
m  
e  
n  
t  
  
↓



- Examines all steps of seed handling from collection to use
- Any previous “link” can impact your product *chain-of-custody*

- Ensure seedlot:

- **Identity**
- **Integrity**
- **Information**



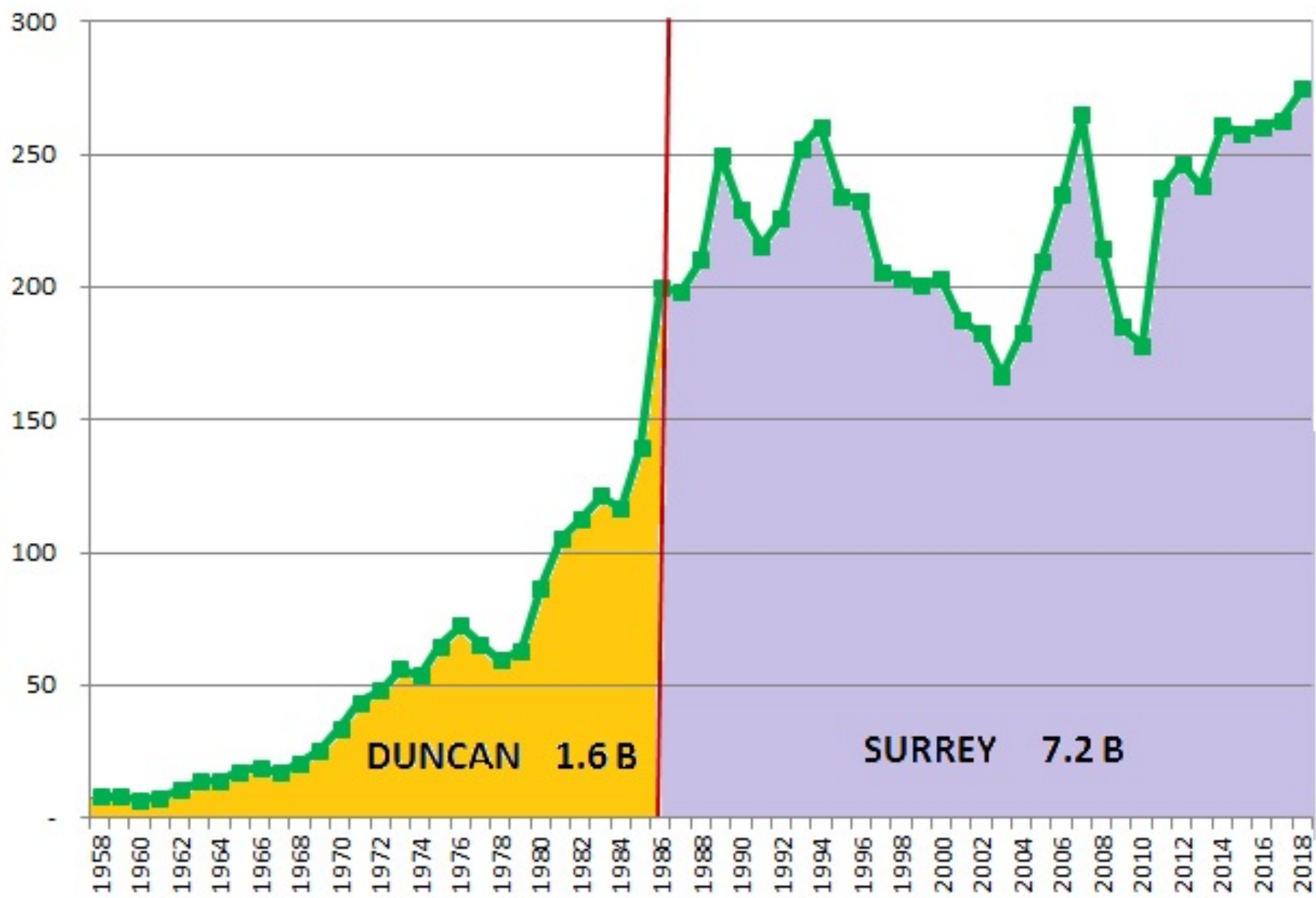
# BC Tree Seed Centre

## “Excellence in Cone and Seed Services”

- 13 regular staff
- 4-8 auxiliary/seasonal staff
- Cone and Seed Processing (\$)
- Inventory Management
  - Seedlot Registration
  - Seed Storage
  - Seed Preparation (stratification / pelleting) (\$)
- Testing
- Finance & Administration
- Facility Management
- Mission Critical facility
- **60<sup>th</sup> Anniversary in 2018**



**Millions of Seedlings Planted**



**DUNCAN 1.6 B**

**SURREY 7.2 B**



# BIG 4

## 2018 SRQ's

### 92.5% seedlings

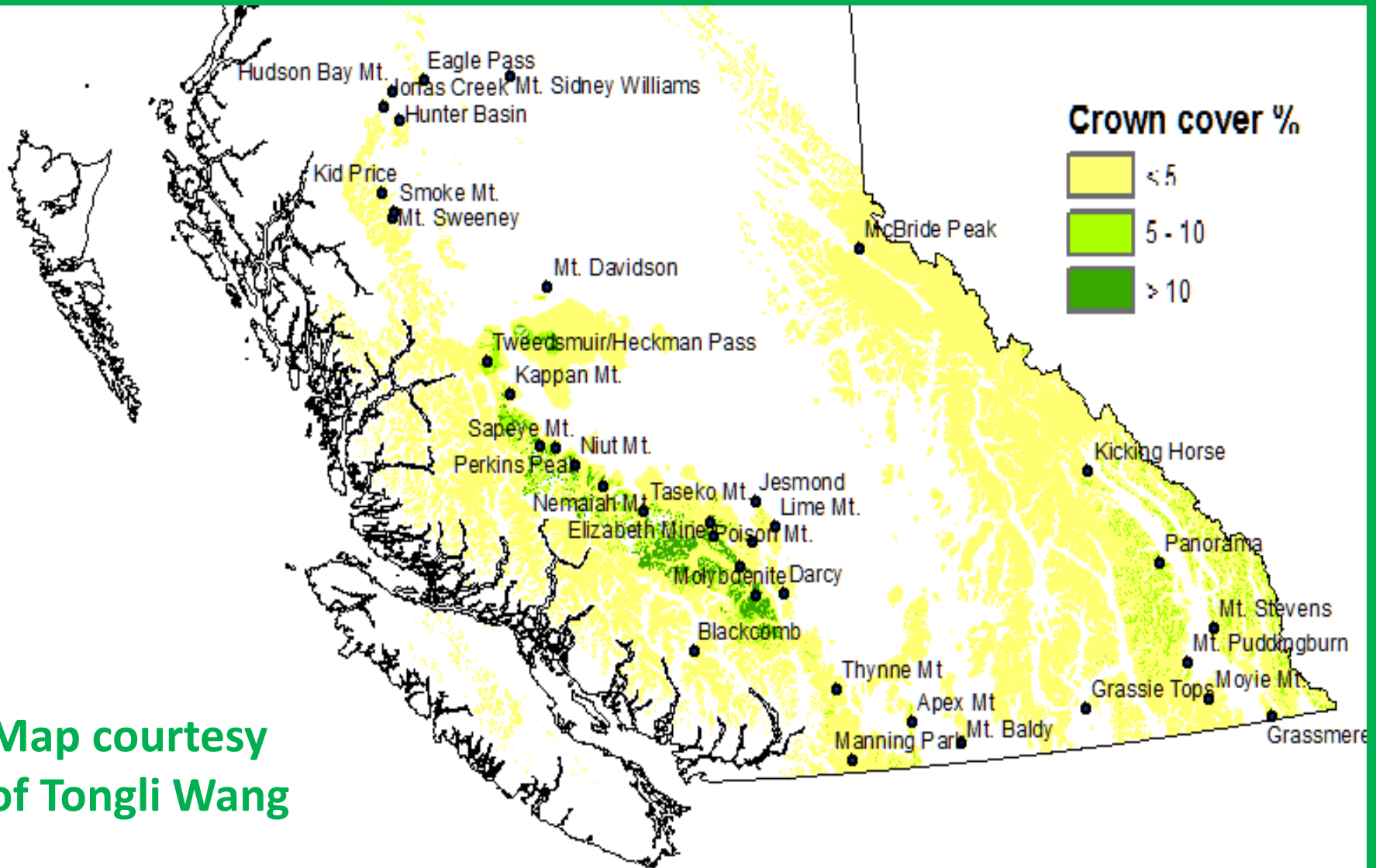


Sp	M seedlings	% orchard	GC (A/B)	Yield (A / B) (Kg/hl)	Ave. GVO	Cumulative %
PLI	103.8	27.9	95% / 94%	0.245 / 0.283	13	37.7
SX	101.0	95.2	87% / 92%	0.642 / 0.679	23	74.4
FDI	25.0	39.8	94% / 94%	0.563 / 0.898	27	83.5
FDC	13.4	91.3	95% / 93%	0.368 / 0.364	11	88.4
CW	11.4	57.1	91% / 91%	0.635 / 1.261	18	92.5
LW	8.4	98.8	87% / 89%	0.629 / 0.590	22	95.6

# Seedlot Registration

- Under the Forest and Range Practices Act (FRPA)
- Seedlot registration is required for seed destined for establishing a free growing stand on crown land for harvesting timber to which a forest stewardship plan applies
- Seedlot registration not required if not for this use
- What do you get for seedlot registration (Spencer)
  - Free seed storage
  - Free seed testing (MC, PUR, SPG, estimated germination based on X-rays)
- We will still store seed for genetic conservation or non-FRPA uses (Dave) many individual tree collections
  - (MC, might get around to estimate GC)

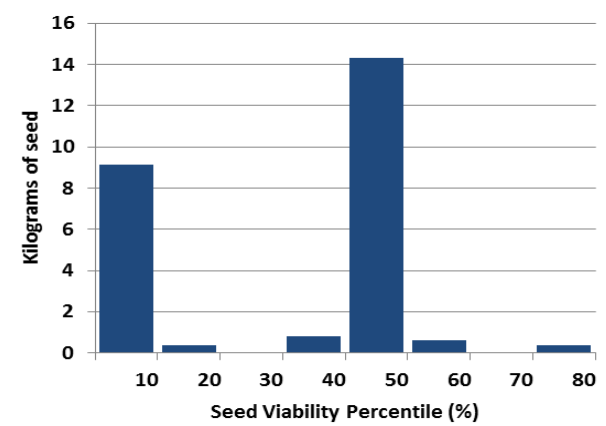
# BC Seed Bank Population Distribution



Map courtesy  
of Tongli Wang



# BC Seed Inventory



- Provincial Seed Bank

- genetic conservation and research
- 563 individual tree collections from 55 populations representing over **34 kg** of seed

- Private Seed *(there is also seed stored elsewhere)*

- Crown land reforestation / restoration
- 14 seedlots with a total of **25.6 kg** of seed **(+ 2 best used)**
- 101 families with a total of **14.6 kg**

**74 kg** (167 lbs) **of seed in total**



# EXTENSION Resources

TSC webpage

<https://www2.gov.bc.ca/gov/content/industry/forestry/managing-our-forest-resources/tree-seed/tree-seed-centre>

**BRITISH COLUMBIA**

Enter a keyword or phrase to search

Home / Farming, Natural Resources & Industry / Forestry / Forest Stewardship / Tree Seed /

- Sustainable Forest Management Practices
- Timber Supply Review & Allowable Annual Cut
- Forest Inventory
- Forest Stewardship Plans
- Shiviculture
- Tree Seed
  - Tree Seed Centre**
  - Seedlots
  - Seed Storage
  - Seed Withdrawal, Prep & Transport
  - Seed Testing
  - Priority Processing
  - Species Averages Tables
  - Cone & Seed Improvement Program
  - Cone & Seed Processing
  - Fee Schedule
  - Forest Genetics
  - Seed Use and Seed Planning
  - Seed Production
  - Operational Tree Improvement
  - Legislation & Standards
  - Events
  - Publications
  - Forest Health
  - Wildfire Management
  - Visual Resource Management
  - Integrated Resource Monitoring

### Tree Seed Centre

The Tree Seed Centre is the primary provider of cone and seed services to B.C.'s forest industry and B.C. government staff.

Tree Seed Centre clients include forest licensees, woodlot licensees, District and B.C. Timber Sales, seed orchards, forest nurseries, tree seed dealers, First Nations, researchers, educators and the public.

#### What We Do

- Cone and seed evaluations
- Cone receipt, storage and conditioning
- Seed extraction and processing
- Testing new and stored seedlots
- Testing cones and seed in processing
- Seedlot registration and certification
- Seed storage
- Seed withdrawal, preparation and shipping to clients for seedlot production, research or other purposes
- Seedlot and process information management and reporting
- Research and extension
- Training and method improvement

Clients must send seed to the Tree Seed Centre for testing, registration and long-term storage if the seed is to be used to reforest Crown land and some types of privately managed forest tenures.

Seed processing and preparation services are provided by the Tree Seed Centre on a fee for service basis. Other services are provided at no charge to clients.

- Refer to the [Cone and Seed Fee Schedule](#)

Clients may choose to have cones and seed processed at private contractors or have seed prepared for sowing at nurseries.

#### Services

### Tree Seed Centre Brochure and Report

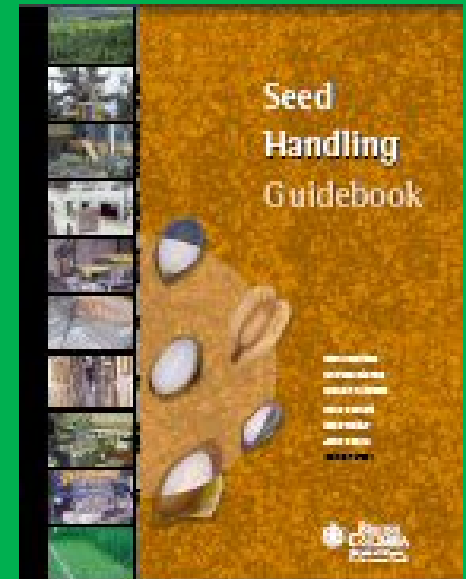
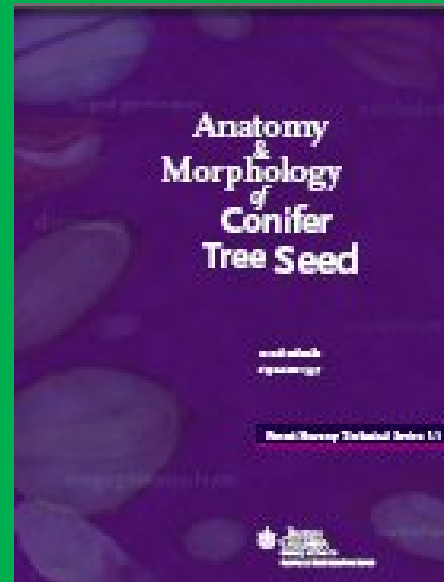
Publications that describe Tree Seed Centre Services:  
[Tree Seed Centre Brochure](#)  
[Excellence in Cone and Seed Services](#)

#### Contact Information

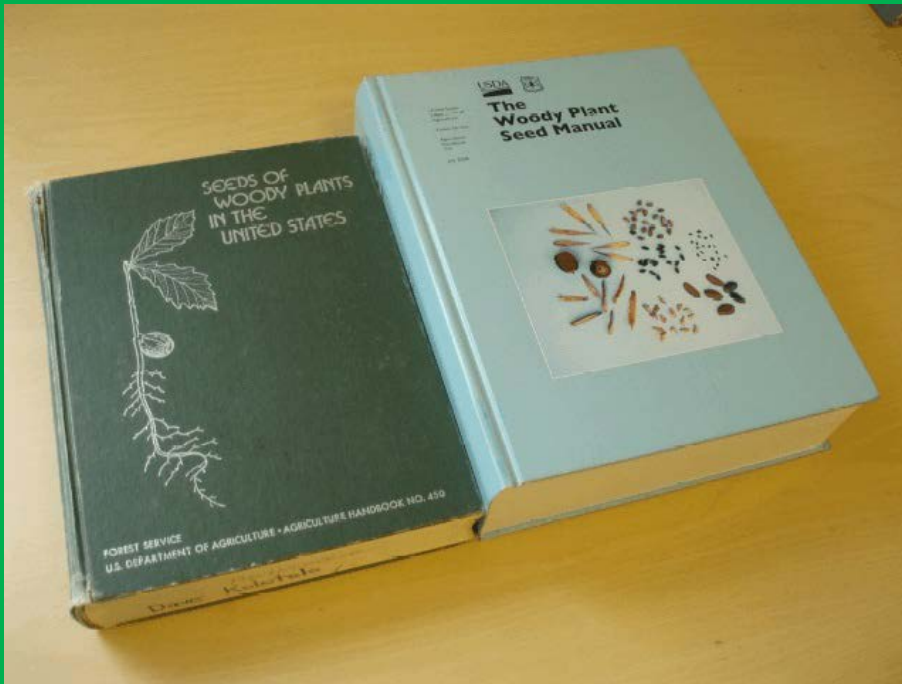
Refer to the [Tree Seed Centre contact list](#) to find out who to contact for specific information. Call or email the Tree Seed Centre for general enquiries.

**Office:**  
604 541-1688

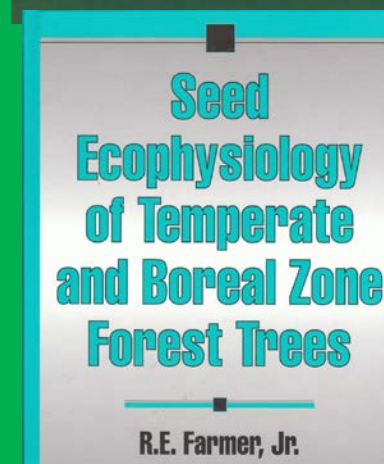
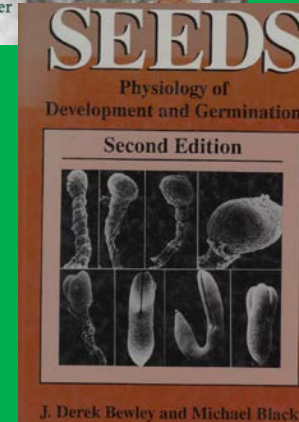
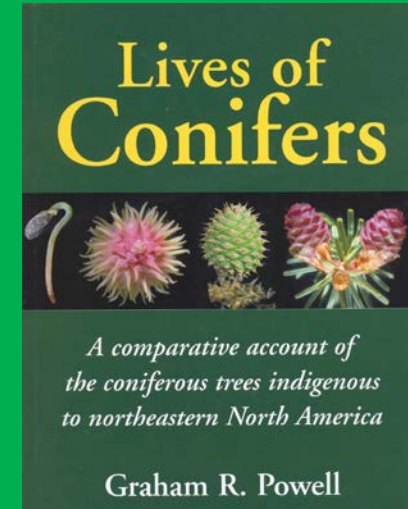
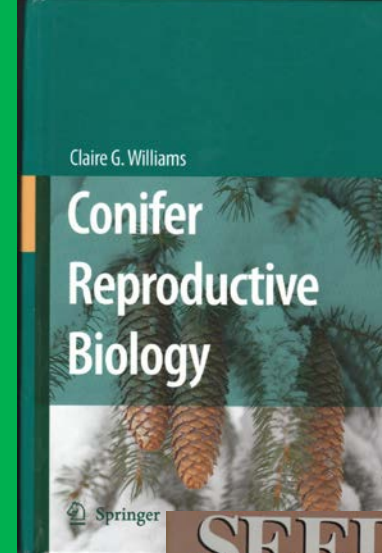
**Email:**  
[FOH@TP.TreeSeedCentre@bc.ca](mailto:FOH@TP.TreeSeedCentre@bc.ca)



# Woody Plant Seed Manual



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



## Tree Seed Working Group News Bulletin

Electronic News Bulletin distributed in July and January  
E-mail Dave to get on distribution list

Dave Kolotelo

[Dave.Kolotelo@gov.bc.ca](mailto:Dave.Kolotelo@gov.bc.ca)

778-609-2001



After 45 years with the BCFS, 42 at the TSC and 19 as our Manager, Heather Rooke retired last January and married this summer after dating Steven for 33 years



# Whitebark Pine Workshop Agenda

- 8:30 Welcome / Introductions
- 8:45 Climate BC / WNA
- 9:00 Cone Collection and Processing
- 10:00 Refreshment Break
- 10:30 Seed Stratification, Maturation and other Seedy tidbits
- 11:00 Seed clipping
- 11:20 Water Activity, X-ray analysis and stratification demos
- 12:00 LUNCH
- 12:30 Practical Seed Cutting & X-rays / Seed Sanitation
- 2:00 Refreshment Break
- 2:15 Tree Seed Centre Tour

# ClimateBC / WNA / NA

<http://cfcg.forestry.ubc.ca/projects/climate-data/climatebcwna/>

- All three programs updated August 31, 2018
- Continuous improvements
- Great tool for very easily determine climate variables for sites of interest
- Can produce 23 annual, 56 seasonal and 168 monthly variables
- Table below illustrates the range in 37 whitebark populations

	ELEV (m)	MAT (°C)	MAP (mm)	FFP (days)
<b>AVE.</b>	<b>1858</b>	<b>-0.2</b>	<b>1061</b>	<b>67</b>
<b>MAX.</b>	2340	1.8	1826	110
<b>MIN</b>	1004	-1.8	504	40
<b>RANGE</b>	1336	3.6	1322	70

**ClimateBC/WNA/NA**

A program to generate high-resolution climate data for climate change studies and applications in British Columbia and western North America

ClimateBC, ClimateWNA and ClimateNA utilize historical weather station data and global circulation model regional projections to project future seasonal and annual climate variables in BC, western North America and entire North America. The programs extract and downscale PRISM (Daly et al. 2008) and ANUSIM (Hutchinson 1991) generated monthly data (2.5 x 2.5 arcmin) for the reference period (1961-1990), and calculate seasonal and annual climate variables for specific locations based on latitude, longitude and elevation (optional). The programs also downscale and integrates historical (1961-2013) (Mitchell and Jones 2005) and future climate data sets (2020s, 2050s and 2080s) generated by various global circulation models from IPCC AR5. The output includes both directly calculated and derived climate variables. There are 23 annual, 56 seasonal and 168 monthly climate variables. Methodologies are described in Wang et al. (2016).

The programs use a combination of bilinear interpolation and elevation adjustment to downscale the baseline climate data (1961-1990 normals) into scale-free point data. The elevation adjustment is achieved through a dynamic local regression function developed individually for each monthly climate variable in the baseline dataset. The effect of the downscaling is illustrated below

## ClimateNA

Desktop version:

ClimateNA version 5.60 ([version history](#)) was released on August 31, 2018. Click [here](#) to download the program for free. The program will take 1.20GB of disk space. For information on installation, please refer to [ClimateBC](#) above.

Web-based version:

Link to the [web-based version of ClimateNA](#). Here is a [2-minute tutorial](#).