

Screening for Forest Health

Ward Strong

FLNRORD

Kalamalka Forestry Centre

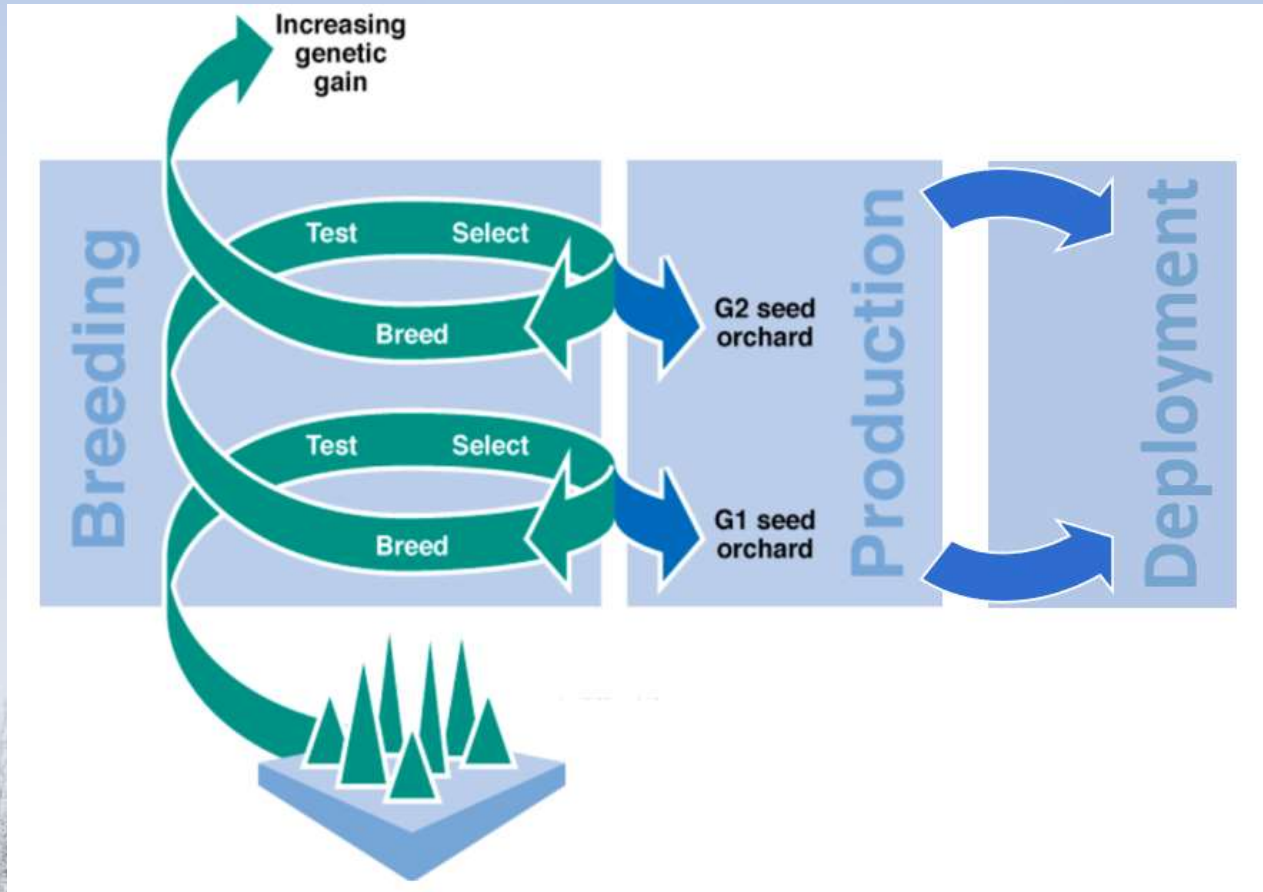
ITAC January 22, 2020



Province of
British Columbia



Forest Genetics Breeding Cycle





Forest Health Screening Programs in BC

Coastal programs: CTAC.

- Cedar, Coastal Douglas-fir

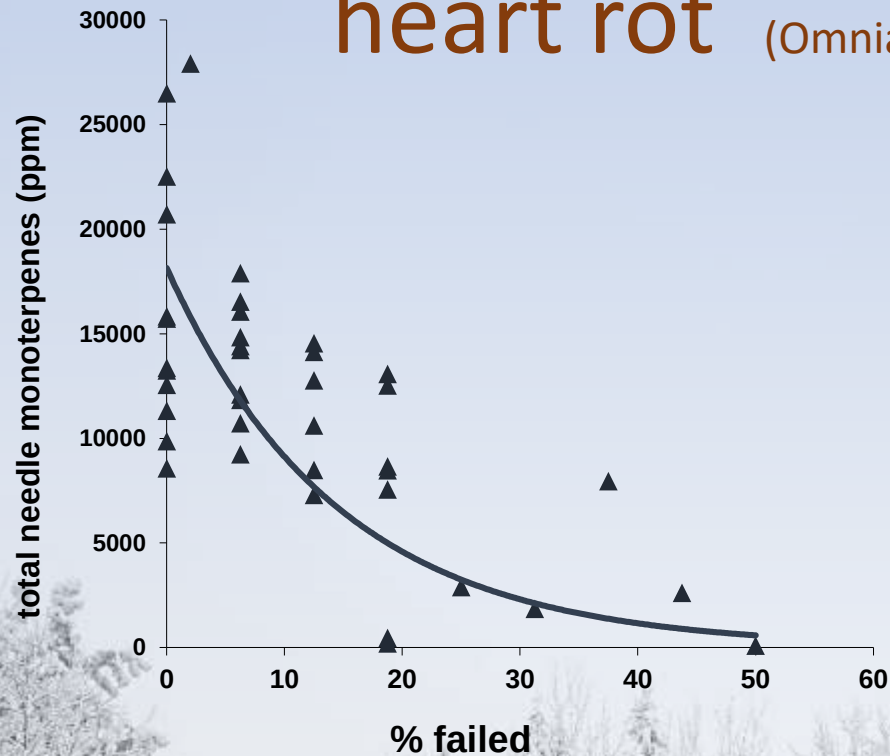
Interior programs:

- Whitebark pine, Ponderosa pine, Lodgepole pine, Interior Douglas-fir, Interior spruce



Coastal Programs

- Cedar: deer browse, heart rot (Omnia Gamal El-Dien, UVic)



Coastal Programs

- Coastal Douglas-fir: Swiss Needlecast / endophyte trial application with GenomeBC (Ward Strong, Jon Degner, UVic)



Interior Programs

Whitebark Blister Rust Resistance

(Ward Strong, Michael Murray, Parks Canada)



Interior Programs

Ponderosa Pine: Drought resistance (Marie Vance)

Lodgepole Pine: Western gall rust, stem rusts, dothistroma (Nick Ukrainetz)



Interior Programs

Interior Douglas-fir:

- Armillaria root rot (Trevor Doerksen),
- Spruce budworm adult Host Selection (Ward Strong)



Interior Programs

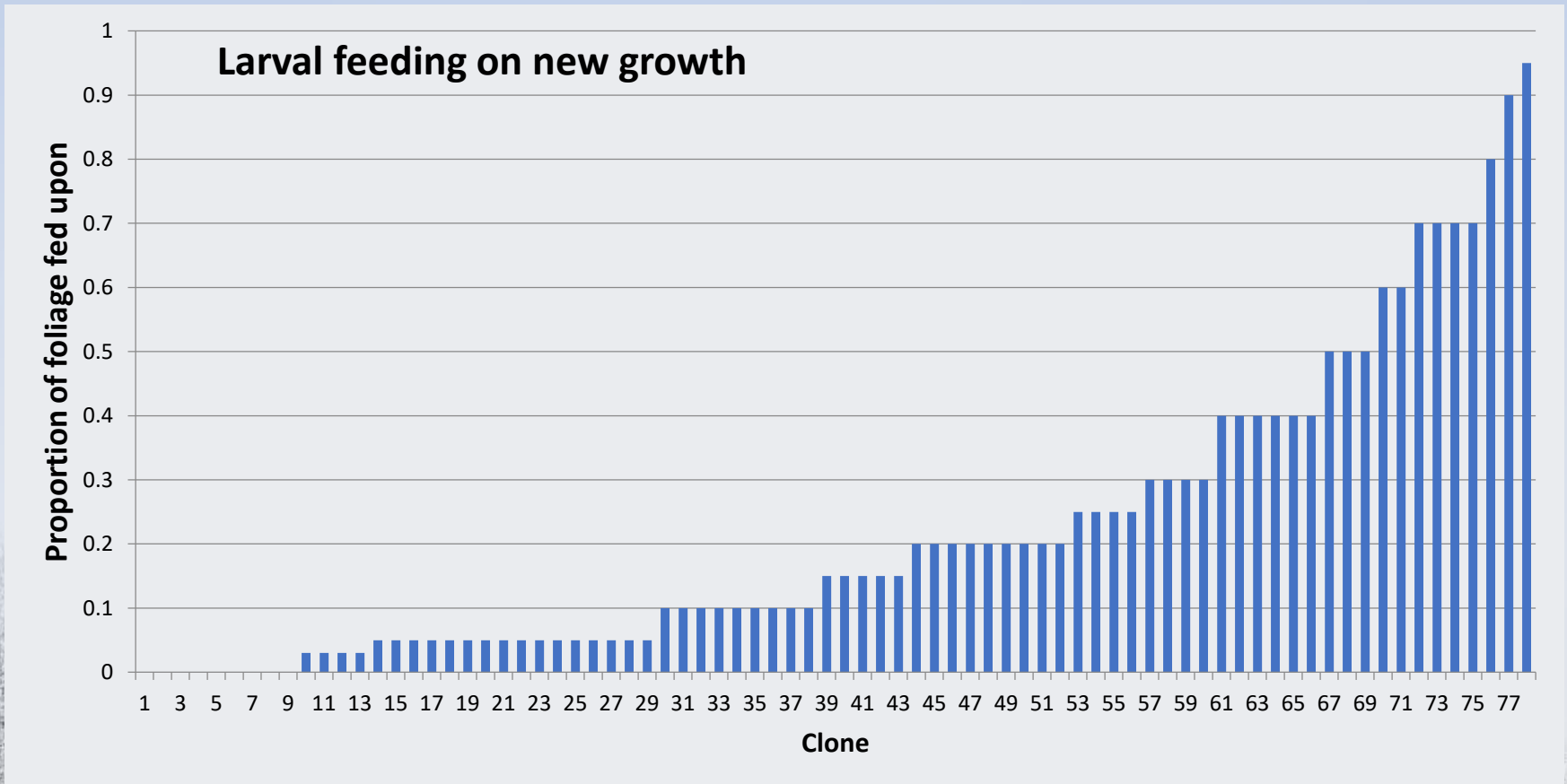
Interior Douglas-fir:

rot (Trevor Doerksen),

m adult Host



- Spruce budworm adult Host Selection (Ward Strong)



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- Spruce budworm adult Host



Interior Programs

Interior spruce:

- Leader weevil (Trevor Doerksen)
- Spruce beetle (Ward Strong, UNBC)



Interior Programs

Interior spruce:

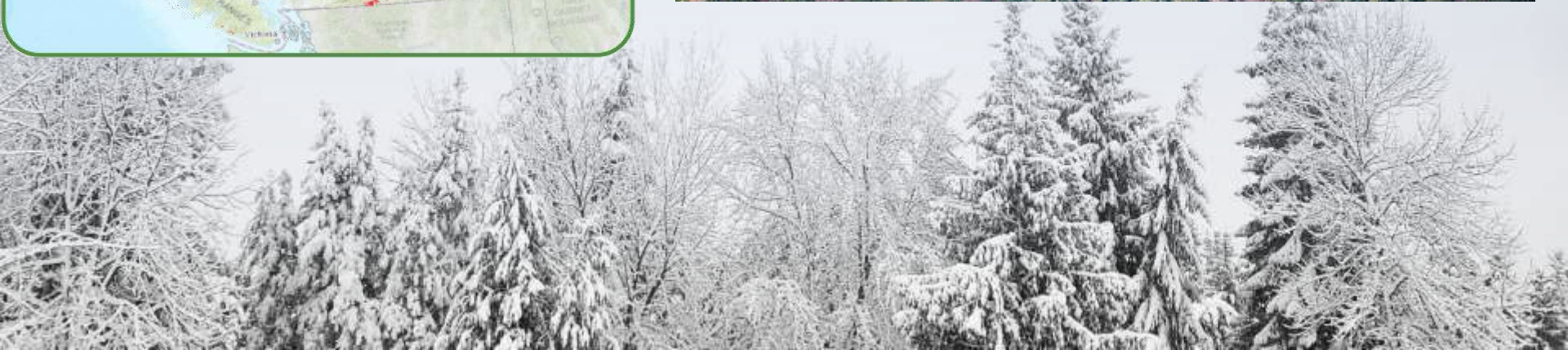
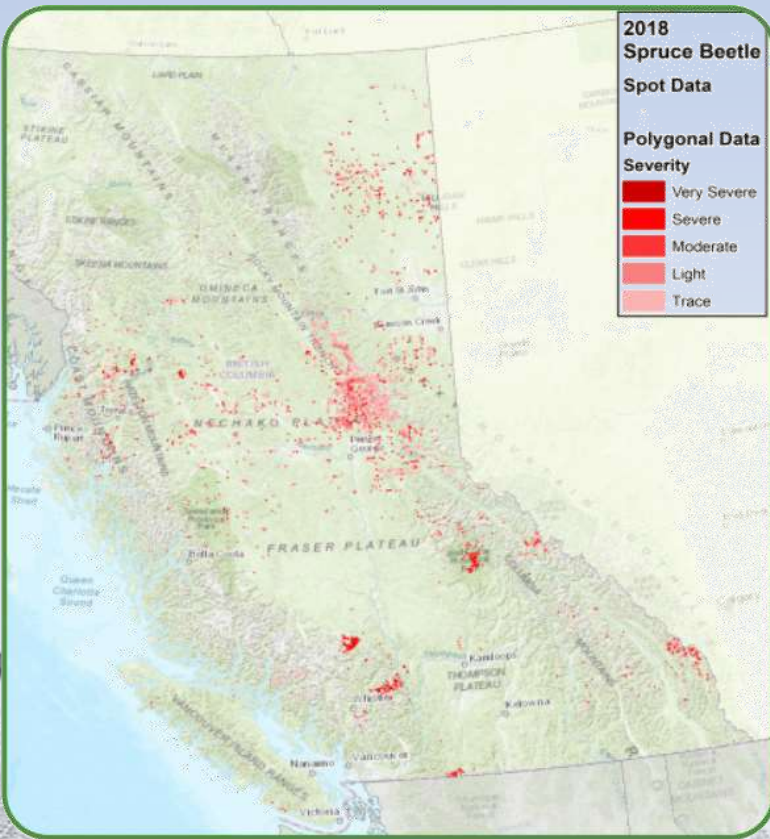
- Leader weevil
- Spruce beetle

(Trevor Doerksen)

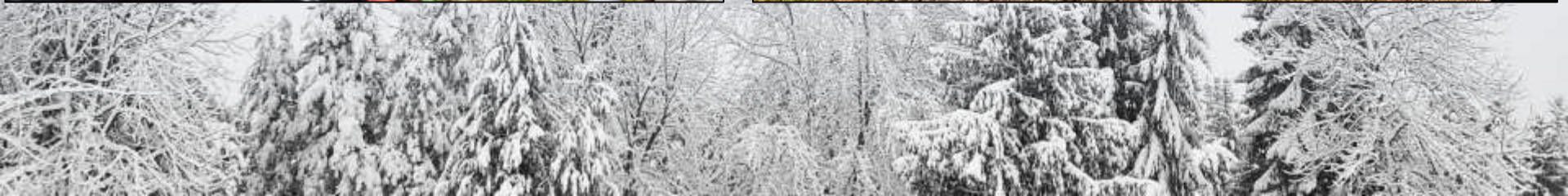
(Ward Strong, UNBC)



- Spruce beetle (Ward Strong, UNBC)



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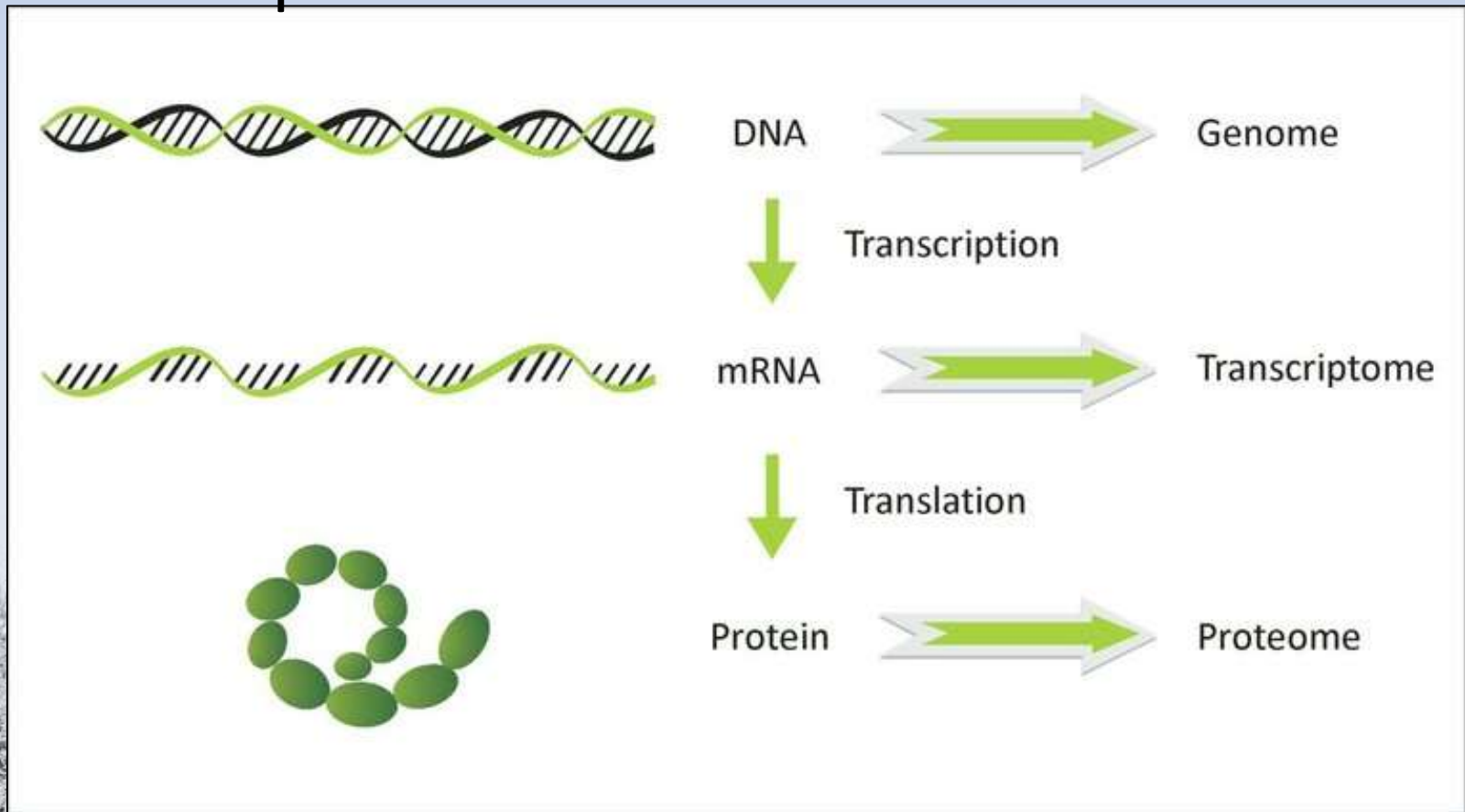


- Spruce beetle (Ward Strong, UNBC)



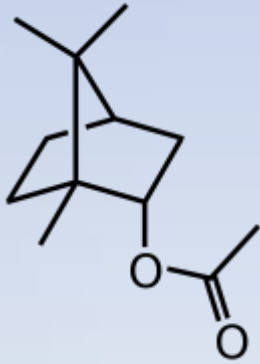
- Spruce beetle (Ward Strong, UNBC)

Transcriptomics

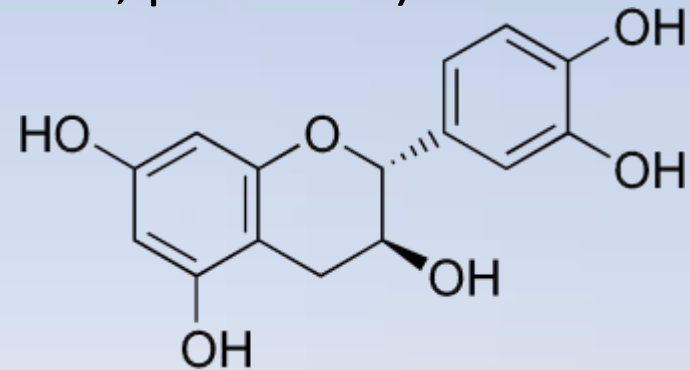


- **Spruce beetle** (Ward Strong, UNBC)

Chemical Defenses (terpenoids, phenolics)



Bornyl Acetate,
Insect defensive compound

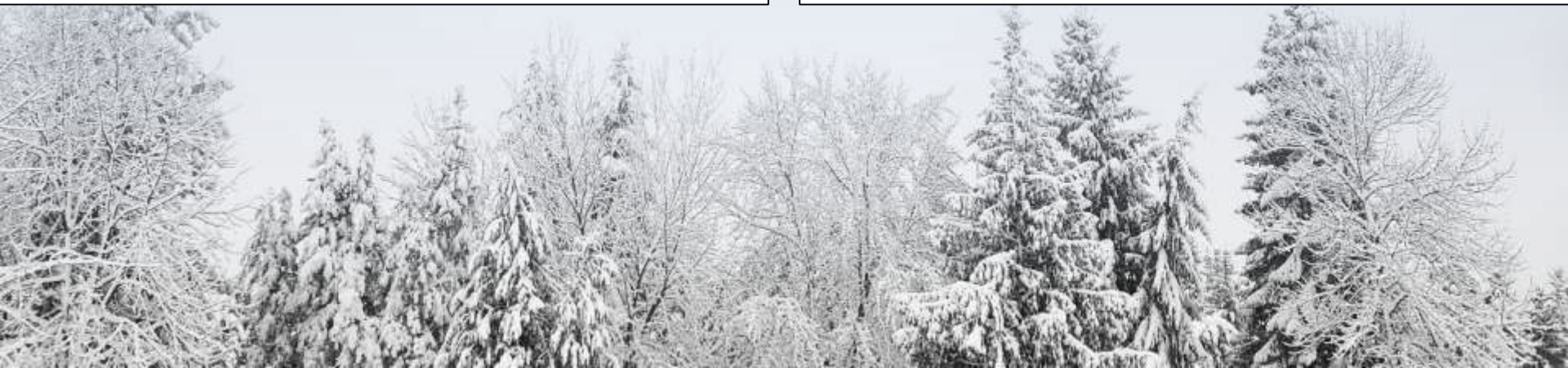
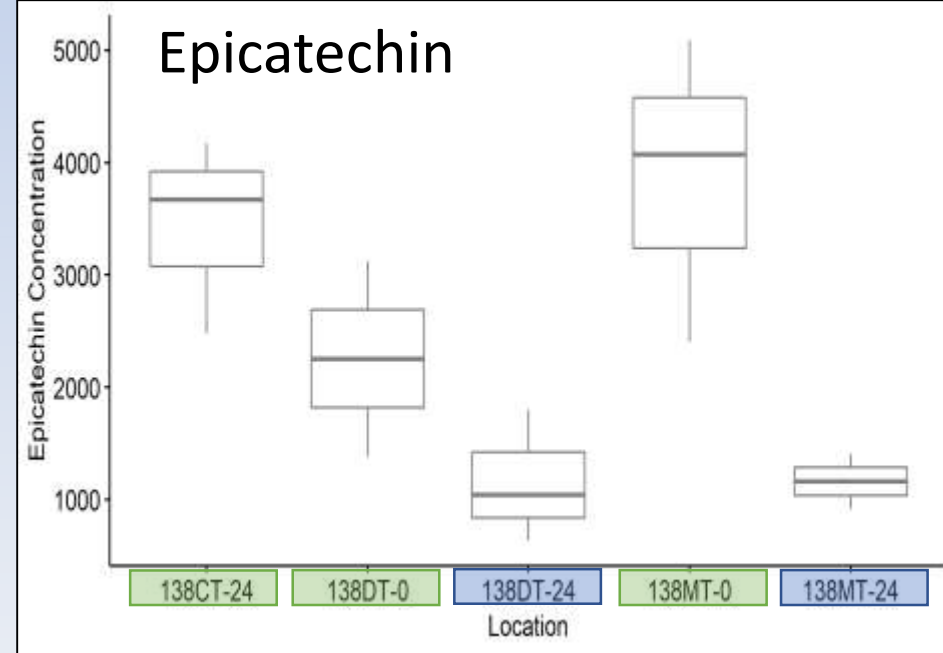
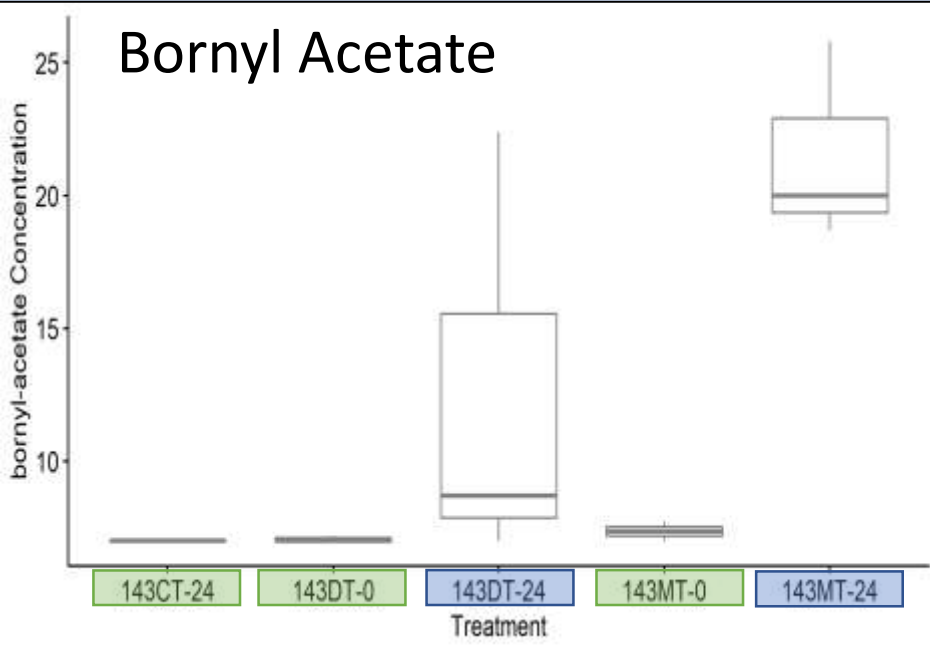


Epicatechin,
Fungal defensive compound



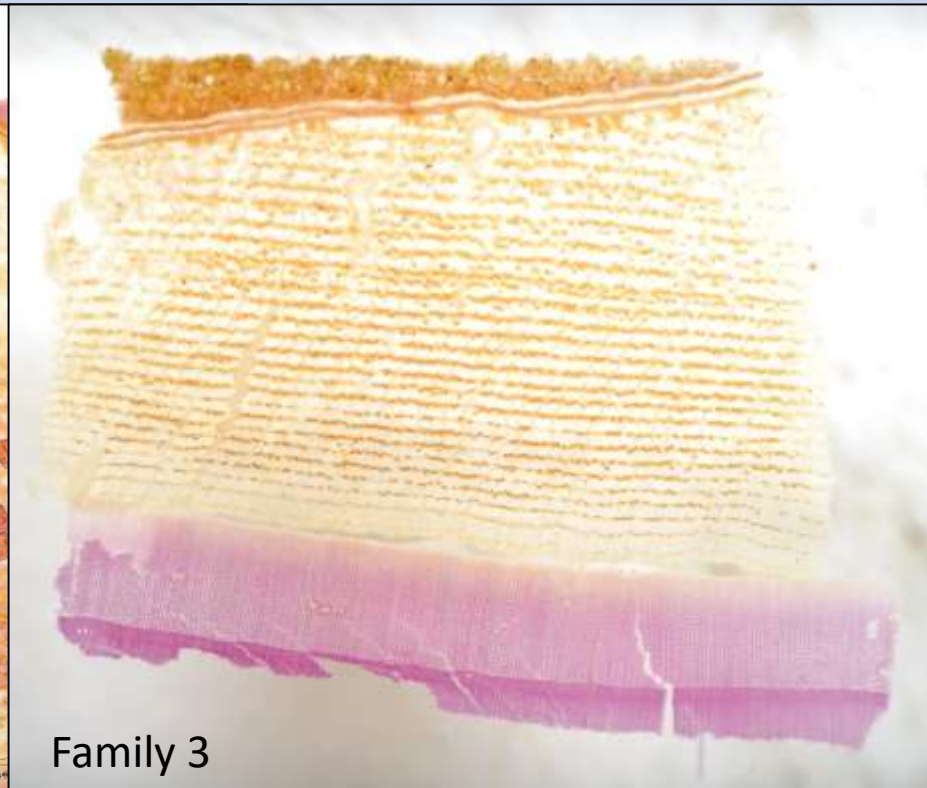
- **Spruce beetle** (Ward Strong, UNBC)

Chemical Defenses



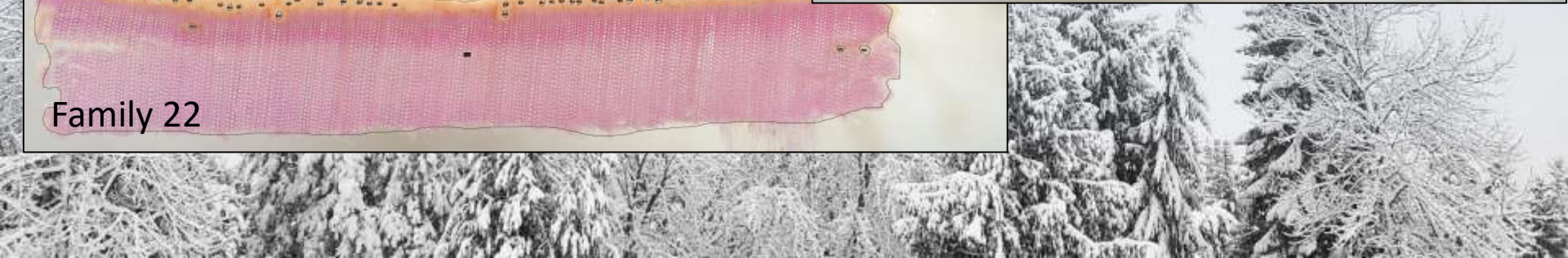
- Spruce beetle (Ward Strong, UNBC)

Physical Defenses



Family 3

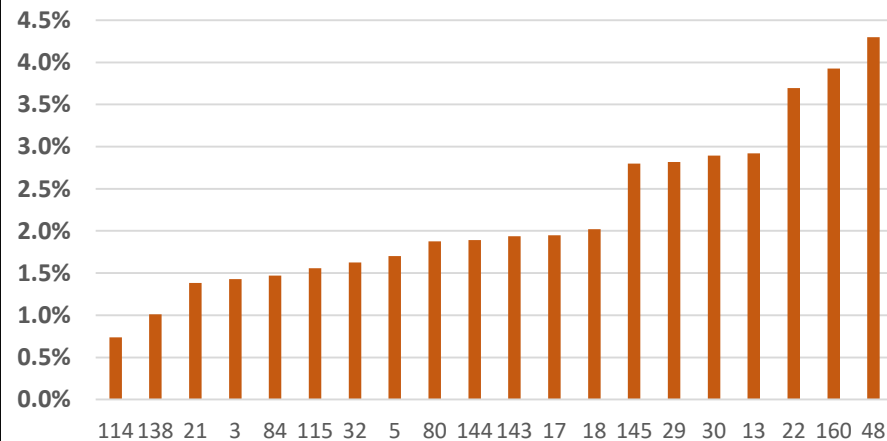
Family 22



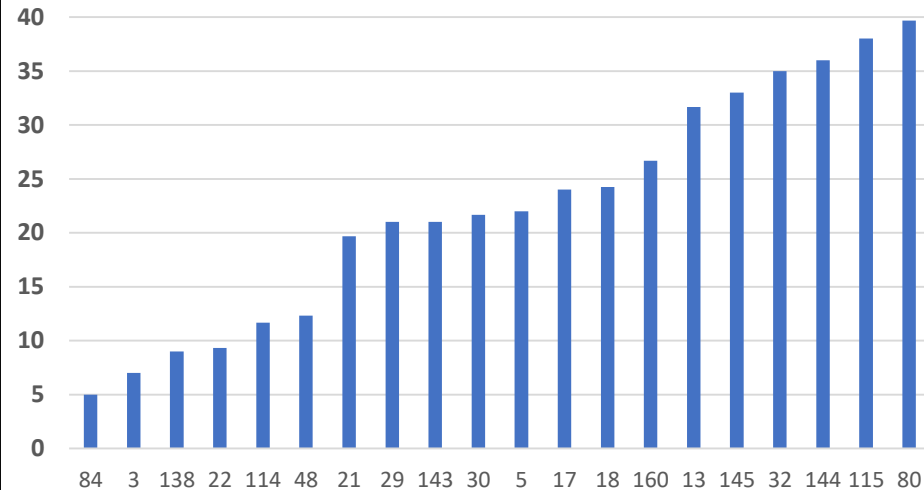
- Spruce beetle (Ward Strong, UNBC)

Physical Defenses

Family Response, SC % Area, overall mean



Family response, RD Num, MeJA, t=24



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Acknowledgements

- BC FLNRORD:
 - Kalamalka Forestry Centre
 - FIRM branch
 - Forest Health Group
- BC MoE
- NRCan
- UBC
- SFU
- Uvic
- UNBC
- College of New Caledonia

