Program Updates: Interior Western Redcedar and Ponderosa Pine



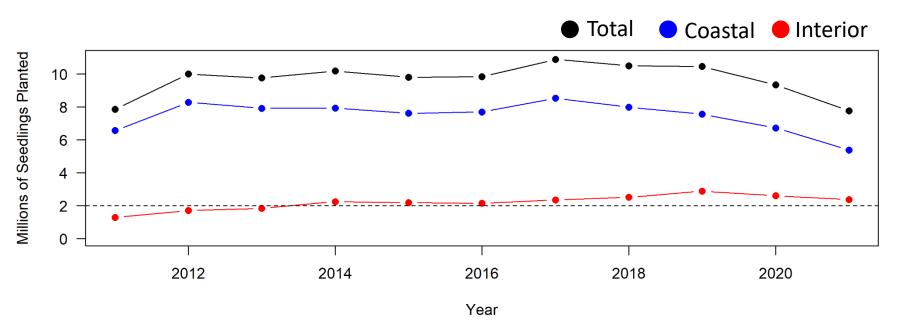
Cwi Breeding Program



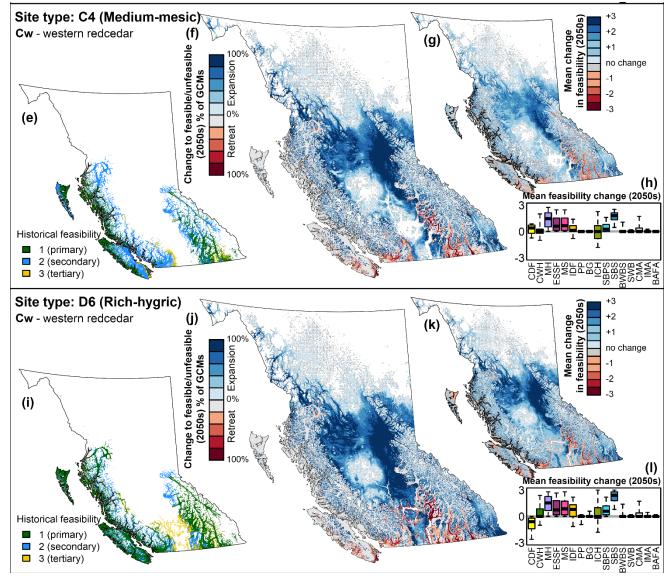
FLNRORD Saanich Seed Orchard (Chris Halldorson)

Cw Planting in RESULTS

- Mean 9.7 million seedlings planted annually
- Interior proportion has increased to 31%



Interior Western Redcedar (Cwi)



MacKenzie and Mahony 2021

Cwi Program Objectives

- Establish first-cycle progeny tests:
 - To select families with superior performance
 - To inform seed transfer policy



Date Creek Cwi provenance test



Thomas Main Cwi progeny test (Jake King)

Cw Px6 Forward Selections



95 selections with a genetic gain of 19%



Sebastian Jimenez-Ibarra and Kyle Maddocks

Cw Px6 Forward Selections



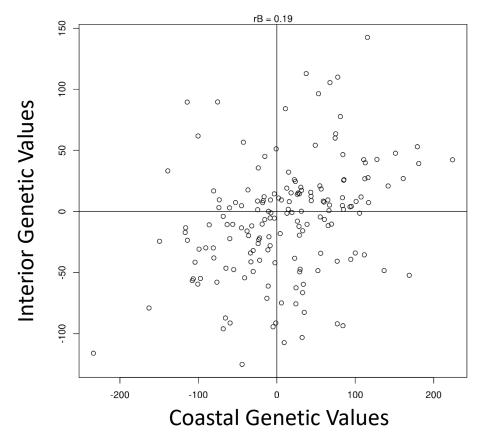
Lindsay Bellingham



95 selections with a genetic gain of 19%

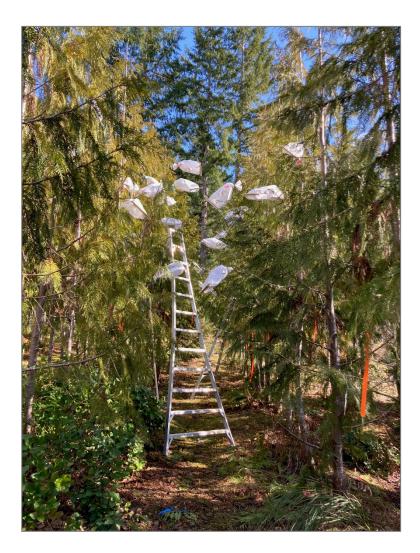
Px6 Genotype X Environment

- Two coastal sites + two sites in the Interior
- High genetic correlations within region (> 0.9)



Despite low levels of genetic differentiation across regions, GxE is high (i.e. low genetic correlations)

Cwi Breeding at CLRS





Cwi Breeding at CLRS



44 males in pollen polymix

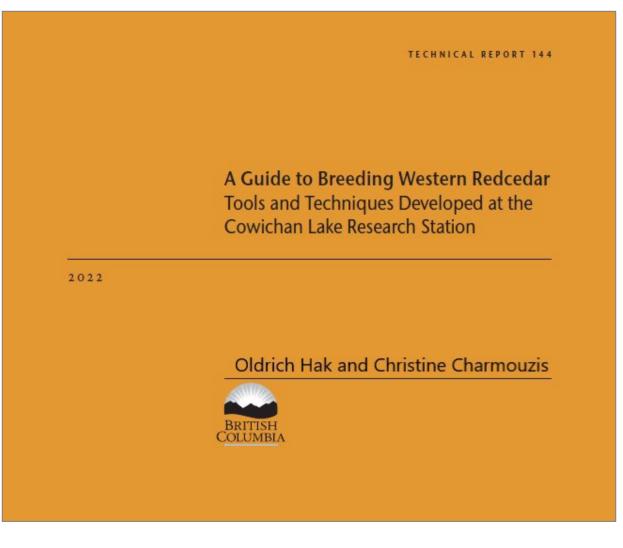


Oldrich Hak

Cwi Breeding at CLRS



Technical Report 144



Kal Breeding Arboretum





Kyle Maddocks

Kal Breeding Arboretum





Val Ashley, Cwi Technician

Skimikin Clone Bank



Rob Taylor, Trish Wallensteen, Kailee Charest

GA Application at CLRS

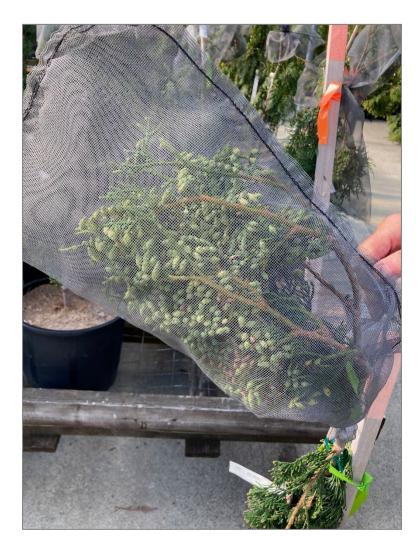


Rose Schmidt, Oldrich Hak, Val Ashley

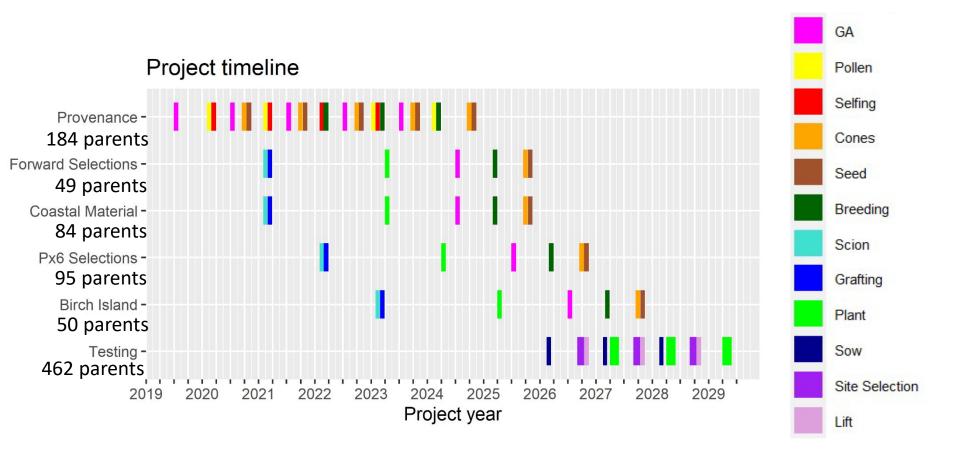


GA Application at Kal





Cwi Activities 2019 - 2029



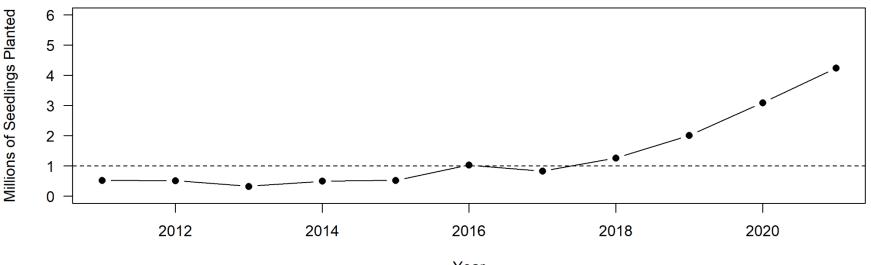
Py Breeding Program



Willamette Valley seed orchard, 11 years from seed (Weyerhaeuser) Photo credit: Robert L. McNitt

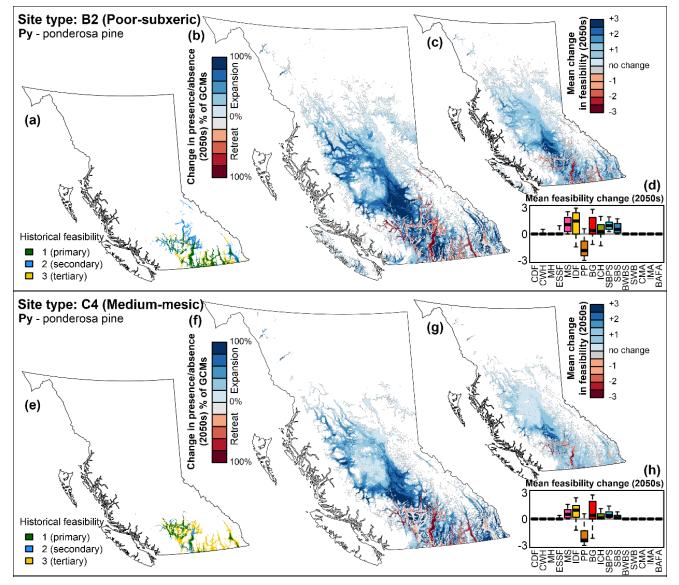
Py Planting in RESULTS

• Plus sowing requests for 2022 = 5.4 million



Year

Ponderosa Pine (Py)



MacKenzie and Mahony 2021

Py Program Objectives

- Establish first-cycle progeny tests:
 - To select families with superior performance
 - To inform seed transfer policy



Okanogan-Wenatchee National Forest, WA



Dugout Seed Orchard, OR



2022 Py Grafting



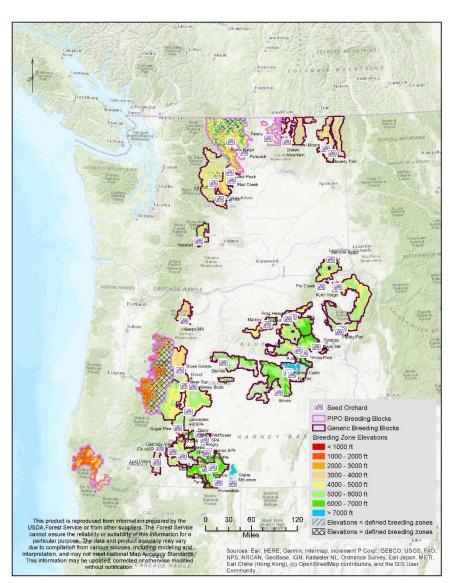
Val Ashley, Py Technician





- Recce of 17 orchards in WA and northern OR
- Targeted 6 with enough cones for collections
- Lost 2 to Dioryctria but picked up 1 extra





Scott Kolpak, USDA Region 6



Creston, BC



J KO INDUSTRIES





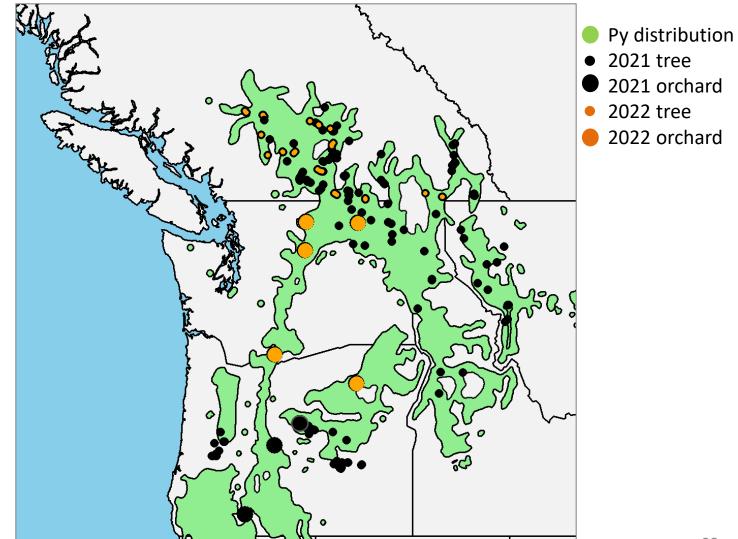
Fisher Hill Orchard, WA DNR



J KO INDUSTRIES



2021/2022 Cone Collections



2022 Seed Predators

Ponderosa pine seedworm (Cydia piperana)

Dioryctria

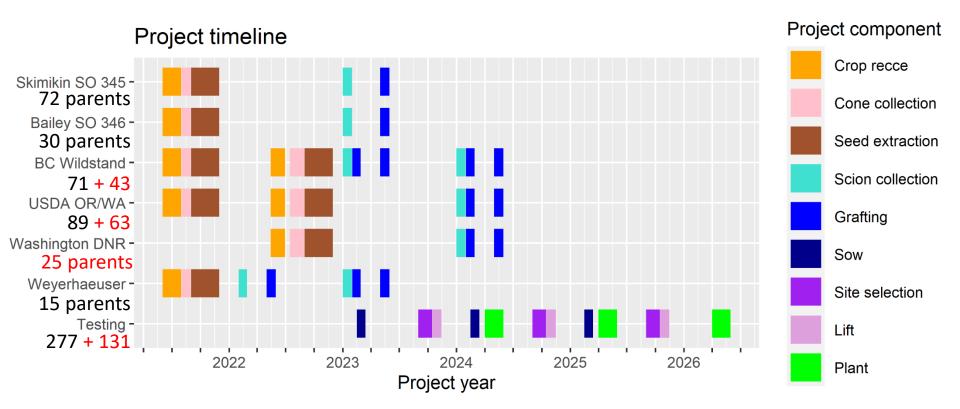


Squirrels

Leptoglossus

Cone resin midge

Py Activities 2021 - 2026

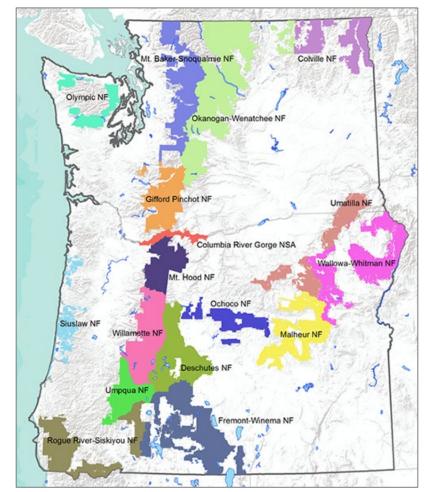


2022 collections aren't looking good but we may not need additional cone collections...

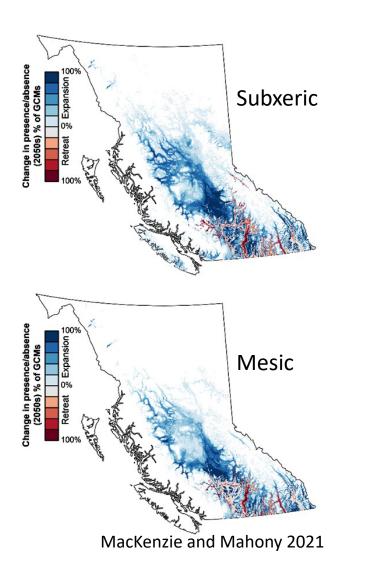
Dorena Genetic Resource Centre

- Over 10,000 individualtree seed collections
- Memorandum of Understanding is already in place with USDA Region 6
- Boost base population to 500 parents





USDA Forest Service National Forest Climate Change Maps

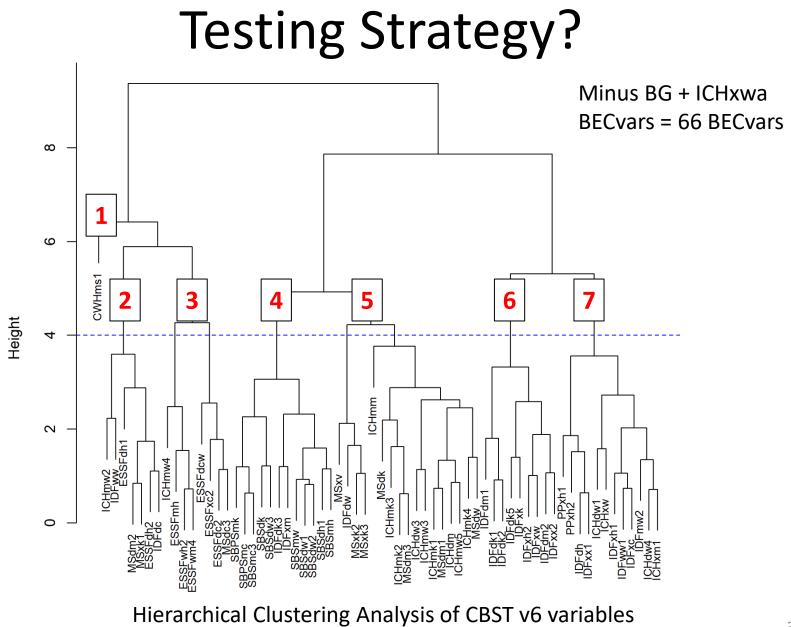


72 BECvars Feasible for Py in 2021-2061

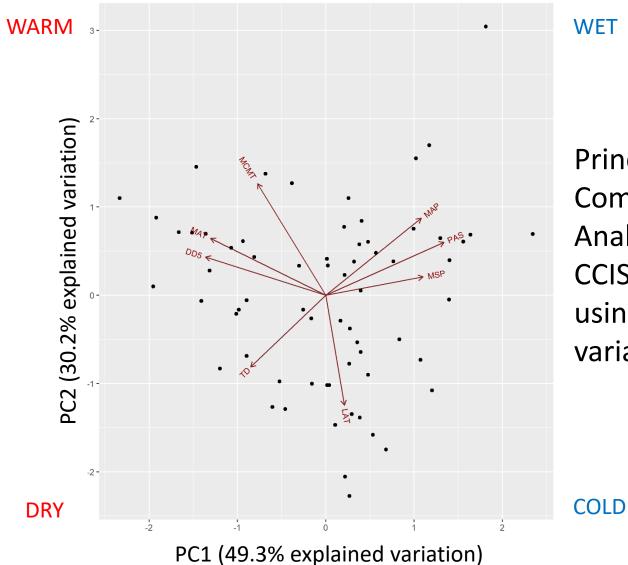
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BGxh1	3	3	3
BGxh2	3	3	3
BGxh3	3	3	3
BGxw1	3	3	3
BGxw2	3	2	2
CWHms1	2	2	3
ESSFdc2	4	3	3
ESSFdcw	4	3	4
ESSFdh1	3	2	2
ESSFdh2	2	2	2
ESSEmh	3	3	2
ESSFwh2	3	2	2
ESSFwm4	4	3	2
ESSFxc2	4	4	3
ICHdm	3	2	2
ICHdw1	2	2	2
ICHdw3	4	3	3
ICHdw4	3	2	2
ICHmk1	2	2	2
ICHmk2	3	3	3
ICHmk3	4	3	3
ICHmk4	4	3	2
ICHmm	4	4	3
ICHmw2	3	3	2
ICHmw3	3	3	3
ICHmw4	3	3	3
ICHmw5	3	3	2
ICHxm1	3	3	3
ICHxw	2	2	2
ICHxwa	2	2	2
IDFdc	3	3	3
IDFdh	2	3	3
IDFdk1	3	2	2
IDFdk2	3	2	2
IDFdk3	4	3	3
IDFdk5	3	3	2

IDFdm1 2 2 2 IDFdm2 2 2 2 IDFdw 3 3 3 IDFmw2 3 3 3 IDFmw2 3 3 3 IDFww 3 2 2 IDFww1 2 3 3 IDFxc 2 2 3 IDFxh1 2 2 3 IDFxh2 3 2 3 IDFxh2 3 3 2 IDFxm 3 3 2 IDFxx1 3 3 2 IDFxx2 2 2 2 MSdc3 4 3 3 MSdm1 3 3 2 MSdm2 3 3 3 MSdk1 3 3 3 MSxk2 3 3 3 MSxk3 4 3 3 MSxk4 3	BECvar	2021	2041	2061
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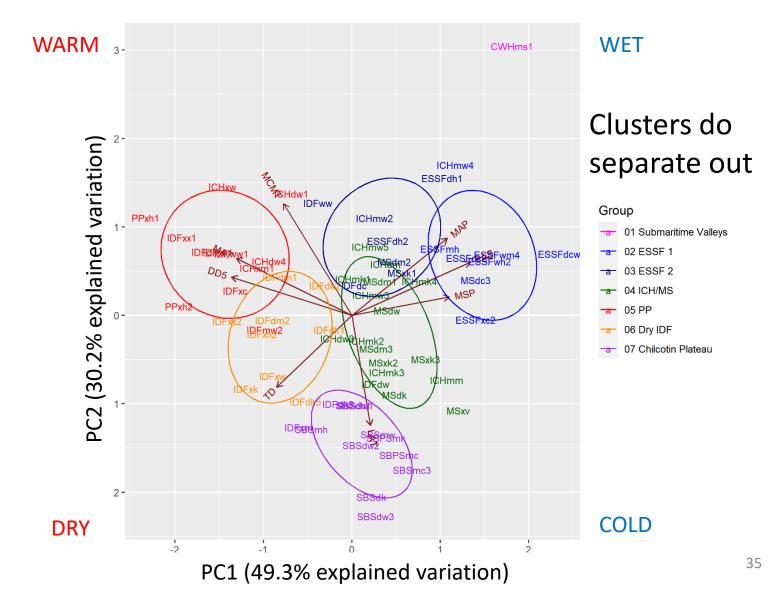
Feasibility is averaged across site series within BECvar (with 50% weight to zonal if present), then averaged across Districts

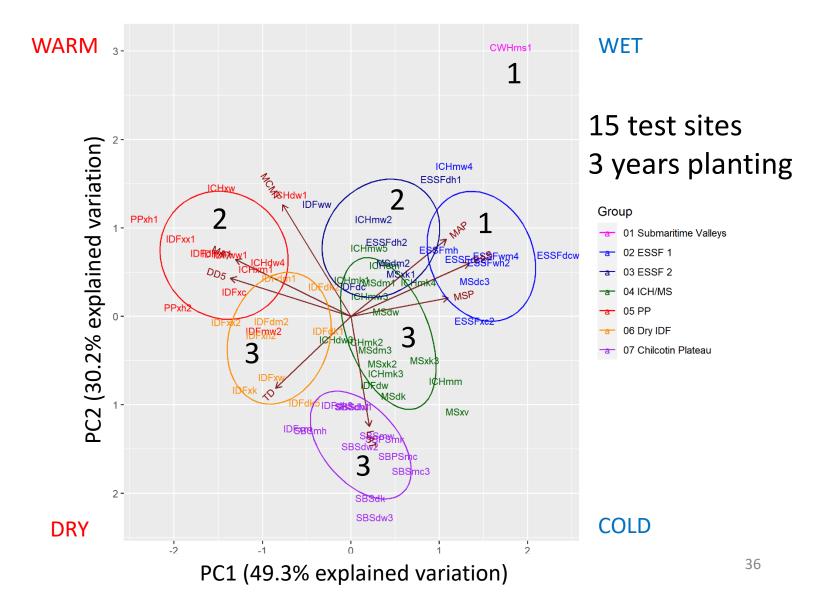


(LAT, MAT, MCMT, TD, DD5, MAP, MSP, PAS)

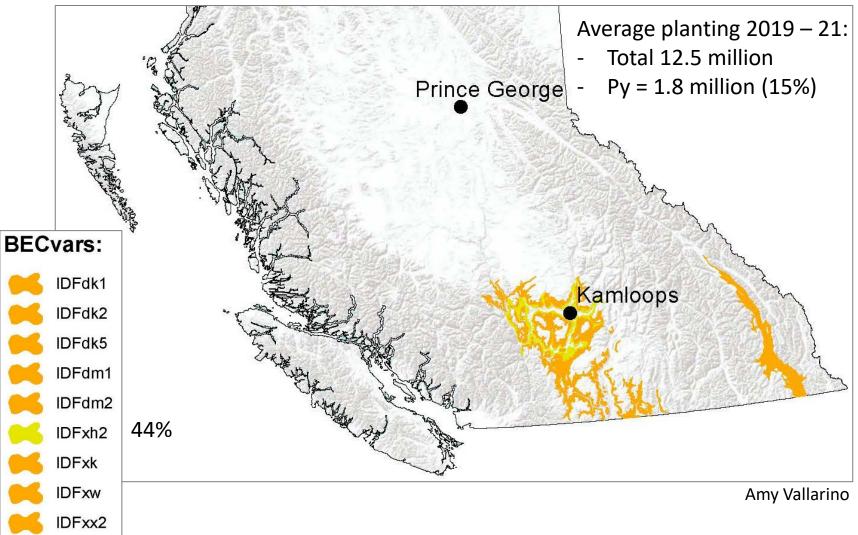


Principal Components Analysis of CCISS BECvars using CBST v6 variables

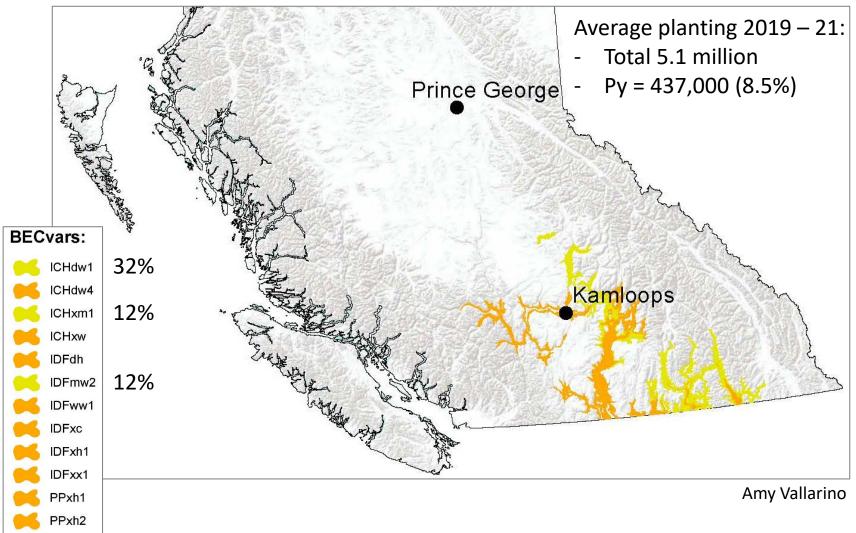




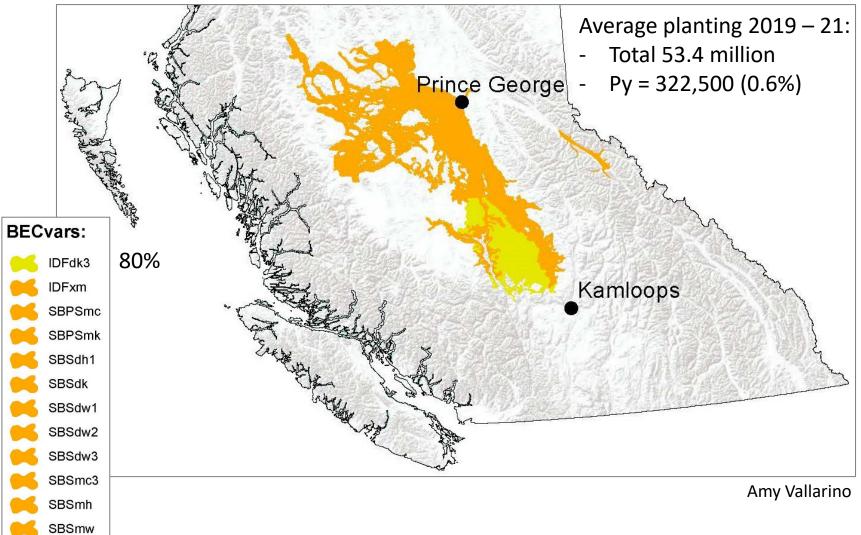
Dry IDF (3 sites)



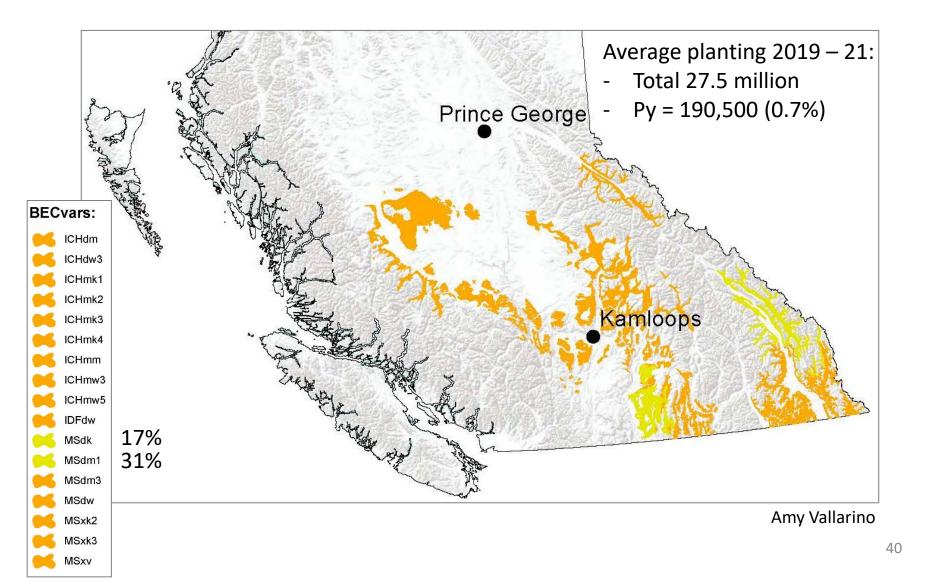
PP (2 sites)



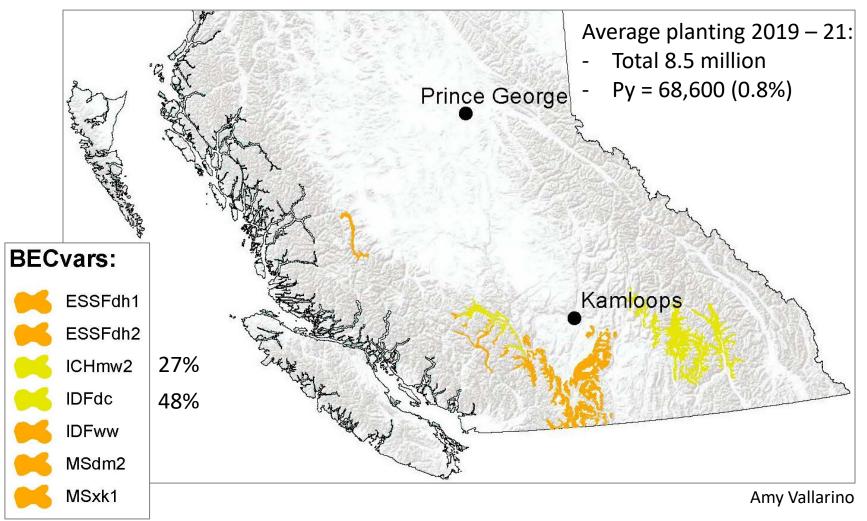
Chilcotin Plateau (3 sites)



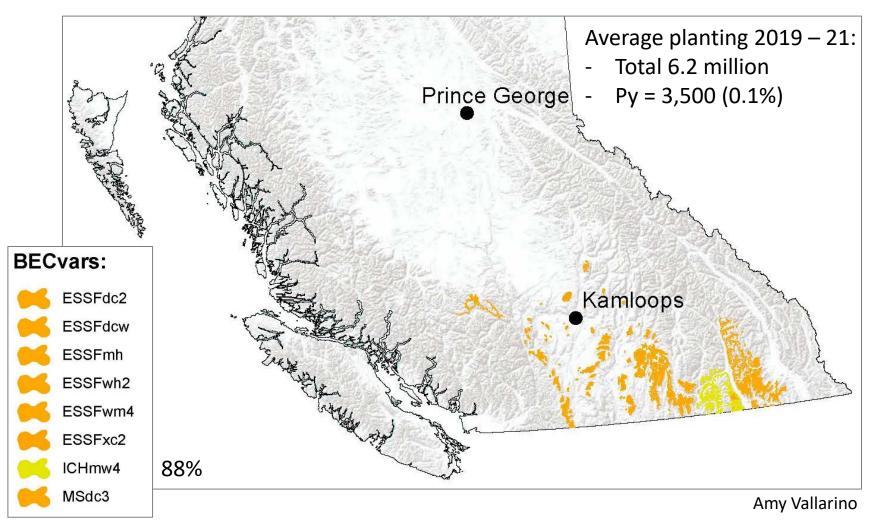
ICH/Dry MS (3 sites)



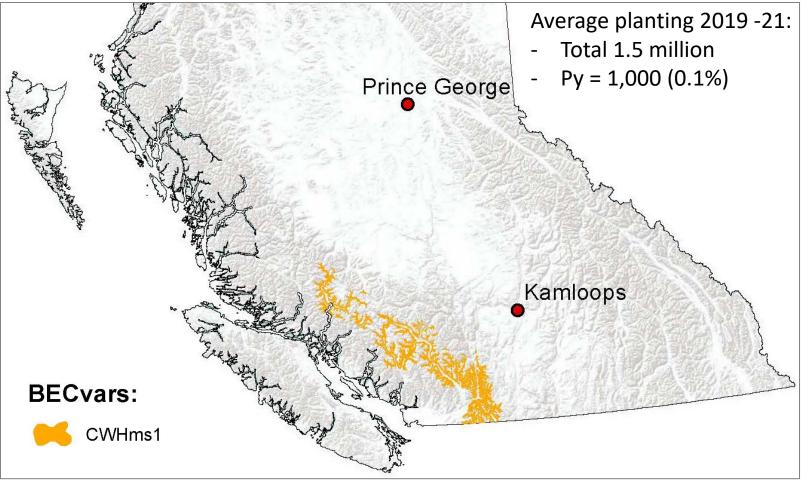
ESSF 2 (2 sites)



ESSF 1 (1 site)



Submaritime Valleys (1 site)



Amy Vallarino

Summary

- I will be looking for Py test sites this year
- I would also love to see existing Py plantations
 Especially your experimental plantings
- Marie.Vance@gov.bc.ca if you have feedback on Py testing strategy

