

Responding to the influence of pests in forestry genetics, seed production, and deployment of improved material

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Abstract: Pests (insects and diseases) influence our tree improvement activities in many ways, from tree breeding through seed deployment. This talk will explore how we understand and respond to the constraints pests place on our seed-related activities. For genetic improvement of forest trees, we are screening for genetic resistance to pests, with the objective of creating pest-resistant genotypes for inclusion in seed orchard programs. Active screening programs include white pine blister rust, spruce leader weevils, gall rust, Comandra rust, spruce budworm, Dothistroma. Regarding seed production, our research program over the years has made tremendous gains in managing seed orchard pests, which can dramatically limit seed yield. Pests addressed have included the Western conifer seedbug, the fir coneworm, spruce gall adelgids, and cone midges. We have also conducted trials for registration of new pesticides. Seed deployment is one means of addressing climate change, in conjunction with a switch to climate-based seed transfer. This process is informed through trials like the AMAT, the Assisted Migration and Adaptation Trial. By examining pest issues associated with AMAT, we can get a heads-up on what pests are likely to be a problem in future climates, and adjust our seed deployment accordingly. Finally, threatened or endangered tree species are often at risk because of insects and diseases. Screening for pest resistance, then establishing seed orchards of resistant material, offers an avenue to repopulate species at risk with durable genetic material. We are currently screening whitebark pine for white pine blister rust resistance; early selections have been made and will be established in seed orchards within a few years.

Bio: I am a forest entomologist with the BC government, where I have spent many years researching the biology, impact, and management of pests in BC's seed orchards. Recently I have contributed to the development of pest screening in the effort to breed trees with resistance to insects and diseases. I have a PhD in entomology from Corvallis, Oregon, and have been a P.Ag. for many years. After work I like to cross country ski, alpine ski tour, cycle, garden, backpack, and kayak, and have recently started rock climbing, much to my wife's angst!