

Assisted Migration Adaptation Trial

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Approximately 50% of all seed used in the province originates from seed orchards. By 2013, this amount is expected to be 75%. In an effort to better understand the climatic tolerances of these important populations, so that the populations best adapted to climates anticipated throughout the rotation can be selected for each reforestation site, Research Branch has initiated the *Assisted Migration Adaptation Trial* (AMAT) – a long-term field trial of orchard seedlots from each seed planning unit.

Forty-nine orchard (or candidate orchard) seedlots representing 13 conifer and three broadleaf tree species will be tested across 48 test sites from Fort Nelson to southern Oregon. Growth, form and pest resistance will be recorded every five years and related to the climate of the test site to help identify the best seedlots for any climate.

Several design features make this trial unique:

- all of BC's main commercial tree species will be tested together in a single experiment
- the number of test sites is greater and the climatic range of the sites is much wider than most genetic trials, allowing more accurate prediction of productivity of each population across a range of climates
- considering that most of BC's most productive land is expected to possess climates currently present in northwestern USA, a number of USA seedlots and climates have been included in the trial

- the exclusive focus on selected (orchard) populations is new in genecology trials and will allow much better understanding of the adaptation of BC's most important reforestation materials
- by testing local wild-stand (Class B) control seedlots alongside the orchard populations, and by using large (5 × 5 tree) square plots, the tests will allow calculation of realized genetic gain of BC and northwest USA's orchard populations.

Due to the large size of the experiment, 12 sites will be planted per year for four years, beginning in spring 2009. As of March 2009, the first 12 sites and most of the second set of a 12 sites have been identified. Sites that will be planted in spring 2009 have been prepared and fenced, where required, and all sites have been laid out. The 53 000 seedlings for the first planting series have been lifted and stratification is starting for the second planting series.

The 2008/09 fiscal year has seen considerable extension activity for the AMAT. The project was presented or discussed at the following meetings or tours:

- Canadian Tree Improvement Association (Canadian Forest Genetics Association) – Quebec (August 2008)
- Pest Vulnerability workshop hosted by Pacific Climate Impacts Consortium – Victoria (November 2008)
- Kamloops Future Forest Strategy workshop – Kamloops (June 2008)



Figure 1. Seedling diversity.



Figure 2. AMAT tagging crew.

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- Chief Forester – Victoria (May 2008)
- Okanagan TSA Public Advisory Group field tour – Summerland (September 2008)
- Cariboo TSA field foresters – Williams Lake (September 2008)
- Northern Silviculture Committee – Prince George (January 2009)
- Coastal Silviculture Committee – Nanaimo (February 2009)

The AMAT team is looking forward to sowing the seed for the second planting series in April 2008 and working closely with our many industrial collaborators who have generously provided seed and assisted us in finding test sites.

Start-up funding for the AMAT was provided by the BC Forest Genetics Council in fiscal years 2006/07 and 2007/08. Funding is currently provided by FIA-FSP.



Figure 3. AMAT seedling species for 2008/09.