Alberta's reforestation framework needs updating, researcher says

Climate change has made guidelines obsolete

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Every year in Alberta, crews from forest companies and provincial agencies plant some 80 million seedlings to reforest more than 50,000 hectares of logged land.

But those new trees may no longer thrive or even survive as Alberta's climate changes, says new research from the University of Alberta.

That could eventually threaten the productivity of Alberta's $9-billion forest industry, which employs 38,000 workers.

"We've found that trees are already lagging in adaptation to climate change and are not performing as they should," said Laura Gray, a PhD student in the university's department of renewable resources.

"We need to change the way we manage our forests today if we want to maximize production."

Gray and her colleagues conducted two studies for her thesis, looking at reforestation in the face of changing climate in western North America. The findings are published in the latest issues of the scientific journals *Public Library of Science* and *Ecological Applications*.

Alberta's forest companies are required by law to reforest what they harvest.

The research showed climate change threatens to make obsolete provincial government guidelines regulating which tree species can be replanted where.

"A lot of forest management strategies are based on data we have from the '60s and '70s, but the climate has definitely changed since then."

Alberta's mountains are getting more precipitation, while the rest of the province has warmed by 0.8 C and received about 10 per cent less precipitation over the last 25 years.

The result is that trees such as aspens — harvested for oriented strand board and pulp — are no longer suited to their natural environments and that has led to much less forest productivity over the past decade. Drought-related kill-off has led to 45 megatons worth of dead tree material in central Alberta over the last decade.

But despite changing climate, tree-planters can't easily change which trees they use. Under the system, the province is divided into about 60 seed zones according to their eco-system types.

Under current rules, trees cannot be moved between zones without special permission.

"What we're finding is that this precise system that we're currently operating under is probably not a great framework, given the climate change we anticipate in the future."

Gray said the rules should be relaxed to allow different or multiple varieties of seeds in zones based on whether they could survive under future climates.

Her research shows it isn't necessary to import tree species non-native to Alberta from, say, Colorado. Native trees growing in the province could be moved to other growing zones whose climates would make a better fit, she said.

Trees should be selected that are more resistant to disease and pests, such as the mountain pine beetle, said Gray, who received some of the funding for the research from forestry companies.

The findings were not surprising to Brady Whittaker, president and CEO of industry group Alberta Forest Products Association. He said industry and government are already working to address the issue.

"In the case of climate change, we are aware of increased mortality in plantations and are encouraging increased tree density and multi-species mixes to adapt to changing conditions," Whittaker said.

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University of Alberta researcher Laura Gray displays a map of Alberta's natural regions, broken up into tree-seed zones.