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Mount Allison student works to build better shelterbelts

The agricultural sector's survival will depend on its ability to adapt to changes in climate. Cecilia Jennings, a Mount Allison University student majoring in English and geography, is providing farmers with information they can use to help make the transformation.

Jennings is working this summer

on a project that will help farmers make decisions on what species to plant and strengthen their ability to cultivate economically and environmentally viable shelterbelt systems in Canada and in the rest of the world.

Specifically, Jennings is evaluating the future of white spruce in shelterbelt systems.

Shelterbelts are a barrier of trees that protect against the wind and erosion of farmland. Her work is also part of a larger study, funded by the Agricultural Greenhouse Gases Program (AGGP).

"The program is investigating the possibility of using shelterbelts as a source of greenhouse gas sequestration as well as seeking to understand how shelterbelts respond to changing climates," says Jennings, who will be using dendrochronology, the study of growth rings in trees, to learn how white spruce have responded to changing conditions.

Jennings chose to look at white spruce because it is one of the most common species planted in Prairie shelterbelts, particularly in Saskatchewan, where she did her sampling.

"White spruce has a strong growth signal and is highly sensitive to its environment, which makes it an ideal species to use for climate modeling," says Jennings.

Understanding the relationship between white spruce growth and climate change is essential in determining its future potential to take up greenhouse gases. Jennings is trying to determine what factors affect the growth of white spruce across Saskatchewan.

The study will determine to what extent white spruce is influenced by various climatic factors, as well as to what degree the influences change, depending on latitude or region.

"By sampling at various latitudes across the eastern part of the province, I can investigate a broad range of climate regions, including key zones that are thought to contain dramatically different past and future climates," she says.

This will provide greater insight into the usefulness of white spruce in future prairie shelterbelt systems and its ability to be used as a tool for greenhouse gas mitigation in future climates.

"I hope to determine under which climate scenarios the tree growth will be most successful, allowing for optimal greenhouse gas mitigation. The results of this project will be an essential step in evaluating the future of white spruce in shelterbelt systems, particularly in Canada, but also worldwide," Jennings says.

Jennings is able to spend the summer on this research thanks to receiving a Natural Sciences and Engineering Research Council of Canada (NSERC) Undergraduate Summer Research Award.