A Dendrochonological Analysis of Canadian Prairie Shelterbelts: Seidel Farm

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Abstract

In the summer of 2013, 40 core samples were taken from 20 trees at the Seidel site for the purpose of the four-year Agricultural Greenhouse Gases Program (AGGP), which seeks to determine the carbon sequestration capabilities of shelterbelt trees and their response to climate and climate change. The Mistik Askiwin Dendrochronology Lab at the University of Saskatchewan processed these cores. Dendrochronological techniques were used to identify the age of the trees. At this site, Manitoba maple samples were collected. It was found that the oldest tree sampled was 43 years old and the overall average age of sampled trees was 35 years.

Introduction

The Mistik Askiwin Dendrochronology Lab (MAD Lab), located at the University of Saskatchewan, is currently involved in a project for the Agricultural Greenhouse Gases Program (AGGP), which is investigating the capability of shelterbelt trees to store carbon. The carbon storage capability of these trees will inform their ability to offset carbon emissions and potentially act as carbon credits. The objective of the larger project is to determine the current and future capacity of carbon sequestration in these shelterbelt trees.

In the summer of 2013, samples for this project were collected across most of Saskatchewan. These samples were used as a part of the larger study, looking at shelterbelt tree growth over time since the trees were planted. As a landowner, and therefore a stakeholder in this project, we would like to provide you with the results from our findings on your property.

Site Information

MAD Lab Site Code: 13DLO00

Date: June 1, 2013

Site Name: Seidel Farm

Site Contact Info: Annavon Seidel

Latitude: 52° 15’ 34.5”

Longitude: -105° 32’ 04.3”

UTM: 0463518 5790048

UTM Zone: 13U

MASL (m above sea level): 579m

Satellites: 8

Precision: ± 5m

Species Common Name: Manitoba maple

MAD Lab Species Code: O00

Methods

The MAD Lab sampled 20 Manitoba maple trees, using a 5.1 mm increment borer to take two core samples from each tree at approximately breast height. These samples were stored in plastic straws and taken back to the MAD Lab in Saskatoon, Saskatchewan for analysis. The samples were glued into slotted mounting boards and labeled with the appropriate site code. The samples were sanded with progressively finer sandpaper (60 to 600 grit) and then buffed in order to reveal the cell structure of the tree rings. The annual-growth rings were measured under a microscope using a Velmex stage system with a precision of 0.001 mm, ultimately yielding an age for each tree.

Results and Discussion

The oldest tree was found to be 38 years old at breast height, while the average age of all trees at the site was 35. The average raw ring-width measurement was determined to be 1.56 mm (see Table 1 for summary).

Table 1. Summary

Site Code	Number of Trees Cored	Oldest Tree	Average Age	Average Ring Width
13DLO00	20	38	35	1.56

Conclusion

The results from this analysis help to strengthen our record of Manitoba maple growth over time within Saskatchewan's northeast. The data collected from this site will be used in future studies, which will attempt to determine future growth trends and the amount of carbon sequestered by Manitoba maple to determine its potential and viability of ongoing carbon sequestration.

This research was conducted at the MAD Lab in Saskatoon, Saskatchewan, and funded through the AGGP. Any questions regarding the findings of this report should be directed to:

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