AGGP-Agroforestry

FARM–SPECIFIC CARBON FOOTPRINT POLICIES

No. SASK-54

by RAFAELLA C. MAYRINCK

In the future, if one was to try to determine farm-specific carbon footprints, the first step a policy would need, is to be able to calculate tree growth through time; the second step it would need, is to then be able to use this growth farm-specifically to calculate how much carbon was sequestered at a given location in a given year. The previous factsheets provide a means to retrieve past Diameter at Breast Height (DBH) and Basal Area growth from increment cores over all of the years of a tree's life.

Measuring a tree to account for all of the above ground biomass that is stored in its trunk, limbs, branches and leaves.

This is seen as an import step for modeling, as along with growth information, the error that the calculations yield can also be established. Reporting the error on such calculations gives a better perspective surrounding any uncertainty involved in the modelling and helps to illustrate the dependability of the method used. Being able to precisely retrieve growth values from increment cores from a single visit is an important milestone for two main reasons. First, it avoids relying on the many time- and money-consuming annual DBH inventory campaigns that would be required to acquire the same information. Second, it allows more data sources to be incorporated into models, such as data from the Data Bank, provincial inventories, and any living (and in some cases, dead) trees that produced annual rings at a given location.

Agriculture and Agri-Food Canada | Agriculture et Agroalimentaire Canada

University of Saskatchewan
Centre for Northern Agroforestry and Afforestation

AGGP-Agroforestry

There are suitable and available lands in Saskatchewan to implement shelterbelts, sequester carbon, and potentially diversify the farm economy. As a complement, there is a shelterbelt decision support system (DSS) [shelterbelts-sk.ca], which is fed with data from this study and others. The DSS provides information about land and species suitability, ideal spacing, carbon stock changes through time, and maintenance techniques according to each farmer's goal. The DSS can also serve as a tool for both farmers as well as policy makers, allowing each to plan and manage shelterbelts, and to potentially establish federal and/or provincial incentive policies for landowners.

The essentials knowledge on how to sequester more carbon by using shelterbelts is known. There are available and suitable lands to plant even more shelterbelts, and the academic tools needed to assist and guide farmers in implementing and maintaining shelterbelts already exists. With farmers becoming more aware that their actions can assist in combating global warming, society just needs another federal or provincial intervention program to implement such a policy. In this way Canada would sequester more carbon in rural agricultural areas, have a greener agricultural sector, and most importantly, serve as a leading example for the rest of the world in innovative ways to sequester carbon.

Extracting increment cores from a tree within a shelterbelt system in Saskatchewan.

FURTHER READING: Mayrinck, R. C. (2021). PhD dissertation, University of Saskatchewan.

CONTACT FOR MORE INFORMATION: SASKAGROFORESTRY.CA/

ACKNOWLEDGEMENTS & COPYRIGHT: This research was done by a team of collaborators from the Centre for Northern Agroforestry and Afforestation at the University of Saskatchewan, under the leadership of Dr. Colin Laroque. Funding was provided by Agriculture and Agri-Food Canada (AAFC)'s Agricultural Greenhouse Gases Program (AGGP). This fact sheet was completed in Feb 2021.

Agriculture and Agri-Food Canada | Agriculture et Agroalimentaire Canada

University of Saskatchewan
Centre for Northern Agroforestry and Afforestation