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Citizen Science: Supporting Ecological Restoration in Muskoka's Forests with Wood Ash

The Citizen Science program seeks to better understand the benefits of residential wood ash on Muskoka trees and forests and to advance public awareness of the calcium decline issue by involving community members in the solution. FOTMW staff and board members began designing the Citizen Science program in January 2022 and it launched in April 2022. The program requires private property owners have safe access to at least two trees of the same species, similar size, and in similar growing conditions. The objective of the program is to compare metrics (measurements and observations) of a test tree (ash is applied) and a control tree (no ash application) over a period of at least one year.

At the time of printing, the program is two-thirds complete with at least one round of data collection remaining. The metrics assessed include tree height, diameter, percent canopy cover and observations of general tree health. Approximately 50 citizen scientists have also collected soil samples foliage samples.

Citizen scientists reviewed the provided training material, collected the information, and submitted it to FOTMW. The soil and foliage samples were sent to Trent University's School of the Environment for analysis. All data was compiled and analysed by FOTMW staff. Additionally, a quality control study was carried out which ran parallel to the second round of data collection and followed the same

procedure of the Citizen Science program, except forestry equipment was used to collect field data. In association with quantitative data collection, qualitative social data was also gathered from the participating citizen scientists through a phone survey.

Sugar maple was the most chosen species in the Citizen Science program. After the ash was applied to the base of the test trees, soil analysis showed that the pH of the soil became slightly more alkaline, which was supported by the quality control assessment. This increase in soil pH appeared to decrease the sodium concentration in the soil and slightly increase the calcium, potassium, and magnesium concentrations. The residential wood ash is having a positive impact on the forest.

Average tree height and diameter increased slightly over time for both the test and control trees, and round two data was consistent with that of the quality control assessment. This consistency suggests that with sufficient training, inexperienced yet keen citizen scientists can effectively collect valuable information without the need for expensive equipment.

As the end users of the data, FOTMW recognizes how essential citizen scientists are to operating this program. The hope is that the relationship is mutually beneficial and citizen scientists develop new skills, find enjoyment, and have interest in



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contributing to a large-scale environmental solution and research initiative. Furthermore, through this research and other on-going environmental monitoring, FOTMW hopes to reach the wider scientific community, local and provincial decision makers, as well as the public about the calcium decline problem and the solution of residential wood ash for ecological restoration.