



To Provide Research, Development, Innovation, Education and Training

Nova Scotia Maple Research Programme Newsletter

December 2013

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Dal's Community Open House

by Karen Nelson

The Maple Research Programme had a booth set up during Dalhousie's Agricultural Campus's Open House on Thursday July 25, 2013. Though it rained (that is an understatement) for most of the day we had a great turn out. Visitors were in great spirits despite the weather, and adults and children alike came out to visit our display. Thanks to the Maple Producers Association of Nova Scotia (MPANS) we had a great banner and table set up to let the public know what research we are currently involved in.

maple toss with many competitions ensuing among the young and old. We heard lots of stories about families having made maple syrup at their homes when young and many more thinking about doing it again after remembering the great times they had as children. It was great to hear all the interest the public shared in the Nova Scotia Maple Industry and how many only purchased Nova Scotia syrup for their homes.

It was a fun filled day with many people visiting our booth and seeing the research that has started between Dalhousie, MPANS and the maple producers.



Trying out the maple toss.

We also had a display of the many products made with or containing maple. A big hit were the maple candies that we handed out, as well as coloring and recipe books all related to maple. For the kids we had set up a



Wagon rides were the way to get around the campus



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Maple Production Informatics.

by Karen Nelson and Dr. Raj Lada

A baseline survey was conducted of the major maple production areas in Nova Scotia over the 2013 summer to assess the influence of geographic location (county), operation size, and technological diversity on maple syrup production. Twenty-two (n=22) producers were surveyed and each provided maple syrup for chemical analysis. Maple syrup was also collected from New Brunswick, Quebec, Ontario, Vermont, and New York for comparative analysis of brix, pH, colour, sugar content, phenolic compounds and minerals. We investigated a number of parameters and their linkages with syrup yields, as well as climate change and producers opinions on the challenges to the Nova Scotia maple industry. This is an important first step in the research to be conducted in Nova Scotia. Currently, Nova Scotia has significantly lower yields on a per tap basis (Figure 1). Compared to other production areas such as Vermont, New York, and Maine, Nova Scotia produces on average 1/3 the syrup.

Assessing the impacts of production practices and sugarbush characteristics on maple syrup production is an important first step as there are a number of still-untapped maples in Nova Scotia. This represents a significant potential resource for the future development of the Nova Scotia maple industry. Maple products can also benefit from three currently strong consumer trends: selection of natural health foods, tasting and discovering of gourmet products, and easy-to-prepare foods (Agriculture and Agri-Food Canada).

We were able to see trends relating to syrup yield and processing methods utilized by producers.

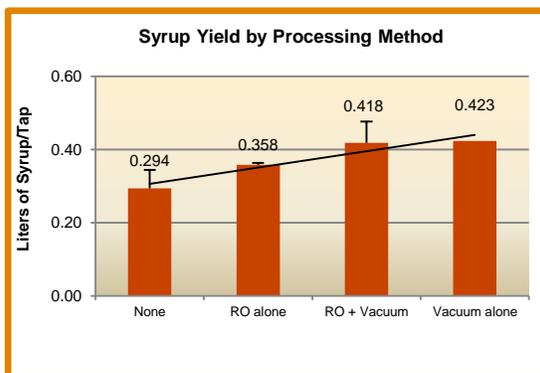


Figure 2 Maple syrup yields (L of syrup/tap) broken down by processing method.

We will be handing out reports for this project at the MPANS AGM to be held in January. As well, Dr. Raj Lada will be giving a presentation regarding the results and outcomes. We hope to see many of you there to answer any questions you may have and to learn more about the maple syrup research ongoing in Nova Scotia.

We would like to thank NSERC- Engage for funding this baseline project as well as the Maple Producers Association of Nova Scotia (MPANS) for their funding contribution and assistance throughout the project.

We would also like thank all those involved in completing this project. Thank you to all the members of the Maple Research Programme Steering Committee (MRPSC): Robert Frame, Dale McIsaac, William Allaway, Kevin McCormick and Matthew Harrison. As well as Ron Young, NS Department of Agriculture. If not for all the producers willing to set aside time to conduct the surveys and so willing to answer the thousands of questions we had for you, this project would not have been a success. So, we would like to thank all the participating producers.

Highlights

- ▲ Sap yield and education are the largest challenges to the NS maple industry
- ▲ Demand for maple products are increasing
- ▲ NS syrup was found to have greater concentration of specific minerals
- ▲ NS syrup samples were within reported ranges, except for P and Mg
- ▲ Small operations were found to have different mineral composition than medium and large operations
- ▲ Varying phenolic compounds were found in greater concentrations in the NS samples

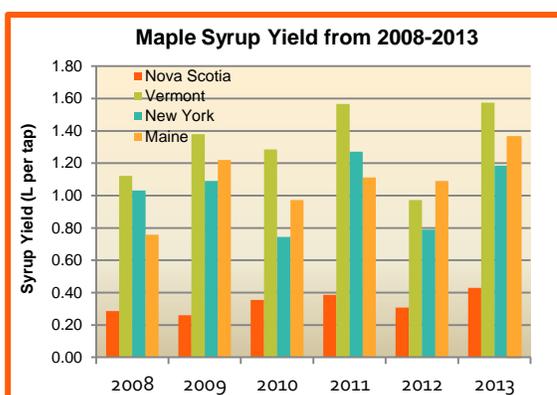


Figure 1 Maple syrup yields (L of syrup/tap) by production area for 2008-2013.



Measuring maple syrup colour and total phenolics using a UV/Vis spectrophotometer at Dalhousie University

Climate Change Project

by Karen Nelson and Dr. Raj Lada

Dr. Lada received funding from the Nova Scotia Department of Energy through the NS Climate Change Adaptation Fund (CCAF) with assistance from contributions from the Maple Producers Association of Nova Scotia (MPANS) to conduct a climate change study on Nova Scotia's (NS) maple production. While the number of taps has increased fourfold from around 75,000 taps in 1973-74, to over 374,000 in 2012 in Nova Scotia, the average syrup yield has declined from 0.437 to 0.325L/tap. While the reasons for low average tap yield is unknown, it is speculated that one of the contributing factors may be climate change.

This project is aimed at i) understanding and uncovering the linkage between climate change and sap and syrup yield; and ii) to develop climate-based models to be used to develop tools to assist in predicting sap flow based on climatic factors.

Forty-eight percent of the producers who participated in our baseline *Maple Production Informatics and Chemical Analysis Survey* over the 2013 summer reported that they believe climate change has had an impact on syrup production, time of tapping, length of season, and composition of the sugarbush. Producers commented that *"the seasons are earlier; when they were young 'they' never made syrup in February before"*. Producers also noted that their seasons are shorter; they get a *"week of good sap weather than a couple days of unseasonably warm temps 'which' causes the holes to plug"* and are experiencing *"large fluctuations in temperatures"* which are reducing the sap flow periods.

We have been in contact with a number of producers to collect long-term data on their syrup production. Our first priority is to collect the producers' records and climatic data from Environment Canada weather stations.

To assess the tree's age and growth Karen Nelson has been visiting sugarbushes to collect a series of tree cores. From there we will process the tree cores in the lab and perform growth measurements to assess the impacts of climate on tree growth.

We have Dr. Arumugam Thiagarajan, Post-doctoral Fellow joining our team who will be conducting the modeling analysis of the data to determine linkages between the weather, tree growth and maple syrup production yields. He has conducted modeling in carrot informatics and brings a wealth of knowledge to the team.

We would like to thank all the producers who are participating in this project for their assistance in collecting the long-term syrup production records and for allowing us to core trees at your locations. We would also like to thank NS Department of Environment, MPANS, the MRPSC, NS Department of Agriculture, and the NS maple producers for their continued support and assistance throughout these projects.



Increment core taken by K. Nelson from a tapped sugar maple in October 2013



Tree coring sugar maples in a Nova Scotia to determine tree age and growth (K. Nelson)

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