

# Northern NY Agricultural Development Program 2008 Project Report

## Adapting to climate change in Northern NY Maple Production

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### Collaborator(s):

- Michele Ledoux, CCE Lewis County
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### Cooperating Producers:

- Rolland Thomas, Franklin County
- Northwood School/Heaven Hill Farm, Essex County
- Cornell Cooperative Extension Learning Farm, St Lawrence County
- Steven Rider, Jefferson County
- Champlain Valley Technical Education Center, Clinton County
- Lewis/Jefferson BOCES, Lewis County

**Background:** The Northern NY Maple Advisory Committee gave their highest priority to research on the value and consequences of tapping earlier than traditionally happens. This comes from legitimate concern about how maple producers should adapt to the climate warming that has been well documented globally and in New York. Long-term sap collection records at the Uihlein Forest show that both the start and end of the sap season has moved about a week earlier in the past 30 years. This is consistent with data from other maple-producing states that also suggests the season is moving earlier and getting shorter.

Maple sap yields depend on having enough days with freeze/thaw cycles in the roughly eight-week period following tapping. Choosing when to start is a critical decision in having economically viable yields. If one taps too early, the tapholes may dry up prematurely, thereby missing out on late season runs. However, delaying tapping until the traditional time of late February/early March could result in a producer missing out on early season runs. This project collaborates with NNY maple producers to determine the advantages/disadvantages of tapping earlier and of staggering tapping as a risk-spreading strategy.

**Methods:** We collaborated with one maple producer in each of the 6 counties to test the effect of starting tapping on different dates in the winter. In December and January, we installed plastic spouts and tubing to connect a set of 4 trees to a 6-gallon bucket. We installed 9 tubing systems at each location. Three of these tubing systems (using 12 trees) were tapped in January, another 3 in February, and the final 3 in March. Every time the sap flowed, before the 6 gallon bucket was emptied into a larger tank, the cooperators measured the total volume and sap sugar content in the buckets. These data were then sent to Michael Farrell at the end of the season to conduct the analysis. Total syrup production was estimated

by using the Rule of 86, which calculates the number of gallons of sap needed to produce a gallon of syrup by dividing 86 by the sugar content % of the sap. For instance, 43 gallons of 2% sugar sap are needed to produce 1 gallon of maple syrup.

**Results:** In most locations, early tapping did not significantly increase sap production. It did in one location. The reason seems to be that the largest amount of sap is obtained in March and April. A location in Clinton County had significant February sap flows, but mostly monthly sap yields in January and February are around 10% of the total. Our Clinton cooperator was the one location where early tapping increased overall yield. There is no evidence in these first year data that early tapping reduces yields during the peak months. Sap production varied 3x between the locations, something we need to understand more about.

**Conclusions/Outcomes/Impacts:** One year of data is not sufficient to make generalized recommendations. We are planning on continuing this project for several years and have already tapped trees for January to repeat the research in 2009. However, if we had to make recommendations with imperfect information based on only 1 year worth of data, we would offer the following advice:

For producers at low elevations and in warmer climates of NNY, we would recommend tapping in January as soon as the long range forecast indicates that there will be at least 2-3 days of sap flow. It wouldn't make sense to tap early if a producer only expected a short period of sap flow, but once the weather conditions start looking favorable for sap flow weather in January, a producer could likely increase their overall yield by tapping early.

For producers at higher elevations and in colder areas of NNY, we would recommend waiting until late February or March before starting to tap. Even though there may be some sap flow in January and February, a great deal of sap flow will occur well into April at these locations. Therefore, it makes sense to wait just before the first flows of March to start tapping to ensure that the tapholes will be as fresh as possible for the major sap flows in April.

**Outreach:** There has been a tremendous amount of media interest surrounding this project. Beginning in Fall of 2007, we started writing articles in Cornell Cooperative Extension newsletters and the Pipeline (quarterly publication of the NYS Maple Producers Association) to start promoting the project and soliciting volunteer cooperators. In January 2008, once all of the cooperators were selected and we had already tapped the first set of trees at each location, Michael Farrell wrote an article for the Maple News entitled "Timing of Tapping Project underway in NNY". There was good press coverage from the outset of the project, including featured news stories on News10 Now out of Watertown and NewsChannel 5 out of Plattsburgh.

The bulk of the media coverage came from a press release put together with NNYADP Publicist Kara Lynn Dunn leading up to Maple Weekend in late March 2008. This generated an abundance of stories about the project and the impact of climate change on maple syrup production; a partial list of media articles based on the press release follows:

- Cornell Chronicle  
<http://www.news.cornell.edu/stories/March08/Maple.in.Jan.kd.html>
- American Agriculturist online:  
<http://americanagriculturist.com/index.aspx?ascid=fpStory&fpsid=32884&fpstid=2>

- Schenectady Gazette:  
[http://cms.dailygazette.com/news/2008/mar/23/0323\\_mapleseason/](http://cms.dailygazette.com/news/2008/mar/23/0323_mapleseason/)
- Sunday March 23 Ogdensburg Advance
- News
- March 22 Watertown Times • News 10
- Now
- 1000 Islands Sun • Physorg.com
- Watertown Times • WWNY TV 7
- Watertown
- Poughkeepsie Journal • Utica Observer
- Dispatch
- Olean Times Herald • Adirondack Daily
- Enterprise
- Lake Placid News

We also worked with Kara to write an article for Farming: The Journal of Northeast Agriculture in Fall 2008 to document the results of the study. Michael Farrell presented the results at the Stone Barns Center for Food & Agriculture in New York in September. He has also shared the results with producers at the Upper Hudson Maple School in Warrensburg on January 2, 2009 and the NYS Maple Conference in Verona on January 10, 2009. He is scheduled to also talk about the results at the Lewis County Maple School on January 24<sup>th</sup>, the Clinton County Maple School at the Miner Institute on January 30<sup>th</sup>, and the St. Lawrence County Maple Expo on January 31<sup>st</sup>.

**Next steps:** This project will continue for several years. Results in future years will depend on the weather patterns for that year and the effect of tubing becoming more contaminated with bacteria and yeast over time. Previous research has shown that new tubing will produce increased yields throughout the sugaring season, as new tubing and spouts continue to produce later in the season whereas old dirty tubing will cause tapholes to “dry up” prematurely. Thus, even though some of the locations were able to produce increased yields by capitalizing on early runs while still obtaining the majority of late season runs, in the future, once the tubing has been impregnated with bacteria colonies, it may dry up much sooner, resulting in lower yields from January placed taps. By conducting this research in future years, we will be able to measure and document the extent to which this happens.

**Acknowledgments:**

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**Reports and/or articles in which results of this project have already been published:**

Dunn, K. Timing of Tapping. Farming: The Journal of Northeast Agriculture. October 2008.

**For more information:**

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