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# MAPLE *Mainline*

December 2019

## WELCOME TO THE 2020 VERMONT MAPLE CONFERENCES!

University of Vermont Extension and Vermont Maple Sugar Makers' Association are pleased to host the 2020 Vermont Maple Conferences. These conferences are designed for anyone who wants to learn about maple production, whether you are an existing sugarmaker or are looking to become one. This year's conferences will take place on January 18 at Brattleboro Union Middle School and January 25 at Lamoille Union Middle and High School.

Please note that due to our change in venue for the Brattleboro conference we need to begin the program one hour later than in the past. We are pleased to offer another full program with information related to the many aspects of maple production. In addition, the Addison County Maple Sugarmakers Association is hosting their annual Maple Seminar on Saturday, January 11 at Middlebury Union High School. Please see the insert for more details about this excellent program and how to register.

There will be speakers from across the maple world delivering up-to-date information on maximizing sap production, marketing, forest health and more. There will be presentations on how to run and maintain a maple cotton candy machine, and the detailed history on how the Cary Maple Sugar Company came to define the modern syrup packer nearly 100 years ago. Program note: not all speakers are available to present at both meetings -- please read the class descriptions closely to see if the class you are hoping to attend will be available. Regular attendees to the Hyde Park meeting will be pleased to hear that the Culinary Arts students from Green Mountain Technology and Career Center will be returning to cater the lunch, don't miss it!

Registration is available online through the Vermont Maple Sugar Makers' Association website [www.vermontmaple.org/maple-conferences](http://www.vermontmaple.org/maple-conferences) or by filling out the paper registration form included on page 2 of this issue of the *Maple Mainline*. There will be five subject area tracks which include Maple Business Management (BUS), Maple Production and Innovation (MAP), Marketing and Media (MAR), Regulations and Maple (REG), and Sugarbush Health (SUG).

After two previous attempts, we hope the third time's a charm for having a representative from Food and Drug Administration (FDA) speak about how the Food Safety Modernization Act may or may not impact your operation. For those licensed foresters looking for continuing education credits, we will again offer presentations that meet the Society of American Foresters (SAF) standards for Continuing Forestry Education credits. The Maple and Forestry Jobs Board is back for 2020. The jobs board can be found at the tradeshow. It is an opportunity for maple and forestry businesses that are hiring to connect with job seekers.

See you at the conferences!

Mark Isselhardt  
University of Vermont Extension Maple Specialist



## BRIAN STOWE, 1963-2019

*This edition of the Maple Mainline is dedicated to Brian Stowe. Brian devoted his 30-year career to the Vermont maple industry, and 29 of those years were spent supporting all aspects of the mission at the University of Vermont Proctor Maple Research Center. Beginning as a firewood cutter, then becoming a sugar maker and woodlands manager, he shared his knowledge, experience, skill and humor with countless sugar makers and aspiring maple producers he met over the years. Despite having a reputation as someone who was comfortable with tried and true methods, Brian embraced change and did so when he tackled new work managing a woods crew and boiling at a large commercial maple operation. Brian lost his life to a tragic accident in the woods following a challenging but successful season. In July 2019, he was posthumously awarded the Vermont Maple Sugar Makers' Association's Sumner Hill Williams Award. Brian had a great love of history, and that respect for history informed his deep sense of duty not only for the work he did for Vermont maple but also as a longtime member of the Vermont Air National Guard. Brian was a true "Green Mountain Boy."*



# 2020 MAPLE CONFERENCES

Sponsored by UVM Extension  
& Vermont Maple Sugar Makers' Association

## SATURDAY, JANUARY 18

Brattleboro Union Middle School (BUMS)  
109 Sunny Acres | Brattleboro, Vt.

## SATURDAY, JANUARY 25

Lamoille Union Middle School (LUMS)  
East Entrance  
736 Vt. Route 15 West | Hyde Park, Vt.

## REGISTRATION

[www.VermontMaple.org/maple-conferences](http://www.VermontMaple.org/maple-conferences)

\$10 VMSMA Members / \$40 Non-Members  
Registration fee does not include lunch.

To request a disability-related accommodation to participate in this program, please contact Cory Ayotte ([cory@vermontmaple.org](mailto:cory@vermontmaple.org)) by January 2, 2020 so we may assist you.

Society of American Forester Continuing Education Credits available; fill out attendance sheets.

Hyde Park lunch provided by Green Mountain Technical and Career Center's Culinary Arts Program.

# SCHEDULES

Important 2020 programming note: The conference schedules for Brattleboro and Hyde Park locations are different; Brattleboro starts one hour later than Hyde Park. There will be five or six classes during each session. Each class is one hour long. Attendees do not need to register for specific classes.

## BRATTLEBORO

Registration opens: 8:30 a.m.  
Welcome & short presentations:  
9:15 - 10:30  
Session 1:  
10:35 - 11:35  
Lunch & tradeshow:  
12:00 - 1:15 p.m.  
Session 2:  
1:20 - 2:20  
Session 3:  
2:25 - 3:25  
Session 4:  
3:30 - 4:30

## HYDE PARK

Registration opens:  
7:30 a.m.  
Welcome & short presentations:  
8:15 - 9:30  
Session 1:  
9:45 - 10:45  
Session 2:  
11:00 a.m. - 12:00 p.m.  
Lunch & tradeshow:  
12:00 - 1:30 p.m.  
Session 3:  
1:30 - 2:30  
Session 4:  
2:45 - 3:45



Photos by Mark Isselhardt, unless otherwise noted.

### REGISTER ONLINE

Save stamps & staff time!  
[www.VermontMaple.org/maple-conferences](http://www.VermontMaple.org/maple-conferences)

### OR BY MAIL

Make checks payable to VMSMA. Mail to:  
1709 Tucker Hill Road | Fayston, VT 05673

Which conference are you registering for?

- January 18 at BUMS in Brattleboro, Vt.  
 January 25 at LUMS in Hyde Park, Vt.

Name \_\_\_\_\_

Address \_\_\_\_\_

Phone \_\_\_\_\_

Email \_\_\_\_\_

Attendee Name(s) \_\_\_\_\_

# VMSMA Members \_\_\_\_\_ x \$10 = \_\_\_\_\_

# Non-Members \_\_\_\_\_ x \$40 = \_\_\_\_\_

# Youth \_\_\_\_\_ x \$5 = \_\_\_\_\_

# Meals \_\_\_\_\_ x \$15 = \_\_\_\_\_

Total \$: \_\_\_\_\_



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## SUBJECT TRACKS



**Maple Business Management (BUS)**



**Maple Production and Innovation (MAP)**



**Marketing and Media (MAR)**



**Regulations and Maple (REG)**



**Sugarbush Health (SUG)**



**“All-natural,” “Family-farmed,” and Other Marketing Mysteries: What’s in a Vermont Maple Label? (MAR)**

*Travis Reynolds, Ph.D., Assistant Professor, UVM Department of Community Development and Applied Economics*

Vermonters are willing to pay price premiums for syrup labeled “Made in Vermont” – but what about “organic,” or “bird-friendly”? Recent surveys suggest “all-natural” and “family-farmed” are labels highly valued by consumers -- but such labels are largely unregulated. This presentation considers maple marketing strategies, and asks how labeling rules and policies can help (or hinder) efforts to support the continued vitality of Vermont maple producers.



**An Effective Defoamer for Organic Maple Syrup Production (MAP, Brattleboro only)**

*Abby van den Berg, Ph.D., Research Associate Professor, UVM Proctor Maple Research Center*

Defoamers currently available for organic maple production have relatively low efficacy. Laboratory experiments identified a commercially available organic defoamer and controlled experiments in commercial-scale maple equipment, and accompanying sensory experiments were conducted. Results determining whether these products were significantly more effective at controlling foam and resulted in less frequent defoamer off-flavor than standard organic vegetable oil will be presented.



**Best Management Practices (BMPs) & Maple Operations (REG)**

*Jason Bradley, Agricultural Engineer, Vermont Agency of Agriculture, Food and Markets*

Required Agricultural Practices (RAPs) directed specifically at maple may be in development over the coming years. This session will include a summary of recent Agency of Agriculture research defining sugar house waste streams from a water quality perspective, and discussion of preliminary best practice recommendations for eliminating discharges.



**Bird-Friendly Maple Project (SUG)**

*Steve Hagenbuch, Audubon Vermont*

Not only do Vermont’s forests support a vibrant maple industry, they also are nesting habitat to some of the greatest numbers of bird species in the country. In an effort to bring these two high-profile aspects of forests together, Audubon Vermont has partnered with VMSMA and the Vermont Department of Forests, Parks, and Recreation to develop the Bird-Friendly Maple Project. This workshop will explain the process for getting your sugarbush recognized as bird-friendly and how doing so can benefit the long-term sustainability of your operation.



**Considering a Sap-Only Enterprise (BUS)**

*Chris Lindgren, UVM Extension Forest Business Program (Brattleboro); Mark Cannella, UVM Extension Associate Professor (Hyde Park)*

Join this group discussion about producing and selling sap. Cannella and Lindgren will facilitate conversation about economics and other key factors to managing a successful enterprise. Topics will include sap collection investments, transportation, pricing and business-to-business relationships.



**Digital Marketing for Maple Entrepreneurs (BUS)**

*Zac Smith, UVM Extension Agricultural Business*

This presentation will explain the applications of digital marketing to maple business entrepreneurs. It will cover how to get started on your own, the main components of a digital marketing plan, an explanation of the current digital marketing environment, and what to expect from the digital marketing industry in the near future.



**Effect of Liming on Sugar Maple Sap Yield and Sweetness in the Long Term (SUG, tentative, Hyde Park only)**

*Rock Ouimet, Forest Engineer, Ph.D., Forest Research Branch, Quebec Ministry of Forest, Wildlife, and Parks*

Rock will present results of a sugar maple sap collection experiment conducted over one spring period in a base-poor sugarbush, 18 years after an experimental liming. The goal was to verify whether the healthier limed trees could produce more -- and sweeter -- sap in the long term than control (non-limed) trees. Results show that liming can enhance maple syrup yield in base-poor sugarbushes over the long term.



**“Food Safety in the Sugarhouse: Developing An Inspection Program and Why It Matters”**

*Presenter(s) TBD (Quality Assurance/Quality Control experts)*

Maple syrup quality is essential to retaining happy customers and a successful business. The additional element of regulations such as the FDA’s Food Safety Modernization Act (FSMA) require that sugar makers follow good practices in the sugarhouse. This presentation will cover the ongoing development of the VMSMA sugarhouse certification program.



**Keys to Optimizing Yields and Sustainability (SUG, Brattleboro only)**

*Abby van den Berg, Ph.D., Research Associate Professor, UVM Proctor Maple Research Center*

Hear a summary of recent and ongoing research conducted by Proctor Maple Research Center to assess the sustainability and yields of various current tapping and sap collection practices which investigate the potential impacts of tapping on tree growth and health.

# 2020 MAPLE CONFERENCE WORKSHOP DESCRIPTIONS



## Maple Business Trends (BUS)

*Chris Lindgren, UVM Extension Forest Business Program (Brattleboro), Mark Cannella, UVM Extension Associate Professor (Hyde Park)*

UVM conducted the 2019 Northeast Maple Business producer survey, and preliminary results on production, forestry, marketing and key business factors will be discussed. UVM Extension has been conducting the Maple Benchmark project since 2013. Cannella and Lindgren will share financial benchmarks and discuss the business factors influencing profitability. Finally, this presentation will include an overview of new legal templates and business calculators available to U.S. maple producers.



## Maple Career Development (BUS, Hyde Park only, Brattleboro TBD)

*Lynn Wolfe, Shelburne Farms*

The first ever maple Career Development Event (CDE) was held at Shelburne Farms in May 2019. The purpose of the Maple CDE was to illustrate the complexity of subjects required to produce high quality maple syrup. The CDE assessed high school students' knowledge through hands-on exercises and traditional test questions. Students from schools around Vermont competed in both individual and team events. This presentation is open to all and will cover the basics of sugaring from tree to bottle and prepare students for future CDE events and help those looking to get into sugaring.



## Maple Cotton Candy 101 (BUS)

*Guillemette Family Sugarmakers*

So you want to make the fluffy stuff? Come take this introductory course on our family approach to making maple cotton candy and the supplies required. You'll also learn some tips and tricks on how to deal with maintenance of your cotton candy machine to keep it running in great condition and producing quality cotton candy. There will be demonstrations and plenty of time for questions.



## The Origins and Development of Plastic Tubing in the Maple Syrup Industry (MAP, Hyde Park only)

*Matthew Thomas, Independent Historian*

The invention and adoption of plastic tubing for gathering and moving maple sap has been one of the most monumental changes experienced by the modern maple syrup industry. This presentation examines the historical development of tubing technology and discusses the role and interaction among the three men who brought plastic tubing from idea to reality.



## Preventive Controls Update for Maple Producers (REG)

*Alyssa Favro, Consumer Safety Officer, U.S. Food and Drug Administration*

This presentation will focus on Food Facility Registration, FSMA (Food Safety Modernization Act), the Preventive Control rule, and what parts individuals and firms may be subject to. Information regarding registering with the FDA and what is required will be provided.



## Sap Concentration and Bulk Tanks: Working More Efficiently in the Sugarhouse (MAP, Hyde Park only)

*Tim Perkins, Director, Ph.D., UVM Proctor Maple Research Center*

Concentrating sap with an RO saves maple producers both time and money, and levels of concentration have been increasing over the past few decades. Using refrigerated bulk tanks allows the storage of concentrate for a period of time. What happens when we combine RO and bulk tank storage and push it to the absolute extreme?



## Silvicultural Considerations for Sugarbush Management (MAR)

*Tony D'Amato, Ph.D., Professor and Director, UVM Forestry Program (Brattleboro); Mark Isselhardt, UVM Extension Maple Specialist (Hyde Park)*

There is great flexibility in how silvicultural tactics and approaches can be used to meet diverse landowner objectives. This includes sustaining a healthy and productive sugarbush. This presentation will discuss how silvicultural treatments can be used to improve tree vigor and growth, while integrating other objectives associated with long-term sugar maple regeneration and habitat considerations.



## State of Maple Health in Vermont (SUG)

*Jim Esden (Brattleboro), Emily Meacham (Hyde Park), Vt. Department of Forests, Parks and Recreation*

This presentation will summarize the results of recent research covering the keys to high yield sap production. Producers will leave with a short list of essential tasks to achieve and maintain a profitable operation.



## Syrup Quality and Retail Containers: Which is "Best"? (BUS)

*Brendan Haynes, Technician, UVM Proctor Maple Research Center*

How is syrup quality affected by storage in different retail containers? This presentation will outline the different types of containers that are available for syrup, and how color and flavor are affected by each.



## Tapping Tips: Do's and Don'ts for Good Production (MAP, Hyde Park only)

*Wade Bosley, Technician, UVM Proctor Maple Research Center*

Tapping is one of the most critical parts of sap collection. Decisions that producers make and the way tapping is done can have large effects on the sap yields achieved. Small errors in tapping can produce large impacts on yield. Learning how to avoid mistakes is the best way to ensure you are getting maximum production from each tap hole.



## Vermont's Maple King: The History of George C. Cary and the Cary Maple Sugar Company (BUS, Hyde Park only)

*Matthew Thomas, Independent Historian*

In a few short years George C. Cary went from unknown traveling salesman to building a maple sugar empire controlling nearly three quarters of Vermont's maple sugar and syrup production. This presentation recounts the rise of Cary, St. Johnsbury's Cary Maple Sugar Company, and how he helped redefine and modernized the maple industry in the early part of the twentieth century.

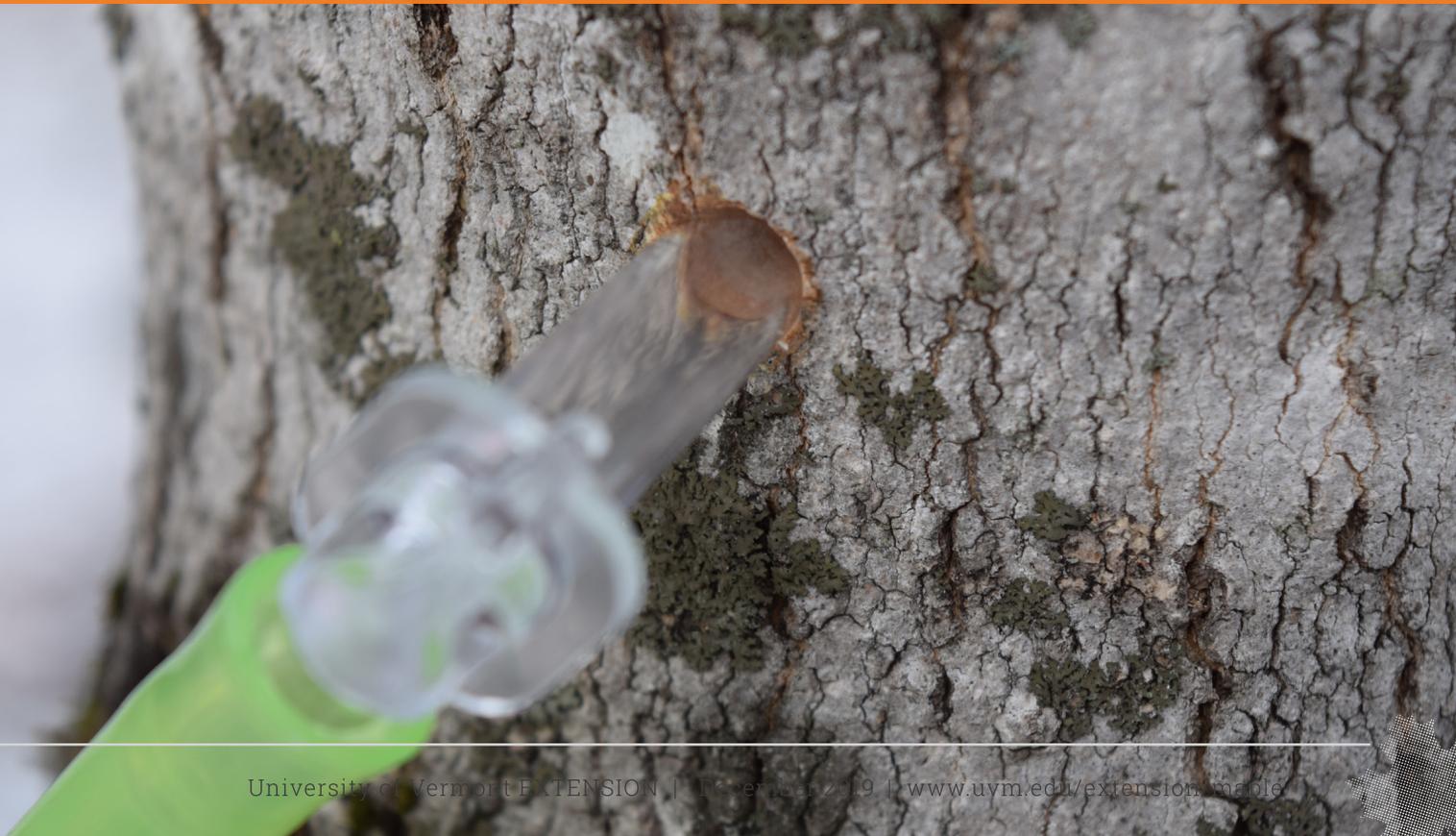


## **ON-SITE HYDROMETER TESTING**

**Bring your hydrometers!**

**Vermont Agency of Agriculture will be on hand to test them so your equipment will be ready for the season ahead.**

The Vermont Agency of Agriculture Metrology Lab calibrates hydrometers to ensure compliance with Vermont Maple Laws and Regulations, and to ensure accuracy in the production and testing of maple syrup. The lab has tested more than 7,000 hydrometers in 2019 from suppliers in China, France and the U.S., and most batches of hydrometers have a 99% acceptance rate. However, batches with 50% rejection have been received.





## EAB IDENTIFICATION

Attacks ALL species of ash trees

### ADULTS:

- ¼-½” inch long, narrow and bullet-shaped
- Metallic green flat back
- Purple/red metallic abdominal segments beneath wing covers

### LARVAE:

- Up to 3 cm long
- Creamy white color with no legs
- Body is composed of flattened, bell-shaped segments

## FOREST HEALTH

New detections of **emerald ash borer (EAB)** continued in 2019, and have been confirmed in ten Vermont towns in eight counties. The sudden increase of EAB detections in Vermont may be related to recent dry growing seasons because although EAB infests healthy ash trees it is especially successful in stressed trees.

Suspect insects were reported in Bristol, Derby and Londonderry by individuals with professional plant health connections. Each represented a new county for EAB, and insect identification was confirmed by a United States Department of Agriculture Animal and Plant Health Inspection Service (USDA-APHIS) identifier. EAB beetles were collected from two different purple traps in Alburgh, making it the second confirmed town in Grand Isle County. These were among the 78 traps deployed by volunteers in 30 towns throughout the state. EAB was not collected from any of the other traps.

Maps indicating known EAB-infested areas in Vermont are available at [vtinvasives.org](http://vtinvasives.org). The maps indicate likelihood of EAB based on where it has actually been observed, although EAB is not necessarily present throughout. By the time the insect is detected, it has already dispersed so any ash tree within ten miles of a known EAB location is considered to be at risk. Including these high-risk areas, the mapped “Infested Area”

Photo Credit: Steven Katovich, [Bugwood.org](http://Bugwood.org)

now includes all or part of 85 towns in thirteen counties. The infested areas are also available for download on the Agency of Natural Resources (ANR) Atlas <http://anrmaps.vermont.gov/websites/anra5/>.

Applying “Slow the Spread Recommendations” to the infested area reduces the risk of spreading EAB and provides time to conduct management activities. While high-risk areas include many towns, visibly infested trees still remain rare in Vermont and there’s a lot of spread to slow. One change to recommendations in 2019 was to redefine the EAB flight season as June 1 to September 30. After looking at weather records from locations throughout the state, and considering growing degree day models, it was determined that EAB beetle emergence will not actually begin until June in Vermont. Recommendations for preventing unintended movement of EAB and information about ash management are available at [vtinvasives.org](http://vtinvasives.org).



Photo Credit: James W. Smith, USDA APHIS PPQ, [Bugwood.org](http://Bugwood.org)

# FOREST TENT CATERPILLAR (FTC)

Forest tent caterpillar (FTC) defoliation plummeted in 2019, with only 537 acres of defoliation mapped, compared to 71,315 acres in 2018. A total of 156,718 acres were defoliated at least once since 2016. (Defoliation data are available on the ANR Natural Resources Atlas.) In late 2018 and early 2019, egg mass surveys were conducted in 16 sugarbushes. Only one sugarbush was identified as being at risk of defoliation. No landowners chose to have their properties treated.



Photo Credit: Steven Katovich, *Bugwood.org*

Despite the drop in acres defoliated, impacts of this outbreak persist. In 2019, we mapped 3,438 acres with dieback or mortality attributed to FTC, in addition to the 4,500 acres mapped in 2018. This is likely the result of repeated years of defoliation, dry growing conditions and minimal refoliation. Ground evaluations were conducted at four of these sites. More than 69% of sugar maples had at least 50% crown damage.

Since 2016, 156,718 acres were defoliated at least once by forest tent caterpillar. Maple decline and mortality have been detected in some locations which had been defoliated.

Pheromone traps for FTC were deployed statewide in mid-summer. The number of moths per trap averaged 1.2, a drop from 15.7 at the height of this outbreak. Coupled with the decrease in acres defoliated, this suggests that the outbreak has come to a close.

The recent forest tent caterpillar outbreak appears to be over, based

**FTC DEFOLIATION  
PLUMMETED  
IN 2019 ...  
FOLLOWING  
PAST TRENDS  
OF 10-20  
YEARS BETWEEN  
SIGNIFICANT OUTBREAKS.**



on 2019 moth counts as well as on the drop in acres defoliated. Thin hardwood crowns and foliage browning were mapped on 28,490 acres in mid-late summer, with a variety of factors responsible. Maple leaf cutter populations were very high again this year and led to brown patches of sugar maple at mid-elevations. Maple leaf cutter feeding was also noticeable on yellow birch and beech. Some hardwood browning was due to anthracnose and other fungi that infected leaves emerging during wet periods in the spring. The heavy seed crop also contributed to the variety of factors, mostly observed symptoms, resulting in unusually small upper-crown leaves which dropped prematurely.

Used with permission and adapted from "Vermont Forest Health Highlights 2019," Vermont Department of Forests, Parks, and Recreation.



**A HEAVY SEED YEAR  
IN SUGAR MAPLE  
CONTRIBUTED TO VISIBLE  
BROWNING IN NORTHERN  
HARDWOOD STANDS.**

Photo credit: Vermont Department of Forests, Parks and Recreation



THE UNIVERSITY OF VERMONT

**EXTENSION**

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Morrisville, VT 05661

# MAPLE *Mainline*



**FROM  
UNIVERSITY OF VERMONT  
EXTENSION**



CULTIVATING  
HEALTHY  
COMMUNITIES