

Ask Proctor

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Could the sugar maples have broken bud during unusually warm January temperatures?

Trees like sugar or red maple (*Acer saccharum* and *Acer rubrum* respectively) living in cold climates protect themselves from winter damage through the process of dormancy. Dormancy is essentially a period of low metabolic designed so that just the most basic and essential processes are continued to keep living cells alive until more hospitable temperatures return. Trees have developed a sophisticated process to trigger the entry and exit from dormancy so as to avoid the damaging effects of freezing on delicate leaf tissue. The process of initiating spring bud break is not tied to a particular calendar date or for that matter reaching a particular temperature. The process is actually driven by balance of growth promoting and inhibiting chemicals. These chemicals are alternatively built up or broken down by the tree depending on the environmental stimulus. A period of cold temperatures is needed for a tree to both enter and exit dormancy. The amount of accumulated cold temperatures (also known as chilling) is inversely related to the amount of warming needed to break dormancy and varies by species. Said another way, if a dormant maple has not been exposed to very much cold weather it will take a greater amount of warm weather to break bud than if the same tree had experienced a longer amount

of cold weather. Generally speaking, sugar maple requires a greater amount of chilling than red maple. According to the Silvics of North America (Godman et. al. 1990), sugar maple grown in northern latitudes require the greatest amount of chilling hours before they can be released from true dormancy. An estimate of around 2500 hours of continuous chilling is offered. It is also thought that not all levels of cold contribute equally to the plants required total chilling requirement. Temperatures between 35-40F seem to be ideal. There is evidence to suggest that a latitudinal gradient exists relative to the chilling requirements of sugar maple.

Although technically not out of the question, a January sugar maple bud break in northern Vermont is so extremely unlikely as to make it practically impossible. Normally sugar maple bud break in northern Vermont occurs from late April through early May. The spring of 2012 serves as a good illustration of how well the dormancy system works in sugar maple. In the middle of March of 2012 Vermont saw five days of temperatures in the 70's and even 80 degrees in some places. Despite the extended period of record warmth, sugar maples did not immediately initiate bud break. Thanks to long term monitoring data from Vermont Department of Forest Parks and Recreation and the Forest Ecosystem Monitoring Cooperative (then Vermont Monitoring Cooperative) we know that sugar maples did experience earlier than average spring bud break in 2012 but not until the mid-

dle of April. By January in Vermont all trees growing in the forested environment would have lost their leaves and entered true dormancy, but the chilling requirements would not necessarily have been met.

We know that the phenology of bud development is extremely variable. Buds do not usually exit dormancy together in one discrete event even within the same individual let alone the same stand. If environmental conditions suitable for bud break were met January it is still only likely that a portion of the buds would break at any one time. This would leave another portion of the trees buds safely in dormancy and possibly outlasting the warm temperatures.

Southern Syrup Research Symposium

**September 28 and 29
Summersville, WV**

The maple world will turn south this September to focus its attention on the potential for syrup production in the Central Appalachians. With plenty of maple, as well as birch, walnut, sycamore, sorghum, and a relatively untapped market, the Central Appalachian and surrounding region is experiencing renewed interest and growth in the making of syrup. West Virginia organized a producers association 4 years ago and Kentucky just last fall.

The purpose of the Southern Syrup Research Symposium is to focus attention on the specific opportunities and challenges of sap and syrup production in this region. It is to bring together scientists, extension specialists and producers to learn and to discuss the issues.

Friday is dedicated to research presentations pertinent to the purpose of the Symposium. Researchers from The Proctor Maple Research Center, Cornell University, West Virginia University, Virginia Tech, Ohio State and others will be on the agenda. The goal is to learn about the sap and syrup research work being done, how it applies to environmental conditions in the Central Appalachians, and identify areas that need further exploration.

Saturday will be time for our maple experts to interact with sap and syrup producers. The day is structured around a series of panel discussions on topics to include: Sanitation, Agroforestry, Entrepreneurship and marketing, Sorghum, Technological Innovations, and Alternative Tree Saps. There will also be a session for producers to share their experiences as they grapple with issues pertinent to sap and syrup production in the region. Saturday also features a plenary session on climate change and syrup production.

Friday evening will feature a special West Virginia Welcome reception, including a square dance featuring a dance called "The Maple Syrup Real," choreographed especially for this event. The Symposium also features a Vendor Trade Show and a poster session featuring maple initiatives taking place in colleges and schools.

For more information, and to register go to: <http://www.syrupsymposium.com> or email Mike Rechlin: mike@future.edu