

Ask Proctor



I'm considering switching from a flat pan to a larger pan with continuous flow, and keep hearing about the gradient. What is a gradient and why is it important?

Very simply, a gradient is a change in some characteristic from one position to another. For maple, the gradient in a maple evaporator refers to the change in sugar content (density) from the sap (or concentrate) inlet to the drawoff point.

Unlike a batch evaporator (a flat pan) where all the liquid in the pan is at or close to the same density, in a (semi-) continuous-flow evaporator (with channels and perhaps flues), the liquid in the area nearest the inlet has experienced less evaporation, and is also constantly being replenished by low density liquid. As the fluid moves through and is in the evaporator longer, more evaporation has occurred, and so the liquid is thicker. This evaporation and associated increase in density continues right to the drawoff point, where the liquid has been in the evaporator the longest, and thus has the highest sugar concentration (is most dense). The gradient develops naturally during the evaporation process, and is maintained by sap/concentrate additions at the inlet, and removal of syrup from the drawoff.

Dr. Tim

After a warm spell that made the sap stop running, a hard freeze made it start again so I collected and boiled. The syrup had an off-flavor. Why?

Off-flavors are notoriously difficult to diagnose without tasting. In this case, there could be few different possibilities.

The most likely is that the sap fermented in the buckets, tubing, or tank, resulting in a "sour sap" off-flavor. This is often described as tasting "fruity," "tangy," or "fermented." It occurs because the sap that sat around in the tubing system, got warm and spoiled (lots of microbes like to grow in sap). Often it is good practice to dump sap that is excessively cloudy until it clears up again at the start of a new run, especially in the late season or after a hot, sunny period.

One thing to be careful of, especially during any warm spells, is that the sap doesn't go ropey or stringy. This is caused by a particular microorganism that exudes a lot of polysaccharide (slimy or gummy) material. Syrup made from this sap will be ropey or stringy (you'll know it when you see it). This syrup is largely unfilterable and unsalvageable. Your only real recourse is to dump everything, clean and the tanks and evaporator excessively and start over, or quit if the season is nearly over. The easiest way to avoid this is to clean all tanks and lines, drain float boxes and any other areas of the evaporator

Ask: continued on page 23

Ask: continued from page 21

with low density sweet, and occasionally (daily during warm spells without sap) bring the evaporator to a boil for 5-10 minutes to kill any microbes that might start the spoilage process. Just be careful not to burn up your pans.

Another possibility is that the sap sat in an evaporator with heavy niter/sugar sand/scale, and may have picked up a bit of “niter off-flavor.” This syrup typically has a little “bite” to it. Finally, it might be that you are near the season, and the trees may have started to produce buddy sap, resulting in “buddy off-flavor.” Buddy syrup is often described as “chocolate”, or “tootsie-roll”, and is quite distinct and very objectionable to most people. If this is the cause, your season is over. Time to pull spouts.

Dr. Tim

Ask Proctor is a new feature in the Maple Syrup Digest, where researchers from the University of Vermont's Proctor Maple Research Center will answer questions about sugaring. If you have questions you'd like to submit for consideration for use in this column, please send them to editor@maplesyrupdigest.org.

Maple Tours and Events

The 2016 **New York State Maple Tour** will be held July 17-19. The tour will be based in Cortland, NY, and will include visits to 12 sugarhouses in five counties, as well as a banquet. Details and registration are at www.nysmaple.com/ny-maple-producers/2016-Maple-Tour/19.

The 2016 **Cornell Maple Camp** will be hosted by West Virginia Department of Agriculture in cooperation with the new West Virginia Maple Producers Association, July 20-23. The Camp will be centered in Morgantown, West Virginia and will feature two half days and two full days of training intended to introduce new or existing maple enterprises to commercial production. Details and registration at www.nysmaple.com/ny-maple-producers/2016-Maple-Camp/22.

The 2016 **Pennsylvania State Maple Tour** will be held September 16-17 in Tioga County. Hosted by the Potter-Tioga Maple Producers Association, the event will include a banquet, tours of sugarhouses, and other local attractions. Contact Miller's Purely Maple (570-724-7907) for more information.

The 5th Annual **Lake Erie Maple Expo** will be held November 11-12 in Albion, PA. The event features a trade show and more than 40 workshops. Details are at www.pamaple.org/LEME.html.

Research Grants Available from NAMSC

The North American Maple Syrup Council, Inc. Research Fund (NAMSC-RF) is pleased to announce its annual Request for Maple Research Proposals (RFP). For more information, see

<http://namsc.org/index.php/en/namsc-research-fund/proposal-submission-guidelines> or contact NAMSC Research Committee Chair, Winton Pitcoff, at winton@massmaple.org.