

Dave Gram: [00:00](#) Let's get into our conversation, right off the top here with one of the ... Had a lot of tough news lately, and we wanted to start out with a sweet topic this morning. That, of course, is the Vermont maple syrup, Vermont maple sugaring, and I'm understanding it was a pretty sweet season this year. Mark Isselhardt is with us, and Mark, did I get all the affiliations right? You're with UVM Extension in the Proctor Research Center?

Mark Isselhardt: [00:23](#) That's right. Hi, Dave. Thanks for having me on.

Dave Gram: [00:26](#) Hi. I'm glad to do it.

Mark Isselhardt: [00:28](#) My office is at the Proctor Maple Research Center, which is a research station within the College of Ag and Life Science, and I'm the Maple Specialist with UVM Extension.

Dave Gram: [00:38](#) Excellent. Well, I got the right guy on the show here to talk about Vermont's maple sugaring season, and as I say, I understand from your report that it looks like it was a record-setting year.

Mark Isselhardt: [00:52](#) Yeah, by all accounts, it was a huge year for production. Both Vermont producers, but also nationwide and even our neighbor to the north, Quebec had a very large production season. So-

Dave Gram: [01:07](#) I'm just wondering if there's any factors which account for that? Was it especially favorable weather patterns, or what do you think were the main contributing factors to that?

Mark Isselhardt: [01:21](#) There's a lot of different parts to it, but maple producers have adopted a lot of technology and a lot of best practices to maintain and achieve high yield so there's a lot of hard work being done, not just during the sugaring season but in the prep for that. Putting out a good tubing system, good equipment, doing good forestry and careful monitoring of tree health, and then checking for leaks during the season, how they manage their vacuum systems. Those are all big contributors, but just like the old days of buckets, weather still matters. You got to have good sugaring weather, and it turns out that 2020 was really good.

We had a warmer March than the past two years, which allowed for good sap flow, but then it didn't get too warm in April. A lot of the sugar bushes more in the upper elevations continued to make syrup later in the season, just because April wasn't too, too hot. So it was a combination. It was a lot of the hard work of the producers. It was the, using modern

techniques and technology. A lot of good weather, and it all added up to a great season. The U.S. production was about 4.3 million gallons, and Vermont achieved half of that. They produced, Vermont sugar makers made 2.2 million gallons of syrup in 2020.

Dave Gram: [02:52](#) That's pretty amazing when you think about this tiny state being half the nation's crop in maple syrup. I mean, I know that Vermont's always been the leader, but that's amazing.

Mark Isselhardt: [03:05](#) It is. And you know, it's not that there aren't tappable trees in other places and there's lots of other states that do make maple, but I think what Vermont has going for it is a few things. Obviously, like you pointed out, a long tradition and not only a tradition, but a willingness to innovate and continue to try new things. So that's important, but you have to have the resource. You have to have a healthy forest, and you have to have the trees that are capable of being tapped.

Then you have to have a group of individuals who are willing to do the hard work of making syrup which, it's not always the nicest weather out there, checking leaks when it's 35 degrees and spitting rain, snow. That's what you have to do to make sure that your production is consistently high. That's also reflected in the per-tap yield. So, if you take total number of taps and, or total amount of syrup and divide it by taps, you get essentially what the average yield per tap is. Vermont's also leading the country there.

Dave Gram: [04:19](#) Wow.

Mark Isselhardt: [04:19](#) .361 gallons of syrup for every tap, on average.

Dave Gram: [04:24](#) So Vermont's pretty much the, I don't know, the Golden State Warriors of maple syrup production here, or something. Although Golden State actually lost the championship last time around, so anyway, maybe that's the bad analogy but Toronto Maple Leafs, speaking of maple. No, Toronto Raptors. Excuse me. Maple Leafs are hockey. Toronto Raptors won the championship last time around, but anyway, enough basketball. So, in terms of the technol- ... You talk about innovation and technology and this sort of thing.

I'm just curious, one of the trends that I've read about in maple sugaring here in Vermont is, a lot of people are using pretty high-tech vacuum tube methods to, we've gone from buckets, we've gone from gravity feed tubes. We now are into the age of

vacuum tubes, and I think there's a instinctive sense here that, could we end up sort of leaning on the trees too hard? Could we end up stressing trees just by withdrawing maybe, almost too much sap, or something? Is there worry there, or do we have this really well-calibrated?

Mark Issehardt: [05:46](#)

Well, you know, it's a great question. It's a complex one to answer scientifically because there are lots of factors, and primarily you're talking ... the reason it's difficult is because you're talking about a plant that lives year after year. It's not like a crop of corn or something, where you plant it and you grow it, and then you harvest it. You're managing these trees that are hardy and well-adapted to the climate, and you're tapping them every year. The research has been initiated where, we're well into our seventh year of a long-term study looking at the impact of high vacuum, compared to more traditional levels of sap extraction, as well as no tapping.

So trees in the same stand, the same conditions, are given those three treatments. Obviously you tap trees for more than seven years, so we're not really reporting on those results yet because it's a long-term study. We wouldn't do well to report interim results on something that, in practice, is done over many years. But, the interim results are encouraging. We're not seeing a significant drop-off in tree health, but there are a lot of factors and it's important to keep track of how your sugar bush is doing and not ignore those signs that can happen from year-to-year.

Dave Gram: [07:28](#)

What do you think the proper length of this study will be? I mean, in other words, will we report results after 20 years or 30 years? Because I know maple sugar is a long-term thing, trees live a long time, and they get tapped for many years, many times.

Mark Issehardt: [07:42](#)

Absolutely, yeah. I mean, some of it depends a little bit on funding, but we're certainly committed to a minimum of 10 years, and then we might be able to use some of that interim data to make some projections to see where things are going. But we know, based on the data so far, that you get twice as much sap when you collect with high vacuum compared to more traditional gravity type sap collection. That may sound like a lot, but as a tree grows it gets bigger and bigger and bigger. So the percentage of how much you're taking out gets smaller and smaller as the tree gets larger. If people are following appropriate guidelines, as far as how big the tree is that they're tapping and the trees are growing in a good quality site, we're not worried at this point. But again, we're in the business of

collecting data and analyzing that, so we're not yet not quite there yet.

Dave Gram: [08:46](#) The science of sugaring. That's what you guys do up there, so that is an important thing. I'm wondering, so 2.2 million gallons is up from what in say, 2019? And then maybe give us some prior years of, how does it compare to, I don't know, going to 2010 for instance?

Mark Isselhardt: [09:08](#) Sure. So 2019, it was just over two million, so there has been some increase. Compared to last year, it was up about 7%, which is pretty significant when you think about how much we are ready, we're producing here in Vermont. Other states that saw good years, Maine was up about 13%. Pennsylvania was actually up. New Hampshire, was up a little bit. A few states were down or flat. New York was about level, maybe off a few percent. Wisconsin was off a few, and Michigan was down quite a bit. It's a little hard to tease out. I'm not as familiar intimately with those climates, but because some of it could have been weather. It's a little hard to tell.

There were some producers in Vermont that didn't have a gangbuster year, but when you add up all that data it turned out to be a record crop, so you can always have a few sites that maybe it was a little too warm, or maybe they had mechanical issues or something. But statewide definitely was a big year. And so, there's been a huge expansion, you're asking about previous years. There's been a doubling of the syrup produced in the last 15 years. So Vermont has doubled its production, and that's come from basically, all size operations.

There's been many large operations going in, but there's also been existing operations that have grown. The increases come, not just from one size operation but pretty much across the board, including backyard producers who are just hearing more about maple or interested in where their food comes from, and they're getting in with a few buckets. They're learning how much work that is, too. Even just with a couple of trees, it's quite a bit of boiling.

Dave Gram: [11:12](#) I mean, that's one amazing thing about this is that, I know people who do sugaring and boy, this is not a 9:00 to 5:00 job. It's also not, I mean, it's not a consistent year-round job either, but when you're boiling you're sometimes pretty short on sleep. Isn't that true?

- Mark Isselhardt: [11:33](#) Yeah. And actually, that's not an uncommon perspective for people. A really short period of high intensity and when the sap runs, you got to boil it. Sap is a perishable product, and you don't get to pick and choose when the trees run so, some technology can help with that. The use of reverse osmosis to concentrate the sap lowers the amount of volume you need to boil, so that can cut down on your boiling time. At the Proctor Center, we've also been experimenting with refrigerating that concentrate? It can help, primarily it helps with the timing, so you can essentially decouple the sap flow from boiling if you have a large enough refrigerated tank. You can scale things appropriately for the number of taps, and you can concentrate and store it and then boil when you have the time.
- Dave Gram: [11:33](#) Sure. I see.
- Mark Isselhardt: [12:37](#) It's pretty different. Pretty different approach, but it certainly helps with labor and it helps with cleanup. You don't have to boil every single time it boils, if you have the right size tank.
- Dave Gram: [12:50](#) Got it. Hey, we need to take a brief break here on the Dave Gram Show on WDEV FM and AM. Let's continue our conversation with Mark Isselhardt of the Proctor Maple Research Center in just a couple moments. We're back. We're talking with Mark Isselhardt. He is with the University of Vermont's Extension Service College of Agriculture and Life Sciences in the Proctor Maple Research Center in Underhill, and doing a lot of the science behind maple sugaring. I've got a couple of listeners calling, and let's go to Bill in Middlebury.
- Bill: [13:22](#) Good morning.
- Dave Gram: [13:22](#) Good morning.
- Bill: [13:24](#) I have two quick questions. Number one, what's the largest operation in Vermont, and how many taps does it have? And second, is there a lot of out-of-state investment going on now? I'll hang up and listen. Thank you.
- Dave Gram: [13:38](#) Okay. Thank you, Bill. Mark, what do you know?
- Mark Isselhardt: [13:42](#) Well, the numbers aren't all that easily accessible, as far as size of operations and number of operations. We have some data, including the ones I was talking about earlier about production come from a USDA voluntary survey that goes out every year. But if the USDA doesn't know about you, they're not going to send you the survey and probably won't get that information.

There's also a Ag Census that happens every five years, and that's got a little bit more accuracy to it. From what we can tell, the largest operation is somewhere 400,000 taps, somewhere in that neighborhood.

It's a little hard to say, because it's not again, not rigorously measured, but that would probably be the largest one. It's up in Essex County. And outside investment, I mean, again, businesses share or don't share that information widely, so it's a little hard to tell. It's our understanding that that operation in Essex County is owned by a Ag investment firm. It had been part of MassMutual and now that was sold to a investment company. I believe they're out of Montreal, but I mean, again, business information isn't always widely available so I can't really say for sure.

Dave Gram: [13:42](#) I see.

Mark Isselhardt: [15:11](#) I will say that, that large operation in Essex County got a lot of attention when it went in, but there was as much or more expansion, as far as number of taps going on in other parts of the state during that same period. So, definitely got a lot of attention being one entity, but there's been huge amounts of growth in other operations, as well, so.

Dave Gram: [15:37](#) Interesting. Well, tell me a little bit about Quebec. Quebec is a big maple syrup producer. How do they compare, or how do we compare with them?

Mark Isselhardt: [15:49](#) Yeah, well Quebec is, it really is a whole 'nother level of production. Obviously it's geographically, it's large, has a larger population. In Vermont, our estimates are there maybe around 3000 maple producers in Vermont. In Quebec, there's over 11,000. So there's a lot more, just producers. It's structured very differently. There's have been and continue to be incentives through the public sector to get people into maple, so that is very different in Vermont. It's all private land, or virtually all private land. Quebec had a big year, too. I think I mentioned that, but they produced 16 million gallons of syrup this year.

Dave Gram: [16:35](#) Wow.

Mark Isselhardt: [16:35](#) They were up 10% from last year so, they produce over 70% of all the syrup in the world and they just have such a large market share that it really, essentially sets the price for syrup worldwide. I mean, we don't produce ... We produce a lot of syrup, but we produce way more than we could consume just in

Vermont. Vermont producers who sell into the bulk market, not directly to consumer but to the packers, they essentially will fall in line with those prices, by and large. I should point out that it's a huge amount of the Vermont crop gets sold in bulk. So in 2019, which is the most current data we have, 87% of all the syrup made in Vermont was sold into the bulk market.

Dave Gram: [17:31](#)

Wow.

Mark Isselhardt: [17:32](#)

And really, that just reflects that, although we have a huge volume of production here in Vermont and really efficient and high yielding, we just don't have that many consumers.

Dave Gram: [17:44](#)

Sure.

Mark Isselhardt: [17:44](#)

Everyone [crosstalk 00:17:45] it, but we can't possibly sell all that syrup to Vermonters, and so it ends up going domestically or internationally.

Dave Gram: [17:58](#)

I went and bought a gallon this past weekend, but I tell you, I realize I'm a small player. Mark Isselhardt has been my guest. Mark, I got to wrap it up, but I really appreciate your participation this morning. It's great talking with you, and we got to stay on top of this maple situation here in Vermont so you're a big help, and I do appreciate it. Thank you.

Mark Isselhardt: [18:17](#)

Sure, and if people have questions in the future and they want to contact me through the UVM Extension, I'm happy to help.

Dave Gram: [18:25](#)

Alrighty. Very good.