### Maple Syrup Season 2014 – Summary

report by

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<u>Overview</u>: This report documents the activities of the Saint John's Maple Syrup operation during the 2014 season. From a syrup perspective it was an above average year. From an educational and Benedictine perspective – it was an outstanding year!

<u>Staff</u>: Once again the leader of the operation was Br. Walter Kieffer, O.S.B. He was assisted by Core Crew members Gary Gillitzer, Jean Lavigne, Al Meier, William Mock, Stephen Saupe, and Dan Weber. Saint John's Outdoor University staff members – Sarah Gainey, Jenny Kutter, MJ Bach, Kate Delfs, and Tom Kroll – were also involved. Mr. Bill Ruhr, a new volunteer this year, invested a large amount of time in the operation and worked closely with the Core Crew. This year, for perhaps the first time ever, the Core Crew kept track of their work hours (**Table 4**). Incredibly, this group invested more than 565 hours in the operation (**Table 4**).

The Core Crew was assisted by nearly 200 volunteers including students, faculty, staff, and friends who collectively donated more than 885 hours to the operation (**Table 4**). These hours are self-reported by the volunteers who are requested to keep a record by signing our log book at the sugar shack or online. The motivation to keep track of hours is that volunteers are rewarded for their participation by receiving an amount of syrup proportional to how much time they donated and they are invited to an end-of-the-season party (*see below*).

Organizing a large crew can be a daunting task, but the Outdoor University staff does an amazing job. Sarah Gainey sends regular email updates to volunteers who have signed up to be on the distribution list. This year at least 25 updates were sent to the list. When Sarah was unable to send them, Jenny Kutter filled-in admirably. Not only were the daily updates informative alerting volunteers to upcoming activities, but in nearly every one Sarah included an interesting maple syrup tidbit/fun fact. She called these 'Sarah's Syrup Snippets' and they are summarized in **Table 7**.

The Outdoor University staff tried a new approach to organizing crew members – using a Doodle survey. It worked reasonably well, though for the most part the crew still makes decisions about upcoming work the night before and relies on old-fashioned telephone calls for communication. This is often necessary because it is often not easy to predict what needs to be done until the last minute.

<u>Upgrades</u>: There were a few upgrades to the operation this year. First, new pans were purchased for Little Larry. These pans are a major improvement over the previous ones because they allow the crew to easily drain them at the end of the day. This prevents ice from freezing within the pans and potentially damaging them. Another advantage is that these pans now make Little Larry nearly identical to Big Burnie which is ideal for teaching purposes. The pans were purchased from Anderson Maple Syrup and were delivered on April 2, 2014.

An additional syrup pan was also purchased for Big Burnie. This pan will serve as a backup in case one of the pans is accidentally burned. Also, it allows the Crew to swap pans on a regular basis (*every other firing*) to remove sugar sand that can accumulate and lead to burning.

Mr. Brian Jungels, Cold Spring (MN), donated to the operation a new bulk storage tank. It holds approximately 300 gallons. Br. Walter, Bill Mock and Dan Weber picked up the tank at the conclusion of the season. This will now give us enough storage capacity to handle most large sap flows. Br. Walter and crew are in the process of constructing a concrete pad to support all of the storage tanks. This was necessitated, in part, because a groundhog burrowed under one of the existing tanks. The pad, when complete, will allow all of our tanks to be plumbed in line.

Last summer, an AmeriCorp crew, led by Br. Walter, spent about three weeks on an assortment of projects including staining the wood shed and the sugar shack. In addition, they cut, split, and filled the shed full of three-foot wood.

Ideas to consider for future shack improvements include:

- (a) Finish the sign above the north doors;
- (b) make a plaque listing the syrup boss & crew members;
- (c) make a plaque listing the winners of our various awards (Sweet Predictions & Sap);
- (d) complete the paneling on the west wall;
- (e) build a structure to stabilize the bottler when it is full of syrup;
- (f) install more attractive fire screening around the wood stove;
- (g) construct a more attractive wood box or other structure to hold the wood, paper for burning in the wood stove;
- (h) include leaves, buds, etc., with the wood paneling display;
- (i) label all buckets with their purpose (*i.e.*, collecting pails; drip pails; filter cleaning pails and so on) which will serve to keep things tidy, prevent them from being used for other purposes so they remain where they are expected;
- (j) remove any items from the main shack that are not directly used in the syruping operation;
- (k) sort all the materials in the shack into well-labeled bins to keep materials tidy and functional so that multiple people working in the space know where things belong;
- (I) finish the area beneath the windows and around the window above the NW door;
- (m) remove all items in the rafters above the firing area and then finish this area it would be especially attractive if the rafters could somehow be reoriented to allow more light from the window above to enter the shack;

- (n) build shelves or other system beneath the current maple jugging shelf to store the empty jugs waiting to be filled; and
- (o) attach to the outside of the shack a bracket and holder system for the propane tank.

**Tapping**: "Community Tapping Day" was held on March 15<sup>th</sup> from 2:00 – 5:00 PM. In the morning, the Core Crew and assorted volunteers gathered at the sugar shack to begin to begin organizing for the event. Tom and Sarah gave a demonstration on tapping to the Crew (Fig. 1).

The event was much like previous years. The Outdoor University staff did a great job organizing the event including refreshments and 'crew' buttons. Br. Walter opened the activities with a prayer and MJ Bach performed her maple syrup song. Participants were instructed on how to tap a tree and then helped assemble some bags.

Like last year, there were several tapping crews, each with an experienced leader, a tree measurer, a 'tapper' with portable drill and spare battery (Fig. 3), a 'spile driver' with a hammer and bucket of spiles (Fig. 4), a 'runner' who dropped a bag/holder/bucket beneath the tap hole, and a 'hanger' who hung the bag on the spile. Sugar maples trees were marked with paintballs by Outdoor University staff to make it easier for the crews to identify tappable trees.

This was the second year of our spile-size study. The western half of the sugarbush (i.e., North Point, The Hollow) was tapped with 5/16ths spiles while the western half with 7/16ths taps, which is the reverse of last year (Fig. 10). Though the data are not yet analyzed, in 2013 there appeared to be no difference between sap yields, but in 2014 the 5/16ths taps showed a reduction. Depending on what the data show in the final analysis, we may continue this study for a third year in 2015.

By the end of the season we had installed 1493 (**Table 3**) – roughly two thirds were 7/16ths. We installed the majority of taps, about 900, on Tapping Day. We had intended to install about 1200 taps but all of our drills ran out of battery power. Br. Walter and helpers went out the following day(s) and tapped some additional trees. During the course of the season another 300 or so were installed by school groups, festival visitors and others.

Clean Up: We began to remove taps on April 22<sup>nd</sup> and were finished removing taps by April 25<sup>th</sup>. Both evaporators were disassembled and thoroughly cleaned. It took several days of hard-working volunteers to wash up all of the buckets and barrels. The assembly line process developed last year with prewashers, washers, rinsers, bleachers, and stackers made the process go quickly. The Core Crew truly appreciated the help of the volunteers ("there is a special place in heaven for bucket washers").

Sap Production: Continuing the Saint John's tradition, we maintained our sap (Fig. 5) production records on a scrap board. The data from 2014 are summarized in Tables 1 & 3. In addition, data for all years are summarized in **Tables 5, 6 & 10**.

Like last year, this was a late season for sap flow (**Table 6, Fig. 23**). The first sap was collected nearly two weeks (1 April) later than average (20 March). Similarly, the last sap collected (22 April) was 11 days later than average (11 April).

Overall, the length of the sap season (21 days) was average. Typically, there are 22 days from the beginning of sap flow to the end (**Table 6**).

A total volume of 12,160 gallons of sap was collected. The largest daily sap collection during the season was 2,250 gallons. Based on the number of taps, it was an above average year for sap production. We collected 8.1 gallons per tap compared to an average of 7.3 (**Table 6**).

**Syrup Production:** Syrup production data were also recorded on a scrap board (**Fig. 6**). Based on these data we produced 351 jugs of syrup. Since we bottle into a mixture of various-sized containers (gallon, three-liter, four-liter, five-gallon pails), this equates to 317 gallons of syrup (**Table 8**). In other words, we produced 9.7% fewer gallons of syrup than the number of jugs that were bottled.

This is the first time in years that that we've kept track of the actual volume of syrup produced. Our previous records (**Table 6**) report the total syrup production as 'gallons' even though the count was actually 'jugs.' In a year that gallon containers were primarily used, the volume of syrup will equal the number of jugs. However in a year like this one in which the majority of jugs were three-liter bottles, the means that the syrup production data could be off by 10% or more. Since there is no way of knowing how many jugs of a given size were used in the past, past syrup data can only be considered approximations. In addition syrup is eaten at festivals, by volunteers and school groups which also lowers our statistics for the total amount of syrup produced.

In the future we plan to record both the number and size of the containers that we jug on our syrup record board. The only good news is that sap volumes should be accurate since these have always been measured using tanks graduated in gallons.

As stated, this year we made 317 gallons of syrup. We produced nearly a quart of syrup per tap (0.85) versus an average season yield of three-quarters of a quart per tap (Table 6). The sugar concentration averaged 2.24% which was average. This yielded a sap-to-syrup ratio of 38.4 which is above average (40.4).

One measure of our syruping success – or perhaps it's an indication of our lack of planning – is that we ran out of glass jugs into which we could bottle the syrup. Fortunately, we had lots of food-grade pails for the excess. This worked out especially well to supply Third Street Brewery with their syrup.

<u>Sweet Predictions Award</u>: Last year we began the tradition of predicting the amount of syrup we would produce. Fourteen people joined the competition (**Figure 7**). The outcome was in doubt until the very end of the season because there was controversy over how the winner

should be determined (nearest guess vs. nearest guess that doesn't go over like the "Price is Right") and whether it should be based on 'jugs' or 'gallons.' At the wrap-up meeting, the Core Crew voted that the winner should be based on actual gallons and the one who has the closest guess, whether or not the guess was higher than the final total. As a result, this year's winner of the Sweet Predictions Award was Br. Walter (Figure 8)!

**Syrup Quality**: The mark of a good operation is not the volume of syrup produced but the quality of the syrup. A high-quality syrup must be of the correct sugar density (concentration), be clear and free from sediment (sugar sand), and have no off-flavors. Syrup is also graded based on color (golden, amber, dark, very dark).

This year, samples were taken from nearly every bottling during the season and analyzed (**Fig 9 & Table 9**). Unfortunately we didn't remember to start the process until April 8<sup>th</sup> so we missed a few early samples.

Of the samples examined, we produced almost exclusively dark and very dark syrups. Only one of the syrups tested was amber. Unfortunately we have no comparative data, but the samples seemed darker this year than in the past.

The sugar concentration of the samples ranged from a low of about 59% to 70%. Both the variability of the values, and the values themselves, are a concern. The fact that the concentrations vary so much suggests that we need to do a better job measuring the sugar concentration before bottling. We especially need to make sure that the syrups are bottled at the correct density. At the shack syrup concentrations are measured with a hydrometer while a refractometer was used here. It is possible that one or both of the instruments require calibration. In any case, these results suggest we need to insure that: (a) we are accurately measuring sugar concentration before jugging; and (b) we should calibrate both instruments and insure all syrup-makers are versed in their use. The temperature probe might also be used to help determine final syrup concentration.

Syrup should be crystal clear without sugar sand or other particulates. Initially several of our samples had some sediment in them which eventually settled out. This suggests we need to determine how to better remove sugar sand. Perhaps we should always plan to use new paper filters whenever we jug and evaluate the way in which we clean the filters.

<u>Festivals & Celebrations</u>: Once again we held two festivals (March 29<sup>th</sup> & April 5<sup>th</sup>) (**Fig. 11**). As usual, the festivals featured maple syrup sundaes, live music, face painting, children's nature area (**Fig. 13**), tours of the sugarhouse, educational lectures, tapping demonstrations, horse drawn wagon rides, samples from Third Street Brewery, and a Native American area (**Fig. 12**). There were 1758 participants at the two festivals (**Table 4**); of these, 1119 participated at the first festival on March 29<sup>th</sup>, which was our largest festival ever.

To encourage student participation in the maple syrup operation, the Outdoor University staff sponsored a variety of events during the syrup season including a maple syrup cook off,

sundaes at Gorecki and Reef, 'shots' at Br Willy's pub happy hour, and flapjack Friday at the Sexton bus stop

Schwietz Family Celebration & Blessing – The family of Mr. Larry Schwietz held a reunion at Saint John's and the maple syrup operation on the weekend of March 29, which coincided with the first festival. The Schwietz's were special guests because they have been very generous supporters of the operation. Among other things, the Schwietz family donated the funds to enable us to purchase "Little Larry" for our educational activities. The Schwietz family had a full day of activities. After Mass, they were transported by horse-drawn wagon to the sugar shack (Fig. 14) where they were welcomed and given an overview of the operation by Br. Walter, Tom Kroll and Steve Saupe (Fig. 15). After, Abbot John Klassen O.S.B. blessed the evaporators (Fig. 16), which wasn't done last year – it was cancelled due to the weather. Following the blessing the family was free to enjoy the festival (Fig. 17). That evening, the syrup crew hosted a dinner for the Schwietz's at the McKeown Center. Mary Kroll and Linda Saupe organized the potluck while Tom Kroll was responsible for beverages and general logistics. The Schwietz's received a plaque commemorating their support of the operation (Fig's. 18 & 19).

Volunteer Celebration – On May 12<sup>th</sup> the Core Crew hosted a Pancake Dinner to thank the all of the volunteers who helped during the seasons. Sarah Gainey, Saint John's Outdoor University program did much of the logistical work for this outstanding event. It was held at home of Saint John's President, Michael Hemmesath. The Core Crew cooked, served and cleaned while volunteers could relax, enjoy a delicious meal featuring our maple syrup, and pick up a gift of syrup to thank them for their help.

<u>Publicity/Honors</u>: The Outdoor University staff maintained a daily blog at the following link: <a href="http://www.csbsju.edu/Arboretum/Stewardship/Projects/LandStewardship/MapleSyrup/Volunteer/DailyUpdate.htm">http://www.csbsju.edu/Arboretum/Stewardship/Projects/LandStewardship/MapleSyrup/Volunteer/DailyUpdate.htm</a>. The same information was also sent to anyone requesting to be part of the maple syrup email distribution list (*see Staff section above*).

In addition to the regular posts and updates, the following publicity/articles about the maple syrup operation appeared:

- Anon (2014) Get a glimpse of maple syrup process. St. Cloud Times. April 5, 2014, p 2A.
- Anon (2014) Maple Syrup Harvesting 2014. Abbey e-News. May 2014.
- Reger, Molly (2014) Tapping into tradition. *The Record*. March 28, 2014.
- Hilsgen, Cori (2014) Locals gather to help with syrup-making. St. Joseph Newsleader. pP 1 & 5.

The operation was also featured by WJON radio (<a href="http://wjon.com/frozen-in-time-st-johns-maple-syrup-video/">http://wjon.com/frozen-in-time-st-johns-maple-syrup-video/</a>).

<u>Maple Sap Award</u>: This award was initiated last year to recognize some of the lighthearted moments that keep the Core Crew smiling. The Core Crew this year voted to give the Maple Sap Award to Tom Kroll for sending Outdoor University staff members hunting for empty glass

jugs that he never remembered to order (**Fig. 8**). Other nominees for the award were: (a) Br. Walter Kieffer, O.S.B. – for incorrectly positioning the valves that would have resulted in a sure meltdown of the syrup pan; and (b) Steve Saupe – who, while cleaning Little Larry, sliced open his ring finger requiring five stitches. **Table 11** provides a running list of award winners.

<u>Education & the Community-at-large</u>: Once again, we provided educational tours to about 1500 students, from pre-school to college (**Table 4**). In addition to the standard tours, festivals, and school groups, we served the public other ways. For example, Br. Walter held a cook-out at the sugar shack for a Knights of Columbus event and ROTC uses the space for some of their field exercises.

The Outdoor University staff also helped to tap trees at the home of Saint John's President, Michael Hemmesath. They installed about 20 taps and the sap was then transported to the sugarhouse for processing using a tank loaned by Gary Gillitzer.

<u>Licensure</u>: We were again licensed by Stearns County Environmental Services (Fig 32). We are proud of licensure and work hard to maintain it. Each year we contact Ms. Jane Knott, Stearns County Environmental Services, at the start of the season to schedule a time for her to visit the operation. We were inspected on April 8, 2014 by Jane Knott.

# **Appendices: Tables & Figures**

(Unless otherwise indicated, all images, figures, and tables provided by SG Saupe)

| Table 1. Sap Colle | Table 1. Sap Collection Data – Spring 2014 |  |  |  |  |  |  |  |  |
|--------------------|--|--|--|--|--|--|--|--|--|
| Date               | Sap collected (gal)                        |  |  |  |  |  |  |  |  |
| 1 Apr              | 580  |  |  |  |  |  |  |  |  |
| 4 Apr              | 225  |  |  |  |  |  |  |  |  |
| 5 Apr              | 860  |  |  |  |  |  |  |  |  |
| 6 Apr              | 1710                                       |  |  |  |  |  |  |  |  |
| 7 Apr              | 1125                                       |  |  |  |  |  |  |  |  |
| 8 Apr              | 750  |  |  |  |  |  |  |  |  |
| 11 Apr             | 1505                                       |  |  |  |  |  |  |  |  |
| 13 Apr             | 265  |  |  |  |  |  |  |  |  |
| 17 Apr             | 220  |  |  |  |  |  |  |  |  |
| 18 Apr             | 1770                                       |  |  |  |  |  |  |  |  |
| 19 Apr             | 675  |  |  |  |  |  |  |  |  |
| 21 Apr             | 2250                                       |  |  |  |  |  |  |  |  |
| 22 Apr             | 225  |  |  |  |  |  |  |  |  |
| Total (gal)        | 12,160                                     |  |  |  |  |  |  |  |  |

| Table 2. Syrup Production Data – Spring 2014 |              |  |  |  |  |  |  |
|--|--------------|--|--|--|--|--|--|
| Date   | Syrup (jugs) |  |  |  |  |  |  |
| 7 Apr  | 65           |  |  |  |  |  |  |
| 8 Apr  | 51           |  |  |  |  |  |  |
| 11 Apr                                       | 16           |  |  |  |  |  |  |
| 13 Apr                                       | 40           |  |  |  |  |  |  |
| 18 Apr                                       | 33           |  |  |  |  |  |  |
| 19 Apr                                       | 41           |  |  |  |  |  |  |
| 21 Apr                                       | 43           |  |  |  |  |  |  |
| 22 Apr                                       | 36           |  |  |  |  |  |  |
| 23 Apr                                       | 18           |  |  |  |  |  |  |
| 24 Apr                                       | 8            |  |  |  |  |  |  |
| Total (gal)                                  | 361          |  |  |  |  |  |  |

| Table 3: Maple Syrup Produ  |             |
|-----------------------------|-------------|
| Statistics Summary – Spring | 2014        |
| Spiles (7/16ths)            | 911         |
| Spiles (5/16ths)            | 573         |
| Spiles (spiles GPS'd)       | 1484 (1493) |
| # sap collection days       | 13          |
| Sap collection dates        | 1 – 22 Apr  |
| Tanker loads of sap         | 57          |
| Total sap collected (gal)   | 12,160      |
| Syrup produced (gal)        | 351         |
| Batches of syrup produced   | 29          |
| Ratio (sap/syrup)           | 34.6        |
| Sugar concentration (%)     | 2.48        |
| Wood Used (syrup / cord)    | 12.5        |

| Table 4: Maple Syrup Volunteers & Visitors – Spring 2014            |         |  |  |  |  |  |  |  |
|---|---------|--|--|--|--|--|--|--|
| Volunteers  | 189+    |  |  |  |  |  |  |  |
| Volunteer hours (Core crew excluding Br. Walter & W. Mock)          | 565.5   |  |  |  |  |  |  |  |
| Volunteer hours<br>(excluding core crew &<br>SJOU staff)            | 885.5   |  |  |  |  |  |  |  |
| Total Volunteer hours   | 1451    |  |  |  |  |  |  |  |
| Festival Participants   | 1758    |  |  |  |  |  |  |  |
| Student groups (pre K – 12)   | 1239    |  |  |  |  |  |  |  |
| Student groups (post-<br>secondary; 12 sections<br>BIOL221L, 2 FYS) | ca. 250 |  |  |  |  |  |  |  |
| Total students  | 1489    |  |  |  |  |  |  |  |
| Tapping Day participants  | 200+    |  |  |  |  |  |  |  |
| Total visitors  | 3447    |  |  |  |  |  |  |  |

Table 5. 2014 Summary Data

| 2014 Summary: Sap & S     | ). up = u.u    |   |            |             |             |         |            |  |  |
|---------------------------|----------------|---|------------|-------------|-------------|---------|------------|--|--|
| # of Taps                 | 1493           | different numb  | ers from G | PS and actu | al count; u | sed GPS | count data |  |  |
| Taps 5/16th (actual cour  | t 911          |   |            |             |             |         |            |  |  |
| Taps 7/16th (actual cour  | t 573          |   |            |             |             |         |            |  |  |
| Taps total (actual count) | 1484           |   |            |             |             |         |            |  |  |
| Taps total (GPS count)    | 1493           |   |            |             |             |         |            |  |  |
| Taps Placed               | 15-Mar         |   |            |             |             |         |            |  |  |
| Taps Pulled               | 22-Apr         |   |            |             |             |         |            |  |  |
| Wood Used (cords)         | 12.53          |   |            |             |             |         |            |  |  |
| volunteers                | 189            |   |            |             |             |         |            |  |  |
| volunteer hours           | 885.5          |   |            |             |             |         |            |  |  |
| Core Crew hours           | 565.5          |   |            |             |             |         |            |  |  |
| festival particip         | 1758           |   |            |             |             |         |            |  |  |
| Students preK-12          | 1239           |   |            |             |             |         |            |  |  |
| Students post             | 250            |   |            |             |             |         |            |  |  |
| syrup boss                | Walter Kieffer | , OSB   |            |             |             |         |            |  |  |
| Syrup Crew                |                | William Mock; Sarah Gainey, Stephen Saupe,  John Oreilly,Gary Gillitzer, Al Meiers, Dan Weber;  Bill Ruhr |            |             |             |         |            |  |  |

continued on the next page

|        |            |                     | Sap Proc |          |            |           | on                 | yrup Product | S     |        |
|--------|------------|---------------------|----------|----------|------------|-----------|--------------------|--------------|-------|--------|
| SAP/DA | GALLON     | Time                | LOADS    | DATE     |            | Total/Day | TIME               | JUGS         | Batch | DATE   |
| 580    | 220        |                     | 3        | 1-Apr    |            |           |                    |              |       |        |
|        | 200        |                     |          |          |            | 65        | 8:15 AM            | 8            | 1     | 7-Apr  |
|        | 160        |                     |          |          |            |           | 9:30 AM            | 14           | 2     |        |
| 225    | 225        |                     | 1        | 4-Apr    |            |           | 2:00 PM            | 17           | 3     |        |
| 860    | 225        |                     | 4        | 5-Apr    |            |           | 3:30 PM            | 10           | 4     |        |
|        | 225        |                     |          |          |            |           | 6:15 PM            | 16           | 5     |        |
|        | 200        |                     |          |          |            | 51        | 12:00 PM           | 13           | 6     | 8-Apr  |
| 1710   | 210        | 4.45 DM             | 0        | C A      |            |           | 2:45 PM            | 11           | 7     |        |
| 1710   | 225        | 1:45 PM             | 8        | 6-Apr    |            |           | 5:30 PM            | 13           | 8     |        |
|        | 225<br>225 | 2:30 PM<br>3:00 PM  |          |          |            | 16        | 7:00 PM<br>5:30 PM | 14<br>16     | 10    | 11-Apr |
|        | 220        | 3:30 PM             |          |          |            | 40        | 3:00 PM            | 14           | 11    | 13-Apr |
|        | 225        | 5:00 PM             |          |          |            | 40        | 4:30 PM            | 12           | 12    | 13-Арі |
|        | 140        | 5:20 PM             |          |          |            |           | 7:00 PM            | 14           | 13    |        |
|        | 225        | 6:15 PM             |          |          |            | 33        | 10:30 AM           | 12           | 14    | 18-Apr |
|        | 225        | 6:37 PM             |          |          |            | 33        | 3:30 PM            | 10           | 15    | то-дрі |
| 1125   | 225        | 2:50 PM             | 5        | 7-Apr    |            |           | 5:00 PM            | 11           | 16    |        |
| 1120   | 225        | 3:40 PM             | - 5      | 7 // /   |            | 41        | 11:00 AM           | 11           | 17    | 19-Apr |
|        | 225        | 4:20 PM             |          |          |            |           | 12:00 PM           | 15           | 18    | 107101 |
|        | 225        | 5:30 PM             |          |          |            |           | 3:30 PM            | 15           | 19    |        |
|        | 225        | 6:20 PM             |          |          |            | 43        | 7:30 AM            | 10           | 20    | 21-Apr |
| 750    | 225        | 11:00 AM            | 4        | 8-Apr    |            |           | 11:00 AM           | 9            | 21    | 217191 |
|        | 225        | 2:20 PM             |          |          |            |           | 2:15 PM            | 13           | 22    |        |
|        | 170        | 2:50 PM             |          |          |            |           | 5:00 PM            | 11           | 23    |        |
|        | 130        | 4:00 PM             |          |          |            | 36        | 11:00 AM           | 15           | 24    | 22-Apr |
| 1505   | 250        | 1:00 PM             | 7        | 11-Apr   |            |           | 3:45 PM            | 10           | 25    |        |
|        | 220        | 3:30 PM             |          |          |            |           | 5:00 PM            | 11           | 26    |        |
|        | 225        | 4:30 PM             |          |          |            | 18        | 1:30 PM            | 8            | 27    | 23-Apr |
|        | 220        | 5:32 PM             |          |          |            |           | 3:30 PM            | 10           | 28    |        |
|        | 225        | 6:22 PM             |          |          |            | 8         | 4:30 PM            | 8            | 29    | 24-Apr |
|        | 205        | 7:14 PM             |          |          |            |           |                    |              |       |        |
|        | 160        | 8:15 PM             |          |          |            |           |                    |              |       |        |
| 265    | 185        | 5:00 PM             | 2        | 13-Apr   |            |           |                    |              |       |        |
|        | 80         | 6:00 PM             |          |          |            |           |                    |              |       |        |
| 220    | 220        | 5:00 PM             | 1        | 17-Apr   |            |           |                    |              |       |        |
| 1770   | 200        | 9:00 AM             | 8        | 18-Apr   |            |           |                    |              |       |        |
|        | 220        | 9:50 AM             |          |          |            |           |                    |              |       |        |
|        | 225        | 11:00 AM            |          |          |            |           |                    |              |       |        |
|        | 225        | 12:30 PM            |          |          |            |           |                    |              |       |        |
|        | 225        | 2:50 PM             |          |          |            |           |                    |              |       |        |
|        | 225        | 3:28 PM             |          |          |            |           |                    |              |       |        |
|        | 225        | 4:10 PM             |          |          |            |           |                    |              |       |        |
| ·      | 225        | 5:30 PM             |          |          |            |           |                    |              |       |        |
| 675    | 225        | 9:00 AM             | 3        | 19-Apr   |            |           |                    |              |       |        |
|        | 225        | 10:30 AM            |          |          |            |           |                    |              |       |        |
| 0050   | 225        | 1:00 PM             | 40       | 04 4     |            |           |                    |              |       |        |
| 2250   | 225        | 8:30 AM             | 10       | 21-Apr   |            |           |                    |              |       |        |
|        | 225<br>225 | 9:30 AM<br>10:15 AM |          |          |            |           |                    |              |       |        |
|        | 225        | 10:42 AM            |          |          |            |           |                    |              |       |        |
|        | 225        | 11:10 AM            |          |          |            |           |                    |              |       |        |
|        | 225        | 12:10 PM            |          |          |            |           |                    |              |       |        |
|        | 225        | 1:15 PM             |          |          |            |           |                    |              |       |        |
|        | 225        | 3:00 PM             |          |          |            |           |                    |              |       |        |
|        | 225        | 4:10 PM             |          |          |            |           |                    |              |       |        |
|        | 225        | 5:30 PM             |          |          |            |           |                    |              |       |        |
| 225    | 225        | 10:45 AM            | 1        | 22-Apr   |            |           |                    |              |       |        |
| 220    | ZZO        | 10. 10 7 1141       |          | 22 / (p) |            |           |                    |              |       |        |
|        |            |                     | 13       |          | count      |           |                    | 29           |       | 10     |
|        | 12160.0    |                     | 57       |          | sum        |           |                    | 351          |       | .0     |
| 2250.0 | 250.0      |                     | 10       | 22-Apr   | max        | 65.0      |                    | 17.0         |       | 24-Apr |
| 220.0  | 80.0       |                     | 1        | 1-Apr    | min        |           |                    | 8.0          |       | 7-Apr  |
|        | 213.3      |                     | 4.4      | 11-Apr   | average    |           |                    | 12.1         |       | 16-Apr |
|        | 225.0      |                     | 4.0      | 11-Apr   | median     |           |                    | 12.0         |       | 18-Apr |
|        |            |                     | -        | 21       | difference | 22.0      |                    |              |       | 17     |
|        |            | 34.6                | p/syrup  |          |            |           |                    |              |       |        |
|        |            | 2.5                 | [sugar]  |          |            |           |                    |              |       |        |
|        |            |                     |          |          |            |           |                    |              |       |        |

Table 6. Summary from all years

| maximum   | minimum  | average  | sum    |   | 2014      | 2013      | 2012      | 2011     | 2010      | 2009      | 2008     | 2007      | 2006   | 2005   | 2004     | 2003     | 2002   | 2000   | 1999   | 1996            | 7661                | 1990   |     | 1988        | 1085     | 1982         | 1978   | 1974      | 1968   |       | 1966   | 1964      | 1958 | 1954   | 1953 | 1951   | 1948  | 1945      | 1943 | 1942   | Year   | updated: May 29, | 1942 - present | 1942 - present |
|-----------|----------|----------|--------|---|-----------|-----------|-----------|----------|-----------|-----------|----------|-----------|--------|--------|----------|----------|--------|--------|--------|-----------------|---------------------|--------|-----|-------------|----------|--------------|--------|-----------|--------|-------|--------|-----------|------|--------|------|--------|-------|-----------|------|--------|--|------------------|----------------|----------------|
| ω         |          | 1353     | 43298  |   | 1493      | 1326      | 1100      | 1200     | 938       | 1287      | 1000     | 965       | 1000   | 600    | 600      | 539      | 600    | 1200   | 1200   | 1200            | 1000                | 1300   |     | 2000        | 1050     | 1850         | 1850   | 3700      | 3100   | 100   | 2200   | 1500      | 8    | 800    |      |        |       | 1750      | 900  | 150    | # of Taps  |                  |                | 1              |
| 560       | 39       | 241      | 7223.8 |   | 317       | 557       | 39        | 126      | 130       | 268       | 227      | 116       | 124    | 45     | 99       | 146      | 107    | 223    | 181    | 277             | 344                 | 364    | 3   | 348         | 780      | 271          | 373    | 369       |        | 8     | 350    | 180       |      | 210    |      | 273    |       | 246       |      | 45     | total syrup (gal)  | 2014             |                | -              |
|           | 1440     |          | 280594 |   | 12160     | 19055     | 2410      | 5615     | 5345      | 10840     | 9360     | 3680      | 5031   | 2770   | 5513     | 6519     | 3413   | 10092  | 7369   | 10631           | 1440                | 11384  |     | 12850       | 21179    | 9758         | 14674  | 15379     | 16447  | 10000 | 13000  |           |      |        |      | 9000   |       | 8600      |      | 1440   | total sap collection<br>(gal)                              |                  |                |                |
| 24.0      |          |          | 53.5   |   | 12.5      | 24.0      |           |          | 4.5       | 12.5      |          |           | ļ.     | ļ      |          |          |        |        |        |                 | +                   | +      |     | -           |          |              |        | 1         | +      | +     | 1      | -         |      | Н      | -    | _      | -     | L         | ŀ    | L      | Wood used (cords)  | +                | ļ              | _              |
| 19-Mar    | 26-Feb   | 10-Mar   |        |   | 15-Mar    | 9-Mar     | 10-Mar    |          | 13-Mar    | 14-Mar    | 1-Mar    | 10-Mar    | 11-Mar | 5-Mar  |          |          |        |        | 26-Feb | 13-Mar          |                     | 9-Mar  | :   | O-IVIdi     | A<br>Mar | 16-Mar       | 19-Mar |           |        |       |        | I /-IVIai | Mor  |        |      |        |       |           |      |        | Taps placed  |                  |                |                |
| 26-Apr    | 24-Mar   | 15-Apr   |        |   | 22-Apr    | 26-Apr    | 24-Mar    |          | 11-Apr    | 13-Apr    | 18-Apr   | 21-Apr    | 9-Apr  | 16-Apr | 15-Apr   |          | 17-Apr |        | 10-Apr |                 |                     |        |     | 270         | 13-Apr   | 26-Apr       | 15-Apr |           |        |       |        |           |      |        |      |        |       |           |      |        | Taps Pulled  |                  |                |                |
| 7-Apr     | 7-Ma     | 25-Mar   |        |   | 7-Apr     | 5-Apr     | 22-Mar    | 2-Apr    | 23-Mar    | 23-Mar    | 29-Mar   | 24-Mar    | 24-Mar | 4-Apr  | 24-Mar   | 27-Mar   | 1-Apr  | 16-Mar | 18-Mar | 31-Mar          | ZO-IVIAI            | 26-Mar | 3 5 | 23-Mar      | 17-Ms    | 2-Apr        | 26-Mar | 3-Apr     |        |       |        | /-IVIdi   | 7 14 |        |      |        | 7-Anr | 16-Mar    |      | 28-Mar | first day syrup  |                  |                |                |
| ır 29-Apr |          |          |        |   | r 24-Apr  | r 29-Apr  | ır 31-Mar | r 11-Apr | ır 10-Apr | ır 14-Apr | 1        | ır 26-Apr |        |        | П        |          |        |        |        | r 24-Apr        | Т                   | Τ.     |     | Т           |          |              |        | r 20-Apr  | T      |       |        | IO-Api    |      | 23-Apr |      | 26-Apr | 4 5   | ır 12-Apr |      |        | last day syrup   | T                |                | 1              |
|           | N        |          | T      |   | or 16-Apr | or 16-Apr | ar 26-Mar | or 6-Apr | or 29-Mar | П         | or 8-Apr | or 11-Apr |        | П      |          |          |        |        |        | or 27-Mar       |                     |        |     | ı,          |          | _            |        | or 11-Apr | t      |       | T      | ٥         | -    | 9      |      | 9      | t     | 2         | l    | 9      |  | t                |                | +              |
| Apr 33.0  |          |          |        |   | Apr 17    |           |           |          |           | 5-Apr 22  |          | Apr 33    |        |        | 2-Apr 23 |          |        |        |        | Apr 24          |                     | Apr 16 |     | 0-Mar 16    |          | Αρ :<br>22 : |        | Apr 17    |        |       |        | _         |      |        |      |        |       |           |      |        | Mean Syrup date # days between first &                     |                  |                |                |
|           |          |          | 236    |   | П         | 19        | 2         | 5        |           | 8         |          | 6         | Τ      | Ī      |          |          |        |        | T      | 1 4             | Т                   | 3 12   | Т   | 1 =         |          | 12           |        | Т         | Ī      | Ī     | Ī      | Ī         |      |        |      |        | Ī     | Ī         |      | Γ      | # cooking days   | Ī                | l              |                |
|           |          |          | 711    | T | Т         |           | ω         |          |           | 27        |          | 13        | Т      | Т      |          |          |        |        | П      | 36 45           | Т                   | 2 4    |     | 37 -        |          | 42           |        |           | T      | Ī     | T      | T         | Ī    | П      |      |        | T     | T         |      | Ī      | batches finished   | T                | Ī              | 1              |
| 17        | ر<br>ت   |          |        |   | 12.1      | 11.6      | 13.0      | 10.5     | 11.8      | 9.9       | 9.5      | 10.5      |        | 7.5    | 9.9      | 8.6      | 8.9    | 6.8    | 8.2    | 7.7             | 9                   | 0.7    | 1 : | 9 -         | 7 0      | 6.5          | 6.4    | 5.9       |        |       |        |           |      |        |      |        |       |           |      |        | avg gal per batch  |                  |                |                |
| 33.5      | 9.0      | 24.0     |        |   | 31.7      | 29.3      | 19.5      | 25.2     | 21.7      | 33.5      | 25.2     | 19.3      | 17.7   | 9.0    | 12.4     | 29.1     | 21.4   | 24.8   | 15.1   | 21.0            | 20.7                | 30.3   | 0 0 | 31.6        | 300      | 22.6         | 26.6   | 24.6      |        |       |        |           |      |        |      |        |       |           |      |        | avg gal per cook day                                       |                  |                |                |
| 3-Apr     | 26-Feb   | 20-Mar   |        |   | 1-Apr     | 30-Mar    | 15-Mar    | 18-Mar   | 17-Mar    | 17-Mar    | 21-Mar   | 18-Mar    | 13-Mar | 24-Mar | 18-Mar   | 17-Mar   | 28-Mar | 6-Mar  | 26-Feb | 21-Mar          | 19-IVIal            | 22-Mar |     | 23-Mar      | 16-Mar   | 2-Apr        | 22-Mar | 3-Apr     | 23-Mar |       |        |           |      |        |      |        |       |           |      |        | first day sap  |                  |                |                |
| 26-Apr    | 24-Mar   | 11-Apr   |        |   | 22-Apr    | 26-Apr    | 24-Mar    | 10-Apr   | 29-Mar    | 13-Apr    | 19-Apr   | 14-Apr    | 10-Apr | 10-Apr | 5-Apr    | 9-Apr    | 13-Apr | 30-Mar | 8-Apr  | 4-Apr           | - <del>1</del> -XDI | 10-Apr |     | 6-Apr       | 11-Apr   | 22-Apr       | 15-Apr | 19-Apr    | 20-Apr |       |        |           |      |        |      |        |       |           |      |        | last day sap   |                  |                |                |
| 19        |          |          | 301    |   | 13        | 19        | СЛ        | 9        | 7         | 13        |          | 00        | Т      |        |          | =        |        |        |        | 17              |                     | h =    |     | 3 =         |          | ವ            |        | 72 2      | 5      |       |        | T         |      |        |      |        |       | Ī         |      |        | # sap collecting days                                      | Ī                |                |                |
| 13-Apr    |          |          |        |   | 11-Apr    | 13-Apr    | 19-Mar    | 31-Mar   | 23-Mar    | 1-Apr     | 4-Apr    | 1-Apr     | 28-Mar | 2-Apr  | 27-Mar   | 28-Mar   | 4-Apr  | 20-Mar | 24-Mar | Z4-Mar<br>Z-Apr | 20-IVIdi            | 31-Mar |     | 30-Mar      | 20-Mar   | 13-Apr       | 3-Apr  | 9-Apr     | 6-Apr  |       |        |           |      |        |      |        |       |           |      |        | mean sap collection date                                   | T                |                |                |
|           | r 19-Mar | r 31-Mar |        |   | 11-Apr    | 14-Apr    | 19-Mar    | 2-Apr    | 23-Mar    | 3-Apr     | 3-Apr    | 2-Apr     | 27-Mar | 4-Apr  | 26-Mar   | 29-Mar   | 6-Apr  | 20-Mar | 24-Mar | 8-Apr           | 2/-IVIdi            | 30-Mar |     | 30-Mar      | 31 -Mar  | 14-Apr       | 4-Apr  | 8-Apr     | 5-Apr  |       |        |           |      |        |      |        |       |           |      |        | Median sap collection date                                 | T                |                |                |
| 42        |          |          |        |   | 21        | 27        | 9         | 23       | 12        | 27        | 29       | 27        | 28     | 17     | 18       | 23       | 16     | 24     | 42     | 3 6             | . 5                 | 16     | ;   | 14          | 26       | 20           | 24     | 16 6      | 28     |       |        |           |      |        |      |        |       |           |      |        | Length sap season<br>(last - 1st collect day)              |                  |                |                |
| 2 121.0   |          |          |        |   | 57.0      | 87.0      | 14.0      | 29.0     | 53.0      | 53.0      | 41.6     | 21.0      | 28.8   | 15.8   | 31.5     | 37.3     | 19.5   | 57.7   | 42.1   | 60.7            | 02.7                | 65.1   | 3   | 73.4        | 121 0    | 55.8         | 83.9   | 87.9      | 94.0   | Ī     | I      |           |      |        |      |        |       | Ī         |      |        | # tanker loads   | Ī                | I              |                |
| 2925.0    |          |          |        |   | 2250.0    | 2925.0    | 795.0     | 1310.0   | 1915.0    | 1915.0    | 2025.0   | 1050.0    | 1006.3 | 525.0  | 1575.0   | 1225.0   | 1138.0 | 1925.0 | 992.3  | 1750.0          | 2100.0              | 1662.5 |     | 1807.8      |          | 1225.0       | 1943.0 | 2275.0    | 2800.0 |       |        |           |      |        |      |        |       |           |      |        | max daily sap collected                                    | Ī                |                |                |
| 481.0     |          |          |        |   | 220.0     | 225.0     | 295.0     | 225.0    | 80.0      | 80.0      | 200.3    | 87.5      | 175.0  | 57.8   | 175.0    | 175.0    | 175.0  |        |        | 87.5            |                     | 52.5   | 3   | 175.0       | 1170     | 350.0        | 481.0  | 175.0     | 175.0  |       |        |           |      |        |      |        |       |           |      |        | min daily sap<br>collectedd                                | Ī                |                |                |
| 1281.6    |          |          |        |   | 935.4     | 1002.9    | 482.0     | 623.9    | 763.6     | 833.8     | 780.0    | 460.0     | 503.1  | 307.8  | 551.3    | 592.6    | 487.6  | 1009.2 | 387.8  | 625.4           | 900.4               | 1034.9 | 000 | 1070.8      | 1245 8   | 750.6        | 1128.8 | 1281.6    | 1096.5 |       |        |           |      |        |      |        |       |           |      |        | average gal sap<br>collected per<br>collecting day         |                  |                |                |
| =         |          |          |        |   | 0.6       | 0.8       | 0.4       | 0.5      | 0.8       | 0.6       | 0.8      | 0.5       | 0.5    | 0.5    | 0.9      | <u>.</u> |        |        |        | 0.5             |                     | 0.8    |     | 0.0         |          |              | 0.6    |           |        |       |        |           |      |        |      |        |       |           |      |        | average gal sap<br>collected per tap per<br>collecting day |                  |                |                |
| 14.4      | 2.2      | 7.3      |        |   | 8.1       | 14.4      | 2.2       | 4.7      | 5.7       | 8.4       | 9.4      | 3.8       | 5.0    | 4.6    | 9.2      | 12.1     | 5.7    | 8.4    | 6.1    | 8.9             | 9                   | 0 00   | 2 : | 6.0         | 100      | 5.3          | 7.9    | 4.2       |        | ç     | D<br>D |           |      |        |      |        |       | 4.9       |      | 9.6    | Sap (gal) per tap per                                      |                  |                |                |
| 0.42      |          |          |        |   | 0.21      | 0.42      | 0.04      | 0.11     | 0.14      | 0.21      | 0.23     | 0.12      | 0.12   | 0.08   | 0.17     | 0.27     | 0.18   | 0.19   | 0.15   | 0.73            |                     | 0.28   | 3   | 0.23        | 200      | 0.15         | 0.20   | 0.10      |        | 9     | 0.16   |           |      | 0.26   |      |        |       | 0.14      |      | 0.30   | Syrup (gal) per tap  |                  |                |                |
| 1.68      |          |          |        |   | 0.85      | 1.68      | 0.14      | 0.42     | 0.55      | 0.83      | 0.91     | 0.48      | 0.50   | 0.30   | 0.66     | 1.08     | 0.71   | 0.74   | 0.60   | 0 0             | 0.00                | 1.12   |     | 0 70        | 1 1 1 1  | 0.59         | 0.81   | 0.40      |        | 0.04  | 0 0    | 0 49      |      | 1.05   |      |        |       | 0.56      |      | 1.20   | Syrup (qt) per tap   |                  |                |                |
| 61.8      | 31.3     | 40.6     |        |   | 38.4      | 34.2      | 61.8      | 44.6     | 41.1      | 40.4      | 41.2     | 31.7      | 40.6   | 61.6   | 55.7     | 44.8     | 31.9   | 45.3   | 40.7   | 38.4            | . 1                 | 31.3   |     | ر<br>م<br>م | 37.8     | 36.0         | 39.3   | 41.7      |        |       | 37 1   |           |      |        |      | 33.0   |       | 35.0      |      | 32.0   | sap/syrup ratio  |                  |                |                |
| 28.9      | 21.4     | 24.7     |        |   | 25.3      | 23.2      |           |          | 28.9      | 21.4      | !        |           |        |        |          |          |        |        |        |                 |                     |        |     |             |          |              |        |           |        |       |        |           |      |        |      |        |       |           |      |        | syrup/cord   |                  |                |                |
| 2.7       | 1.4      | 2.2      |        |   | 2.24      | 2.51      | 1.39      | 1.93     | 2.09      | 2.13      | 2.09     | 2.71      | 2.12   | 1.40   | 1.54     | 1.92     | 2.70   | 1.90   | 2.11   | 2.24            | 2 4                 | 2 7.75 | 1 6 | 3 !         | 2.27     | 2.39         | 2.19   | 2.06      |        | 1.01  | 33     |           |      |        |      | 2.61   |       | 2.46      |      | 2.69   | average sugar conc<br>from rule of 86                      |                  |                |                |
| 5.0       |          | 1.0      | T      |   | _         | _         | _         | _        | _         | _         | _        | _         | _      | _      | _        | _        |        |        |        | 2 2             |                     | 3 N    | , ( | c           | ıı l     | 4            | 4      | 2 4       | 2 4    |       | 0      | ח –       | 4    | _      | 2    | 2 -    | ۵ د   | 0 0       | _    |        | interval between tapping (years)                           | Ī                | Ī              |                |

## **Table 7. Sarah's Syrup Snippets from 2014** (Fun facts by Sarah Gainey in her daily update emails sent to volunteer distribution list)

- 1. According to our records, March 19 is our average first date of sap collection. What will it be this year? Only time will tell...
- 2. Temperature conditions determine when sap flows out of the trees. We need nights below freezing and days above freezing for sap flow. Want to know more? Join Outdoor U's MJ Bach at her Thursday Forum presentation 'Saint John's Sweet Tradition: Maple Syrup' this coming Thursday, March 20 from 4:15-5:15 in Quad 346 at SJU. Rumor has it she will be performing her original maple syrup song!
- 3. Put the snow to good use! <u>'Sugar on Snow'</u> is a delicious maple syrup treat to make on fresh snow.
- 4. It may be an old tradition, but research on improving maple syruping methods continues at places of higher learning across the country. Check out this <u>research</u> from the University of Vermont on a new way to collect sap from young trees. Interesting, but I'd rather keep our old trees with their branches on.
- 5. In honor of the <u>maple syrup cook-off</u> for CSB/SJU students today at 7 pm at McKeown (stop by for some samples!), here is a <u>website</u> with some amazing recipes using real maple syrup!
- 6. I always love finding other people who get why we pour our heart and soul into making maple syrup. <a href="Sam Neumann">Sam Neumann</a> is an emerging author out of Boulder, Colorado whose book *Quitting Cold Stone* (And Other Struggles) includes a couple of brilliant paragraphs on how underrated pure maple syrup is (excerpt attached to this email).
- 7. Wow! It's a good thing we tap as many trees as we do. Hopefully we will never encounter any <u>exploding maple trees</u> that burst due to extreme pressure building up from a lack of tapping! (*April Fool's Day daily update*)
- 8. How long into the NPR story were you a believer?
- 9. Mike Leedahl is one of our amazing volunteers who demonstrates Native American maple syruping techniques during our festivals. One of his other many talents is writing and his latest entry on his 'Black Powder Beagles' blog is called 'The Liquid Gold of the Avon Hills.' Enjoy!
- 10. Looking for other people as into maple syrup as you are? Check out the Minnesota Maple Syrup Producers Association website and their latest newsletter (attached) by our very own Steve Saupe!

- 11. Are you up on your maple syrup facts? Try this <u>quiz</u> from Braingle on maple syrup. This syruper did very well, even though some of their facts are slightly out of date and slightly inaccurate. Bonus points if you can tell me which ones!
- 12. Looking for a new resource on how to make maple syrup at home? Check out *The Sugarmaker's Companion* by Michael Farrell. It includes information on making syrup from trees other than maple, including birch and walnut. One of our own staff members was inspired to a few Black Walnut trees in her yard this spring...we'll let you know how it tastes!
- 13. I'm hoping for this in my Easter basket!
- 14. Things are always easier to understand when in <u>cartoon form</u>.
- 15. This <u>song</u> is pretty good. But there is one I like better.
- 16. Here are the early statistics from this syruping year, as compiled by Steve Saupe:
  - Sap collected 12160 gals
  - Syrup produced 351 gal
  - Sap/syrup ratio 34.6
  - Avg sap sugar conc 2.5%
  - # of cooking days 10
  - # of sap collected days 13
  - # of tanker trips into woods 57
  - Sap collection season length 17 days
  - # of batches of syrup cooked on finishing stove 29
- 17. There are lots of great people all over the state of Minnesota who do what we do!
- 18. We taste tested the Black Walnut syrup in the office that MJ Bach, an Outdoor U staff member, made after tapping the walnut trees in her front yard. It's not maple syrup but it does taste good. I would use it to sweeten my coffee!
- 19. An official proclamation from the state of Minnesota!
- 20. The end of the syruping season can determined by a number of things, including when the temperatures stop fluctuating between freezing and thawing, when the buds burst on the trees, and/or when the syrupers are tired out and ready to move on to different things!

| Table 8: Analysis of Ac | tual Syrup Production du | uring the 2014 Season. |  |  |  |  |  |  |
|-------------------------|--------------------------|------------------------|--|--|--|--|--|--|
| Container size          | Number Jugged            | Volume (gallons)       |  |  |  |  |  |  |
| 4-liter glass jug       | 63                       | 66.6                   |  |  |  |  |  |  |
| 3-liter glass jug       | 182                      | 144.2                  |  |  |  |  |  |  |
| Gallon jug              | 66                       | 66.0                   |  |  |  |  |  |  |
| 5-gallon plastic pail   | 8                        | 40.0                   |  |  |  |  |  |  |
|                         |                          |                        |  |  |  |  |  |  |
| Total                   |                          | 316.8                  |  |  |  |  |  |  |

Table 9: Analysis of syrup samples from 2014 season. Sugar concentration was measured with a Misco Abbe Palm digital refractometer. If two values are reported, they were measured on different dates. Color was estimated using a color comparator kit from Vermont (Fancy – Medium Amber – Dark Amber – Grade B) which is basically equivalent to the new grade standards (Golden – Amber – Dark – Very Dark) that are reported below. The clarity was visually determined by estimating the degree of cloudiness (0-3) at the completion of the season; all samples were clear several weeks later with some cloudiness on the bottom of the bottle.

| Date     | Batch | Clarity | Color     | [Sugar]   |  |  |  |
|----------|-------|---------|-----------|-----------|--|--|--|
| April 8  | 9     | 0       | Dark      | 66.9/67.6 |  |  |  |
| April 11 | 10    | 1       | Dark      | 63.7/67.8 |  |  |  |
| April 13 | 11    | 1       | Very Dark | 68.1/68.4 |  |  |  |
|          | 12    | 2       | Very Dark | 66.8/67.5 |  |  |  |
|          | 13    | 2       | Very Dark | 66.4/66.9 |  |  |  |
| April 18 | 14    | 2       | Very Dark | 58.7/60.1 |  |  |  |
|          | 15    | 0       | Very Dark | 65.6/70   |  |  |  |
|          | 16    | 0       | Very Dark | 67.7/68.1 |  |  |  |
| April 19 | 17    | 1       | Very Dark | 67.2/66.8 |  |  |  |
|          | 18    | 1       | Very Dark | 66.5/68   |  |  |  |
| April 21 | 20    | 1       | Amber     | 68.9      |  |  |  |
|          | 21    | 2       | Very Dark | 67.7      |  |  |  |
|          | 22    | 1       | Very Dark | 68.5      |  |  |  |
|          | 23    | 0       | Very Dark | 68.3      |  |  |  |
| April 22 | 24    | 1       | Very Dark | 66.8      |  |  |  |
|          | 25    | 2       | Very Dark | 67.5      |  |  |  |
|          | 26    | 3       | Dark      | 65.9      |  |  |  |

#### Table 10. Summary of Maple Stats – 1942 – 2014.

compiled by

# Stephen G. Saupe College of St. Benedict/St. John's University Biology Department Collegeville, MN 56321

Date: May 29, 2014



This document provides a summary of data from the St. John's Maple Syrup Operation. Ranges are shown in parentheses. Data prior to 1972 are incomplete because they were destroyed when the original sugar house burned down.

#### <u>General</u>

| First season to make syrup                                      | 1942 |
|---|------|
| Number of years since St. John's began making syrup             | 72   |
| Number of seasons during which St. John's has made syrup        | 38   |
| Average time (in years) between successive syrup-making seasons | 1.9  |

#### **Tapping Data**

| Average date trees are tapped             | 10 March (26 Feb – 19 Mar) |
|---|----------------------------|
| Average date taps are removed             | 15 April (24 Mar – 26 Apr) |
| Average number of taps (for all seasons)  | 1353                       |
| Average number of taps (prior to 2002)    | 1619                       |
| Average number of taps (since 2002)       | 989.1                      |
| Fewest number of taps (& year installed)  | 150 (1942)                 |
| Maximum number of taps (& year installed) | 3700 (1974)                |

#### **Sap Collection Data**

| Average first date of sap collecting   | 20 March                 |
|--|--------------------------|
| Earliest date on which sap was first collected (& the year)                                      | 26 Feb <i>(1999)</i>     |
| Latest date on which sap was first collected (& the year)  | 3 Apr <i>(1974)</i>      |
| Average last date of sap collecting  | 11 April                 |
| Earliest date on which sap was last collected (& the year)                                       | 24 March <i>(2012)</i>   |
| Latest date on which sap was collected (& the year)  | 26 April ( <i>2013</i> ) |
| Average number of days during the season on which sap was collected                              | 12 (5 – 19)              |
| Average number of days between first and last sap collection (= length of sap production season) | 22.3 (9 – 42)            |

#### **Sap Volume Data**

| Most sap collected, in gallons, during a season (& the year) | 21,179 <i>(1985)</i> |
|--|----------------------|
| Average sap collected, in gallons, during a season           | 9676                 |
| Average sap collected, in gallons, on a collecting day       | 793 (308 – 1282)     |
| Most sap collected, in gallons, on a single day (& the year) | 2952 (2013)          |
| Average gallons of sap collected per tap                     | 7.3 (2.2 – 14.4)     |
| Average gallons of sap collected per tap per collecting day  | 0.6 (0.3 – 1.1)      |

#### Sugar House & Evaporator Info

| Year sugar house constructed (first season of use/syrup production)                       | 1971 (1972)              |
|---|--------------------------|
| Year South addition added to sugar house  | 1999                     |
| Year West addition to sugar house completed and wood shed renovated                       | 2009                     |
| Teaching Evaporator (Little Larry) size   | 2 ft. wide x 6 ft. long  |
| Teaching Evaporator (Little Larry) capacity (gallons / hour): sap boiled / syrup produced | 20 / 0.5                 |
| Production Evaporator (Big Burnie) size   | 3 ft. wide x 14 ft. long |
| Production Evaporator capacity (gallons / hour): sap boiled / syrup produced              | 200 / 5                  |

#### **Syrup Production Data**

| Average gallons of syrup produced during a season (data for all seasons) | 241                |
|--|--------------------|
| Average gallons of syrup produced during a season (since 2002)           | 177 (45 – 268)     |
| Maximum gallons of syrup produced in a season                            | 560 (1985)         |
| Minimum gallons of syrup produced in a season (& the year)               | 39 ( 2012)         |
| Average quarts of syrup per tap  | 0.75 (0.14 – 1.7)  |
| Wood used (gallons syrup / cord burned)                                  | 24.7 (21.4 – 28.9) |

#### **Sugar Concentration Data**

| Average sap/syrup ratio  | 40.6 (31.3 – 61.8) |
|--|--------------------|
| Average seasonal sugar content of sap, in percent              | 2.2%               |
| Lowest seasonal sugar content of sap, in percent (& the year)  | 1.4% (2005)        |
| Highest seasonal sugar content of sap, in percent (& the year) | 2.7% (1990)        |

| Table 11. Great moments in Saint John's Maple Syrup History – A Summary of the |                |   |
|--|----------------|---|
| Maple Sap Award Winners  |                |   |
| Year   | Award Winner   | Great Moment                                      |
| 2014   | Tom Kroll      | Forgetting to order desperately need gallon jugs  |
| 2013   | Gary Gillitzer | Driving a full sap tank into the woods to collect |
|  |                | more sap  |



Figure 1. Tom Kroll & Sarah Gainey training tapping crews on Tapping Day



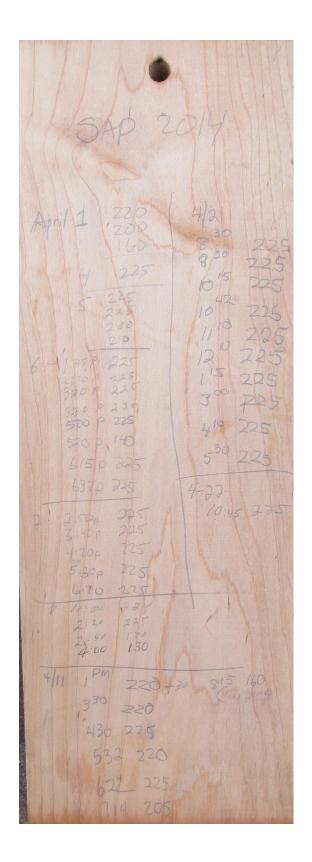
Figure 2. Jenny Kutter, Ben Carlson & Sarah Gainey display a sign used in the spile study.



Figure 3. Erin Wissler (CSB '14) showing how to tapping a maple on Tapping Day. Note the green paintball dot identifying the tree as a sugar maple.



Figure 4. Chris Beranek (SJU '14) tapping in a spile on Tapping Day.



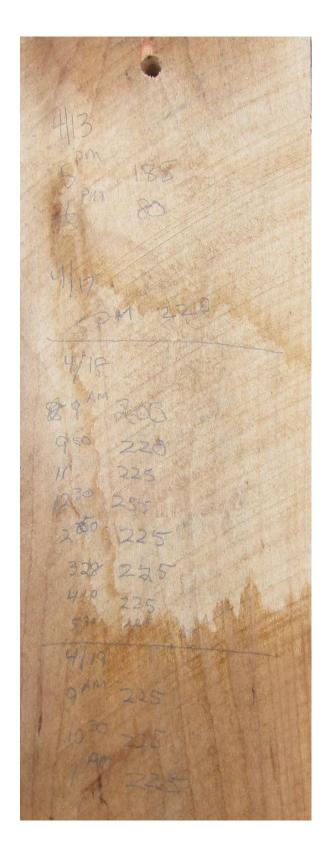


Figure 5. Board (*left – front; right – back*) showing sap collection records for 2014

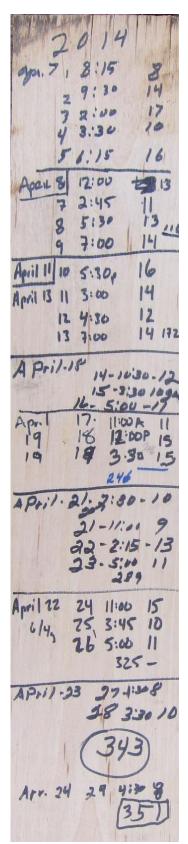


Figure 6. Board showing syrup production records for 2014

| SWEET 2014   |      | ZUOI T |
|--------------|------|--------|
| Jenna P      | 129  |        |
| Gwyneth      | 170  |        |
| Gary         | 246  |        |
| MI           | 219  |        |
| Al<br>Jean   | 22.2 |        |
| Kartie J.    | 272  |        |
| Kevin M.     | 287  |        |
| Br. Walter   | 329  |        |
| BILL M       | 333  |        |
| Amy S.       | 367  |        |
| Steve<br>Dan | 390  |        |
| Linda M.     | 456  |        |

Figure 7. Sweet Predictions Contest guesses



Figure 8. Brother Walter Kieffer (left) and Tom Kroll, winners of the 2014 Sweet Predictions and Maple Sap awards, respectively.



Figure 9. Syrup samples from 2014. Top row: Batch 9 (April 8), Batch 10 (April 11), Batch 11 - 13 (April 13). Middle row: Batch 14 - 16 (April 18), Batch 17 - 18 (April 19). Bottom row: Batch 20 - 23 (April 21), Batch 24 - 26 (April 22). There is no batch 19 sample.

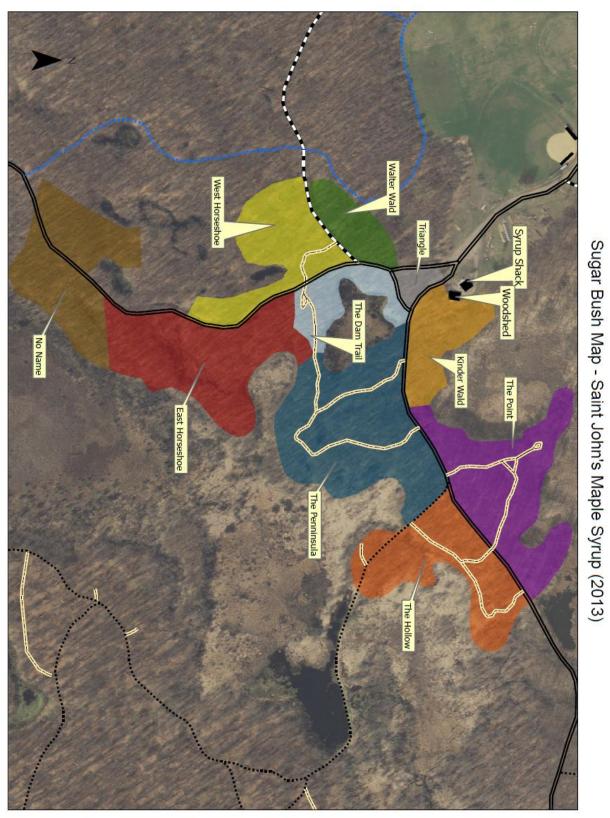


Figure 10. Map of the Saint John's Sugar Bush stands. Image provided by Jean Lavigne, Ben Carlson and Tom Kroll.



Figure 11. Advertisement for the second maple festival. *Image from Saint John's Outdoor University program.* 



Figure 12. Mike Leedahl chatting with visitors at the Native American area at the March  $29^{th}$  festival. *Image by Amy Anne Saupe*.



Figure 13. Katie and Gwyneth Lavigne-John staff the nature booth at the March 29<sup>th</sup> festival. Image by Amy Anne Saupe.



Figure 14. The Schwietz family being transported to the Saint John's Sugar House for a special tour and blessing of the evaporators. Image by Amy Anne Saupe.



Figure 15. Tom Kroll (center) and Br. Walter Kieffer, O.S.B (second from left) welcome the Schwietz family to the Saint John's sugarhouse. *Image by Amy Saupe*.



Figure 16. Abbot John Klassen, O.S.B., preparing to bless the evaporators, Big Burnie and Little Larry. *Image by Amy Anne Saupe*.



Figure 17. Larry & Carol Schwietz enjoying maple syrup sundaes and hot chocolate at the March 29<sup>th</sup> festival. *Image by Amy Anne Saupe*.



Figure 18. Larry Schwietz (left) accepting a certificate of appreciation from the Saint John's Maple Syrup Operation present by Tom Kroll (right). Image by Amy Anne Saupe.



Figure 19. Certificate presented to the Schwietz family for their contributions to the Saint John's Maple Syrup Operation.



Figure 20. Core Crew members Dan Weber, Bill Mock and Br. Walter Kieffer, O.S.B. (left to right) cook pancakes at the Volunteer Appreciation Supper.



Figure 21. Volunteers fill their plates with pancakes, sausages and Saint John's maple syrup while Core Crew member Al Meiers looks on.



Figure 22. President Michael Hemmesath welcomes the guests at the Volunteer Appreciation Dinner.

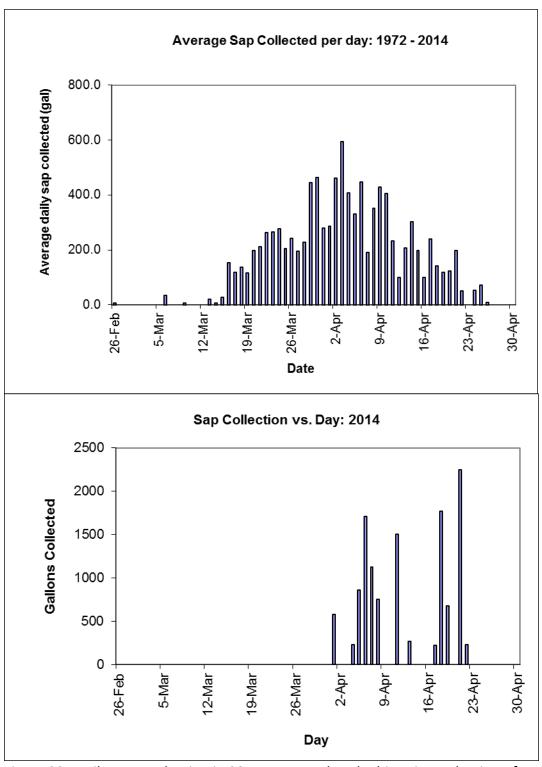


Figure 23. Daily sap production in 2014 compared to the historic production of sap.

Figure 23. Licensure of the Saint John's Maple Syrup Operation received from Stearns County Environmental Services



Stearns County Environmental Services 705 Courthouse Sq Rm 343 St. Cloud, MN 56303 320.656.3616

Type: Full
Date: 04/08/14
Time: 10:00:00
Report: 4302141010

#### Food and Beverage Establishment Inspection Report

Page 1

Location:

ST JOHN'S UNIVERSITY MAPLE SYRUP PROCESSING PO BOX 2900

COLLEGEVILLE, MN56321

Steams County, 73

-License Categories:

MSPL

Expires on: 12/31/14

Establishment Info: ID#: 5226 Risk: High

Announced Inspection: Yes

- Operator:

ST JOHN'S ABBEY STEPHANIE YOUNG Phone #: 320-363-2900 ID #: 2

The violations listed in this report include any previously issued orders and deficiencies identified during this inspection. Compliance dates are shown for each item.

No NEW orders were issued during this inspection.

Total Critical Orders This Report:

Total Non-Critical Orders This Report: 0

- -THE SAP WAS JUST STARTING TO FLOW A BIT AT 10 AM DURING THIS INSPECTION.
- -TREES HAVE BEEN TAPPED SINCE MARCH 15TH AND THE SAP IS FLOWING WELL.
- -ALL THREE EVAPORATORS WERE UP AND RUNNING DURING TODAY'S INSPECTION.
- -THIS FACILITY IS STILL USING FOOD GRADE BAGS AND FIVE GALLON PAILS TO COLLECT SAP FROM THE TREES. SAP IS THEN DUMPED INTO LARGE PLASTIC BARRELS AND TRANSPORTED TO THE SUGAR SHACK TO BE STORED IN BULK TANKS OUTSIDE THE SHACK. FROM THESE BULK TANKS, THE SAP IS PIPED INTO THE EVAPORATOR USING FOOD GRADE PLASTIC HOSE.
- -THE SAP IS HEATED IN THE LARGE EVAPORATOR AND THEN FILTERED TO REMOVE THE SUGAR SAND PRIOR TO BEING POURED INTO THE SMALL EVAPORATOR WHERE IT IS HEATED ONCE AGAIN PRIOR TO BEING FILTERED AGAIN, AND THEN TRANSPORTED TO THE KITCHEN IN STAINLESS CONTAINERS. SAP THAT WILL BE PLACED IN SMALL BOTTLES FOR GIFTS ETC., IS HEATED ONE MORE TIME PRIOR TO BEING BOTTLED.
- -ALL CONTAINERS USED FOR SAP COLLECTION AND TRANSPORT ARE SANITIZED WITH A CHLORINE SOLUTION OF 50-100 PPM, AS ARE THE BULK TANKS, EVAPORATORS, AND HOSE.
- -THE SPIELS ARE AUTOCLAVED AFTER EACH SEASON TO KILL ANY PATHOGENIC SUBSTANCES.

jane.knott@co.stearns.mn.us

Full Type: 04/08/14 Date: 10:00:00 Report: 4302141010

ST JOHN'S UNIVERSITY

### Food and Beverage Establishment Inspection Report

Page 2

-ALL SYRUP PRODUCED IS STILL USED ON THE ST JOHNS AND ST BENS CAMPUSES, AS WELL AS FOR SOME GIFTS. NO SYRUP IS SOLD.

NOTE: All new food equipment must meet the applicable standards of NSF International. Plans and specifications must be submitted for review and approval prior to new construction, remodeling or alterations.

| I acknowledge receipt of the Stea<br>4302141010 of 04/08/14. | arns County inspection report number |
|--|--------------------------------------|
| Certified Food Manager: N/A                                  |                                      |
| Certification Number: Expir                                  | res:/ /                              |
| Inspection report reviewed with person in cha                | arge and emailed.                    |
| Signed:  | Signed: Gare Knot                    |
| STEVE SAUPE  | Jane Knott                           |
| BIOLOGY PROFESSOR  | Environmental Health Specialist      |
|  | Stearns Environmental Services       |
|  | 320.656.3613                         |



# Saint John's Maple Syrup Mission Statement

The mission of the Saint John's Maple Syrup operation is to continue the long-standing Benedictine tradition of making maple syrup. Since 1942 the monks and their friends have gathered together to tap trees, collect sap and boil it down to produce a heavenly confection that is a testament to the forest stewardship of the Benedictine community. In addition, we strive to provide opportunities for the Saint John's community, including monks, students, and the public at-large, to learn about, and participate in, the process of making this sustainable forest product.

updated: May 2012

## Saint John's Maple Syrup **Goals & Objectives**

In 2001, Abbot John Klassen, OSB, requested that the Saint John's Arboretum take joint responsibility with the Abbey for the Saint John's Maple Syrup operation. A Mission Statement (above) and the following goals and objectives were established:

**Goals**. The goals of the Saint John's Maple Syrup operation are to:

- 1. maintain the tradition of Benedictine syrup-making on campus
- 2. provide educational opportunities for the Saint John's community including monks, students, staff and the general public
- 3. provide the Abbey with maple syrup

**Objectives**: To accomplish the goals elucidated above, the specific objectives of the Saint John's Maple Syrup operation are to:

- 1. annually produce maple syrup and welcome visitors in the Benedictine tradition
- 2. collect sap and make syrup from approximately 1000 taps
- 3. make enough syrup to meet the needs of the Abbey and Arboretum (including festivals, visitors, and guests) and to reward our volunteers.
- 4. provide educational opportunities for CSB/SJU students, pre-college students, and the Saint John's community.
- 5. host annually a Community Tapping Day and Maple Syrup Festivals

updated: May 2012



## A Blessing - by Walter Kieffer, O.S.B.

Oh, God of all goodness.

In the beginning you created the earth and divided it between the lands and the waters.

On the lands you created all kinds of vegetation; plants and trees of all kinds, and commanded them to cover the earth, providing both shelter and food for all.

Of the multitude of trees you have given us in this forest, you gave us the sugar maple to provide your gift of sweet sap from the healthy trees, and fuel for the cooking from the old and culled trees.

Today, following the rich traditions of our native brothers and sisters, we ask your blessing on this spring ritual of sapping.

May all the tap holes be clean and of a correct depth.

Help us to tap the spiles correctly – hard enough to seal the spile and hold the bag, but without damaging the tree, splitting the wood and losing the sap.

We ask your blessing on this season's collecting, boiling, jugging, cleanup and wood restocking.

May you reward our labors with a fruitful harvest.

Lord, we ask your blessing on all nature.

Protect the woods and waters of our lands for generations to come.

Bless all who come out to work, observe, and visit.

May we be ever mindful of all gifts you provide for us.

We make this prayer as always through Christ our Lord, and in the power of your Holy Spirit. Amen.