Maple Syrup Season 2018 – Summary

by

Stephen G. Saupe

CSB|SJU Biology Department
Collegeville, MN 56321; ssaupe@csbsju.edu

Date Prepared: May 29, 2018

<u>Overview</u>: This report documents the activities of the Saint John's Maple Syrup operation during the 2018 season. Saint John's began making syrup in 1942, making this season the 76th year. In the early days, the monks and their friends would make syrup every two or three years. Since about 2000 when the Outdoor U program became co-partners, the operation is run on an annual basis. In 2018 we installed 1589 taps, produced 251 gallons of syrup and welcomed more than 3,100 visitors, volunteers, and students to operation. Though we only made an 84% crop, by any other measure the Saint John's Maple Syrup Operation was a huge success and truly reflects the Benedictine values that characterize our institutions.

<u>Staff</u>: Br. Walter Kieffer, OSB, was the leader of the operation. He was assisted by the Core Crew (Gary Gillitizer, Jean Lavigne, Al Meiers, Bill Mock, Stephen Saupe, and Dan Weber), as well as Darrell Ashfield, Mark Ludowese, Jim Preusser, Harold Zip, and a host of other volunteers (Figures 36-39). Saint John's Outdoor University staff members – Sarah Gainey (Figure 35), Kyle Rauch, Jenny Kutter, Ashley Walker, and John Geissler – provided additional support.

At least 144 volunteers including students, faculty, staff, and friends joined Br. Walter and the crew. These volunteers collectively donated more than 1165 hours to the operation (**Table 4**). The hours are self-reported by the volunteers in our online database. The motivation for volunteers to keep track of hours is that they are rewarded for their participation by receiving an amount of syrup proportional to how much time they donate. Adding together the time worked by the Core Crew and other volunteers, at least 1771 hours went into the production of Saint John's Maple Syrup during 2018 (**Table 4**).

Organizing a large group of people can be a daunting task, but the Outdoor University staff does an amazing job. Quite a few email and text messages are exchanged between the crew to arrange activities. To alert the public, Sarah maintains a blog and sends regular "Maple Syrup Updates" by emails to volunteers who have signed up to be on the distribution list. To encourage volunteers to read the updates, Sarah includes informational and entertaining "Snippets." (Table 11).

Outdoor U made buttons again this year for all participants/volunteers. This year, the buttons were craft paper brown and designed by Ella Grote and AnnMarie Backstrom. Past button

colors and designers are summarized in **Table 13.** Steve created a framed display of past buttons (**Figure 1**).

<u>Tapping</u>: Motivated by beautiful weather (40+ F), on Valentine's Day Br. Walter, Gary, Jim and Steve tapped the 3/16th gravity vacuum pipelines on the east side of the dam (**Figures 8 & 9**). Three lines with 49 taps were installed. On Feb 16, Br. Walter, assisted by Dan, Steve, and Amy Saupe finished the remainder of the pipelines in the Hollow and North Point and also tapped about 125 drops in No Name Plus.

The rest of the taps (excluding the educational ones) were installed on Tapping Day – Feb 24 (Figures 3 & 4). Kyle prepared the Tapping Day plan (Figure 5). Tapping crew leaders (Figure 6) met at 9 AM for a training session by Kyle. Steve provided a little assistance. Leaders were provided with tapping instructions including a handout documenting correct procedures (Figure 2). After the training, everyone had lunch at the Refectory and then returned to meet the volunteers/participants. Each Tapping Crew was assigned to tap a different section of the sugarbush (Figure 5 & Appendix 4). As usual, one of the highlights of Tapping Day was Br. Walter's traditional prayer (Figure 7, Appendix 3). About 120 volunteers and crew participated (Table 4, Figures 10 & 11). It began to snow heavily just as tapping was completed. This made visibility difficult. As a consequence Kyle inadvertently backed into a tree and shattered the rear windscreen of his Jeep (Figure 12), which earned him a nomination for a Sap Award (see below).

It was another early year for tapping. If you consider that Br. Walter and helpers first installed some pipelines on Feb 14th, this ties for the earliest we've ever tapped. However, even if we use Tapping Day (Feb 24th) as our first date of tapping, this was the second earliest tapping date on record.

By the end of the season, a total of 1589 taps had been installed. These included: (a) six $3/16^{th}$ gravity vacuum lines: Dam 1-8 trees, 13 taps; Dam 2-5 trees, 9 taps; Dam 3 (closest to 194) – 18 trees, 27 taps; Hollow East – 13 trees, 22 taps; Hollow West – 10 trees, 16 taps; North Point – 10 trees, 16 taps (**Figures 15** & **16**); (b) drop pails – 16 plastic spiles connected to a three-foot 16 for 16 dropline. (**Figure 13**); (c) five gallon pails hung on trees (**Figure 14**). These were the most common collection method; and (d) bags and holders – primarily used in the education areas. Anecdotally, it appeared that there was considerably more squirrel damage on the bags this year than last year.

Sap flow data from each of the four collection methods are being analyzed to determine their effectiveness. **Table 14** compares some of the pros and cons of the 3/16th vacuum lines and drop pails. It was necessary to periodically check the gravity vacuum lines to insure that there were no leaks (**Figures 15** & **16**).

<u>Pulling Taps/Clean Up</u>: The taps were pulled beginning on April 29th. The job was finished the next day (Apr 30). This was the latest date on record that taps were ever pulled.

Clean-up was made easy with the official "Walter Washer" bucket cleaner (Figures 17 & 18). A washing station was set up in which the dirty buckets were first given to a prewash person who did a quick scrub to remove mold. The bucket was then passed to the next person who put the bucket on the mechanical washer. The clean bucket was then rinsed and sanitized, and stacked to dry. Amazingly, all of the buckets – roughly 1000 – were washed in a single day! (Figure 19)

To bring the buckets back to the sugar shack at the end of the season, the buckets are typically stacked together and the stacks hauled on a trailer pulled by a tractor. One drawback of this method is that the buckets tend to stick together and are hard to separate for washing. This year, Br. Walter and crew designed and built a "Bucket Cage" to haul the buckets (Figure 20). The cage was an 8-foot tall fenced area on a trailer. A tractor hauled the cage into the sugarbush and the buckets were tossed into it much like a game of basketball (Figure 21). It required about 2.5 trips to bring in all of the buckets in the cage (Figure 22). Once at the shack, the cage was backed up to the washing station, the back door opened and the buckets removed and handed to the washers.

<u>Sap Production</u>: Sap production records, as is tradition, were maintained on scrap wood (**Figure 23**). The 2018 data are summarized in **Tables 1**, **3**, & **5**. Sap data for all years for which we have records are summarized in **Table 6**.

Though we tapped early (Feb 24th), our first recorded sap collection didn't occur until March 17th, three weeks later (**Figures 23 & 24, Table 5**). After Tapping Day the weather turned cold and sap flow stopped. As a result, the first sap collection was March 17th, which coincidentally, is the historical average first date of sap collecting (**Table 7**). Overall, our records show that there is a trend toward earlier sap flow (**Figure 26**).

The last sap for the year was collected on April 29th, which is latest date on record. This is 2.5 weeks later than our historic average date for last collecting sap (April 11th) (see **Figure 23**; **Tables 5, 6 & 7**). **Figure 24** compares sap flow this year with the previous season (2017). It clearly shows that this was a much later year. **Figure 25** shows sap flow on various dates from all seasons. The usual peak sap flow occurs in late March and early April.

Considering the early tapping date and late tap-removal date, it made for a long season – 43 days from first to last sap collection. It was 73.4% longer than our historical average (24.8 days; **Table 7**). Typically, a long season translates into more days on which sap is collected (**Figure 28**) and ultimately more sap and syrup (**Figure 27**). Unfortunately, it was not true this year. Though it was a long season, there were only 14 days on which we collected sap, which is only 13.9% more than average (12. 4 days). This difference reflects the long cold winter we experienced this season.

A volume of 8715 gallons of sap was collected (**Tables 1**, **3**, & **5**). The largest daily sap collection during the season was 1705 gallons on April 19th (**Table 1**). Based on the number of taps, it was a lower year for sap production. We collected 5.5 gallons of sap per tap compared to our average of 7.3 (**Tables 1**, **5**, & **6**), or in other words, about 25% less sap than expected. Perhaps

the most important reason for the lower sap yield is the weather. As noted, there were few sap collection days.

Syrup Production: Syrup production data were, like sap data, recorded on a scrap board (**Figure 29**). Based on these data we produced 263 jugs of syrup (**Tables 2, 5 & 10**) that went into the cellar. Since we bottle into a mixture of various-sized containers (gallon, three-liter, four-liter), this equates to 251 gallons of syrup (**Table 10**). In other words, this year we produced about 5% fewer gallons of syrup than the number of jugs that were bottled. The actual difference between the number of jugs and gallons is due to the types of containers used. Last year (2017), we used a greater proportion of three-liter containers which meant the difference between the number of jugs and gallons was even greater (9.3%).

Historically, we have based our production statistics (see Table 6) on the number of jugs/gallons of syrup that are put into the cellar by the end of the season. However, we know that we always make more syrup than is reflected in this total because syrup is used at festivals, eaten by volunteers, and served to visitors and school groups. It is hard to know exactly how much more syrup we make than our records reflect, but this year Br. Walter estimated that we actually made 281 gallons.

We have had to replace the rubber valve in the fitting between the sap pan and syrup pan several times. To solve this problem, Br. Walter suggests the valve between the two pans should not be opened until after the sap is hot and boiling.

We had a major problem with Big Burnie. When the evaporator was flooded for the first time it sprang a leak – actually, dozens of them (Figure 30). There were holes along the sides of the sap pan as well as on the flues (Figure 31). Some of the holes were even the diameter of a pencil (Figure 32). We're not sure what caused the leaks. Like the little Dutch Boy with his finger in the dike, toothpicks worked reasonably well to plug the visible leaks. An old syrupmaker trick is to add a little corn meal to the sap in the pan. The corn meal presumably settles to the bottom, expands and plugs holes in the flues. This, too, worked surprisingly well. Unfortunately the syrup we produced tasted like corn bread and was extremely thick and couldn't be filtered. This syrup is counted in our production totals (see batches 1 & 2, Table 5 & Figure 29). Br. Walter took it to use in the monastic dining hall. Unfortunately, the corn meal and toothpick fix was only temporary. The pans continued to leak. Coupled to the fact that no one wanted to make unfiltered syrup that tasted like corn meal, it became quickly apparent that we needed a better solution.

Whether by luck or divine intervention, on the day we first discovered the leaks, Bob Craven an SOT student who also works at Northside Welding, happened to be on a tour of the operation with his daughter's class. He learned about our problem and said that he could fix the holes. We drained the evaporator, removed the sap pan, and then loaded it in Br. Walter's pickup truck. Two days later we were back in business. Bob fixed over 100 holes! Best of all, his outstanding work only cost a few gallons of syrup. Although we were able to use the pan for the remainder of the season, it must be replaced by next year.

<u>Was it a Good Year?</u> No, maybe, yes. Seasonal syrup production was below average. Typically, we make about three-quarters of a quart of syrup per tap (**Table 5**). Since there were 1589 taps, if it was an average year we should have made 298 gallons of syrup (= 1589 x 0.75). However, this year we only made 251 gallons of syrup or 0.63 quarts of syrup per tap (**Table 5**). Thus, our crop yield was only 84% of expected. Even though our syrup yield was 16% lower than expected, this is actually good considering we had a 25% reduction in sap this year (*see above*).

What saved our season is that the sugar concentration of the sap was higher (2.5%) than usual (2.2%; see **Table 6**). The higher the sap sugar concentration, the less sap that is required to make a gallon of syrup. Though our calculated season average sugar concentration was 2.5% (Table 5), every time we actually measured the sap sugar concentration it was even higher, going as high as 3.4% (see **Figure 23**). The high sugar concentration helped to increase our syrup yield even though our sap volumes (5.5 vs 7.3 gal sap / tap) were lower than usual. As a result, this year the sap/syrup ratio was just 34.7 compared to our average value of 40.1 (**Figure 5**).

So, was our season successful? No, if you only consider syrup yield. Maybe, if you consider how much syrup we made with a defective sap pan. Definitely yes – based on how many volunteers, school groups and others visited the operation and experienced this Benedictine tradition (see below).

Syrup Analysis: We save a sample of every batch of syrup that is bottled during the season. This year we bottled on 33 occasions and remembered to save samples from 26 of them (**Figure 32**). These samples were analyzed for quality in four main areas – clarity, color, density and flavor.

The clarity of syrup this year was very good. All of the samples were clear and did not have any debris or other foreign materials. This reflects improvements in our procedures when filtering the syrup as well as the fact that this year there appeared to be comparatively less sugar sand than in the past.

Maple syrup is sorted into grades based on color (and flavor). The four grades are golden color/delicate flavor, amber/rich, dark/robust, and very dark/strong. Based on color, this year we only made amber/rich and dark/robust syrup (**Figure 33**).

Maple syrup should have a density of 66 - 68.9% sugar. The majority of our samples fell within this range (**Figure 34**).

Finally, Saint John's maple syrup tastes delicious. Only two or three had an off-flavor of butterscotch.

In short, Saint John's maple syrup is excellent.

<u>Sweet Predictions Award</u>: Each year the Crew has a contest to predict the winner of the amount of syrup we will make. The entries are listed in **Table 12**. Although controversial, if we assume the winner is the person who guesses closest to the number of gallons listed on our record board (**Figure 29**) and that are put in the cellar, then the winner of the Sweet Predictions Award for 2018 is Mark Ludowese. Congratulations Mark! A listing of past winners is given in **Table 9**.

Festivals & Celebrations: We hosted two festivals this year (March 24, April 7). The Outdoor U staff created beautiful ads to promote the festivals (Figure 43). Johnnie/Bennie Media also included segments about the festivals in their broadcasts (Figures 41 & 42). Though the weather was a little cool, the turnout was excellent. Over 1,300 visitors, staff and volunteers joined us (Table 4). Visitors could take a horse-drawn carriage ride, tap a tree, collect sap, have a maple sundae, or tour the sugarhouse. Kyle, Jenny and Sarah (Figure 35) did an outstanding job organizing volunteers and events. However, for inexplicable reasons, Sarah assigned Gary to be the "Lead" sugarhouse tour guide. Perhaps it is because, according to Gary, a visitor described his presentation as "riveting" (Figure 36). He was 'assisted' by Jean and Steve, who Sarah decided needed multiple name tags (Figure 37).

CSB alumnae and maple syrup volunteer, Mary Gondringer, took some wonderful images of one of the festivals (Figures).

Students from BIOL201 staffed the informational booths this year. They worked with Kyle and Carol Jansky, CSB|SJU Biology Department, to create posters about assorted aspects of the syruping process.

We strive to have both of our evaporators running for the festivals. Because of the cold weather, on the day before the second festival we had no sap. To avoid cooking water, Br. Walter and crew removed ice from the barrels, hauled it to the powerhouse to thaw, pumped the thawed sap into the tanker, and returned it to the sugarhouse to use to run both Little Larry and Big Burnie for festival visitors.

The last issue of *The Record* (May 5, 2018) published a bucket list of the "100 Things every Bennie and Johnnie should do." Attending a maple syrup festival was listed at #78.

<u>Publicity/Honors</u>: Articles and publications about the 2018 Saint John's maple operation include the following:

- Anon. (2018) Abbey eNews March 2018 (sent March 20, 2018). see Figure 40.
- Anon. (2018) Variety. 3. Campus Commotion. Maple Syrup Festival. *The Record*. March 23, 2018. p 4 (Variety).
- Anon. (2018) Abbey Banner. Sugarbush image captioned, "On 28 February Brother Walter Kieffer reported that the 2018 maple syrup season was underway as 1400 taps

were inserted in hundreds of Saint John's maple trees. Spring, p 35.

- Anon. (2018) Sticking to tradition (photo-essay). The Record. April 13, p 7.
- Anon. (2018) The Record's CSB|SJU Bucket List: 100 Things every Bennie and Johnnie should do. *The Record*. May 4, p 7.
- Anon. (2018). Video on Saint John's Maple Syrup Festival earns former Johnnies award. Community Newsroom. CSB|SJU. April 17, 2018. Available at: https://www.csbsju.edu/news/2018natas?utm source=Twitter&utm medium=Social& utm_campaign=2017%20Events. see Figure 46
- Anon. (2018). Maple Syrup Harvest. Abbey e-News. May 17, 2018.
- Johnnie Bennie Campus News (2018) Learn more about the Maple Syrup Festival and . . . Johnnie/Bennie Media. March 19, 2018. see Figure 41. Available at: https://www.youtube.com/watch?v=gl8MvFx01ss.
- Johnnie Bennie Campus News (2018) Learn more about the Maple Syrup Festival and . . . Johnnie/Bennie Media. April 17, 2018. see Figure 42. Available at: https://www.youtube.com/watch?v=zLYg3FVYPpc.
- Vos, Liz (2018) Sweet experience. Kindergarteners learn the process of making maple syrup. The Albany Enterprise. 120 (14): 1, 2. Wednesday April 4. This piece featured Outdoor U student naturalist Ella Grote in a cover photo.

Last year, SSQTCH Creative, a group three Johnnies (Ian Fritz, Conor Murphy, Patrick Reagan) created a video about the Saint John's Maple Syrup operation (available at: https://www.youtube.com/watch?v=cfpJ8fkkHZM). On April 13th, the video won the "Upper Midwest Emmy® Chapter/Foundation Student Crystal Pillar Award" (Figure 46). Congratulations Ian, Conor, and Patrick!

As a fun aside, the family of retired Outdoor U director, Tom Kroll, makes maple syrup in the Long Prairie area. They were featured in a movie that was made by an Alexandria radio station (https://www.youtube.com/watch?v=Tfo QeWpvY4).

Maple Sap Award: Nominees for the 2018 Maple Sap Award were: (1) Dan & Gary – They received a joint nomination for their inability to use a key to open the machine shop door; (2) Kyle – for backing into a tree on Tapping Day knocking out his rear windscreen (Figure 16). As Jean noted, Kyle's jeep learned what happens "when maples tap back;" (3) Br. Walter – for talking so long to a parent chaperone on a field trip that he missed the departing school bus; (4) Sarah – for having the parking brake on as a group of nearly a dozen tried to push her out of a

slippery parking space at the first festival (**Figure 45**); and (5) Steve – for breaking a hydrometer.

As tradition, the previous year's winner, Gary, had the honor of naming the winner. Gary wisely selected Sarah for the 2018 Sap Award (**Figure 44**, **Table 8**). The crew greeted his decision with unanimous approval.

Education & the Community-at-large: As always, the Saint John's Outdoor University provided a variety of educational opportunities and experiences. In addition to the festivals described above, this year the operation hosted just over 1,400 preK - 12th grade students on maple syrup field trips (**Table 4**). This is the most in a season we have ever served! As an example of how busy the sugarhouse is, during the week of week of March 18-24 there were 17 scheduled tours of the operation (**Figure 47**).

In addition, there were 276 CSB|SJU students who were given tours of the operation. This includes 12 introductory biology labs (BIOL201), 3 FYS sections, and 2 student organization (IWL and I-LEAD). As a visual aid for teaching, Steve donated to the Outdoor U a maple board showing a spile and the non-conductive wood that develops in response to the injury (**Figure 53**).

To promote the operation, the Outdoor U sponsors a series of fun campus activities including: (a) Maple syrup @ Brinner (CSB Gorecki), (b) maple sundaes at the Reef, (c) PRP-sponsored Flapjack Friday at Sexton bus stop, (d) syrup shots at Br. Willies open mic night, and (e) maple syrup lattes offered at the Schu and Clemens coffee shops.

If we add up the number of volunteers and core crew members and festival participants and students (Table 4), more than 3,100 individuals were involved in some aspect of the Saint John's Maple Syrup Operation!

Perhaps most importantly, the Saint John's Maple Syrup Operation is a model for promoting the Benedictine values of community and stewardship. Consider collecting sap from nearly 1,600 taps. For most maple producers, this represents a huge undertaking and is the reason large operations opt to use vacuum tubing for sap collection. In contrast, at the Saint John's Maple operation we have so many volunteers that we can collect that sap in an hour!

<u>Licensure</u>: The operation is licensed by Stearns County Environmental Services (**Figures 48** & **49**). We are proud of licensure and work hard to maintain it. We contact Stearns County Environmental Services at the start of the season to schedule an inspection. We were inspected on March 30, 2018 by Mr. John Tracy.

<u>Upgrades</u>: As always we made a number of improvements to the operation including:

- 1. Handrail Jim Preusser constructed a handrail on the steps leading up to the bulk storage tanks. To help stabilize the handrail he also built a small bench (Figure 50).
- 2. Carrying crates Jim once again used his carpentry skills to building a series of additional 2-bottle carrying cases. He made about a dozen last year and again this year (Figure 51).
- 3. Sign Michael Roske and the Saint John's Wood Shop completed the beautiful sign above the northeast door (Figure 52).
- 4. Shelving in Sarah's Shed new wire shelving was installed in Sarah's Shed.
- Bucket Cage for collecting sap buckets in the sugarbush (Figures 20 22).

Ideas to consider for the future include:

- 1. Glove dryer;
- 2. Volunteers insure that we have enough for volunteers to do;
- 3. Remove the ragged ends of the second largest storage tank
- 4. Stainless or other food grade rack to steam bottles
- 5. build a structure to stabilize the bottler when it is full of syrup;
- 6. make a plaque listing the syrup boss & crew members;
- 7. make a plaque listing the winners of our various awards (Sweet Predictions & Sap);
- 8. complete the paneling on the west wall;
- 9. install more attractive fire screening around the wood stove;
- 10. construct a more attractive wood box or other structure to hold the wood, paper for burning in the wood stove;
- 11. 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;
- 12. Create a labeled tool rack
- 13. remove any items from the main shack that are not directly used in the syruping operation;
- 14. 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;
- 15. finish the area beneath the windows and around the window above the NW door;
- 16. attach to the outside of the shack a bracket and holder system for the propane tank.
- 17. Most of all, we need a new sap pan for 2018!

Tables, Figures & Appendices

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

Table 1. Sap Collection Data – Spring 2018							
Date	Sap collected (gal)						
17 Mar	225						
19 Mar	100						
23 Mar	775						
25 Mar	540						
28 Mar	450						
29 Mar	970						
12 Apr	225						
13 Apr	1125						
18 Apr	450						
19 Apr	1705						
20 Apr	890						
23 Apr	450						
24 Apr	425						
29 Apr	385						
Total (gal)	8715						

Table 3: Syrup Production Statistics Summary – Spring 2018							
Spiles (5/16ths)	1540						
# sap collection days	14						
Sap collection dates	17 Mar –						
	29 Apr						
Sap Season length (days)	43						
Tanker loads of sap	42						
Total sap collected (gal)	8715						
Syrup produced (gal)	250.8						
Batches of syrup finished	33						
Ratio (sap/syrup)	34.7						
Sugar concentration (%)	2.5						

Table 2. Syrup Production Data – Spring 2018										
Date	Syrup (gals)									
25 Mar	5.3									
27 Mar	10.6									
29 Mar	6.9									
13 Apr	57.1									
19 Apr	71.7									
20 Apr	35.2									
24 Apr	29.8									
30 Apr	19.1									
1 May	15.2									
Total (gal)	250.8									

Table 4: Saint John's Maple Syrup Operation Volunteers & Visitors –							
Spring 2018							
Volunteers (counts families as	144						
one so total number even							
higher)							
Volunteer hours (including	1165						
Jim Preusser, Harold Zip,							
Darrell Ashfield, Mark							
Ludowese)							
Core Crew hours (excluding	606						
Br. Walter & SJOU staff)							
Total Volunteer hours	1771						
Festival 1 (Mar 24) (includes	672						
visitors, staff, volunteers)							
Festival 2 (Apr 7) (includes	632						
visitors, staff, volunteers)							
Total Festival Participants	1304						
Student tours (pre K – 12)	1400+						
Student tours (post-	276						
secondary; incl. biology labs &							
others)							
Total students	1676+						
Tapping Day participants	120						

Table 5. 2018 Summary Data

37 ATE		_	74.5 3L	40.0 Gal	136.3 4L		Total	250.8 Total	difference gallons Total	Batches		length	43	ıp/syrup	34.7					
19-Api			3.0	2.0	4.0	#NUM!	8.0	7.5	median				12-Apr					450.0		
25-Mar 18-Apr			1.0 3.4	1.0	1.0 4.2	0.0 #DIV/0!	5.0 8.0	4.8 7.6	min average				17-Mar 8-Apr	2.7				100.0 622.5	0.0	
1-May			8.0	6.0	10.0	0.0	12.0	10.6	max				29-Apr					1705.0	0.0	
			94	40	129	0	263	250.8	sum	_										
33									count	9		SAP DAYS	14		#LOADS	42	TTL SAP	8715	0	
								avg	27.9	3.7	29.2									
								ttl	250.8	33.0	263.0									
1-May			8	2	2		12	10.5												
1-May			2	Ľ	3		5	4.8	15.2	2	17									
30-Apr 30-Apr			2	3	2		7	6.7												
30-Apr 30-Apr			6		4		7	6.6 5.8	19.1	3	21									
24-Apr	28	1:40	4	1	1		6	5.2												
24-Apr			3		5		8	7.7												
24-Apr 24-Apr			4		5		9	8.5	29.0	4	32									
20-Apı 24-Apı			8		5		- 8 9	6.3 8.5	29.8	4	32									
20-Apr			6	1			7	5.8												
20-Apr	22		2	1	4		7	6.8												
20-Apr					8		8	8.5												
19-Api 20-Api			2	2	4		8	7.8	35.2	5	38									
19-Apı 19-Apı			2	6	3		9	8.5 9.7												
19-Apr			3	2	3		8	7.5												
19-Apr			2	1	5		8	7.9												
19-Apı 19-Apı			1	1	7		6 7	6.0 7.4					29-Apr	1	1	2	160	385		2.
19-Apr			1	1	6		8	8.1					24-Apr	1	1	2	200	425		3.
19-Apr	12	10:30	5	3	2		10	9.1					23-Apr	2		2		450		
19-Apr			4	L	4		8	7.4	71.7	9	74		20-Apr	3	1	4	215	890		J.,
13-Apr 13-Apr			4	1	5		6	6.3					18-Apr 19-Apr	7	1	8	130	1705		3.
13-Apr			2	3	3		- 8 - 7	7.8 6.3					13-Apr	2		2		450		3.4
13-Apr			3	1	6		10	9.7					12-Apr	5		5		1125		-
13-Apr			1	4	5		10	10.1					29-Mar	1	- 1	1	70	225		
13-Apr			4	4	4		8	7.4					28-Mar	4	1	5	70	970		
13-Apr			3	4	3		10	9.5	57.1	7	59		25-Mar	2	3	2	340	450		
29-Mar			2	4	5		7	6.9	6.9	1 7	7		23-Mar	3	3	3	100 540	775 540		
27-Mar			_		10		10	10.6	10.6	1	10	Corn Meal	19-Mar	2	1	4	100	100		
25-Mar	_				5		5	5.3	5.3	1	5	Corn Meal	17-Mar	1		1	400	225		
																_				
ATE	Batch	Time	Syru _l 3L	p Produ Gal		5 Gal	Total (jugs)	Total (gallons)	Total (Gal/day)	Batches finished			DATE	Sap Pro Full Loads	Partial	Ttl loads	Gal partial	GALLON	SAP/DAY	[Sug
		Harold Zip,	Daryl A	shfield,	Mark L	udowese	& Jim Pre	usser												
yrup Crew		William Mo	ck, Jea	n Lavign	e, Step	hen Saup	e, Gary Gi	llitzer, Al M	eiers, Dan V	Veber.										
yrup Boss		Walter Kief	fer, OSI	В																
apping Day par	ticipants	120	includi	ng atten	dees a	nd volunte	ers													
ommunity	,					,	,													
tudents post (CS		276	(12 bio	labs. 3	FYS. i	LEAD, IW	L)													
estival particip tudents preK-12		1400																		
ore Crew hours																				
olunteer hours		849	(count		0.00	10 00 0010	ai totai riig	,	1165.0		riaroia, i	linani, omi, De		10010 1011						
lood Used (cord olunteers	S)	144	(count:	s familie	s as or	ne so actu	al total hig	her)	148.0	TTL with	Harold.	Mark, Jim, Da	arrel - 316 h	nours tota	al					
aps Pulled		29-Apr	(finishe	ed on 30	Apr)															
aps Placed		24-Feb	(pipelir	nes start	ted on I	Feb 14, fir	ished on F	eb 16			ΠL	1304								
aps total (GPS o											7-Apr	632								
aps total (actua		,									24-Mar									
aps 5/16th (bags aps 5/16th (vacu											2018 for	stival details								
			all of it	JUIS																
of Taps		1589	all 5/16	Rthe																

Table 6. Data Summary from all years

		interval between tapping (years)			0 6	Т		~			0	2 4		4 4	ტ ტ	ო	7	ч с	7 7	ო ,	- 0	1 ~			-	-	-		-	-	-	-					6. 5	0.
		average sugar conc from rule of 86	5.69	9	2.46		2.61				2.32		2.06	2.19	2.27	2.33	2.75	2.04	2.24	2.11	2.70	1.92	1.54	2.12	2.71	2.09	2.13	2.03	139	2.51	2.24	2.51	2.14	247			2.2	4. 1
		syrup/cord																									21.4	0.0		23.2	25.3	26.0					25.0	21.4
		sap/syrup ratio	32.0		35.0		33.0				37.1		41.7	39.3	37.8	36.9	31.3	1.24	38.4	40.7	31.0	44.8	55.7	40.6	31.7	41.2		- 4	61.8		38.4		40.2	34.7	:		40.1	
		Syrup (qt) per tap	1.20		0.56			, R	3	0.49				0.81			1.12		0.92		0.74		0.66					0.30					0.88	63	3		0.75	
		Syrup (gal) per tap	0.30		0.14			90	0.20		0.16		0.10	0.20	0.29	0.17	0.28	0.22	0.23	0.15	9.0	0.27	0.17	0.12		0.23	0.21	2 5	9 0	0.42	0.21	0.22	0.22	0.18	5		0.19	
		Sap (gal) per tap per	9.6		6.9						5.9		4.2	7.9	10.9	6.4	8.8	- 0	e. 8 6.9	6.1	5.4	12.1	9.5	5.0	3.8	9.4	8.4	7.6	2.5	14.4	8.1	2.5	8 6	3 13	9		7.3	2.5
		collected per tap per											0.3	9.0	0.6	0.5	8.0	o 0	0.5	0.3	ω α Ο Ο		6.0	0.5	0.5	0.8	9.0	ο c	2.0	0.8	9.0	0.5	0.7	i 4	-		9.0	0.3
		collected per collecting day										7006 7	1281.6	1128.8 750.6		1070.8	1034.9			387.8			551.3					623.0	482.0	1002.9	935.4	785.7	1183.1	622.5	ì		793.8	
ı		average gal sap				ı	П		П																												166.5 79	
		min daily sap collectedd										177	175.0	350.0			52.5		87.5		175.0	ш	175.0			**	_	225.0	-			_		100				
		max daily sap collected										0.000	2275.0	1943.0	2100.0	1807.8	1662.5	750.0	1750.0	992.3	1138.0	1225.0	1575.0	1006.3	1050.0	2025.0	1915.0	1310.0	795.0	2925.0	2250.0	1800.0	3455.0	1705.0			1752.4	525.0
	Н	# tanker loads					Н	+				0.00		83.9	_		65.1	_	_	-	10.7	_		_		41.6	_	20.00	-		57.0	-	72.0	_			55.4	14.0
		(last - 1st collect day)												24 6			19										27							6 4			24.8	
		Feudip sab sesson											5 5	5 5	a z	ä	ä																	g 5			31-Mar	Mar
		Median sap collection										Α.Α.	8-Apr	4-Apr	31-Mar	30-Mar	30-Mar	Z/-Mar	8-A	24-Mar	20-Mar	29-Mar	26-M	27-Mar	2-Apr	3-Apr	3-Apr	2-Apr	19-Mar	14-Apr	11-Apr	28-Mar	22-Mar	12-Anr				
		date date										S.A.pr	9-Apr	3-Apr	29-Mar	30-Mar	31-Mar	Zo-Mar	7-Apr	24-Mar	ZU-Mar 4-Anr	28-Mar	27-Mar	28-Mar	1-Apr	4-Apr	1-Apr	23-Mar	19-Mar	13-Apr	11-Apr	27-Mar	22-Mar	8-Anr	5		30-Mar	17-Mai
t	H	# seb collecting days										H	Н	13	-	Н	= ;	+	± 1 ⁻	Н	01 6	Н	10	+	Н	-		, 0	+	H			5 1	+	Н	360	12.4	Ω
H	Н	last day sap		H	+	H	H	+			H	20.Apr		15-Apr 1		6-Apr			22-Apr 1		30-Mar 1					19-Apr 1								29-Apr				
												2	19,	15.	1 -	-6	10,	4 <	22-	80	13 F	o တ	Ϋ́	5 6	4	19,	13-Apr	10.Apr	24-1	26-	22-Apr	1,	ţ ,	2 9			11-Apr	24-
T	П	first day sap										23.Mar	3-Apr	22-Mar 2-Anr	16-Mar	23-Mar	22-Mar	19-Mar	21-Mar	26-Feb	6-Mar	17-Mar	18-Mar	13-Mar	18-Mar	21-Mar	17-Mar	17-Mar	15-Mar	30-Mar	1-Apr	12-Mar	28-Feb	17-Mar			17-Mar	g-Feb
		svg gal per cook day											24.6	26.6			30.3		21.3		24.8		12.4		19.3			25.7			31.7			0.00			24.8	
I		avg gal per batch			I			Ī						6.4		9.4	7.7		7.7				9.9					20.0						- 2			9.2	
H	Н	batches finished					H	+			H		63	82 64			47							0 1			27				,						30.5	
	Н	# cooking days					Н	t					15	4 5	1 1	=	2 5	7 5	<u>τ</u> (C	27 0	ם ע	O CO	ω ι	0 ~	9	0	80 (o u	0 0	1 6	10	=	4 0	οσ		278	0.0	2.0
		# days between first & # ast cooking												2 %			9 1				7 7							<u>∞</u> σ					33				21.1	9.0
		Mean Syrup date											11-Apr	5-Apr	1-Apr	30-Mar	2-Apr	27 Mar	12-Apr	27-Mar	25-Mar 11-Anr	2-Apr	2-Apr	4-Apr	11-Apr	8-Apr	5-Apr	29-IMar	26-Mar	16-Apr	16-Apr	31-Mar	23-Mar	18-Anr	5		3-Apr	23-Mar
t	H	last day syrup	12-Apr		12-Apr	l	26-Apr	23.00	<u> </u>	10-Apr			20-Apr	16-Apr	12-Apr	8-Apr	11-Apr	4-4 pr	24-Apr	10-Apr	25-Apr	9-Apr	16-Apr	12-Apr	26-Apr	20-Apr	14-Apr	11-Apr	31-Mar	29-Apr	24-Apr	13-Apr	12-Apr	1-May	î		15-Apr	31-Mar
+	Н	first day syrup				7-Apr		,		7-Mar			3-Apr 2	26-Mar 1			_		1,1		,,												8-Mar 1					6-Mar
			28-Mar		16-Mar	7				ż			ų		-		26-Mar	20-Mar	31-Mar		16-Mar	27-Mar	.,	(4				N .						``				
		Taps Pulled												15-Apr	13-Apr					10-Apr	17-Anr		15-Apr	9-Apr	21-Apr	18-Apr	13-Apr	TI-Apr	24-Mar	26-Apr	22-Apr	14-Apr	8-Apr	29-Apr			15-Apr	24-Mar
t	H	Taps placed		H			\parallel	t		17-Mar				19-Mar			9-Mar	t	13-Mar	26-Feb		H	1	11-Mar	10-Mar	1-Mar		13-Ivlar	10-Mar		15-Mar		25-Feb		3			14-Feb
+	H	Wood used (cords)		H	+	+	H	+	\parallel	-	-		H	7 7	+		7	+	+	7		H	- 1	+	=	-			7				Ø 4	- 2	1			4.5
T	Ħ	total sap collection (gal)		0000	8600		0006	+	П	\dagger	13000	16447	15379	14674	21179	12850	11384	12500	10631	7369	3413	6219	5513	5031	3680	9360	10840 12.5	5345 4.5	2410	19055 24.0	12160 1	11785 13.3	15380	8715		326829 6	9904 13.4	1440 4.5
00	,	total syrup (gal)			246	+	273	240	2	182		-	369	373 1	.,		364				107		99			227		30			317			25.1	Ш	8		99
updated: May 10 2018		*gsT fo	20		1750	+	H	5		800		3100	3700	1850			1300				0021		009			1000		938			1493		1743			24 846		
updated: May 10	1		_	H	+	-	H	a				\vdash	Н					5 4		Н	+			ļ.	Н	-	+	+	+			+	+	+	\Box	49624	`	
. 0		Year	1942	1943	1945	1949	1921	1953	1958	1959	1966	1968	1974	1978	1985	1988	1990	1992	1996	1999	2007	2003	2004	2006	2007	2008	2009	2 2	2012	2013	2014	2015	2016	2018		ams	average	minim .

Table 7.

Summary of St. John's Maple Syrup Statistics: 1942 - 2018

compiled by

Stephen G. Saupe

College of St. Benedict/St. John's University
Biology Department
Collegeville, MN 56321
date: May 10, 2018



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.

General

First season to make syrup	1942
Number of years since St. John's began making syrup	76
Number of seasons during which St. John's has made syrup	42
Average time (in years) between successive syrup-making seasons	1.9

Tapping Data

Average date trees are tapped	8 March (14 Feb – 19 Mar)
Average date taps are removed	15 April (24 Mar – 29 Apr)
Average number of taps (for all seasons)	1378
Average number of taps (prior to 2002)	1613
Average number of taps (since 2002)	1116
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	17 March
Earliest date on which sap was first collected (& the year)	18 Feb (2017)
Latest date on which sap was first collected (& the year)	3 Apr (1974)
Average last date of sap collecting	11 April
Earliest date on which sap was last collected (& the year)	24 March (2012)
Latest date on which sap was collected (& the year)	29 April (2018)
Average number of days during the season on which sap was collected	12.4 (5 – 19)
Average number of days between first and last sap collection (= length of sap production season)	24.8 (9 – 48)

Saint John's Maple Syrup - Summary Statistics

page 2

Sap Volume Data

Most sap collected, in gallons, during a season (& the year)	21,179 (1985)					
Average sap collected, in gallons, during a season	9904					
Average sap collected, in gallons, on a collecting day	794 (308 – 1282)					
Most sap collected, in gallons, on a single day (& the year)	3455 (2016)					
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)	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 sap boiled per hour / gallons syrup produced per hour]	20 / 0.5
Production Evaporator (Big Burnie) size	4 ft. wide x 14 ft. long
Production Evaporator capacity [gallons sap boiled per hour / gallons syrup produced per hour]	200 / 5

Syrup Production Data

Average gallons of syrup produced during a season (data for all seasons)	249
Average gallons of syrup produced during a season (since 2002)	208
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)	25.0 (21.4 – 28.9)

Sugar Concentration Data

Average sap/syrup ratio	40.1 (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 8.	Table 8. Great moments in Saint John's Maple Syrup History – A Summary of the			
Maple Sap Award Winners				
Year	Award Winner	Great Moment		
2018	Sarah Gainey	Leaving the parking brake on while nearly a dozen		
		people tried to push her out of a slippery parking place		
2017	Gary Gillitzer	Wrapping the sap wagon around a tree		
2016	Br. Walter Kieffer	Burning Big Burnie's syrup pan		
2015	Br. Walter Kieffer	Getting whacked in the head with a tire jack handle		
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		

Table 9. Great moments in Saint John's Maple Syrup History – A Summary of the Sweet Prediction Winners			
Year	Award Winner		
2018	Mark Ludowese		
2017	Ashley Walker		
2016	Bill Mock		
2015	Br. Walter Kieffer & Al Meiers (tie)		
2014	Br. Walter Kieffer		
2013	Bill Mock		

Table 10: Analysis of Actual Syrup Production during the 2018 Season.			
Container size	Number Jugged	Volume (gallons)	
4-liter glass jug	129	136.3	
3-liter glass jug	94	74.5	
Gallon glass jug	40	40	
5-gallon plastic pail	0	0	
Total	263	250.8	

Table 11. Sarah's Syrup Snippets from 2018 (Fun facts by Sarah Gainey in her daily update emails sent to the volunteer distribution list)

Feb 22 – Check out the overview of last year's season in the 2017 Maple Syrup Annual Report prepared by our very own Steve Saupe!

Feb 26 – I can guarantee that watching this video about our syruping operation will put you in the mood for all things maple syrup! Thanks to the crew at **SSQTCH** for the amazing video.

Mar 6 – Squirrels are known to do damage to maple trees, chewing off the outer bark to access the inner bark and the sweet sap. Apparently we've been worried about it for a while! https://www.forestry.umn.edu/sites/forestry.umn.edu/files/MinnesotaForestryNotes 54.pdf

Mar 10 – Need something else to do while waiting for the sap to flow? Check out the EagleCam Live Stream from the MN DNR. She laid 3 eggs in mid-February and with hope they are still viable. The late, wet snow made it difficult for the adults to sit on the nest.

Mar 15 – Some cool facts about our sap averages, thanks to Steve Saupe.

- Average date of first sap collection: March 17
- Earliest date sap was first collected: Feb 18 in 2017 (remember the warm February we had last year?!?)
- Average date of last sap collection: April 11
- Latest date sap was last collected: April 26 in 2013 (remember the May snow day that
- Average number of days between first and last sap collection: 24.1

Mar 18 – On the other side of the world, maple sap is not boiled down into syrup, but instead enjoyed as is, often in large quantities.

Mar 21 – Check out the latest episode of Johnnie Bennie Campus News for coverage of the upcoming festival. You may see some familiar faces!!

Mar 26 – Check out the Maple Syrup Demos and Tours at Kraemer Lake-Wildwood County Park this coming weekend! The Carlson family has a wonderful family history of making maple syrup and are opening their doors this Saturday, March 31 from 1-4 pm so you can take a look at their process. Kraemer Lake County Park is just down the road from Saint John's. They also sell their syrup at the Minnesota Street Market in St Joseph under the name Wildwood Ranch.

Mar 27 – When will our season be over? Temperatures need to be below freezing at night and above freezing during the day for sap to flow. The forecast is for a cold Easter weekend so we still are hoping the best sap flow is yet to come!

- Mar 29 You don't have to have a big evaporator and hundreds of tapped trees to make syrup! Plenty of people just tap a few trees in their yard and cook the sap on the stove or over the fire. Check out this great article from U of MN Extension on making maple syrup at home!
- **Apr 5** Apparently there are <u>rogue tree tappers</u> in Ely this year.
- **Apr 18** Kids get to go to summer camp, why not adults? Check out this <u>Maple Camp</u> in New York this summer. Then you'll sound like your kids... 'Remember, that one time, at maple camp...'
- **Apr 11** Check out this <u>illustrated account</u> of the great maple syrup heist in Canada in 2012 when 6 million pounds of maple syrup was stolen from 'The International Strategic Reserve.'
- **Apr 19** A huge congratulations goes to SSQTCH and their <u>'Upper Midwest Emmy®</u> <u>Chapter/Foundation Student Crystal Pillar Award'</u> they received on April 13th for their Saint John's Maple Syruping video. Ian, Conor, and Patrick are 2017 grads of SJU and we are so lucky they spent their time and talent documenting syruping at Saint John's. The <u>video</u> is worth a watch again!
- **Apr 22** All sorts of great recipes using maple syrup on the Minnesota Maple Syrup Producers' Association's <u>website!</u>
- **Apr 26** Syruping from the tree's point of view.
- Apr 28 An adorable sign of spring!!
- May 1 Did you know maple syrup is graded?
- May 3 Don't mess with the <u>universe</u>.

Table 12. 2018 Sweet Predictions Guesses		
Name	Guess	
Gary	259	
Jean	172	
Kyle	317	
Mark	254	
Sarah	127	
Steve	317	

Table 13. Maple Syrup Crew Button Summary (information provided by Sarah Gainey, Saint John's Outdoor U)			
Year	Color	Designer	
2008	Light green		
2009	Light purple		
2010	Light blue		
2011	Bright Orange		
2012	Bright yellow		
2013	Red		
2014	Teal	Teresa Gonia	
2015	Green	Maddie Norgaard	
2016	Black with white lettering	Natalie & Siri	
2017	Dark purple	Pearce Jensen	
2018	Craft paper brown	Ella Grote & AnnMarie Backstrom	

Table 14. Comparison of drop pails and 3/16 th gravity tubing		
	Pros	Cons
Drop Pails	 Theoretical increase in sap yield due to vacuum (If tube was full of sap then there is 0.88 in Hg/ft x 3 ft = 2.6 in Hg Two taps can feed a single pail, fewer pails needed = less clean-up 	 Harder to collect – bending over, threading tubes into holes Difficult to find a level spot Annual replacement of spiles; impossible to clean Freeze to the ground Sap remains frozen longer
3/16 th Gravity Tubing	 Theoretical increase in sap yield due to vacuum Don't have to collect sap 	 Leaks can ruin the vacuum (Fig 15 & 16); need to check regularly for leaks Longer time to set up Cost of tubing Spiles should be replaced annually



Figure 1. Display of past Crew buttons created by Steve Saupe from buttons made by the Saint John's Outdoor U staff.

Saint John's Maple Syrup: Tree Tapping Procedure

- Locate a sugar maple green paintball marks in 2011; whitewash lichens, previous holes (though this isn't foolproof), sharp-pointed chocolate-brown buds, opposite branches
- Saint John's Maple Syrup
- Look carefully on all sides; some paint spots are difficult to see!
- Look up be sure the tree is alive/healthy
- If need be, ask crew leader or Outdoor U staff for assistance in identifying sugar maples
- Determine the number of taps use string ruler
 - Wrap string around tree beginning at the duct-taped side
 - Starting from the taped end, if it overlaps two knots = no taps; If it overlaps the 1st knot = 1 tap; If it overlaps no knots = 2 taps
 - Two taps per tree maximum (conservative tapping guidelines)
 - If previous year tap hole didn't seal up, do not tap this year

Drill tap hole

- Find last year's tap hole.
- New spile should be located to the right and up about 4 inches to avoid non-conductive wood.
 Shavings from a "good" hole should be white (conductive).
- Avoid damaged areas of the bark, or depressions or valleys in the bark.
- Tap about waist height (if too high hard for the average person to reach, if too low, bucket can hit ground and not hang properly on the spile)
- Drill at a slight upward angle (ca. 5 degrees) to help the sap drain out
- Drill in 1.5 inches deep, but no more than 2 inches.
- Drill should be up to speed before entering tree
- o In/out in one motion; concentrate when tapping to do it right. Do not re-drill a hole
- Do not clean out the hole with a stick or other; most shavings should be removed as drill is removed
- 4. Place lid under each tap hole
 - Immediately drop a lid beneath each hole as it is drilled so the hole can be located for the next steps.
- Tap spile in hole
 - Find tap hole (above the lid)
 - Tap (don't smash, whack, or pound) spile into hole with hammer (too hard = split wood; too soft = spile falls out; TAP JUST RIGHT! Tap should be secure when you grab it and give it a push.
 - Listen for sound when tapping changes to a thud once the tap is seated.
- 6. Hang bucket/bag or other on spile
 - Buckets may stick together; it helps to twist the outside one rather than pullingMay have to use force/teamwork to get buckets apart
 - Hang bucket on spile through the circular hole on the bucket so that the 'washer' on the spile is inside the bucket to help keep it on the spile.
 - Put on the lid and raise up handle to help hold lid on. Squeeze handle if needed to get good contact with lid.
 - There is a green stripe on each bucket. Hang all the buckets with the green stripe facing toward the tree. When in doubt, determine correct direction before beginning.

Quality Control

 Last person going through your area making sure nothing was missed (lids on ground under holes, spiles without buckets, buckets without lids, all buckets turned "white out" to start, etc...)

Other Notes

- ✓ Please stay in your assigned area. If you finish, check in with staff to see what to do
- ✓ If you find a tree in your assigned area that is a sugar maple but isn't marked with paint, go ahead and tap it
- ✓ We have extras of everything in trucks on the trails. If in doubt, ask! Thanks for your help today!!
 Revised: February 2018

Figure 2. Slightly revised version of the Tapping Day instructions provided to volunteers on Tapping Day 2018



Figure 3. Tapping Day email sent by Outdoor U (copied from email received on February 23).

OutdoorU

Home / Saint John's Outdoor University / Saint John's Abbey Arboretum / Saint John's Maple Syrup / Maple Syrup Education / Tapping Day

Tapping Day

Saturday, February 24, 2018

Saint John's Sugar Shack, 1 - 4 p.m.

Join us for our big community tapping day! No experience necessary, just bring your outdoor clothing and 'sweet' attitude!

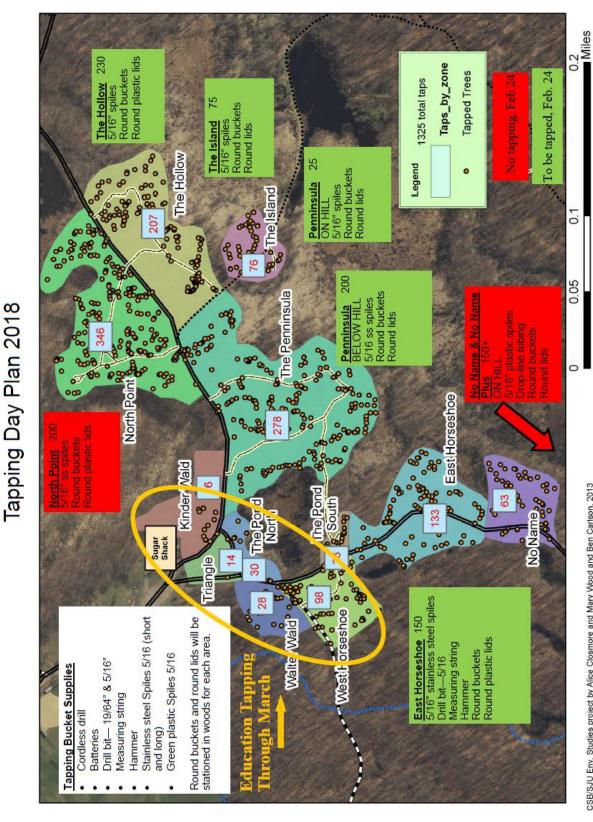
We will start the day off with blessings and songs, then the tapping will begin. We hope to put out at least 1000 taps. We could use as much help as possible in getting everyone involved to accomplish this in just 3 hours! With that in mind and depending upon how many people show up, we appreciate everyone's understanding and help with making sure everyone gets a chance to participate.



Don't Forget:

- > Wear warm waterproof clothes in layers as the area is very wet and muddy, and often very snowy in the woods.
- > You don't have to sign up, just show up willing to help! Families with kids are encouraged!
- > Please park by the Prep School and walk to the shack (about 20 minute walk). There is not a lot of parking AND the road is known for getting people and their cars stuck.
- > Coffee, hot chocolate, and pastries will be available, bring your own mug if possible!

Figure 4. Tapping Day information on the Outdoor U website.



CSB/SJU Env. Studies project by Alice Closmore and Mary Wood and Ben Carlson, 2013

Figure 5. Tapping Day Plan



Figure 6. Tapping Crew leaders on Tapping Day



Figure 7. Br. Walter reciting his Maple Syrup Prayer on Tapping Day.



Figure 8. Br. Walter, assisted by Gary Gillitzer, installing a tap on the 3/16th gravity vacuum line.



Figure 9. Br. Walter working on the 3/16 gravity vacuum line. Valentine's Day.



Figure 10. Ella Grote installing a tap on Tapping Day.



Figure 11. Jean Lavigne trying to stay warm on a cold and snowy Tapping Day.



Figure 12. Pieces of the windscreen from Kyle Rauch's Jeep and the offending tree that "tapped back" on Tapping Day.



Figure 13. Drop pail in North Point. The last person to collect this pail inadvertently threaded the tube through one hole and out the other.



Figure 14. Pails hanging on trees in the Hollow on March 18. Image courtesy Jean Lavigne.



Figure 15. 3/16 gravity vacuum line showing the position of a leak. The sap is flowing right to left and the leak is where the bubbles begin. A piece of electrical tape fixed the leak.



Figure 16. Vacuum tubing leaking at a connector.



Figure 17. Bucket washing station. The stainless steel tank is filled with hot soapy water. It is kept hot by a heater placed beneath the unit. Sheet of tin surround the bottom of tank to keep the heat focused on the tank. Jim Preusser (foreground) hands pails to a prewasher (Mark Ludowese, right foreground) who does a quick scrub and then passes the bucket to Bill Mock (left) and Dan Weber who do the final cleaning on a rotating drum.



Figure 18. Bucket washing station with Dan Weber, Jim Preusser and Bill Mock. Gary Gillitzer is hidden, wearing tan hat.



Figure 19. A bucket washing crew - Jim Preusser, Harold Zip, Dan Weber and Mark Ludowese - taking a well-deserved lunch break.



Figure 20. Jim Preusser constructing the cage to collect buckets.



Figure 21. Kyle and Br. Walter tossing pails in the cage to return to the sugarhouse for washing.



Figure 22. Br. Walter riding shotgun as Gary Gillitzer drives the bucket cage filled with buckets to the sugarhouse for washing.

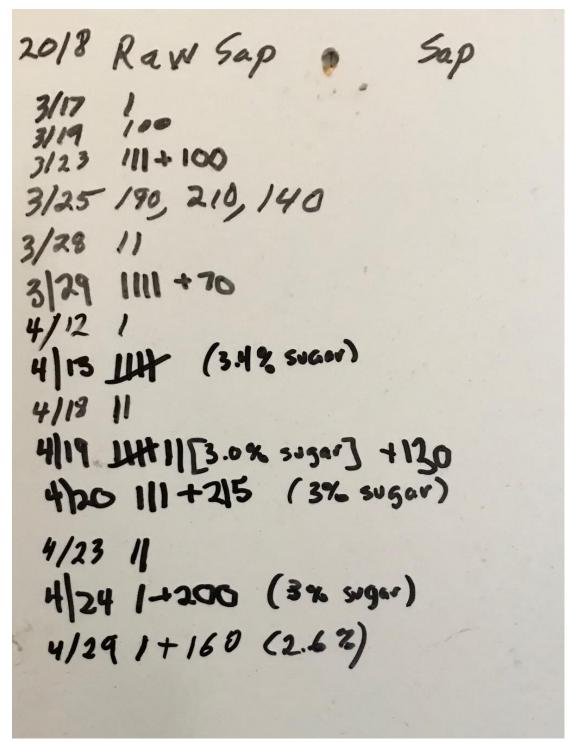


Figure 23. 2018 Sap production statistics maintained on a piece of scrap wood at the Saint John's sugar shack.

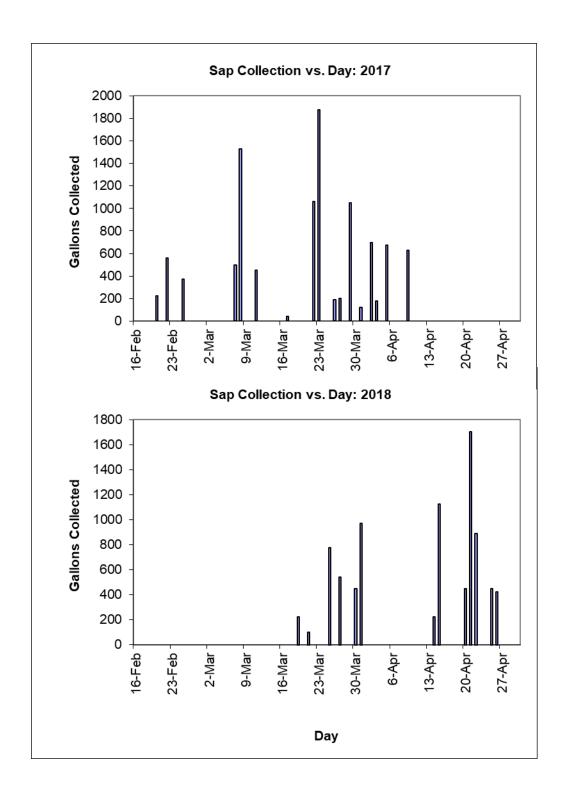


Figure 24. Sap production statistics from the 2017 (top) and 2018 (bottom) seasons.

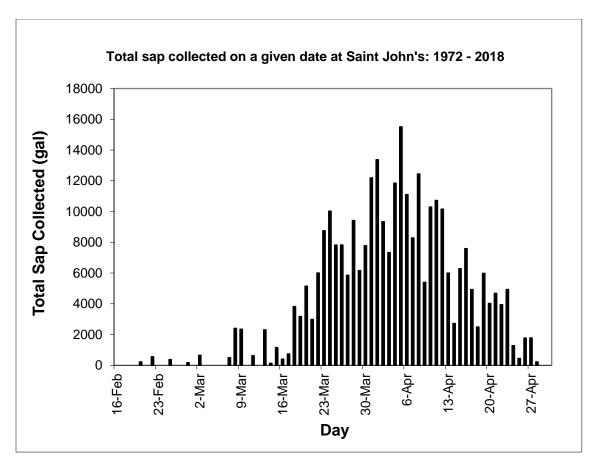


Figure 25. Sap Production statistics for all years in the Saint John's Maple Syrup Operation.

First day sap collection vs. Year (1942 - 2018)

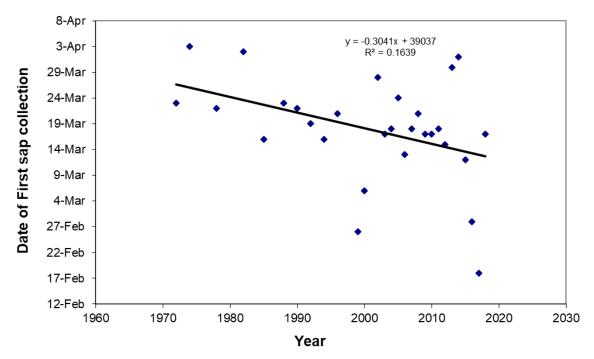


Figure 26. Relationship between date of first sap collection and year

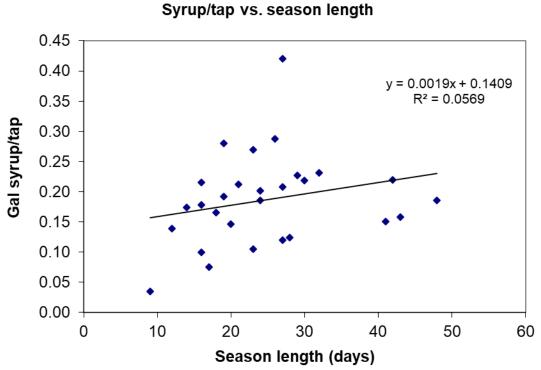


Figure 27. Relationship between amount of syrup per tap and length of the season

Sap collecting days vs. season length

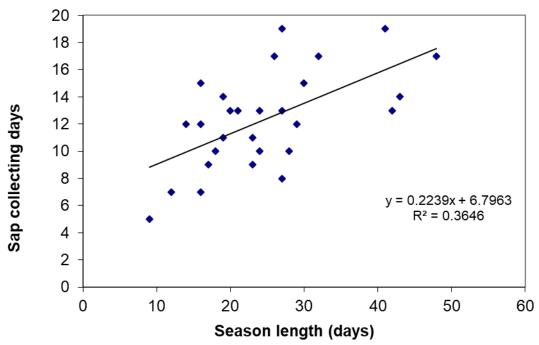


Figure 28. Relationship between the number of sap collection days and season length

5	4	R	UP	2	01	8	
6	ATCH .	TIME ,	21				POIN.
DATE	#		3L	GAL	41	TOTAL	5
3.27	2	-			5	CM 5	15
3.29		3:30	2		5	7	22
4.13	4		3	4	3	10	32
4.13	5	200	4	,	4	8	40.
4.13	6	1:00	#1	24	\$5	@ 10	50
	7	2:45	3	1	6		60
1.13	8	330	2	3	3	10	
	9	4:45)		8	68
4.13	الدائمة المناد	-	4		3	7	75
4.13	10	5:15		1	5	6	18
4.19	11	9:15	4		4	8	89
4.19	12	10:50		3	2	10	99
4.19	13	11130	STATE OF THE PARTY		64	8	107
4.19	14	12:4			THE PERSON NAMED IN COLUMN	7	113
4.19	15	1:40		1	7 5	8	128
4.14	16	2:40				0	
4.19	17	3:30	THE RESERVE OF THE PARTY OF THE	2	3	29	136
4-19	18			3	3	7	
4-19	19	5:49	Company of the last of the las	6	2	10	163
4.20	20	10:15	And the second second	2	4	8	171
4.10	21	11.50	AND AMERICAN STORY		84	8	178
4.20	22	12:3		1	4	77	189
4.20	23	2:0		1		8	19
4.20	24	3:0			6	9	77115
4.24	25		AND DESCRIPTIONS	-	5	1000	207
4.34	26	11:09				CHARLES AND A STATE OF THE STAT	
4. 24	27	13:0		-	5		
1.51	28	1:40	4	1	Maria Carlo Barrello	6	
4.30	29	10:4	53		4		
4.30	30				1	7	
4.30	31			I	3 2	7	246
	32				3	5	
5-1	33			DESCRIPTION OF THE PARTY OF THE	2 2	12	263
5-1	,,						-

Figure 29. Syrup production data from 2018

.



Figure 30. Sap pan with two leaks shooting a fountain of sap



Figure 31. Flues on underside of sap pan showing dark areas where holes were found



Figure 32. Close-up view of hole in a flue of the sap pan. This hole is approximately the diameter of a pencil.



Figure 32. 2018 Syrup Samples. Top (first) row (from left): Batches 3, 4, 7, 8, 9. Second row: Batches 10, 11, 12, 13, 14, 15. Third row: Batches 16, 17, 20, 21, 22, 23, 24. Bottom row: Batches 25, 26, 27, 28, 30, 31, 32, 33.

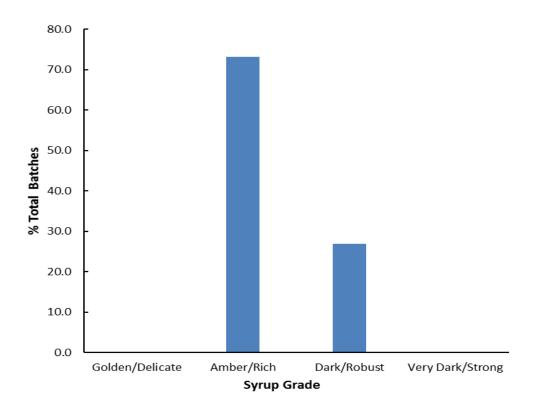


Figure 33. Grades of Saint John's maple syrup produced during 2018. n = 26.

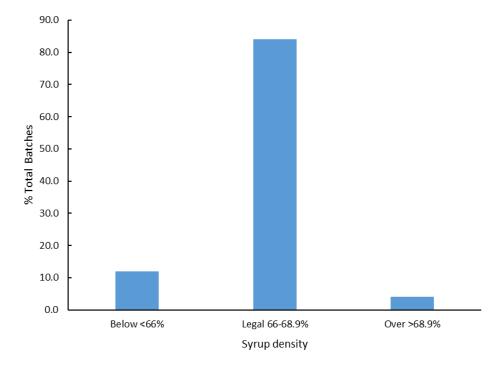


Figure 34. Density of Saint John's Maple Syrup samples from 2018. n = 25. The sample from batch #3 was excluded because it was only a partial sample and not filled to the top of the sample jar.



Figure 35. Sarah Gainey, a true Wonder Woman for all she does for Outdoor U, displaying her superhero bling at the first maple syrup festival.



Figure 36. "Lead" tour guide, Gary Gillitizer, giving a 'riveting' presentation during a sugarhouse tour. Image courtesy of Sarah Gainey.

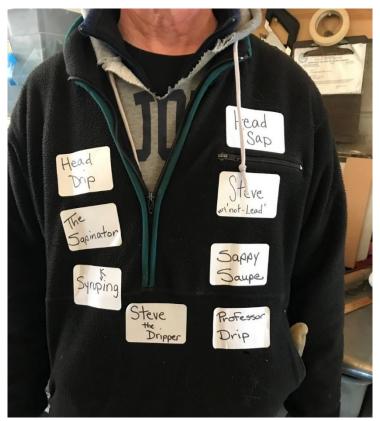


Figure 37. "Assistant" sugarhouse tour guide, Steve, who was issued numerous name tags during the first festival.



Figure 38. Gary, Al and Jean at the end of the first festival.



Figure 39. Dan Weber, chief cook, checking syrup in the evaporator.



Saint John's Abbey began making maple syrup in 1942. Today, hundreds of volunteers help tap trees, collect sap and cook the syrup each spring. With the help of Saint John's Outdoor University, the syrup operation also provides opportunities for education with tours and the annual Maple Syrup Festivals.



For registration and more information: http://csbsju.edu/outdooru/events/maplesyrupfestival

Figure 40. Information about the maple operation that appeared in the *Abbey eNews*, March 2018.



⊞ General Announcements - CSB/SJU Students; ⊞ General Anı

📵 If there are problems with how this message is displayed, click here to view it in a web browser.

Learn more about the Maple Syrup Festival, the Archipelago As Follow the link to wa



Johnnie Bennie Media

www.facebook.com

Learn more about the Maple Syrup Festival, Learn More at csbsju.edu/jbmedia

Figure 41. Johnnie Bennie Media, March 19, 2018 edition, highlighting the first maple syrup festival.



Figure 42. Johnnie Bennie Media, April 17, 2018 edition, highlighting the second maple syrup festival.





Figure 43. Ads created by Outdoor U to promote the maple syrup festivals.



Figure 44. Sarah Gainey, proud recipient of the 2018 Maple Sap Award.



Figure 45. Volunteers attempt to push Sarah out of a slippery parking space. They were unsuccessful because Sarah had the parking brake on, which earned her the Maple Sap Award.

Community Newsroom

Home / Community Newsroom / Video on Saint John's Maple Syrup Festival earns former Johnnies award

Video on Saint John's Maple Syrup Festival earns former Johnnies award



campaign=2017%20Events.

April 17, 2018

the Saint John's Maple Syrup operation. Available at:

SSQTCH Creative received an Upper Midwest Emmy® Chapter/Foundation Student Crystal Pillar Award at the 2018 NATAS-Upper Midwest Student Production Awards on April 13 at the Crowne Plaza AiRE Hotel, Bloomington, Minnesota.

The group, whose name is pronounced "sasquatch," began as an independent student startup at the College of Saint Benedict and Saint John's University in spring 2015. SSQTCH received the award in the College: Non-Fiction category for its video on the Saint John's Maple Syrup Festival. The video was posted on May 5, 2017 (the awards are for calendar year 2017).

Figure 46. Press release describing the award won by SSQTCH Creative for their video about

https://www.csbsju.edu/news/2018natas?utm_source=Twitter&utm_medium=Social&utm_

Student media groups from CSB and SJU have earned three of the last four College: Non-Fiction awards.

SSQTCH consists of Ian Fritz '17 (producer and director), Conor Murphy '17 (director and editor) and Patrick Reagan '17 (director and editor).

"We had an absolute blast doing the video," Fritz said.

Fritz added that the video was done for two 2017 classes – a maple syruping class taught by Steve Saupe, professor of biology at CSB and SJU, and a video class for Br. Simon-Hòa Phan, OSB, associate professor of art at CSB and SJU.



SSQTCH (from left) Patrick Reagan, Conor Murphy and Ian Fritz.



Figure 47. Sample of classes that visited the Saint John's Maple Operation during the week of March 18 - 24.

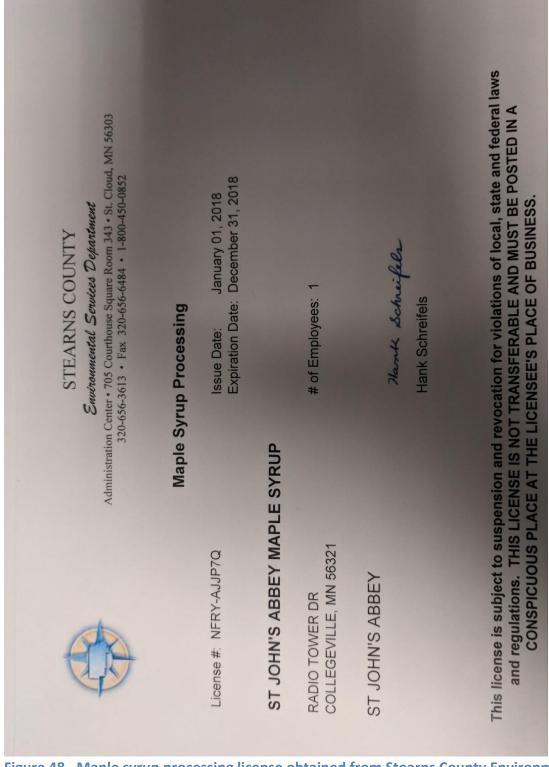


Figure 48. Maple syrup processing license obtained from Stearns County Environmental Services.



Steams County Environmental Services Department 705 Courthouse Square Room 343, Saint Cloud, MN, 56303 320 656-3613

Type: Routine Date: 03/30/20	18 Food	d and Beverage Establishment Inspection Report			
Report JTRY-AX	KQH39	Illispection Report			
Location:		Establishment Info:			
	EY MAPLE SYRUP	ID #: NFRY-AJJP7Q			
RADIO TOWER		Risk: High			
COLLEGEVILLE		Announced Inspection: No			
License Catego		Operator:			
Maple Syrup Pro	The second secon	ST JOHN'S ABBEY			
Expires on: 12/31/	2018	Phone #: 320 363-2782			
		ID #: NFRY-AJJNWA			
Equipment Temps					
Description	eracures	Temperature (Fahrenheit)			
NOTE: All new for	od equipment must meet	t the applicable standards of NSF International, Plans			
		review and approval prior to new construction,			
		review and approval prior to new construction,			
remodeling or alte		review and approval prior to new construction,			
		review and approval prior to new construction,			
remodeling or alte	erations.				
remodeling or alte	erations.	re (Fatrenteit) State of Food			
remodeling or alter Food Temperature Description	erations. es Temperatur				
remodeling or alte	erations. es Temperatur				
remodeling or alter Food Temperature Description	erations. es Temperatur				
Food Temperatur Description Warewashing Info	erations. es Temperatur	re (Fahrenheit) State-of Food			
Food Temperature Description Warewashing Info The viola	Temperatur Temperatur ations listed in this report in	e (Fahrenheit) State-of Food			
Food Temperature Description Warewashing Info The viola	Temperatur Temperatur ations listed in this report in	re (Fahrenheit) State-of Food			
Food Temperatur Description Warewashing Info The violatidentified	Temperature Temperature ations listed in this report in a during this inspection. Co	e (Fahrenheit) State-of Food			
Food Temperatur Description Warewashing Info The violatidentified Observed Critical	Temperature Temperature ations listed in this report in a during this inspection. Co	nclude any previously issued orders and deficiencies ompliance dates are shown for each item.			
Food Temperature Description Warewashing Info The violation identified Observed Critical Total # 0	Temperature Temperature ations listed in this report in a during this inspection. Co	nclude any previously issued orders and deficiencies ompliance dates are shown for each item.			
Food Temperatur Description Warewashing Info The violatidentified Observed Critical	Temperature Temperature ations listed in this report in a during this inspection. Co	nclude any previously issued orders and deficiencies ompliance dates are shown for each item.			
Food Temperature Description Warewashing Info The violation identified Observed Critical Total # 0	Temperature Temperature ations listed in this report in a during this inspection. Co	nclude any previously issued orders and deficiencies ompliance dates are shown for each item.			
Food Temperature Description Warewashing Info The violation identified Observed Critical Total # 0 Repeated # 0	Temperature Tempe	nclude any previously issued orders and deficiencies ompliance dates are shown for each item.			
Food Temperature Description Warewashing Info The violation identified Observed Critical Total # 0 Repeated # 0 Observed Violation	Temperature Tempe	nclude any previously issued orders and deficiencies ompliance dates are shown for each item.			
Food Temperature Description Warewashing Info The violated identified Observed Critical Total # 0 Repeated # 0	Temperature Tempe	nclude any previously issued orders and deficiencies ompliance dates are shown for each item.			

The Maple syrup process is well documented in the file. The critical control point is the last distillation process to the bottling of the syrup. During this last step, it is critical to keep the process as sanitary as possible. All syrup is used by the Monks or shared with workers.

I acknowledge receipt of the Steams County inspection report number JTRY-AXQH39 of 03/30/2018 Certified Food Manager:

Certification Number: Expires:

Person in Charge

Comments



Figure 49. Inspection report for the Saint John's Maple Syrup Operation.



Figure 50. Jim Preusser and the new handrail and bench ("Jim's Place") that he constructed.



Figure 51. Jim Preusser displaying one of the 2-jug carrying cases he built.



Figure 52. Steve & Sarah beneath the new sign in the sugarhouse.



Figure 53. Steve presenting to Sarah a maple board showing the degree of staining from a single spile hole. The board is used in educational programming.



Figure 54. 2018 Maple Syrup Festival. Image taken by a drone. Courtesy of Mary Gondringer.



Figure 55. Saint John's Maple Syrup sugarhouse (left center) and wood shed during a 2018 Maple Syrup Festival. Image taken by a drone. Courtesy of Mary Gondringer.



Figure 56. Festival visitors head into the sugarbush to tap trees and collect sap during a 2018 Maple Syrup Festival. Image taken by a drone. Courtesy of Mary Gondringer.

Appendix 1. 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

Appendix 2: 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

<u>**Objectives**</u>: 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

Appendix 3: 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.

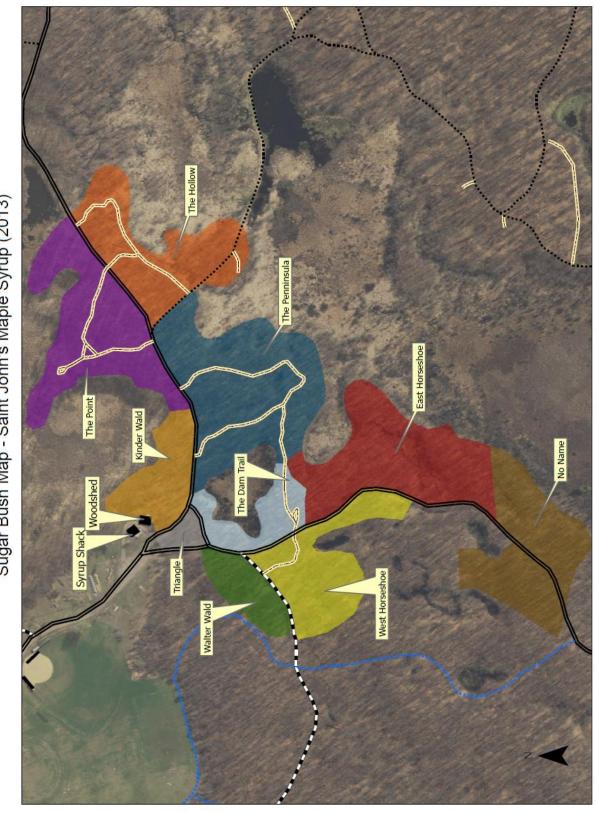
Bless all who come out to work, observe, and visit.

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.



Appendix 4: Saint John's Sugar Bush Map



Sugar Bush Map - Saint John's Maple Syrup (2013)