

Maple Syrup Season 2016 – Summary

by

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Date prepared: January 19, 2018

Overview: This report documents the activities of the Saint John's Maple Syrup operation during the 2016 season.

Staff: 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. Incredibly, this team invested more than 608 hours in the operation (**Table 4**). In addition, Saint John's Outdoor University staff members – Sarah Gainey, Jenny Kutter, MJ Bach, Hannah Jungels, and Tom Kroll – provide lots of support to the Crew.

Br. Walter and the Core Crew were joined by at least 176 volunteers including students, faculty, staff, and friends who collectively donated more than 1241 hours to the operation (**Table 4**). These hours are self-reported by the volunteers who are requested to keep a record by signing our logbook at the sugar shack or by entering their data in our online database. 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. Two volunteers – Jim Preusser and Harold Zip – deserve special mention because they invested such a large amount of time and worked so closely with the Core Crew. Incredibly, a total of more than 1850 hours went into the production of Saint John's Maple Syrup during 2016 (**Table 7**).

Organizing a large crew can be a daunting task, but the Outdoor University staff does an amazing job. Sarah Gainey sends regular email "Maple Syrup Updates" to volunteers who have signed up to be on the distribution list. This year, volunteers received at least 20 updates on Feb 26; Mar 6, 8, 10, 11, 15, 17, 19, 21, 24, 28; and Apr 4, 6, 10, 12, 15, 18, 19, 23, 26. To encourage volunteers to read the updates, Sarah included informational "Snippets." (**Table 12**). In addition to numerous emails between Core Crew members, Sarah sent out regular "Core Crew Updates," too.

Tapping: Ideal sap flow weather came early this year, which motivated Jean to send a note to the Core Crew on February 19th to suggest that we put taps out prior to Community Tapping Day. On February 22nd the crew began prepping buckets and put collecting barrels out in the woods. To avoid missing an early run, on Thursday, February 25th, Br. Walter and volunteers had installed about 700 taps and reported that they were "dripping good" and the sugar concentration was high (3.0%).

New this year was the addition of four, 3/16th inch gravity-vacuum lines in the Hollow and North Point (**Figure 23**). On each line, up to about 15 trees were tapped, 3/16th inch tubing was attached, and each was run to a collector barrel (**Figures 17 & 18**).

By Sunday, February 28th, the trees had dripped enough to haul in three loads (650 gallons) of sap (**Table 5**). This was the second earliest sap flow on record. The earliest is February 26, 1999.

A week later, on Saturday, March 5th, “Community Tapping Day” was held with a “record-setting crowd” of about 300 people who helped to install about 700 taps. Like last year, there were several tapping crews, each with an experienced leader, a tree measurer, a ‘tapper’ with portable drill and spare battery, a ‘spile driver’ with a hammer and bucket of spiles, a ‘runner’ who dropped a bag/holder/bucket beneath the tap hole, and a ‘hanger’ who hung the bag on the spile. Sugar maple trees were marked with paintballs by Outdoor University staff to make it easier for the crews to identify the trees to be tapped. The team leaders included Core Crew members, Outdoor U staff as well as some experienced volunteers including Mike Roske, Mike Leedahl, Ben Carlson, Kate Delfs, Marion Gondringer, Teresa Gonia, Kyle Lyndgaard, Larry Schug, Courtney Millaway, and Jonathan Carlson. Each Crew was assigned a different area of the sugarbush to tap (**Figure 23 & 27**). As usual, the Outdoor University staff did a great job organizing the event including refreshments, ‘crew’ buttons, and Br. Walter’s traditional prayer.

One drawback of having so many inexperienced volunteers helping is that they can make mistakes, even with the best training that we can give. Though we try very hard to educate our volunteers, it can be frustrating to find the occasional spile installed at an incorrect angle (**Figure 16**) or other mistakes. This is a small price to pay for having so many willing and enthusiastic volunteers.

By the end of the season, 1743 taps had been installed. Of these, 941 (54%) were 5/16th and 802 (46%) were 7/16th inch (**Tables 3 & 11**). We continued our spile study again this year and kept track of how many spiles of various sizes were installed in different areas of the sugarbush. One logistical challenge, handled extremely well by the Outdoor U staff is keeping track of the various sizes/styles of spiles used in the operation (**Figure 30**).

On April 8th we began to pull taps and were finished by April 11th (**Table 5**). On Sunday April 10th Walter reported that the sap was still running clear but the sugar concentration had fallen to about 1.7%. He concluded that it was “High time to pull taps for sure.”

Clean Up: The clean-up process was much the same as last year. The mechanized bucket washer created by Br. Walter, Bill Mock and Dan Weber was put to good use and it worked great (**Figures 21**). Square buckets still needed to be washed the old-fashioned way (**Figure 22**). Insulated gloves are frequently used during cleanup and all phases of the operation (**Figure 19**).

Sap Production: Continuing the Saint John's tradition, we maintained our sap production records on a scrap board (**Figure 1**). Note the first run of sap collected on February 28th occurred before we started using our sap, so is not shown on the board. The data from 2016 are summarized in **Tables 1, 3 & 5**. In addition, data for all years are summarized in **Tables 6 & 7**.

This was an early year for sap flow, as noted above. In fact, it was about 2.5 weeks earlier than the average first sap collection date, which is March 18th (**Figure 2, Tables 6 & 7**). The last sap was collected on April 11th, which is the typical date for the last sap collection (**Figure 2, Tables 3, 6 & 7**). Because of the early start, it made for a longer than usual syruping season (42 days compared to 24; **Tables 6 & 7**) and sap was collected on more days (15) than usual (12)(see **Table 6 & 7**).

A total volume of 15,380 gallons of sap was collected (**Table 3 & 5**). The largest daily sap collection during the season was 3,455 gallons, which is the most ever collected on a single day (**Table 7**). Based on the number of taps, it was an above average year for sap production. We collected 8.8 gallons of sap per tap compared to an average of 7.4 (**Tables 1 & 5**).

Syrup Production: Syrup production data were also recorded on a scrap board (**Figure 3**). Based on these data we produced 425 jugs of syrup (**Table 2 & 5**). As Br. Walter joked in an April 12th email to the crew, "the final number of jugs/pails is certified and verified by Al and Harold of the United Maple Syrup Certified Cookers Guild." Since we jug into a mixture of various-sized containers (gallon, three-liter, four-liter, five-gallon pails), this equates to 382.2 gallons of syrup (**Table 10**). In other words, we produced 10.1% fewer gallons of syrup than the number of jugs that were actually bottled.

Prior to 2015, our data 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 about 10%. 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, visitors, school groups, and others, which also lowers our statistics for the total amount of syrup produced. In contrast, sap volumes are accurate because they have always been measured using tanks graduated in gallons.

As stated, this year we made 382 gallons of syrup. We produced nearly a quart of syrup per tap (0.88) versus an average season yield of three-quarters of a quart per tap (**Table 6 & 7**). The sugar concentration this year averaged 2.14%, which was just slightly, lower than average (2.2%). This yielded a sap-to-syrup ratio of 40.2, which was average (40.3).

Syrup Analysis: Continuing the tradition begun last year, we kept a sample of nearly every batch of syrup that was jugged (**Figures 8 & 10**). Volunteers were recruited to evaluate the samples (**Figure 9**). Each sample was tasted and its density and transmittance were measured.

The majority (50%) of syrup produced this year was USDA Grade Dark / Robust ($T_c = 49.9 - 25\%$). No Golden/Delicate syrup ($T_c > 75\%$) was produced during 2016 (**Table 13**). The color of the syrup got darker, in a linear fashion, over the course of the season (**Figure 24**). This is typical and caused by the growth of microbial contaminants in the sap and the increased production of metabolites by the trees, all of which interact during the cooking process.

On about March 21st or 22nd there was a noticeable decline in the transmittance of the samples (see **Figure 24**). This likely occurred because the cook team, led by Br. Walter, inadvertently forgot to open the valve into the syrup pan. Consequently, the syrup pan caught on fire and was destroyed (**Figures 12 & 31**). The pan was removed, discarded, and replaced, but salvaging as much syrup as possible caused a decrease in syrup transmittance that took about a day or two to clear the system. Though we lost a considerable amount of syrup, fortunately the accident did not appear to affect the flavor of the syrup produced during those days.

Most (79.5%) of the samples were clear (data not shown). The remainder were slightly cloudy. This is due to sugar sand that was not completely removed during the filtration process.

The majority of the samples (90%) were of legal density (66-68% sugar). However, four samples were below the minimum density, including one as low as 64% Brix. In the future, we need to insure that all syrup is finished to a minimum of 66%.

Sweet Predictions Award: Fifteen people joined the competition to predict the amount of syrup we would produce (**Figure 14**). This year's winner of the Sweet Predictions Award was Bill Mock (**Table 9, Figure 13**) whose guess of 412 gallons was only 30 gallons off.

Festivals & Celebrations: We hosted our festival this year on April 2nd (**Figure 6**). The second festival was cancelled because we were concerned that the early start to the season would mean an early end to the season, too. The festival featured the standard activities including maple syrup sundaes, live music, face painting, children's nature area, tours of the sugarhouse, educational lectures, tapping demonstrations, horse drawn wagon rides, and a Native American area. There were 395 visitors (172 adults, 97 youth, 20 children, 70 CSB students, 36 SJU students) and 116 staff and volunteers, which means there were 511 total participants. Although the attendance was a little lower than a typical festival, considering the weather was cold (35 F) and windy, we were pleased with the turnout.

After the festival, the Core Crew gathered for a potluck to celebrate the end of the season. A few weeks later, Mr. Larry Schwietz (**Figure 15**) and his family came to visit and we held a luncheon celebration in his honor. Larry served on the Arboretum Advisory Committee for many years. Our educational evaporator, "Little Larry," is named in his honor of his family's long-time support for all things related to the Abbey Arboretum and the Outdoor U. Further, his son, Fr. Paul Schwietz, O.S.B., was the founder of the Saint John's Arboretum.

Outdoor U often hosts a Pancake Dinner to thank all of the volunteers who helped during the season. Unfortunately, this year it was cancelled.

Publicity/Honors: The Outdoor University staff maintained a daily blog at the following link: <http://www.csbsju.edu/Arboretum/Stewardship/Projects/LandStewardship/MapleSyrup/Volunteer/DailyUpdate.htm>. 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:

- Anonymous (2016). School Days. Getting the most of Minnesota's top universities – without ever cracking open a textbook. **AAA Living**. p. 40 (March/April issue).
- Anonymous (2016). Abbey Chronicle. **Abbey Banner**. p. 35, Spring.
- Anonymous (2016). Abbey Chronicle. **Abbey Banner**. p. 45, Fall.
- Anonymous (2016) **Saint John's Abbey E-News**, March 28.
- Chatelaine, Hailey (2016) Maple syrup video. Uploaded to YouTube as part of an assignment for BIOL379 (<https://www.youtube.com/watch?v=QLx6D0QDGuY>)
- Wessel, Ann (2016) It all boils down to hard work. **St. Cloud Times**, March 26, Our Woods & Waters, pp. C1 & C4.
- Wessel, Ann (2016). Where to catch a maple syruping demo. **St. Cloud Times**, March 26, Our Woods & Waters, p. C2.

Maple Sap Award: Outdoor U director, Tom Kroll nominated Br. Walter writing that, “As a proud past SAP recipient, I would nominate myself this year if I could think of anything that exceeds the twisted wreck of the charred front pan laying out behind the shack.” Another Core Crew member (*i.e.*, the author of this report), also nominated Br. Walter (“my nomination for the award is someone we all love and admire, someone who has been making syrup longer than anyone, someone whose name is synonymous with maple syrup, someone who lives closest to the sugar shack, someone who epitomizes Benedictine love, hospitality and spirit, someone who burned up a syrup pan.”) Although technically Br. Walter, last year's Sap Award Winner, should have made the decision for this year, the Crew unanimously (perhaps with one exception), awarded Br. Walter the Maple Sap Award for “seasoning” the Big Burnie syrup pan (**Table 8, Figure 11 & 12**).

Education & the Community-at-large: Once again, we provided educational tours to nearly 1500 students, from pre-school to college (**Table 4**). The majority of college students who visit the operation do so as a part of their BIOL201 laboratory. The Outdoor U staff does a wonderful job. To encourage the students, Outdoor U offers a “Maple Spirit Award” to the group that shows the greatest amount of enthusiasm during their visit. The lab group earns a maple syrup sundae party and trophy. The winner of this year's award was one of the lab groups of Dr. Katherine Furniss (**Figure 7**). In a note sent to the Outdoor U staff, Dr. Furniss described her experiences at the sugar shack:

This is my fifth year teaching these labs. The students always come back so excited about the tradition at SJU, the science behind sap flow, and the delicious product from all the hard work. A large number of our lab students become active volunteers in the Arboretum. The Biology faculty love getting our students outside and it is my favorite week every Spring semester.

The Outdoor U staff does a fantastic job of pulling out the inner 5 year old in our students and getting them excited and curious. I am surprised every year by the students who have been quiet all semester and all of a sudden in this lab you can't keep them quiet.

May the sap flow quickly and the volunteers be plentiful. Dr. Katherine Furniss

In addition to the school groups, Br. Walter gave a tour to the Stearns County Master Gardeners as a part of their annual spring conference. He also had a cookout at the shack with his Knights of Columbus group.

One new display is a pressure gauge installed in a maple near the sugarhouse (**Figure 5**). It provides a visual demonstration of the conditions inside the tree and correlates well with sap runs.

Sap-sickles were also common this year (**Figure 4**).

Licensure: We were again licensed by Stearns County Environmental Services (**Figures 26 & 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. She inspected the operation on March 29, 2016.

Upgrades: There were several upgrades to the operation this year. Perhaps the most significant was redoing the south foyer area (**Figures 28 & 29**). Br. Walter, Bill, Dan and others, removed the old joists and then paneled the ceiling with maple to match the rest of the shack. The maple lumber was supplied by Mike Roske and the Saint John's wood shop. Not only did this beautify the shack but also allowed in much more light.

Other additions included acquiring a fire extinguisher, installing a crank system to more easily raise and lower the steam hood (**Figure 29**), and add labels/signs to our wood paneling display (**Figure 20**).

At our year-end meeting on May 10, 2016, there were several suggestions for the future including:

- clean the pails right after pulling taps
- put the empty collecting pails away at the end of the day
- save trees for the education group to tap
- empty any rinse water from jugs before bottling

- minimize tractor paths thru woods
- insure communication between Core Crew members
- get longer spiles,
- post Core Crew phone numbers in the sugar shack.
- afternoon sap collection works better to make sure the buckets are thawed
- stay away from the steep North Point slope with taps.
- try tubing closer to the shack so more visitors can see it.
- continue collecting the sap data while pumping the sap into the tanker.
- help the Abbey sell the syrup to departments on campus to generate money for the syrup account (departments would not be allowed to sell the syrup, just give it away as gifts.)
- avoid stacking wood near the shack door

Among things to do that have carried over from last year include:

- 1) Finish the sign above the north doors;
- 2) make a plaque listing the syrup boss & crew members;
- 3) make a plaque listing the winners of our various awards (*Sweet Predictions & Sap*);
- 4) complete the paneling on the west wall;
- 5) build a structure to stabilize the bottler when it is full of syrup;
- 6) install more attractive fire screening around the wood stove;
- 7) construct a more attractive wood box or other structure to hold the wood, paper for burning in the wood stove;
- 8) include leaves, buds, etc., with the wood paneling display;
- 9) 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;
- 10) remove any items from the main shack that are not directly used in the syruping operation;
- 11) 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;
- 12) finish the area beneath the windows and around the window above the NW door;
- 13) build shelves or other system beneath the current maple juggling shelf to store the empty jugs waiting to be filled; and
- 14) attach to the outside of the shack a bracket and holder system for the propane tank.

Appendices: Tables & Figures

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

Table 1. Sap Collection Data – Spring 2016

Date	Sap collected (gal)
28 Feb	650
7 Mar	2350
11 Mar	2310
14 Mar	225
18 Mar	500
21 Mar	1575
22 Mar	3455
26 Mar	1800
28 Mar	1190
2 Apr	100
4 Apr	450
8 Apr	675
11 Apr	100
Total (gal)	15,380

Table 2. Syrup Production Data – Spring 2016

Date	Syrup (gals)
8 Mar	20.7
9 Mar	33.8
11 Mar	7.9
12 Mar	37.0
19 Mar	30.4
21 Mar	17.1
22 Mar	41.3
23 Mar	27.2
24 Mar	39.6
28 Mar	60.9
29 Mar	18.6
5 Apr	17.7
11 Apr	21.2
12 Apr	9
Total (gal)	382.4

Table 3: Syrup Production Statistics Summary – Spring 2016

Spiles (7/16ths)	802
Spiles (5/16ths)	941
Spiles Total	1743
# sap collection days	13
Sap collection dates	28 Feb – 11 Apr
Tanker loads of sap	72
Total sap collected (gal)	15,380
Syrup produced (gal)	382.4
Batches of syrup produced	45
Ratio (sap/syrup)	40.2
Sugar concentration (%)	2.1
Wood Used (syrup / cord)	

Table 4: Saint John's Maple Syrup Operation Volunteers & Visitors – Spring 2016

Volunteers (<i>counts families as one so total number even higher</i>)	176
Volunteer hours (<i>includes Harold Zip's (130) and Jim Preusser (154) hours</i>)	1241
Core Crew hours (<i>excluding Br. Walter & SJOU staff</i>)	608
Total Volunteer hours	1849
Festival Staff & Volunteers	116
Festival Visitors (<i>includes 172 adults, 97 youth, 20 child, 70 CSB students, 36 SJU students</i>)	395
Total Festival Attendance	511
Student tours (pre K – 12)	1263
Student tours (post- secondary; incl. biology labs & others)	228
Total students	1491
Tapping Day participants	300

Table 5. 2016 Summary Data

2016 Summary: Sap & Syrup Data									
# of Taps	1743								
Taps 5/16th (actual count)	941								
Taps 7/16th (actual count)	802								
Taps total (actual count)									
Taps total (GPS count)									
Taps Placed	February 25 some put out. Community tapping day Mar 5								
Taps Pulled	Started April 8; finished April 11								
Wood Used (cords)									
volunteers	176 counts families as one so total actually higher								
volunteer hours	957								
Core Crew hours	608								
festival particip	511 (just one)								
Students pre K-12	1263								
Students post	228								
Syrup boss	Walter Kieffer, OSB								
Syrup Crew	William Mock, Sarah Gainey, Stephen Saupe, Kyle Rausch, Gay Gillitzer, Al Meiers, Dan Weber. Although not officially on the crew, Harold Zipp & Jim Preusser were ever pres								

continued on the next page

Table 6. Summary from all years

St. John's Maple Syrup - Summary of Data																												
1942 - present																												
updated: 6/3/2016																												
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Table 7. Summary of Maple Stats – 1942 – 2016

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. Data compiled by Stephen G. Saupe, CSB/SJU Biology Department.

General

First season to make syrup	1942
Number of years since St. John's began making syrup	74
Number of seasons during which St. John's has made syrup	40
Average time (in years) between successive syrup-making seasons	1.9

Tapping Data

Average date trees are tapped	9 March (25 Feb – 19 Mar)
Average date taps are removed	14 April (24 Mar – 26 Apr)
Average number of taps (<i>for all seasons</i>)	1371
Average number of taps (<i>prior to 2002</i>)	1619
Average number of taps (<i>since 2002</i>)	1064
Fewest number of taps (& <i>year installed</i>)	150 (1942)
Maximum number of taps (& <i>year installed</i>)	3700 (1974)

Sap Collection Data

Average first date of sap collecting	18 March
Earliest date on which sap was first collected (& <i>the year</i>)	26 Feb (1999)
Latest date on which sap was first collected (& <i>the year</i>)	3 Apr (1974)
Average last date of sap collecting	11 April
Earliest date on which sap was last collected (& <i>the year</i>)	24 March (2012)
Latest date on which sap was collected (& <i>the year</i>)	26 April (2013)
Average number of days during the season on which sap was collected	12.2 (5 – 19)
Average number of days between first and last sap collection (= <i>length of sap production season</i>)	23.3 (9 – 43)

Sap Volume Data

Most sap collected, in gallons, during a season (& <i>the year</i>)	21,179 (1985)
Average sap collected, in gallons, during a season	9928
Average sap collected, in gallons, on a collecting day	807 (308 – 1282)
Most sap collected, in gallons, on a single day (& <i>the year</i>)	3455 (2016)
Average gallons of sap collected per tap	7.4 (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 sap boiled per hour / gallons syrup produced per hour]	20 / 0.5
Production Evaporator (Big Burnie) size	3 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 (<i>data for all seasons</i>)	248
Average gallons of syrup produced during a season (<i>since 2002</i>)	202
Maximum gallons of syrup produced in a season	560 (1985)
Minimum gallons of syrup produced in a season (& <i>the year</i>)	39 (2012)
Average quarts of syrup per tap	0.76 (0.14 – 1.7)
Wood used (gallons syrup / cord burned)	25.0 (21.4 – 28.9)

Sugar Concentration Data

Average sap/syrup ratio	40.3 (31.3 – 61.8)
Average seasonal sugar content of sap, in percent	2.2%
Lowest seasonal sugar content of sap, in percent (& <i>the year</i>)	1.4% (2005)
Highest seasonal sugar content of sap, in percent (& <i>the year</i>)	2.7% (1990)

Table 8. Great moments in Saint John's Maple Syrup History – A Summary of the Maple Sap Award Winners

Year	Award Winner	Great Moment
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
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 2016 Season.

Container size	Number Jugged	Volume (gallons)
4-liter glass jug	105	111.0
3-liter glass jug	234	185.4
Gallon glass jug	66	66.0
5-gallon plastic pail	4	20
Total	425	382.4

Table 11: Spile types used during the 2016 Season

Type		
5/16 th	Stainless stubbies	117
	Stainless longs	489
	Stainless with eyelet	166
	Soule	
	Total 5/16 th	941
7/16 th	Standard	708
	Standard with hook	31
	Aluminum	63
	Total 7/16 th	802
Grand Total – All sizes		1743

Table 12. Sarah's Syrup Snippets from 2016 *(Fun facts by Sarah Gainey in her daily update emails sent to volunteer distribution list)*

Sarah's Syrup Snippets: We aren't the only ones [experiencing a strange winter](#)...only time will tell how our syruping season will turn out!

People show their love of real maple syrup in a variety of ways. Watch how CSB Senior Haley Chatelaine shows her love of maple syrup (link below). Seriously wonderful. (<https://www.youtube.com/watch?v=QLx6D0QDGuY>)

The temperature conditions needed for sap flow are days above freezing and nights below freezing. We may be looking at a [short season](#) this year...

Wondering how sap conditions are in Wisconsin? There is now a 'Sap Report' every day on [WAXX radio](#), 104.5 FM out of Eau Claire, read twice between 5-7 am and again at noon. If you can't tune in on your radio, you can listen to it on the Roth Sugarbush [Facebook page](#).

The young and the young at heart will love these children's books about maple syruping. Here are a few current favorites:

- [Sugarbush Spring](#) by Marsha Wilson Chall
- [At Grandpa's Sugarbush](#) by Margaret Carney
- [Sugar Snow](#) by Laura Ingalls Wilder

I dare you to scroll through this [website](#) while you are hungry...

Want to know how to say '[maple syrup](#)' in Irish? Of course you do...

Interested in collaborating with other syrup makers in Minnesota? Then get involved in the [MN Maple Syrup Producers' Association](#). Events, industry news, recipes and more are available on their website.

Sometimes you can have too much of a good thing...anyone remember this [clip](#) from the TV show Friends when Ross overindulges on maple candy?

(not) Sarah's Syrup Snippets: Celebrate Easter this weekend. Celebrate maple syrup all year round. National Maple Syrup Day is on December 17. Start planning your feast now. *(this one was written by Jenny Kutter)*

Thanks to Tom Voller-Berdan from CSB/SJU Admission/Marketing and his team, we now have some cool panoramic shots from the festival. Check out the links to the '360s' below. Be sure to click and drag the sides of the photos to see the full shot!

- <https://www.panono.com/p/nizcaSRMDw2I>
- <https://www.panono.com/p/rRUH5ZBOdRqG>
- <https://www.panono.com/p/FtoOMLY6BMyW>

In honor of all our CSB/SJU seniors still trying to figure out what's next...or maybe for someone looking for a career change...may I suggest a graduate program at the University of Vermont where you could do maple syrup research at the [Proctor Maple Research Center](#)!

Check out this article '[Making Maple Syrup at Saint John's](#)' by Steve Saupe in the CSB/SJU Faculty Journal Headwaters from 2006. For those of us who have been involved for a while, it is fun to see what has changed and what remains the same!

Happy National [Grilled Cheese](#) Day!

Feeling inspired to make your own syrup next year? [Roth Sugar Bush](#) in Cadott, Wisconsin is a great place to buy supplies from!

A [new international grading system](#) for maple syrup was adopted in 2015. Steve Saupe, one of our maple syrup core crew and a well-renowned maple syrup judge for the Minnesota State Fair, led a group of us through the process of grading Saint John's maple syrup yesterday. Tasting over 40 samples of syrup is harder than you think!
[Maple Syrup Flavor Wheel](#)

April 23 - I'm all tapped out for the season. Be back next year!

Table 13. Light Transmittance of Maple Syrup Samples Produced During 2016. N = 40.

Grade (Color / Flavor)	Light Transmittance (%)	Samples	% Total Samples
Golden / Delicate	>75	0	0
Amber / Rich	74.9 - 50	14	35.0
Dark / Robust	49.9 - 25	20	50.0
Very Dark / Strong	<25%	6	15.0

2016 | Sep 225 per
 load
 3/7 ~~III~~ III + 100 gpl
~~3/8~~ 3/8 III III + 60
 3/14 I
 3/18 II + 50
 3/21 III II
 3/22 III III III + 80
 3/26 III III
 3/28 III + 130 + 160 (~~III~~)
 4/2 100
 4/4 II
 4/8 III
 4/11 100

Figure 1. Sap Collection Data from 2016 season

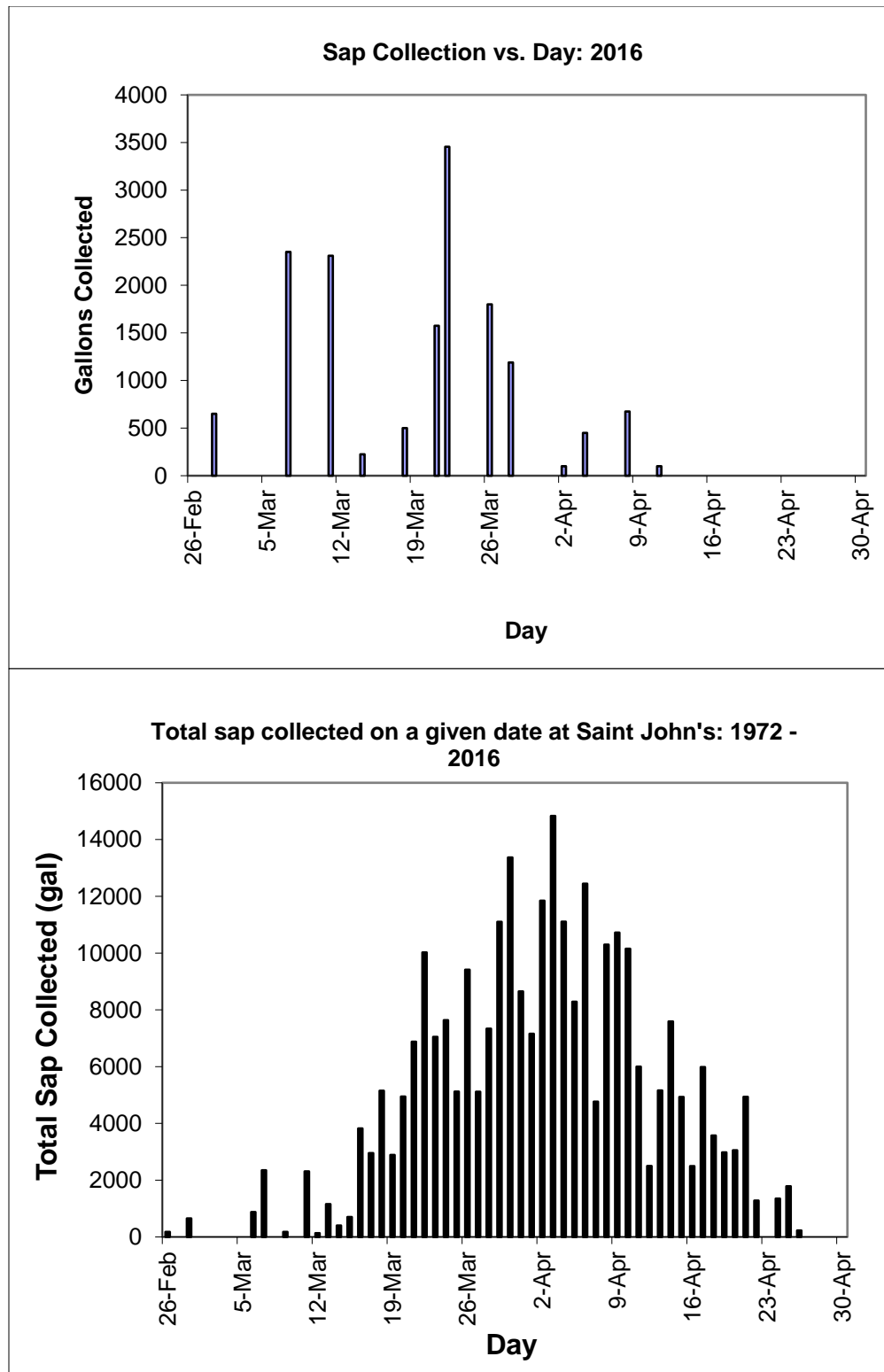


Figure 2. Sap production statistics from the 2016 season compared to all years in the Saint John's Sugarbush.

SYRUP 2016						
Date	Barn	Time	3L	Gal	4L	Total
3/8	1	12:15p	13	-	-	13
3/8	2	3:30	-	3	7	10
3/9	3	11am	10	1	4	15
3/9	4	1:30pm	3	-	8	11 49
3/9	5	3:30p	7	-	4	11
3/11	6	4:30	6	1	2	9
3/12	7	11am	3	1	5	9
3/12	8	1pm	5	2	3	10 88
3/12	9	2:15pm	1	1	8	10 98
3/12	10	5:15	2	-	7	9
3/19	11	11:30	6	1	5	12
"	12	1:30	7	3	2	12
3/19	13	2:00	7	1	2	10 141
3/21	14	2:00	2	1	4	7 148
3/21	15	5:00	2	1	2	5
3/21	16	6:00	2	4	-	6 (159)
3/22	17	10:30	4	5 paid	-	9
"	18	12:30	4	-	4	8
"	19	2:00	10	-	-	10
"	20	3:30	6	2	2	10
"	21	6:00	5	1	3	9 10
3/23	22	12:00p	5	-	3	8
3/23	23	2p	3	3	-	6 (226)
"	24	4:15p	4	1	1	7 (227)
"	25	5:45	7	1	2	10 (237)
3-24	26	10:30A	6	1	1	8 (245)
"	27	12:45p	7	2	-	9 (254)
"	28	3:00	9	-	1	10
"	29	2:45	3	2	3	8
"	30	3:45	8	0	3	11 (283)
3-28	31	8:30	7	2	2	11
"	32	10:45	5	0	4	9
"	33	12:P	7	1	2	10
"	34	1:30	5	1	3	9
"	35	3:30	10	2	0	12
"	36	5:20	9	0	1	10
"	37	6:00	9	0	1	10 (354)
3-29	38	10:15	9	2	1	12
"	39	0:30	8	0	2	10 (376)
4-5	40	11:30	8	10 (paid)	2	10
4/5	41	1:00	2	4	2	8 (394)
4/11	42	11:45	0	6	0	6
4/11	43	2:15	2	5	0	7
4/11	44	3:15	2	5 (paid)	1	9 (416)
4/12	45	4:00	0	9	0	9 (425)

Figure 3. Syrup production statistics from the Saint John's Maple Syrup Operation in 2016



Figure 4. Sap-suckle in the Saint John's sugarbush. Image by Br. Walter Kieffer, OSB.



Figure 5. Gauge used to measure maple stem pressure during the sap flow season. Pressures can reach 30 psi and higher when the sap is flowing. Image by Br. Walter Kieffer, OSB.

Maple Syrup Festival

discover

**Saturday
April 2
11AM - 4PM**

*Tree tapping. Sap collecting.
Syrup cooking. Bonfire.
Maple syrup sundaes.
Horse-drawn wagons.
Kid activities.
Music.*

Pre-register
and
SAVE!

**OutdoorU@csbsju.edu
320.363.3163
csbsju.edu/OutdoorU**

Saint John's
OUTDOOR
UNIVERSITY

Dress for the weather. No pets.
Boots recommended. Fun required.

Saint John's
Maple Syrup

Figure 6. Advertisement for the 2016 Saint John's Maple Syrup Festival



Figure 7. Winners of the 2016 Spirit Award - Dr. Katherine Furniss BIOL201 laboratory class. Image submitted by Dr. K Furniss.



Figure 8. Samples of each batch of syrup that was bottled are displayed in the Saint John's Sugarhouse.



Figure 9 Participants analyzing each batch of Saint John's Maple Syrup produced during the 2016 season (from left – Jean Lavigne, Sarah Gainey, Br. Walter Kieffer, MJ Bach, Stephen Saupe, Hannah Jungels, and Kyle Rauch.



Figure 10. Samples of Saint John's Maple Syrup produced during 2016: Top Row (batch # from left) 1, 2, 3, 4, 5, and 6. Second row: 7, 8, 9, 10, 11, 12, 13. Third Row: 14, 15, 16, 17, 18, 19, 20, 21. Bottom Row: 22, 23, 24, 25, 26, 27, 28, 29, 30



Figure 11. Br. Walter Kieffer, winner of the 2016 Sap Award, being congratulated by Tom Kroll.



Figure 12. Br. Walter Kieffer examining the burnt sap pan that earned him the 2016 Sap Award.
Image by Tom Kroll.



Figure 13. Bill Mock, winner of the Sweet Predictions trophy.



Jean	62
Steve	111
Gary	113
Sarah	127
Hannah	186
Tom	196
Harold	199
Amy S.	205
Matt J.	211
MS	219
Kyle	222
Al	303
Walter	329
Dan	337
Bill	412

Figure 14. Listing of the Sweet Predictions from 2016



Figure 15. Core Crew member Stephen Saupe and Mr. Larry Schwietz (right). Larry is the father of Saint John's Abbey Arboretum Founder, Fr. Paul Schwietz, and a longtime supporter of the Saint John's Maple Syrup Operation.



Figure 16. Spile installed at an incorrect angle by a volunteer during Community Tapping Day.



Figure 17. Images showing the new 3/16th inch gravity tubing lines



Figure 18. Image showing the gravity-vacuum line ending in a collection barrel



Figure 19. Gloves drying on top of the Saint John's main evaporator, Big Burnie.



Figure 20. New labels for the wood paneling



Figure 21. Bill Mock, Jim, and Br Walter Kieffer cleaning buckets using the new bucket washer invention.



Figure 22. AnnMarie Backstrom, Gary Gillitzer, and Kyle Rauch washing buckets the old-fashioned way.

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

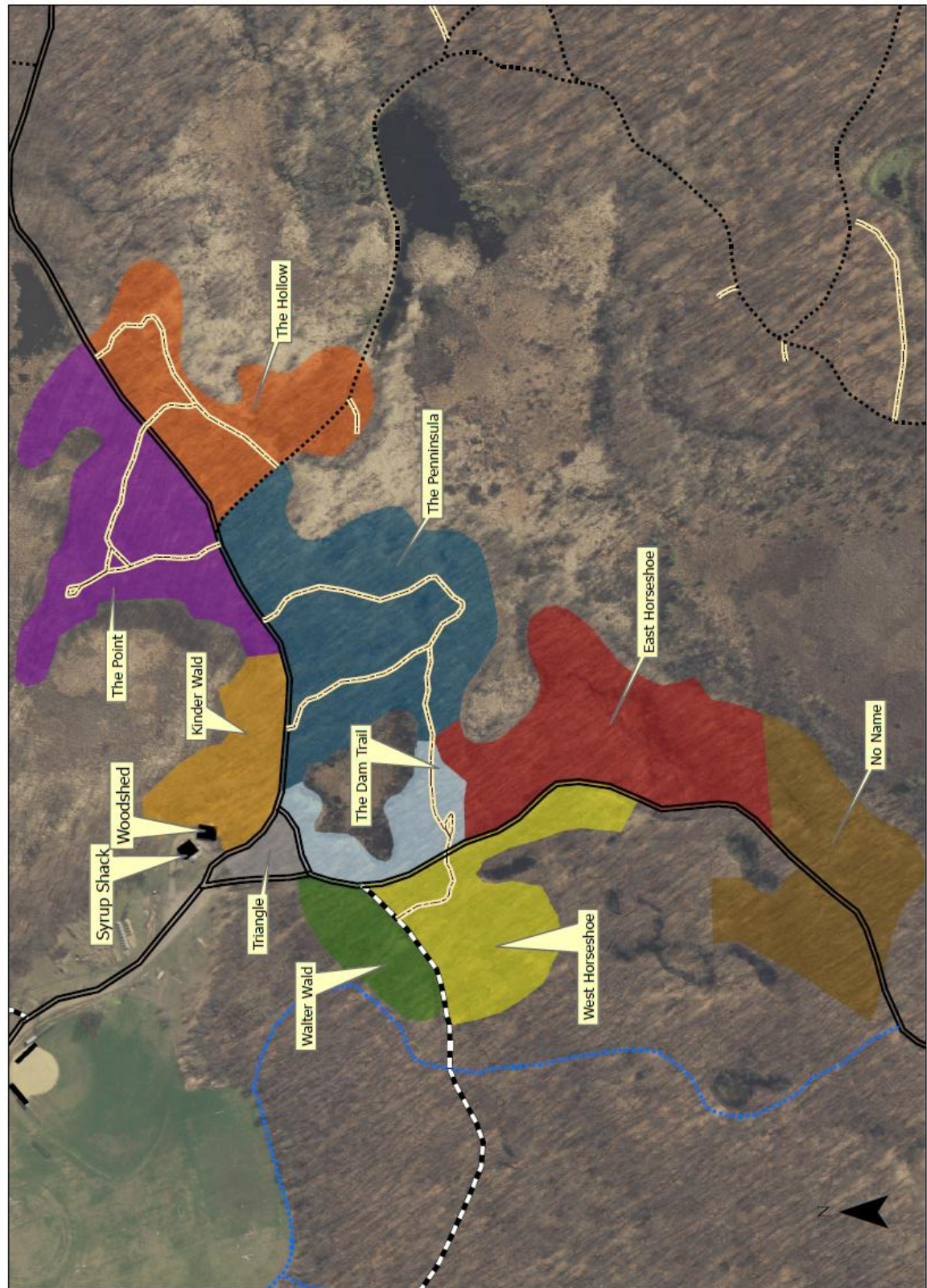


Figure 23. Map of the Saint John's Sugarbush

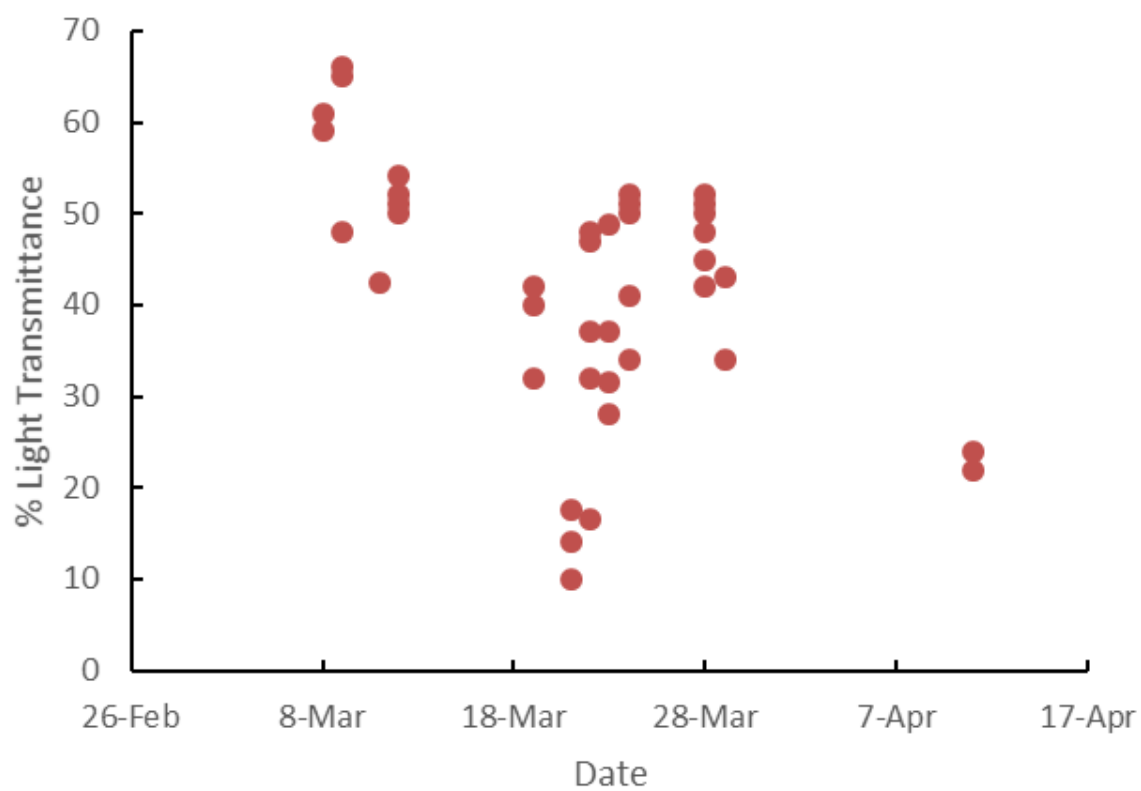


Figure 24. Light transmittance of batches of syrup produced during the 2016 season

Saint John's Maple Syrup



A sap-run is the sweet goodbye of winter. It is the fruit of the equal marriage of sun and frost.

-John Burroughs "Signs & Season" (1886)

Saint John's Maple Syrup is a partnership between Saint John's Abbey and University to continue the tradition of producing maple syrup while providing opportunities for education and service to the community. Br. Walter Kieffer, OSB, runs the maple syrup operation and is assisted by many volunteers.

Events that are open to the public include:

Maple Syrup Festival

Preregister by April 1

Saturday, April 2 | 11 am - 4 pm

<http://csbsju.edu/outdooru/education/events/maplesyrupfestival>

Figure 25. Notice about the Saint John's Maple Syrup Operation in the Saint John's Abbey E-News, March 2016



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

Type: Full
Date: 03/29/16
Time: 13:00:00
Report: 4308161033

Food and Beverage Establishment Inspection Report

Page 1

Location:

ST JOHN'S ABBEY/MAPLE SYRUP

PO BOX 2400
COLLEGEVILLE, MN 56321
Stearns County, 73

License Categories:

MSPL

Expires on: 12/31/16

Establishment Info:

ID #: 3226
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: 0

Total Non-Critical Orders This Report: 0

-SEASON IS COMING TO AN END AS OF TODAY. FINAL BATCH WAS BEING FILTERED FOR A SECOND TIME FROM THE SMALL EVAPORATOR.

-TREES WERE TAPPED BEGINNING ON FEB. 26TH AND MOST WERE TAPPED ON MARCH 6TH.

-ABOUT 1500-1600 TREES WERE TAPPED AGAIN THIS YEAR.

-PLASTIC COLLECTION PAILS ARE USED TO COLLECT SAP FROM THE SPILES.

-THEY DID SOME EXPERIMENTING WITH GRAVITY/VACUUM PLASTIC HOSE THIS YEAR, IN AREAS WHERE THERE WAS ENOUGH OF AN ELEVATION DROP BETWEEN THE TAPPED TREES AND THE COLLECTION BARREL.

-SAP IS COLLECTED IN FOOD GRADE PLASTIC PAILS AND DUMPED INTO LARGE PLASTIC BARRELS. FROM THE BARRELS, THE SAP GOES INTO A LARGE PLASTIC COLLECTION SYSTEM AND TRANSPORTED TO THE BULK TANKS UP BY THE SUGAR SHACK. THIS IS TEMPORARY STORAGE PRIOR TO ENTERING THE EVAPORATOR.

-THE FACILITY HAS 4 BULK TANKS THAT HOLD ABOUT 1400 GALLONS OF SAP.

-ALL PLASTIC PAILS, COVERS, AND BARRELS ARE WASHED, RINSED, AND SANITIZED (USING BLEACH), PRIOR TO USE EACH SEASON.

-THE SPILES ARE AUTOCLAVED AFTER EACH SEASON TO KILL ALL PATHOGENS.

Figure 26. 2016 Maple Syrup Operation Inspection Report/License (*continued on next page*)

Type: Full
 Date: 03/29/16
 Time: 13:00:00
 Report: 4308161033

Food and Beverage Establishment Inspection Report

Page 2

ST JOHN'S ABBEY/MAPLE SYRUP

-THE SAP IS HEATED IN THE LARGE EVAPORATOR AND FILTERED TO REMOVE THE SUGAR SAND PRIOR TO BEING TRANSFERRED TO THE SMALL EVAPORATOR. IT IS HEATED A SECOND TIME IN THE SMALL EVAPORATOR AND FILTERED A SECOND TIME. FOLLOWING THE SECOND FILTRATION, IT IS PLACED IN FOOD GRADE GLASS JUGS. ANY SYRUP INTENDED TO BE USED AS GIFTS IS HEATED A THIRD TIME IN ONE OF THE UNIVERSITY KITCHENS, PRIOR TO BEING PLACED IN GIFT BOTTLES.

-ALL SYRUP PRODUCED IS USED ON CAMPUS OR GIVEN AS GIFTS. NO SYRUP IS SOLD.

-IT TAKES 40 GALLONS OF SAP TO PRODUCE ONE GALLON OF SYRUP.

-THE GOAL IS TO PRODUCE ONE QUART OF SYRUP PER TAP.

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 Stearns County inspection report number
 4308161033 of 03/29/16.

Certified Food Manager: N/A

Certification Number: _____ Expires: / /

Inspection report reviewed with person in charge and emailed.

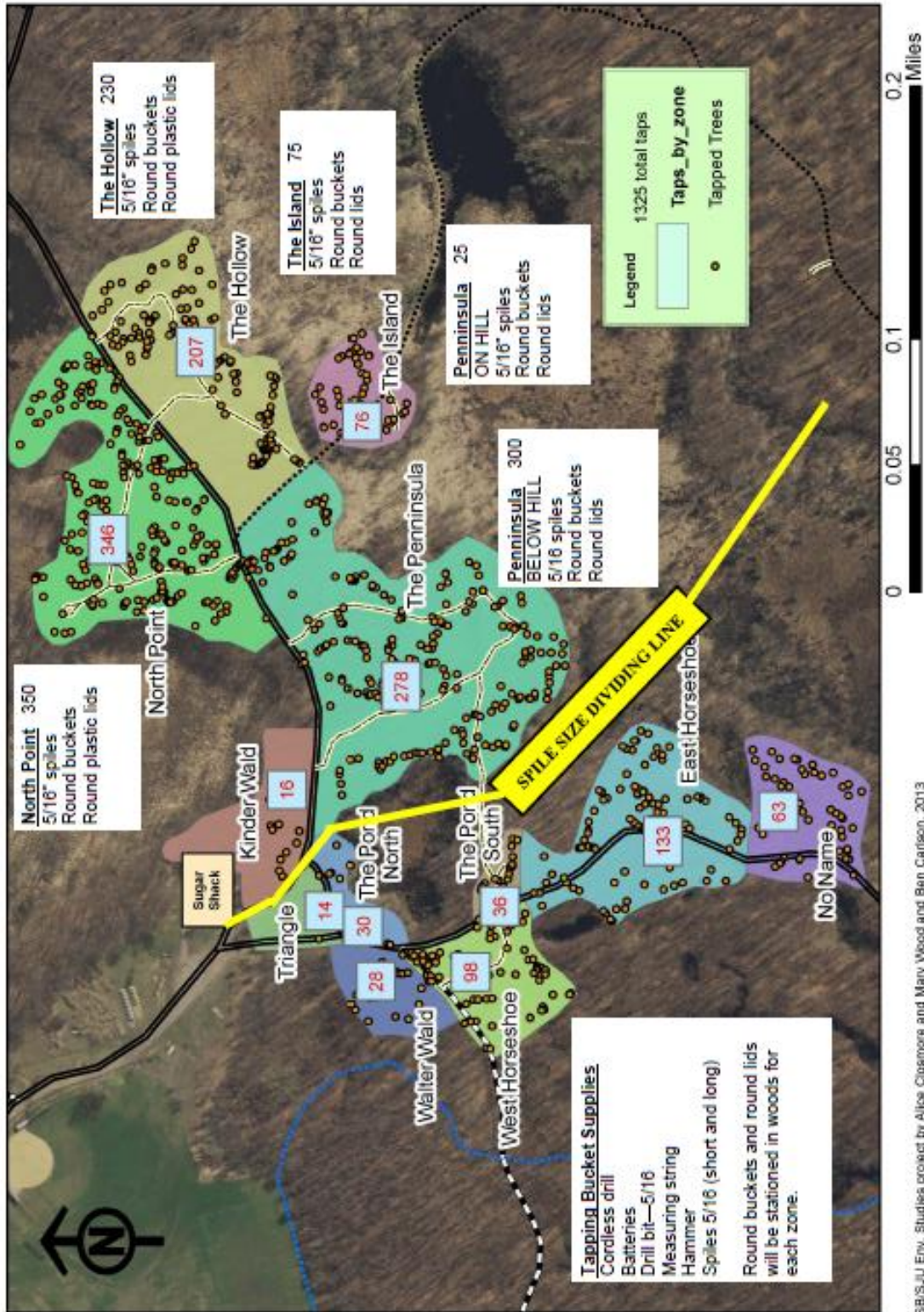
Signed: _____

STEVE SAUPE
 BIOLOGY PROF ST JOHNS

Signed: Jane Knott

Jane Knott
 Environmental Health Specialist
 Stearns Environmental Services
 320.656.3613
 jane.knott@co.stearns.mn.us

Tapping Day Plan 2016



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

Figure 27. Tapping Day Plan – 2016. Map created by Jean Lavigne.



Figure 28. New ceiling in the foyer area.



Figure 29. New ceiling area in foyer. Note crank to the upper right of the door used to raise and lower the evaporator.



Figure 30. Assortment of spiles used during 2016.



Figure 31. Burned syrup pan. Top image shows warping on the bottom of the pan. The lower image shows the caramelization and burning of the syrup in the pan.



COUNTY OF STEARNS
Environmental Services Department
Administration Center Room 343, 705 Courthouse Square
St. Cloud MN 56303
320-656-3613 or 1-800-450-0852 - Fax 320-656-6484

STEARNS COUNTY HAS ISSUED THE FOLLOWING LICENSE(S):

<u>LICENSE TYPE/DESCRIPTION</u>	<u>UNIT #</u>	<u>VALID PERIOD</u>
MAPLE SYRUP PROCESSING LICENSE	1	01/01/16 - 12/31/16

License #: 5226
Establishment: ST JOHN'S ABBEY/MAPLE SYRUP
Address: PO BOX 2400
COLLEGEVILLE MN 56321
Name of Owner: ST JOHN'S ABBEY

Licenses are granted pursuant to application and payment of fee and therefore, are subject to all provisions and conditions of the laws of the County, State and Federal Government and are revocable for violation thereof. Licenses shall not be sold, assigned, loaned or transferred. To be valid, this Official License Form must be posted conspicuously.

Hank Schuifels
Authorized County Signature

January 1, 2016
Date

Figure 25. Maple Syrup Processing License

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.



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.