

Planting trees for tomorrow:
Can I eat that?
Maple Syrup Harvesting

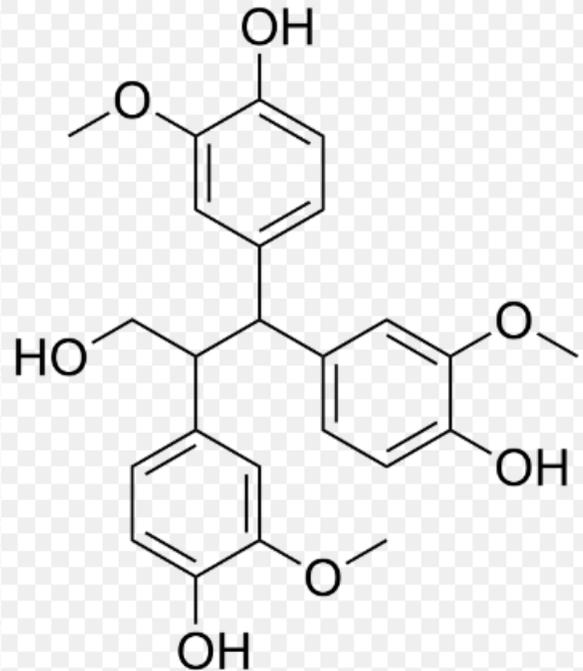
John and Karen Truman
Tybuk Farm Maple Syrup

Introductions



- John Truman
 - Has been involved in the maple syrup industry since the 1990's- he is a 2nd generation owner
 - Currently owns 130 acres of land but taps about 30 acres
 - Last year collected over 25,000 gallons of sap which translates to over 500 gallons of syrup
- Karen Truman
 - Just married into the family 7 years ago, but jumped right in and has learned a lot
 - Concentrate on sales and marketing, but do help with tapping

What is Maple Syrup?



- Maple syrup is made from the sap of a maple tree. In cold climates, these trees store starch in their trunks and roots before winter, the starch is then converted to sugar that rises in the sap in late winter and early spring. Once the majority of the water is removed, you are left with the maple syrup we are all familiar with.
- The major carbohydrate found in maple syrup is sucrose along with lesser amounts of glucose and fructose and complex carbohydrates, including high molecular weight polysaccharides.
- It does have small amounts of nutrients (manganese and riboflavin along with zinc and calcium) and antioxidants

History of Maple Syrup Harvesting Native Americans

- Maple syrup was being processed into syrup by the Native Americans long before Europeans arrived in the region.
- The legend goes that a chief of one of the tribes threw his tomahawk at a maple tree. The next day when the weather warmed up, they found maple sap leaking from the tree and discovered its sweetness. They would make V-shaped incisions in the tree trunks, then inserted reeds to run the sap into clay buckets or birch-bark baskets.
- The Native Americans also developed rituals around syrup-making, celebrating the Sugar Moon (the first full moon of spring) with a Maple Dance. They would have sugar camps near the maple trees where they would prepare for the time that the sap would begin to flow.
- The maple sap was concentrated first by leaving it exposed to the cold temperatures overnight and disposing of the layer of ice that formed on top. Following that, the sap was transported by sled to large fires where it was boiled in clay pots to produce maple syrup. Often, multiple pots were used in conjunction, with the liquid being transferred between them as it grew more concentrated.

History of Maple Syrup Harvesting European Colonists

- The Native Americans showed the arriving colonists how to tap trees
- Prior to the 19th century, processed maple sap was used primarily as a source of concentrated sugar, in both liquid and crystallized-solid form, as cane sugar had to be imported from the West Indies.
- The colonists first bored holes in the trunks, they then inserted wooden spouts into the holes and hung a wooden bucket from the protruding end of each spout to collect the sap. The buckets were commonly made by cutting cylindrical segments from a large tree trunk and then hollowing out each segment's core from one end of the cylinder, creating a seamless, watertight container. Sap filled the buckets, and was then either transferred to larger holding vessels (barrels, large pots, or hollowed-out wooden logs), often mounted on sledges or wagons pulled by draft animals, or carried in buckets. The sap-collection buckets were returned to the spouts mounted on the trees, and the process was repeated for as long as the flow of sap remained "sweet". The specific weather conditions of the thaw period were, and still are, critical in determining the length of the sugaring season.

History of Maple Syrup Harvesting

European Colonists- part 2

- The harvested sap was transported back to the base camp using large barrels pulled by horses or oxen.
- The sap was then poured into large vessels and boiled to achieve the desired consistency. This occurred either over a fire built out in the open or inside a shelter built for that purpose (now known as a sugar shack). The boiling process was very time-consuming.

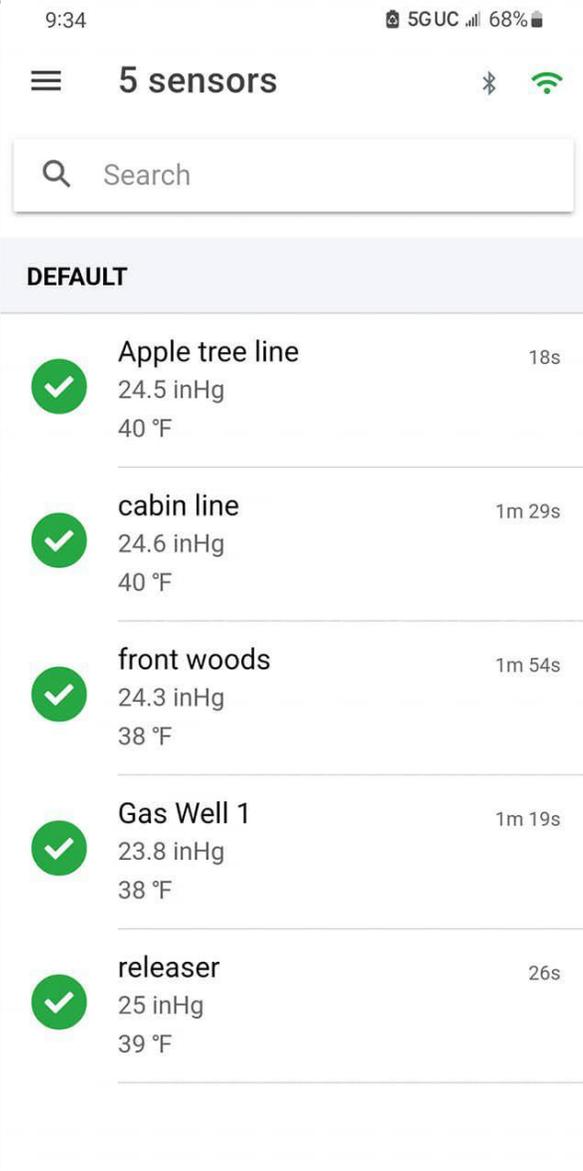
History of Maple Syrup Harvesting since 1850

- Since the 1850's, multiple upgrades were made:
 - Syrup makers started using large, flat sheet metal pans as they were more efficient for boiling than heavy rounded kettles, because of the greater surface area for evaporation
 - The first evaporator was patented in 1858- this featured two pans and a firebox which greatly decreased boiling time
 - Around 1900, syrup makers bent the bottom of the pan into a series of flues which increased the heated surface area of the pan and again decreased boiling time
 - Trees were tapped with metal taps which drain into metal buckets

History of Maple Syrup Harvesting modern times

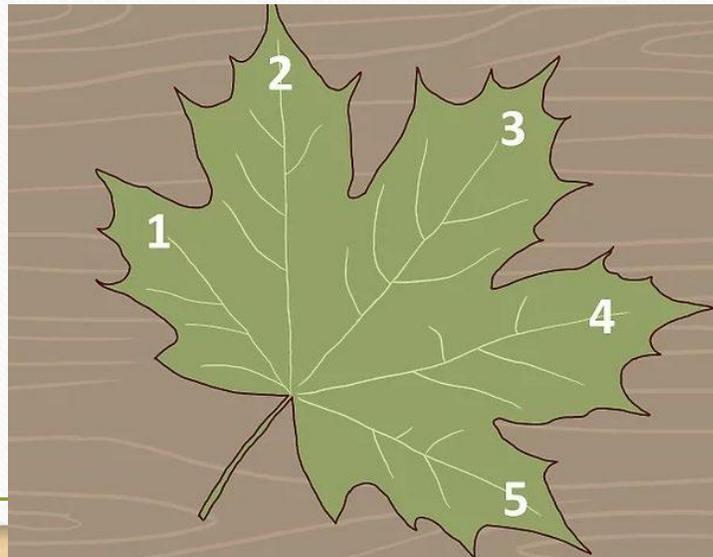
- During the 1970's there were a lot of advances:
 - Plastic tubing systems were perfected- connecting taps in trees to the main drainage lines
 - Many sugar masters had the main drain lines end in their sugarhouse
 - Vacuum pumps were added to tubing systems putting a slight vacuum on the lines helping to pull out additional sap
 - Reverse-Osmosis machines were developed that removed part of the water from the sap before it was boiled, increasing processing efficiency





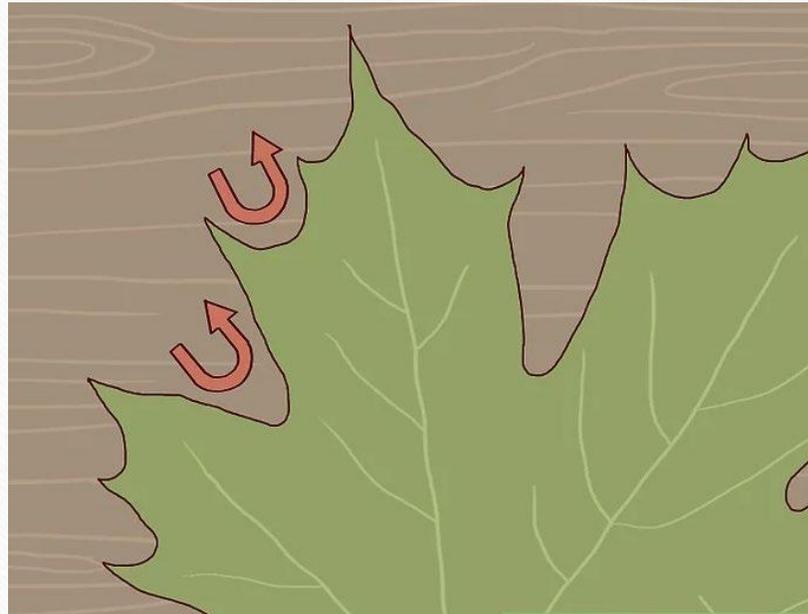
Identifying a Sugar Maple

- Obviously, all trees contain sap, but we limit our tapping to sugar maple trees because they have the highest concentration of sugar in their sap (up to 3%) and they have the best flavor.
- How to identify a sugar maple tree: The sugar maple tree (*Acer saccharum*) grows abundantly in the northeastern part of North America. <https://www.wikihow.com/Identify-Sugar-Maple-Trees>
 - Look closely at the color of the leaves- they will have a dark green color on the outside and lighter green color on the underside. In the fall, they turn orange, yellow or red
 - Sugar maple leaves are segmented into 5 lobes. There should be 3 large main lobes and one smaller lobe on either side. They have sharp teeth and are connected by shallow U shaped notches.



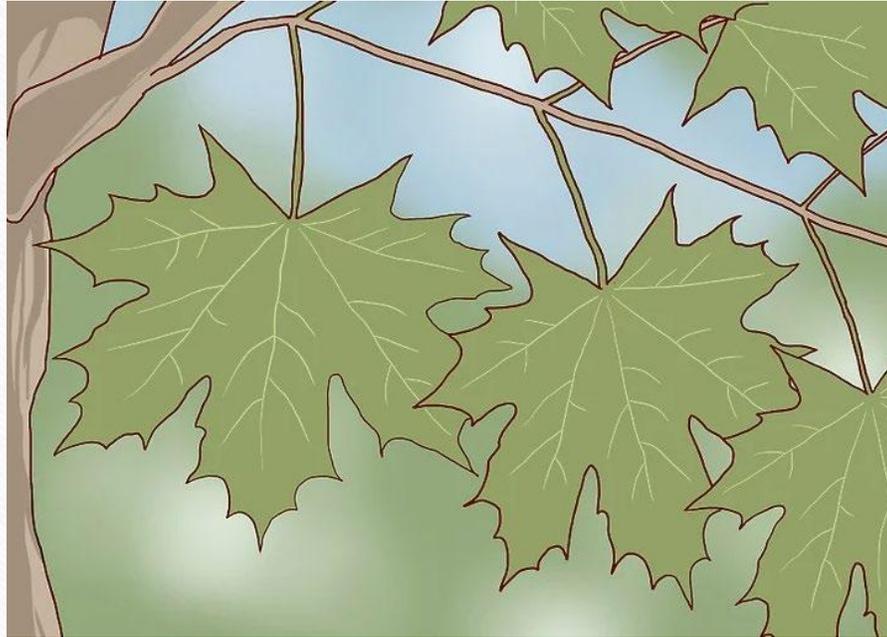
Identifying a Sugar Maple

- Look closely at the edges of the leaf- sugar maple leaves have smooth U-shaped margins between the points.



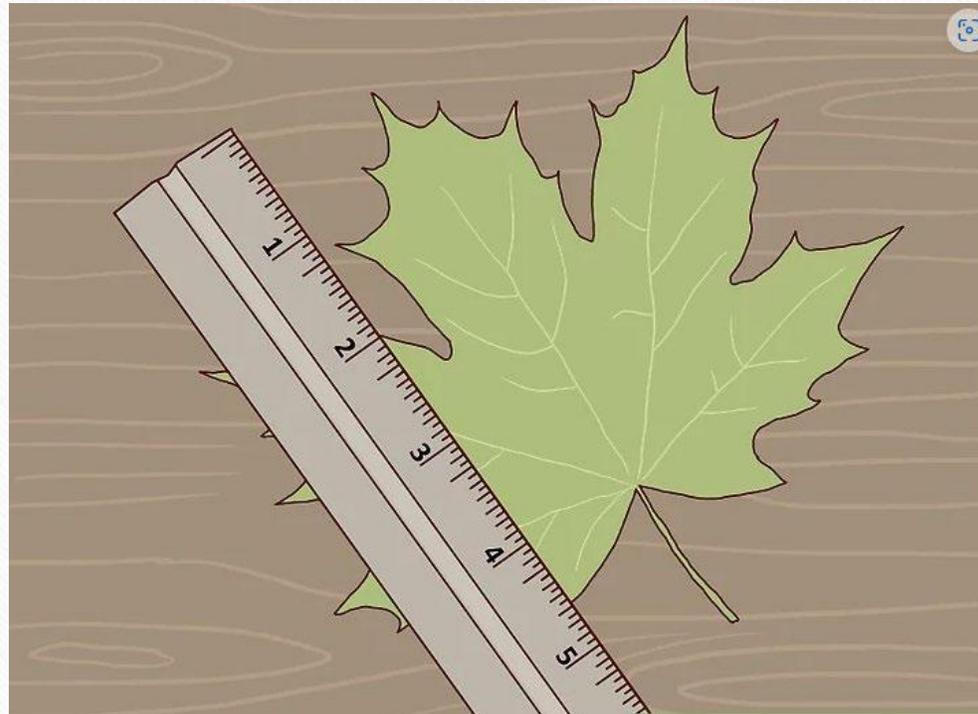
Identifying a Sugar Maple

- Examine how the leaves grow out from the twig- look for leaves that grow perpendicular from the twig in pairs (opposite orientation)



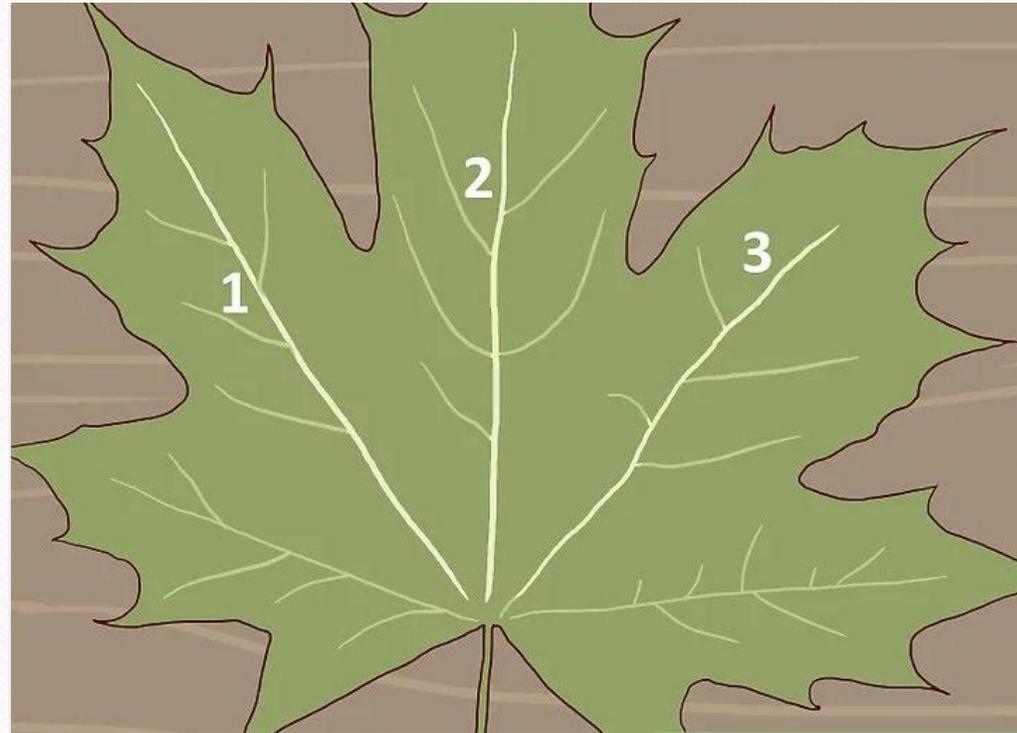
Identifying a Sugar Maple

- Measure the leaves- mature leaves average 3-5 inches and are equally wide



Identifying a Sugar Maple

- Look for 3 main veins in the leaf



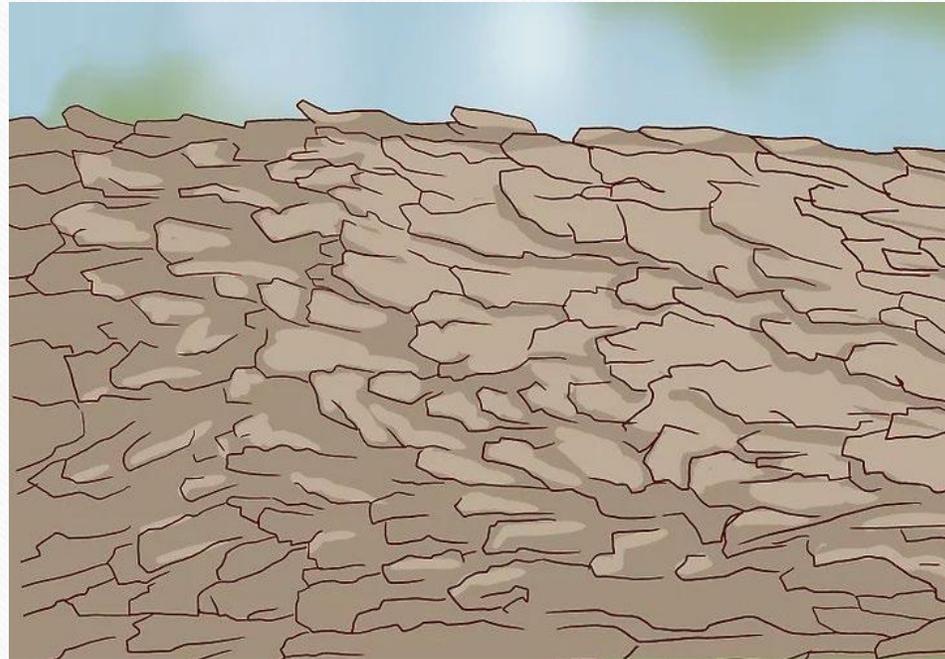
Identifying a Sugar Maple

- Look for brown, furrowed bark: The bark of sugar maple trees changes color as it ages. The bark of younger trees will be grayish-brown in color. As the sugar maple trees mature, the bark will deepen to a dark brown. It is characterized by vertical grooves that are closely spaced.



Identifying a Sugar Maple

- Examine the edges of the bark. The edges of the plates of bark gradually lift as a sugar maple gets older, and the plates flake away from top to bottom once the tree has reached maturity.
- Mature sugar maple trees may appear “shaggy” from a distance, due to the exaggerated peeling plates of bark that the trees develop.



Identifying a Sugar Maple

- LeafSnap Plant Identification- this is a free app- we tried it and it was close



What size tree can you tap?

- A tree should be at least 10 inches in diameter in order to tap it
- The tree should look healthy
- The more sunshine a tree receives, the more sap it produces

When should you tap you trees?

- The season can start as soon as New Year's day- it depends on your location
- Generally the sap starts to flow between mid-February and mid-March
- The rising temperature creates pressure in the tree generating sap flow- this is basically a transfer of the sap from the root system to the tree above ground
- The day time temperature needs to be in the 40's with night time temperatures around 20 or below
- Wind will affect the sap production- you get less on windy days

How much sap do you get out of a tree?

- Larger trees with a lot of sun can produce up to 2 gallons of sap per day with ideal temperatures
- Smaller trees will produce between a quart to a gallon a day
- Some days, mother nature just goes crazy

How do you tap a tree?

- Drill hole 2-3 inches deep at a slightly upward slant so the sap can drain out- you can mark your drill bit with tape so you don't go too deep
- Drill the hole with a drill bit the size of your tap- 5/16th inch is the most common
- If the tree is over 18 inches in diameter can drill 2 holes- but put them in opposite sides of the tree
- The shavings from the drilled tap hole should be light brown, indicating healthy wood. If the shavings are dark brown, drill another hole in a different location.
- Try to drill holes over large roots
- Don't hammer spiles too tight- they are hard to remove
- At the end of the season, they should be removed



Collecting sap

- It is best to collect sap daily.
- A drop a second is a good rate. It tends to flow better in the afternoon as the tree warms up.
- Filter your sap with a cheesecloth to collect any foreign material
- Store sap in a cool place at 38 degrees or below- refrigerator or in the snow, until you boil it

How to store sap

- Sap is like milk- it will go bad and needs to be refrigerated at a temperature of at least 38 degrees or cooler since it has no preservatives
- If there is snow on the ground, you can keep the store containers outside, in the shade, packed with snow
- Store it in glass or plastic containers
- Sap should be used within 7 days of collection
- You can freeze sap until you get enough to boil

How to boil sap

- Set up needed:
 - Outside turkey fryer or wood/propane fire
 - Roasting pan or some type of flat pan
 - Candy thermometer is helpful
 - Butter or vegetable oil as an anti-foaming agent
 - Cheesecake cloth to filter the sap

Generally it takes 40 gallons of sap to make 1 gallon of syrup (1 gallon of sap will make 3-4 ounces of syrup)

How to boil sap

- We suggest doing this OUTSIDE since it creates a lot of steam and has been know to remove wallpaper and warp kitchen cabinets!
- Filter your sap to remove any foreign objects
- Pour sap into boiling pan
- Keep the fire as hot as possible
- It will take approximately 1 hour per gallon to evaporate maple syrup
- Occasionally you should skim off the foam off the top
- Boil the sap until you have 1.5-2 inches of liquid in the pan. The liquid will turn a darker color.
- At this point, you can move it to a more controlled fire (aka you kitchen stove) to finish it
- The final stage happens very quickly, so don't leave the stove and monitor the temperature constantly
- When the maple syrup reaches 216-219 degree range, your boil is complete
- Syrup towards the end can foam and boil very quickly. A few drops of vegetable oil or a sliver of butter added to the syrup can fix this issue
- Filter the finished syrup before bottling to remove sugar sand

How to store maple syrup

- Syrup must be packed hot – 185°F to 190°F. Refilter if syrup is reheated to over 195°F
- Put the cap on immediately and place the container up-side-down to seal it and then on its side to cool.
- Store in a cool dry place. Packed syrup can be frozen for longer storage.
- Syrup that is not hot packed can be kept in the refrigerator or freezer.

When do you stop collecting sap?

- The season ends when night time temperatures no longer fall below freezing
- Generally the season lasts until early April
- Some factors to consider:
 - When your volume drops, it may be the end of the season
 - If the tree starts getting buds, the season is over
 - If the sap is cloudy, smells funny or tastes funny, your season is over

How do you get dark robust syrup vs light syrup?

- Mother nature is in charge of this
- The difference between the syrup types is the color and taste- the sugar content is the same
- Darker syrup is stronger and occurs later in the season
- Lighter syrup usually occurs early in the season
- You never know what you will get

Maple Syrup fun facts

- What is fake maple syrup made of? High fructose corn syrup, corn syrup, caramel color and artificial flavors
- 80% of the world supply comes from Canada- as do most of the maple syrup supplies- we have learned some metric measurements
- Top maple producers in the US-
 - Vermont- 2,550,000 gallons produced
 - New York
 - Maine
 - Wisconsin
 - Michigan
 - New Hampshire
 - Pennsylvania- 164,000 gallons produced
- Maple syrup goes with more than just pancakes- it is used for baking, beer, drinks, salad marinade, candy

Thank you listening to our presentation. We will have a list of resources emailed to your group. We have found this to be a very addictive hobby. One of the best ways is to learn more is to visit the maple producers in action- Tioga Maple Weekend- March 18th and 19th

Feel free to follow us at our Facebook page: Tybuk Farm Maple Syrup or email us at tybukmaple@comcast.net

We have samples of maple syrup available if anyone is interested

