Evaporation Experiment

Background: Through the evaporation process, two percent sugar sap is transformed to approximately 66% sugar syrup. As the sap changes to syrup, the color, taste, texture, and other physical characteristics change. This exercise is designed to observe and document these changes.

Procedure:

1. Collect sap from your buckets, and refrigerate until you have approximately 5 gallons.
2. Pass sap through your pre-filter.
3. Fill your evaporator (electric pot) with sap to about an inch below the edge and make initial observations on work sheet.
4. Run your evaporator so that the sap is consistently boiling. The sap will evaporate about 8 cups of liquid per hour at a full boil, so you will need to add sap approximately every 4 hours.
5. Make another set of observations around mid-day and add more sap to the evaporator.
6. Make a final set of observations at the end of the day and turn off your evaporator and store the product.
7. Repeat this for as many days as you would like or until you reach syrup.
8. Compile your observations to understand the overall trends.

NOTE: The sap may begin to foam as it boils. To settle the foam, add a small amount of fat, either butter pat or small amount of cooking oil. The process of evaporation, by nature, creates a lot of steam; setting up the evaporator near some type of ventilation is advised.

Educational Tips: For younger grades, this is a good time to have children work on their use of adjectives, especially for the color and texture observations. Younger students may also only want to do a single observation for each day. For older students, you can implement a set measurement like how quickly the syrup drips from a spoon or Brix content to get a more consistent set of data.