North Carolina Muscadine GRAPE Association

Protocols for Collecting Grape Samples

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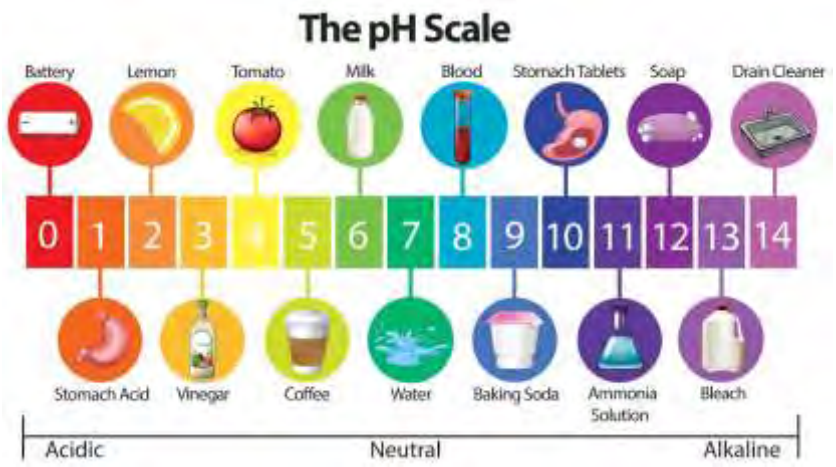
Overview

- Grape Chemistry
- Sampling Spplies
- Sampling Procedure
- Sample Analysis

Grape Chemistry

Chemistry for Grape Juice/Wine Production

- Soluble solids (SS or Brix)
  - Measure of percent sugar content of a solution when sugar is the major component
- pH
  - Measure of acidity and alkalinity on a scale of 0 to 14
  - pH of 7 is neutral, less than 7 acid, and above 7 alkaline
- Titratable acidity
  - Measure of predominant acid in a solution



Grape Chemistry Standards

- Grape chemistry standards vary by cultivar
- Harvest grapes in optimum condition
  - Wine grapes 20-25% sugar (°Brix) and pH 3.2-3.5
  - Muscadine grapes 15-20% sugar (°Brix) and pH 3.0-3.5
- Harvest early if fruit quality declines due to rain, pests or disease

Sampling Supplies

Sampling Equipment

- Refractometer
- pH meter
- Titratable acidity
  - pH meter
  - Burette
  - Stir plate
  - Sodium hydroxide

Other Supplies

Zip-type freezer bags

Beakers or plastic cups

DI water

Paper towels

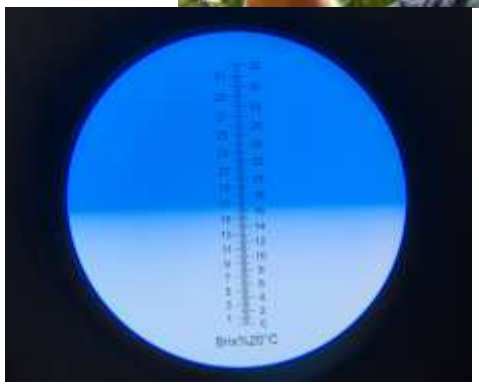
Disposable pipettes

How Refractometers work?

- Light passing through liquid is slowed compared to speed it travels in air.
- When juice is placed on the measuring surface of a refractometer, the light passing through slows and is bent.
- The refractometer focuses this bent light on a tiny internal scale.
- The scale is magnified by the eyepiece lenses so it is visible.

Using Hand-held refractometer

- Place drop of juice on measuring surface of the refractometer
- Look through eyepiece
- Read the scale where the contrast line (difference between light and dark areas) crosses the scale
- Rinse measuring surface of refractometer with water and dry with soft paper towel



Sampling Procedure

When to Sample Grapes?

Three to four sampling times before harvest

- At version
  - Berries soften, berry skin changes from green to yellow/red
- Two to three weeks before expected harvest
- One week before expected harvest
- Two days before expected harvest

Early Sampling Grapes?

Walk randomly in vineyard to sample grapes

- Collect 1 berry from a grape cluster on a vine
- Squeeze juice onto refractometer
- Repeat ten more times
  - different locations in vineyard and within canopy
- Record the average of the soluble solids level and sample date for that vineyard

Harvest Sampling Grapes?

Collect 100-200 berries for analysis

- Start sampling near the beginning of each row
- Collect 10-25 berries for each side of a row
  - Select a berry from the “shoulder” of a cluster, then one berry from the middle of a different cluster, and one from the tip of a different cluster
  - Take 10 step down the row
- Repeat the same three-berry sampling procedure
  - Number of steps between sampling zones is based row length
  - Vary locations of clusters on the vine and select berries from the front/back of clusters

Collecting Grape Samples

- Collect grapes in a zip-top freezer bag
- Label each bag with cultivar and plot name

Sample Analysis

Collecting Grape Juice

- Seal the bag of grapes
- Gently squeeze grapes from the outside of the bag
- Squeeze until grapes are juiced
- Unseal the bag
- Pour juice into a beaker/cup

Measuring Juice Chemistry

- Make sure juice is room temperature
- Measure soluble solids and pH of juice
  - Place a drop of juice on refractometer and measure the soluble solids
  - Place pH probe into juice to measure pH

Conclusions

Grape growers should keep records of grape chemistry and sampling to plan future harvests

“Quality of wine is made in the vineyard”