Making Muscadine Wine at Home (Beginners)

by

Chuck Blethen

Chuck@JeweloftheBlueRidge.com

August 18, 2021
American Grapes

Fox Grape (Vitis labrusca)

Muscadine/Scuppernong (Vitis rotundifolia)

Riverbank/Frost Grape (Vitus riparia)

Cayuga

Niagara

Catawba & Isabella

Concord

Norton/Cynthiana
Outline of this Muscadine Home Winemaking class

Legal stuff
Supplies needed
Basic testing equipment you need
Some useful charts/tables
Unique things you need to know about Muscadines
Useful references

You will learn a little basic chemistry and zymology
The purpose of this class is to

“Teach you how to make Muscadine wine at home”

In short - learn how to manage fermentation

General Process

Sugar + Yeast - Oxygen = Carbon Dioxide + Alcohol

Fermentation stops at ~14.5%
How much wine can I legally make?

The U.S. Law Concerning Alcohol Production

BATF Sec. 24.75

Wine for personal or family use

(a) General. Any adult may, without payment of tax, produce wine for personal or family use and not for sale.

(b) Quantity. The aggregate amount of wine that may be produced exempt from tax with respect to any household may not exceed:
   (1) 200 gallons per calendar year for a household in which two or more adults reside, or
   (2) 100 gallons per calendar year if there is only one adult residing in the household.

(c) Definition of an adult. For the purposes of this section, an adult is any individual who is 18 years of age or older. However, if the locality in which the household is located has established by law a greater minimum age at which wine may be sold to individuals, the term "adult" will mean an individual who has attained that age.

This was last updated on September 17, 1999 (verified 2020)

Note: You can make alcohol, but you can't concentrate it

(Make grappa without a license)
What factors impact the quality of wine made at home?

- Quality of your material source
- Sanitation level
- Ability to test/taste your wine
- Ability make necessary adjustments of acidity, sweetness, residual sulphite, etc.
- Your winemaking skills
Supplies

Glass carboys - 1, 2, 3, 5 or 6.5 gallons
Measuring spoons and cups
Supplies

Airlocks
Supplies

Wine bottles
(new or recycled)

Corks
Buy the best quality you can get
Corking Machine - for a few bottles
Floor/Tabletop Corking Machine (for dozens of bottles)
Supplies

Yeast (dry or liquid)
Toasted oak chips (or oak powder) – adds oak flavor to wine
Potassium MetaBi-sulphite – kills rogue yeasts in the must & preserves wine
Dextrose or Simple sugar – to increase the potential alcohol in Muscadine juice
Yeast Energizers/Nutrients
Testing Equipment

Hydrometer & Graduated Cylinder
Testing Equipment

Refractometer

Place 1 drop of juice here

Look through this eye piece

This is what you see through the eye piece
### SG/Brix/PA Conversion Chart

<table>
<thead>
<tr>
<th>Specific gravity (SG)</th>
<th>°Brix ([{\text{SG} - 1} \times 220] + 1.6)</th>
<th>Potential alcohol (PA) (%) (0.6 \times °\text{Brix} - 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.000</td>
<td>1.6</td>
<td>0.0</td>
</tr>
<tr>
<td>1.010</td>
<td>3.8</td>
<td>1.3</td>
</tr>
<tr>
<td>1.020</td>
<td>6.0</td>
<td>2.6</td>
</tr>
<tr>
<td>1.030</td>
<td>8.2</td>
<td>3.9</td>
</tr>
<tr>
<td>1.040</td>
<td>10.4</td>
<td>5.2</td>
</tr>
<tr>
<td>1.050</td>
<td>12.6</td>
<td>6.6</td>
</tr>
<tr>
<td>1.060</td>
<td>14.8</td>
<td>7.9</td>
</tr>
<tr>
<td>1.070</td>
<td>17.0</td>
<td>9.2</td>
</tr>
<tr>
<td>1.080</td>
<td>19.2</td>
<td>10.5</td>
</tr>
<tr>
<td>1.090</td>
<td>21.4</td>
<td>11.8</td>
</tr>
<tr>
<td>1.100</td>
<td>23.6</td>
<td>13.2</td>
</tr>
<tr>
<td>1.110</td>
<td>25.8</td>
<td>14.5</td>
</tr>
<tr>
<td>1.120</td>
<td>28.0</td>
<td>15.8</td>
</tr>
<tr>
<td>1.130</td>
<td>30.2</td>
<td>17.1</td>
</tr>
<tr>
<td>1.140</td>
<td>32.4</td>
<td>18.4</td>
</tr>
<tr>
<td>1.150</td>
<td>34.6</td>
<td>19.8</td>
</tr>
<tr>
<td>1.160</td>
<td>36.8</td>
<td>21.1</td>
</tr>
</tbody>
</table>
Testing Equipment

Titratable Acid (TA) Test Kit - follow directions
### Adjusting the Acidity of your wine (0.60 to 0.80 TA)

<table>
<thead>
<tr>
<th>Total Acidity (TA)</th>
<th>To obtain 6 g/L add to each gallon</th>
<th>To obtain 8 g/L add to each gallon</th>
</tr>
</thead>
<tbody>
<tr>
<td>(g/L*)</td>
<td>(g) - oz</td>
<td>(g) - oz</td>
</tr>
<tr>
<td>3.0</td>
<td>11.3 0.39</td>
<td>18.9 0.66</td>
</tr>
<tr>
<td>3.5</td>
<td>9.4 0.33</td>
<td>17.0 0.60</td>
</tr>
<tr>
<td>4.0</td>
<td>7.5 0.26</td>
<td>15.2 0.53</td>
</tr>
<tr>
<td>4.5</td>
<td>5.6 0.19</td>
<td>13.2 0.46</td>
</tr>
<tr>
<td>5.0</td>
<td>3.8 0.13</td>
<td>11.4 0.40</td>
</tr>
<tr>
<td>5.5</td>
<td>1.9 0.66</td>
<td>9.5 0.33</td>
</tr>
<tr>
<td>6.0</td>
<td>7.5 0.26</td>
<td>5.6 0.19</td>
</tr>
<tr>
<td>6.5</td>
<td>3.8 0.13</td>
<td>1.9 0.66</td>
</tr>
<tr>
<td>7.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Titratable acid as tartaric acid - TA test kit value x 10
### pH vs Titratable Acidity

**Definition**
- **pH**: A measurement of the concentration of free protons (H⁺ ions) in a solution.
- **Titratable Acidity**: A measurement of the sum of free protons and un-dissociated acids in a solution. Gives the total acidity as an approximate value.

**Unit of Measurement**
- **pH**: Unit-less.
- **Titratable Acidity**: The unit of measurement for titratable acidity is grams per litre (g/L).

**Purpose**
- **pH**: Measures the total dissociated protons in a solution.
- **Titratable Acidity**: Measures the total dissociated and non-dissociated acids in a solution.

More Information Online: [WWW.DIFFERENCEBETWEEN.COM](http://WWW.DIFFERENCEBETWEEN.COM)
Clean & sanitize EVERYTHING – bottles, glasses, corks, tubing, caps, stirrers, carboys, hands – anything that may come in contact with the wine

Keep unwanted (rogue) bacteria, mold and fungus from growing in your wine

Only the yeast / bacteria that you CHOOSE for fermenting your wine to be allowed to thrive & grow
Supplies for Cleaning/Sanitizing

One Step™ (cleaner & sanitizer)
One tbsp per gallon of warm water
25 minutes soak

Iodophor™ - sanitizer only – you still need a cleaner - soap & water
Two caps/5 gallons
60 second soak

KMS (Potassium Metabisulphite - sanitizer only – you still need a cleaner)
Two oz./gallon of water
20 second soak
Works great in a spray bottle too!
Winemaking Equipment

Grape Crusher

Press bag (a.k.a. jelly bag)

Wine Press
Common clarifiers used by home winemakers to “fine” or “clarify” hazy or cloudy wines

Time +/-
Refrigeration +/-
Super-Kleer (Kieselsol/Chitosan (shellfish)) +/-
Activated Carbon
Crushed egg shells
Diatomaceous earth
Polyvinylpyrrolidone (PVP)
Polyclar
Milk (2-3 drops per gallon)
Egg albumen (egg whites) +
Gelatin +
Isinglass (fish scales) +
Casein and caseinates +
Chitosan (chitin) +
Sparkolloid +
Enolophin / Kieselsol -
Bentonite clay -
Sulfites for Wine Preservation

Used in winemaking over 100 years
Wine yeast produce small amounts of SO2 during fermentation
Good winemaking practices call for adding 50 to 100 ppm
At bottling time residual sulphur dioxide is 30 to 50 ppm
US regulations require warning on labels (Contains Sulphites)
for wines containing more than 10 ppm sulphur dioxide
About 10% population at large allergic to sulphites
Free Sulphite Test Strips - follow directions
Free sulphites in wine is highly dependent upon pH
Racking (siphoning) is necessary skill to develop if making wine at home.

**Supplies**

Auto-Siphon
Unique Things You Need To Know About Muscadine Winemaking

Scuppernongs were used to make the first American wine the the colonies in the early 1500s

Modern researchers call muscadine the “smart grape”

Dwell time on the red muscadine skins is a few hours - NOT days/weeks

Has high acid naturally

Ready to bottle in 6 months
The Nature of Muscadine Grapes

Thicker skins
High in aromatic polyphenols
Low natural sugar content
Low to no tannin
Low pH
Medium to High TA
High Ellagic Acid content
Lower nitrogen content
High tendency to oxidize
High level of Resveratrol
Medium level of proteins
Higher disagreeable polyphenols in seeds
Ripening over an extended period of time (multiple harvests)
Balanced Muscadine Winemaking

- Always adjust alcohol potential before pitching yeast
- Monitor TA & pH
- Taste from time to time
## Balanced Muscadine Winemaking

<table>
<thead>
<tr>
<th>Category</th>
<th>Residual Sugar (grams per liter)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry</td>
<td>up to 4 g/L</td>
<td>sugars are below perceptible levels</td>
</tr>
<tr>
<td>Off-Dry</td>
<td>5 - 9 g/L</td>
<td>basically dry, but with a hint of sweetness</td>
</tr>
<tr>
<td>Medium-Dry</td>
<td>10 - 18 g/L</td>
<td>perceptible sweetness, but often covered by high acidity</td>
</tr>
<tr>
<td>Medium-Sweet</td>
<td>19 - 45 g/L</td>
<td>sweeter still, but not quite sweet enough to pair with dessert</td>
</tr>
<tr>
<td>Sweet</td>
<td>46 - 100 g/L</td>
<td>sweet wines, like port or Sauternes</td>
</tr>
<tr>
<td>Luscious</td>
<td>over 100 g/L</td>
<td>the sweetest of the sweet</td>
</tr>
</tbody>
</table>

Remember:
Relatively small changes in added sugar changes the aromatic profile significantly
Muscadine Home Winemaking Equipment & Supplies

Equipment needed:

• **Primary Fermenter.** A 6-8 gallon bucket with a lid would be preferable - food grade plastic
• **Secondary Fermenter.** A 5 gallon narrow-necked carboy, preferably glass
• **Airlock.** To allow carbon dioxide gas to escape and keep out air. Fill and keep full with sterilizing agent
• **Siphon.** 6 feet of food grade plastic tubing or Auto-Siphon
• **Small crusher.** - to break the skins of the grapes
• **Strainer.** Either cheese cloth or a nylon bag (or small wine press)

Supplies:

• **Wine Yeast** - One packet of EC-1118 or Lalvin RC 212 (Scott Labs W15 works well too)
• **Campden tablets** - This kills off wild bacteria and yeast found on the fruit skins; acts as preservative in bottles
• **Grapes** - 90 pounds to yield 5 gallons of wine
• **Yeast Nutrient** - Lallemand Fermaid O works best.
• **Simple Sugar** - Turbinado sugar works the best for home winemaking (boil water and sugar, then cool before using)
• **Non-chlorinated water**

*Simple Sugar is turbinado sugar mixture 1:1 with water that has been boiled and cooled*
Ready to go!
Muscadine Wine Recipe - (5 Gallons)

Pick or buy your grapes. Ripe Muscadine grapes have a sugar level of about 14-16 Brix.

Directions:

1. For **white muscadines** immediately crush & press the grapes to remove the grape skins, pulp and seeds and pour juice into a carboy. Measure the Brix to determine how much sugar to add to bring the potential alcohol up to 10-11%. Next, slowly stir simple sugar* into the must making sure hydrometer reading does not go higher than 1.085 (20 Brix). Multiply the Brix reading by 0.57 to get potential alcohol. If you have an acid test kit at home, test your wine and adjust it accordingly at this point. You need a Total Acidity (TA) of about .60 to .80. Add tartaric acid if TA too low, and potassium bicarbonate if TA is too high. Mix yeast nutrient with 1-2 packets of wine yeast in a cup of warm water and add to must. Primary fermentation will begin. Seal/cover fermenter.

2. For **red muscadines**, crush the grapes into a primary bucket and cover. Wait for 4-6 hours, before pressing the grapes to remove the grape skins, pulp and seeds. Then slowly stir simple sugar into the must making sure hydrometer reading does not go higher than hydrometer 1.085 (20 Brix)... If you have an acid test kit at home, test your wine and adjust it accordingly at this point. You need a Total Acidity (TA) of about .60 to .80. Add tartaric acid if TA too low, and potassium bicarbonate if TA is too high. Mix well... Mix yeast nutrient with 1-2 packets of wine yeast in a cup of warm water (~ 110F) and add to must. Primary fermentation will begin. Pour juice into a carboy and seal with an airlock.

3. Let the wine ferment/age for 6 months.

4. Make a final check of the TA and taste test. Make any sweetness/acidity adjustments prior to bottling.

5. Dissolve 1 crushed Campden tablet in a small cup of water and add to carboy

6. Bottle and cork - Ready to drink now but tastes better if you can wait about 6 months.

*Simple Sugar is turbinado sugar mixture 1:1 with water that has been boiled and cooled
Storing your Muscadine Wine

Store your wine in a place that is:
Dark
Cool (55-65F)
Free of vibrations
Aging Your Muscadine Wine

Muscadine wines are best when they are consumed young
6 months to a year
Some of my References
My Winemaking Supply Source

Asheville Brewers Supply (supplies/kits)
712 Merrimon Ave
Asheville NC 28804
(828) 285-0515
www.AshevilleBrewers.com
Music: *Drinkin’ Wine* by Jerry Lee Lewis

**Making Muscadine Wine at Home**

Thanks for watching… Cheers!