Backyard Vineyards for Muscadines
by
Chuck Blethen (Mountain methods)
&
Mack Johnson (East/Coastal Plains methods)
August 14, 2021
Presentation Overview

- Grape selection
- Planting
- Trellising
- Training
- Pruning
- Harvesting
Vineyard Location Basics

1 – South-facing slopes are best
2 – Well drained soil
3 – No shade during the day
4 – No walnut trees or cedar trees within 150 feet
5 – Fences
6 - Horizontal vs vertical rows?
Why do you want to grow grapes?

Table grapes
Pies
Jam
Juice
Wine
Method of growing:

Traditional
Natural
Organic
Biodynamic
How many vines do I want to grow?

Traditional Grape Production Per Vine

- 15-16 pounds/vine
- 16#/gallon of wine

Muscadine Production Per Vine

- 50-60 pounds/vine
- 20#/gallon of wine
Vineyard layout:
Number and direction of rows
Post locations
Clearance between rows for working
Vineyard Decisions

Vineyard plot preparation:

Soil analysis
Plow
Till
Soil amendments
Perfect Vineyard Top Soil

Healthy soil = 23% water, 25% oxygen, 7% organic matter, 45% minerals

Quick test
12” x 12” x 6” hole - 15 or more earthworms
Five steps to preparing soil for a vineyard

1: Evaluate soil through test pits, soil samples and laboratory soil analysis

Dig several holes in vineyard site or use soil bore sampler

Send soil samples to NCSU co-op extension

Also find out if nematode worms, phylloxera in soil
Five steps to preparing soil for a vineyard

2: Amend soil with lime, nitrogen, compost or additives to make it pH balanced and to add any necessary nutrients

Teach yourself nutrients vines need

Check soil sample test results to see what needs added, amended
Five steps to preparing soil for vineyard

3: Holes

Dig your holes for planting vines about 1 1/2 feet deep - use 8” or 10” auger or a manual post-hole digger

Add your amendments to holes
In the Mountains

No drainage

Excellent drainage

Mostly humus
Red clay
Soft crumbly subsoil
Granite
In the Mountains

Clay pot method of planting

Fill hole around roots with 50–50 mixture of compost & local soil
In the East/Coastal Plains

O - Dark organic layer with leaves and grass

A - Top soil with some organic matter mixed with minerals

B - Subsoil, rich in minerals

C - Deposited sediments from which soil is formed (parent material)

Sandy Loam
Five steps to preparing soil for a vineyard

4: Mulch

Mulch around grapevines 12 inches out from trunk (mountains)

Mound soil in the lower elevations
Five steps to preparing soil for a vineyard

5: Irrigation

Mainly first year

Most backyard vineyards on flat ground

If vineyard contains less than 100 vines, hand water vines with hose, giving enough water every week to grow

If you don’t need it, save money
Vine Spacing

Muscadine grapes

20 feet between vines

Plant close to posts for support of cordon
Considerations for Determining Vine-Row Spacing

Training-trellising system:

Low-vigor sites for vertical shoot positioning systems more adaptable for higher density grapevines plantings

Steep slopes can accommodate closer row spacing

8 to 10 foot spacing between rows
Practical questions to ask before deciding on a vine-row spacing layout

Muscadines

Native, cold-hardy Katuah Muscadines medium vigor

Vine spacing is 20 feet between vines, plant 18” from post

Recommended trellis height 5 feet
Muscadine Vine Spacing

Muscadine 200 feet Row Trellis Posts & Wire
No anchor posts needed for rows shorter than 100’

3-4” row post 7’ long
5-6” end post 8’ long
9-10 gage wire
4-6” anchor post
wire tensioner

20’
5’
2’
18”
1’
3’
3’
Backyard Trellis Options
Early vine training

Year 1: Mid-season
Year 2: End of season

Note the bamboo training sticks
Don’t kill off grass between vines
Pinch off all grapevine clusters for the first 3 years
Vine Terminology for Muscadines

SPUR PRUNING
Living with the Grape

<table>
<thead>
<tr>
<th></th>
<th>Spring</th>
<th>Summer</th>
<th>Autumn</th>
<th>Winter</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bleeding</strong></td>
<td><strong>New roots</strong></td>
<td><strong>New roots</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Auxiliary bud development</strong></td>
<td></td>
<td><strong>Bud endo-dormancy</strong></td>
<td></td>
<td><strong>Eco-dormancy</strong></td>
</tr>
<tr>
<td><strong>Vegetative</strong></td>
<td></td>
<td></td>
<td><strong>Trunk thickening</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Bud burst</strong></td>
<td><strong>Shoot growth</strong></td>
<td><strong>Cane maturation</strong></td>
<td><strong>Leaf fall</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Lateral shoot growth</strong></td>
<td><strong>Inflorescence initiation &amp; development</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Reproductive</strong></td>
<td></td>
<td><strong>Flowering, berry growth, ripening</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Flower development</strong></td>
<td><strong>Fruit set</strong></td>
<td><strong>Veraison</strong></td>
<td><strong>Harvest</strong></td>
<td></td>
</tr>
<tr>
<td>Vegetative growth</td>
<td>Dormant</td>
<td>Early bud swell</td>
<td>Late bud swell</td>
<td>Bud burst</td>
</tr>
<tr>
<td>-------------------</td>
<td>---------</td>
<td>----------------</td>
<td>---------------</td>
<td>----------</td>
</tr>
<tr>
<td>Bud closed. No visible indication of growth.</td>
<td>The bud is visibly swollen, brown and fuzzy. No green or pink tissue is visible yet.</td>
<td>The bud has elongated and green or pink leaf tissue is visible though bud is still closed.</td>
<td>The leaves have separated at the tip, usually exposing the growing point.</td>
<td>The shoot is 1-3 inches (2.5-7.5 cm) long with 1-3 small leaves at right angles to the stem.</td>
</tr>
</tbody>
</table>
In the East/Coastal Plains

<table>
<thead>
<tr>
<th>Season</th>
<th>Cultivar</th>
<th>Flower type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early</td>
<td>Lane</td>
<td>Self-fertile</td>
</tr>
<tr>
<td>Mid</td>
<td>Supreme</td>
<td>Female</td>
</tr>
<tr>
<td>Mid</td>
<td>Ison</td>
<td>Self-fertile</td>
</tr>
<tr>
<td>Mid</td>
<td>Black Fry</td>
<td>Female</td>
</tr>
<tr>
<td>Mid</td>
<td>Paulk</td>
<td>Self-fertile</td>
</tr>
<tr>
<td>Late</td>
<td>Nesbitt</td>
<td>Self-fertile</td>
</tr>
</tbody>
</table>

Seedless Muscadine Varieties

**Razzmatazz** - a self fertile red/burgandy when fully ripe that is a continuous bloomer

**Oh My!** - a self fertile bronze, medium size berry that bears mid-season
In the East/Coastal Plains

**Bronze Fresh-Market**

<table>
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<tr>
<th>Season</th>
<th>Cultivar</th>
<th>Flower type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early</td>
<td>Hall</td>
<td>Self-fertile</td>
</tr>
<tr>
<td>Early</td>
<td>Triumph</td>
<td>Self-fertile</td>
</tr>
<tr>
<td>Mid</td>
<td>Tara</td>
<td>Self-Fertile</td>
</tr>
<tr>
<td>Mid</td>
<td>Fry</td>
<td>Female</td>
</tr>
<tr>
<td>Late</td>
<td>Late Fry</td>
<td>Self-fertile</td>
</tr>
</tbody>
</table>
In the East/Coastal Plains

### Processing Cultivars

<table>
<thead>
<tr>
<th>Color</th>
<th>Cultivar</th>
<th>Flower type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dark</td>
<td>Noble</td>
<td>Self-fertile</td>
</tr>
<tr>
<td>Bronze</td>
<td>Carlos</td>
<td>Self-fertile</td>
</tr>
<tr>
<td>Bronze</td>
<td>Doreen</td>
<td>Self-fertile</td>
</tr>
<tr>
<td>Bronze</td>
<td>Magnolia</td>
<td>Self-fertile</td>
</tr>
</tbody>
</table>

Photo courtesy: Dr. Patrick Conner, University of Georgia
Table 5. Appropriate levels of nutrients based on leaf analysis during bloom (Poling et al. 2003)

<table>
<thead>
<tr>
<th>Element (Unit)</th>
<th>Optimal Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrogen (%)</td>
<td>1.65–2.15</td>
</tr>
<tr>
<td>Phosphorus (%)</td>
<td>0.12–0.18</td>
</tr>
<tr>
<td>Potassium (%)</td>
<td>0.8–1.2</td>
</tr>
<tr>
<td>Calcium (%)</td>
<td>0.7–1.1</td>
</tr>
<tr>
<td>Magnesium (%)</td>
<td>0.15–0.25</td>
</tr>
<tr>
<td>Boron (ppm)</td>
<td>15–25</td>
</tr>
<tr>
<td>Copper (ppm)</td>
<td>5–10</td>
</tr>
<tr>
<td>Iron (ppm)</td>
<td>60–120</td>
</tr>
<tr>
<td>Manganese (ppm)</td>
<td>60–150</td>
</tr>
<tr>
<td>Molybdenum (ppm)</td>
<td>0.14–0.35</td>
</tr>
<tr>
<td>Zinc (ppm)</td>
<td>18–35</td>
</tr>
</tbody>
</table>

- Apply fertilizer 2-3 times per year, not later than June
- Use Calcium Nitrate, Ammonium Nitrate, or full-spectrum fertilizer
### Fertility young vines

<table>
<thead>
<tr>
<th>Vine Age</th>
<th>Irrigation</th>
<th>Fertilizer</th>
<th>Timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Year</td>
<td>Yes</td>
<td>Every 3-4 weeks, starting 2 weeks after planting</td>
<td>Planting – August</td>
</tr>
<tr>
<td>Year 2</td>
<td>Yes</td>
<td>Every 2 Months</td>
<td>April – August</td>
</tr>
<tr>
<td>Mature</td>
<td>No</td>
<td>2 times per year</td>
<td>April - June</td>
</tr>
</tbody>
</table>

- Frist year: Fertilize in a 12-18 inch circle around the plant
- Second year: increase the circle, fertilize less frequent, keep plant irrigated if longer stretches without rain
Above 1600 feet Elevation?

You will need cold-hardy grapevines

Possible choices:
Katuah Muscadines
Katuah Scuppernongs
Grape Flowers

Perfect flower

Self pollinating

Pedicel

Photo courtesy Cornell University
Grape Flowers

Male flower

Anther

Missing female parts

Pedicel

Male flower

Male flower

Photo courtesy Cornell University
Grape Flowers

Female flower

Stigma

Pedicel

Female flower
Propagating Backyard Vines

Rock/Dirt Method

Saran Wrap/Aluminum Foil Method

Plastic Bottle Method
**VERAISON**

Chlorophyll is replaced by anthocyanin (red grapes).

Sweetness increases.

Acidity decreases.

After veraison it takes 30–70 days for grapes to fully ripen.
Not ripe yet

Immature fruit

This one is ready to eat

Not ripe yet
Not Ripe

Ready to Pick
When to Harvest?

When you see the birds coming for the grapes

Brix measurement using a refractometer:
15-16 for muscadines,

Taste
Sight
Feel
Seed color
Not Ripe

Ripe
Harvesting

Collapsible lugs & Picking bucket
Next Step:
Making Wine at Home
10AM Wednesday, August 18
&
10AM Saturday, August 21
Backyard Vineyards for Muscadines
by
Chuck Blethen
Jewel of Blue Ridge Vineyard

August 14, 2021