Muscadine Summer Chores 101

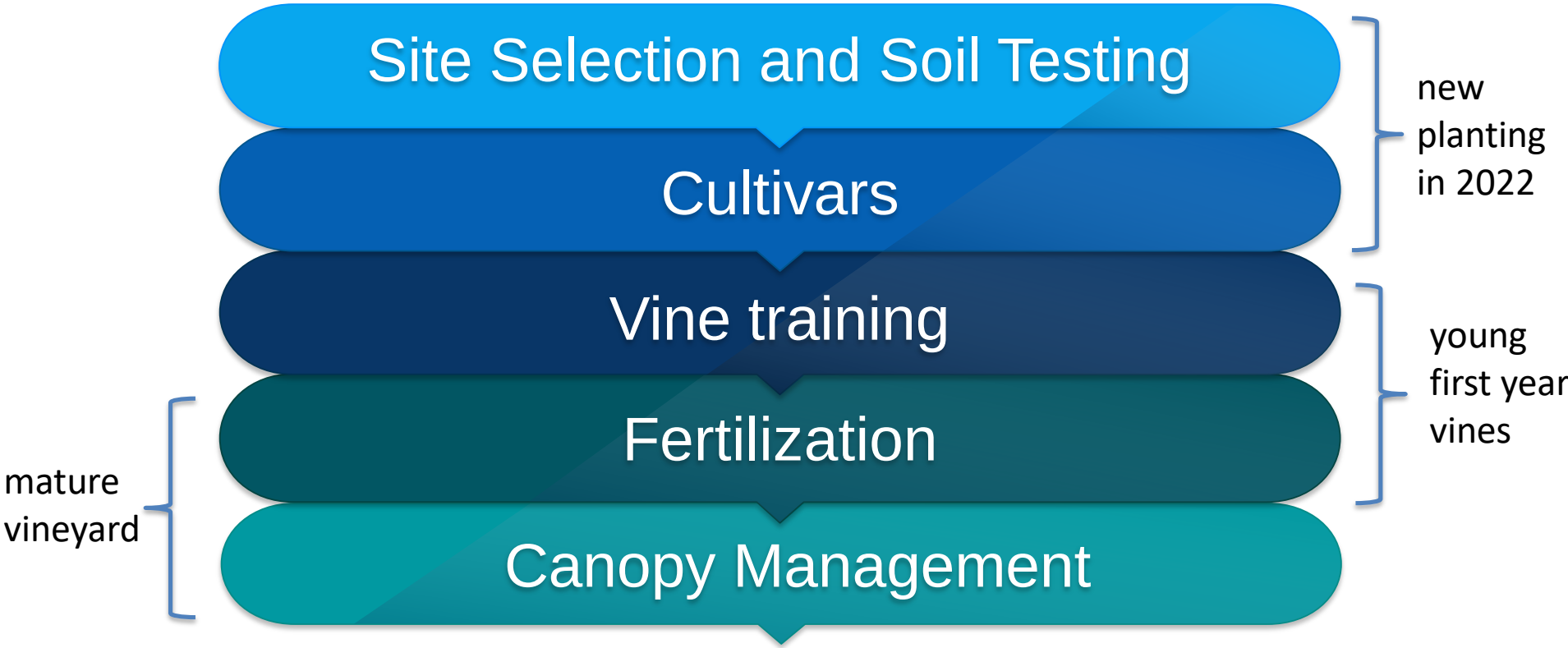
Mark Hoffmann, NC State University

3 Things to Worry About

- Do you want to expand next year?

- Young vines in their first year?

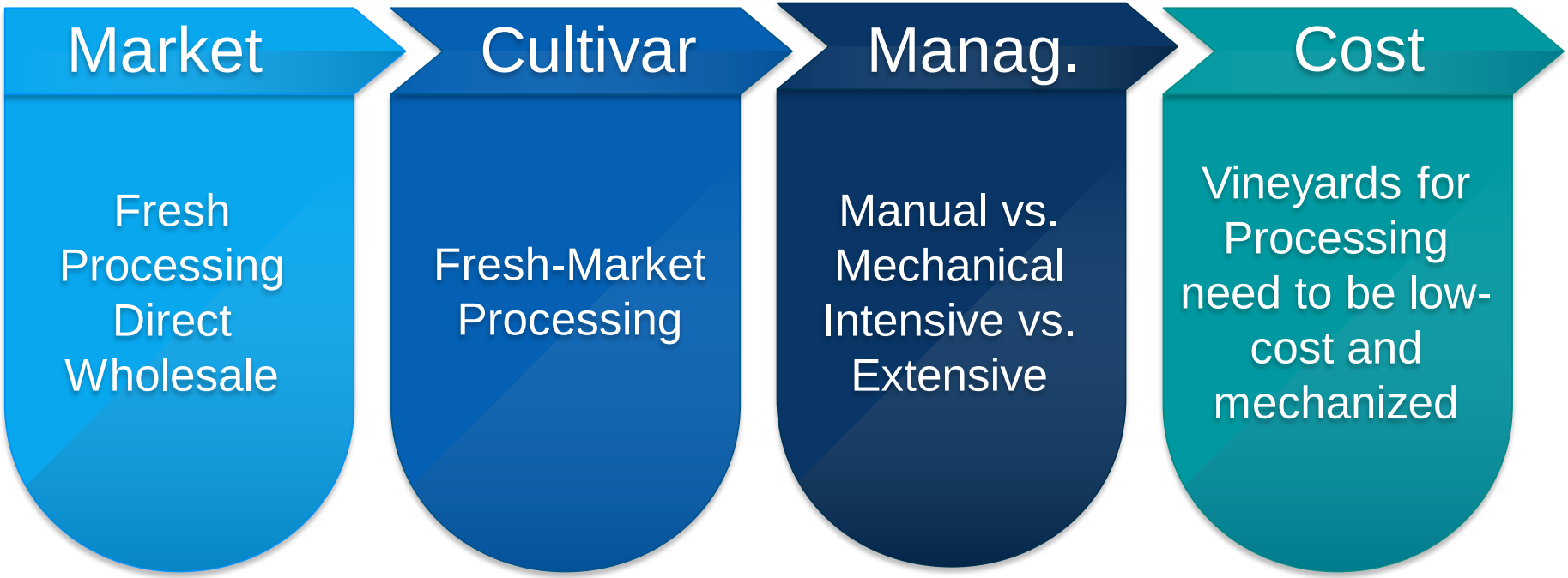
- Mature vines?


Site Selection and Soil Testing
Cultivars
Vine training
Fertilization
Canopy Management
new planting in 2022
young first year vines
mature vineyard

Site Selection

How much costs a vineyard?

Costs and Site Selection



Vineyard Establishment: 4 years!

Year 1: Site Selection and Field Prep

Year 2: Planting and Trellis

Year 3: Establishment

Year 4: First Harvest

Costs: Know this first

Market	Management	Upfront Investment	Labor Demand	Returns /acre	Time Scale to profitability
Direct-to Consumer	Intensive + small (1-2 acres) + Food Safety	$	++	moderate	5-8 years
Whole Sale	Intensive + large + Food Safety	$$$	+++	High	7-10 years
Processing	Low-Cost, large scale, mechanized	$$	+	Low	5-10 years
Wine Sales	Low-Cost, mechanized, tasting room; Events;	$$$$	+++	N/A	7-10 years
Wine Making	Low-Cost, mechanized; Tasting Room, Events; Winery	$$$$$$	++++	N/A	10-12 years

Rule of thumb

Investment into one acre of muscadine vineyard from establishment (Year 1) to first harvest (Year 3-4)

$20,000 - $30,000 / acre

Long-Term: Revenue > Total Cost

Make a business plan before you start

Set yourself goals

Be realistic!!!!!!!

Farming needs to be cost-effective;

If you lose money, more and more frustration will creep in

Risking the well-being of yourself, your family and loved-ones.

Site Selection

Questions?

1. Is the site suitable to your market needs?
2. Is the pH correct?
3. Water Drainage?
4. Air Drainage?

1. Market Needs

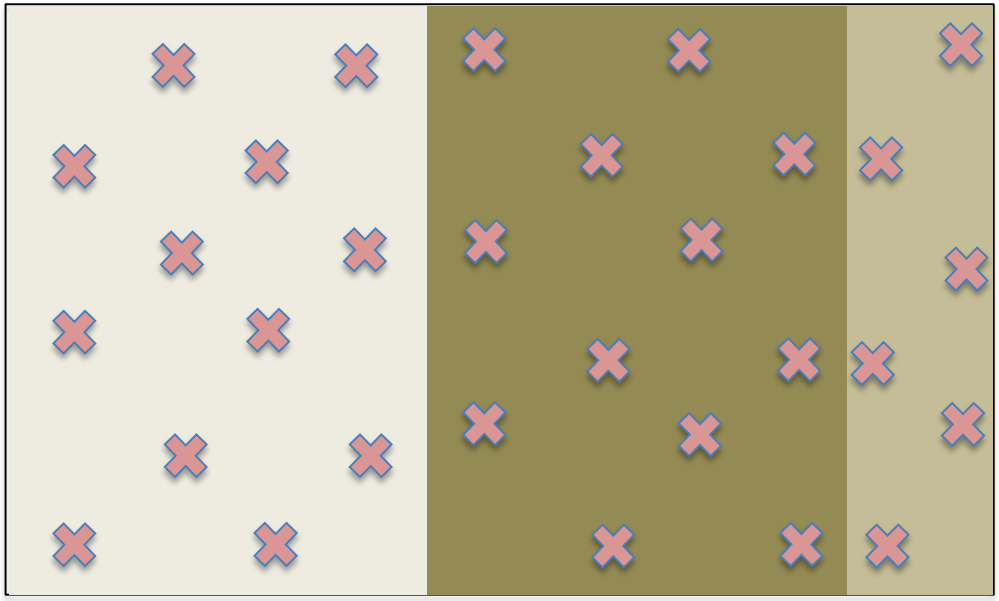
1. **U-Pick:** Easy access for cars; Parking Space; Space of Children/Activity?; Close to a road/busy neighborhood;
2. **Processing:** Easy access for heavy machinery; Turnaround space for heavy machinery; Even growth; Sturdy trellis and post;

2. Soil pH: 6.0-6.5

Soil sampling :

- **0-7 inches**
- **7-14 inches**

Summer before planting



Combined Samples 1 and 2 (0-7;7-14)

Combined Samples 3 and 4 (0-7;7-14)

Combined Samples 5 and 6 (0-7;7-14)

Adjust pH based on Soil Samples

Send soil samples to
www.ncagr.gov/agronomi/sthome.htm

Optimal pH: 6.0-6.5

Optimal P in soil 30 ppm of P

Adjust pH based on Soil Samples

Lime (not Gypsum)

Incorporate in the summer BEFORE posts and planting

3. Water Drainage

Photo Courtesy:
Connie Fisk

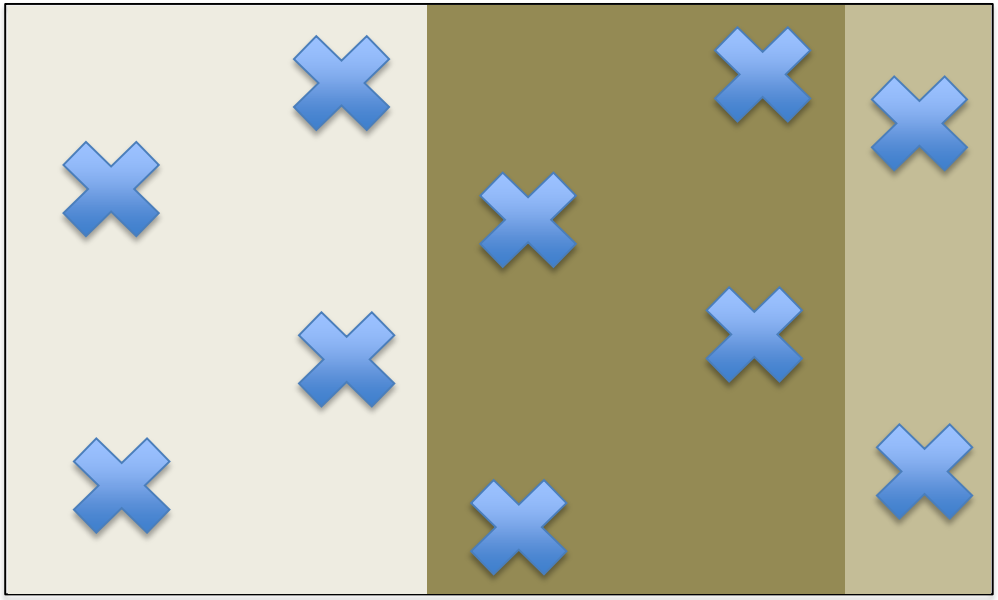
Standing Water is a red flag

- Standing water or bad/no drainage will cause low growth and disease problems down the line. Don’t plant!

Evaluate Field with Auger

Evaluate field

- For long standing water after heavy rain
- For hard soil layers in the upper **30-40 inches**

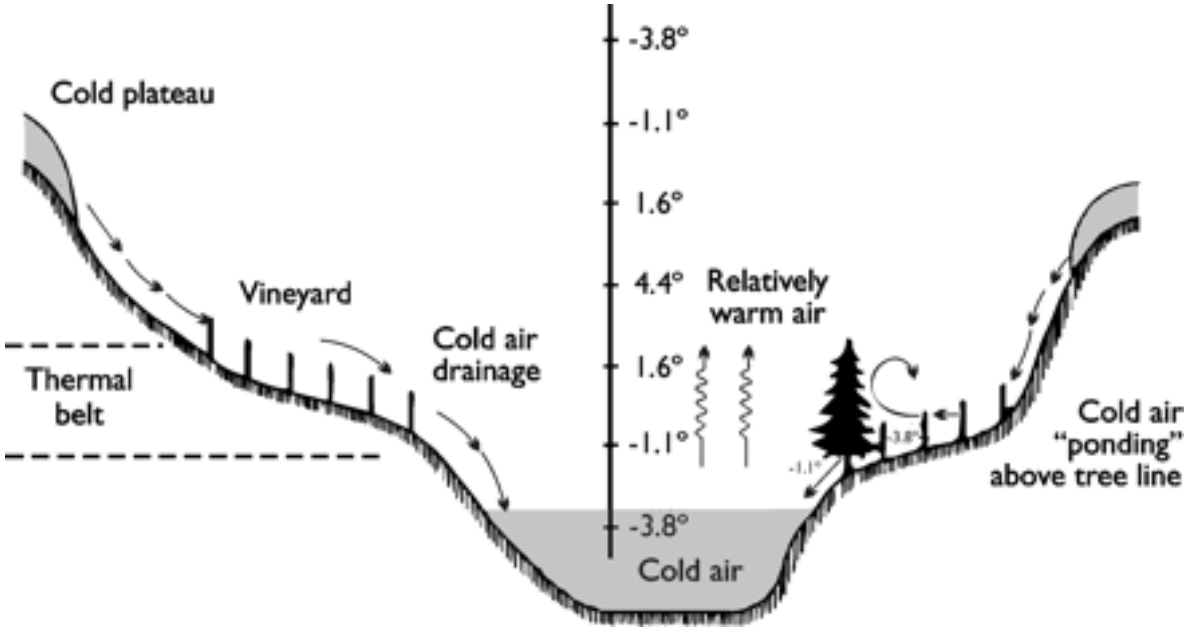


Summer before planting

4. Air Drainage

Evaluate field

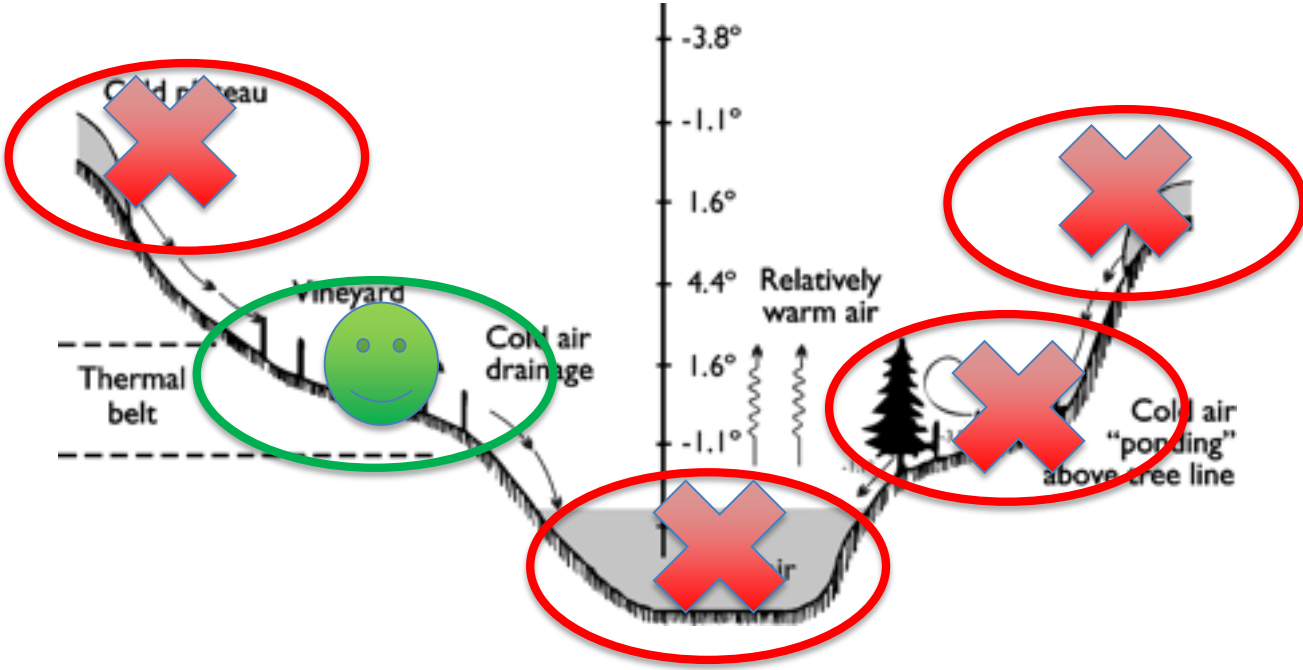
- Vineyards need two things:
- **Sunlight**
- **Air Drainage**



If planted in the wrong spot

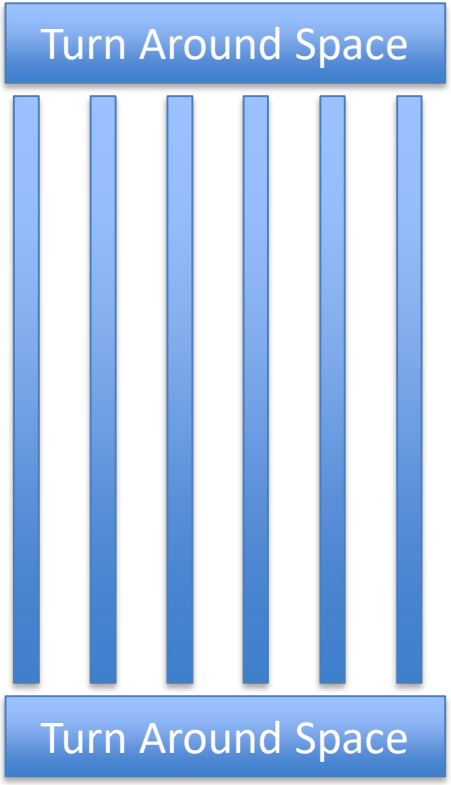
Increased risk of:

- **Dead plants**
- **Split Trunks**
- **Frost Damage**



One more thing: Turn Around

30 -40 ft



Cultivars

- Muscadine cultivars are either **female** or **self-fertile** (perfect flower)
- **Male muscadines are not used in commercial production, and are often not/less fruitful**
- All female cultivars need a self-fertile pollinator

Cultivars

Figure 2. Close-ups of male, self-fertile ("perfect"), and female muscadine flower clusters (photos by Patrick Conner).

4 | Muscadine Grape Production Guide for the Southeast

https://content.ces.ncsu.edu/muscadine-grape-production-guide

Don’t sell wine/juice cultivars for fresh consumption

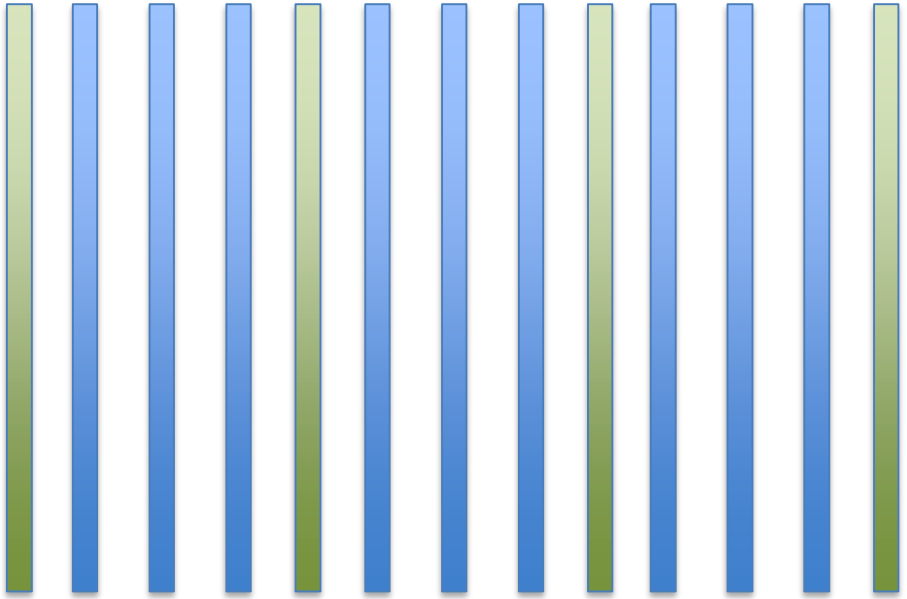
- **Wine/juice Cultivars:** High yields, high sugar, small berry size, wet picking scar, poor eating quality!
- **Fresh-Market**: large, frim, dry picking scar, high eating quality! Can also be used for wine/juice.

Photo courtesy: Dr. Patrick Conner, University of Georgia

Female vs. Self-Fertile

Rule of thumb: 1:3 ratio

(self-fertile : female)



Dark Fresh-Market

Season	Cultivar	Flower type
Early	**Lane**	Self-fertile
Mid	**Supreme**	Female
Mid	**Ison**	Self-fertile
Mid	**Black Fry**	Female
Mid	**Paulk**	Self-fertile
Late	**Nesbitt**	Self-fertile

Bronze Fresh-Market

Season	Cultivar	Flower type
Early	**Hall**	Self-fertile
Early	**Triumph**	Self-fertile
Mid	**Tara**	Self-Fertile
Mid	**Fry**	Female
Late	**Late Fry**	Self-fertile

Processing Cultivars

Color	Cultivar	Flower type
Dark	**Noble**	Self-fertile
Bronze	**Carlos**	Self-fertile
Bronze	**Doreen**	Self-fertile
Bronze	**Magnolia**	Self-fertile

Photo courtesy:
Dr. Patrick Conner, University of Georgia

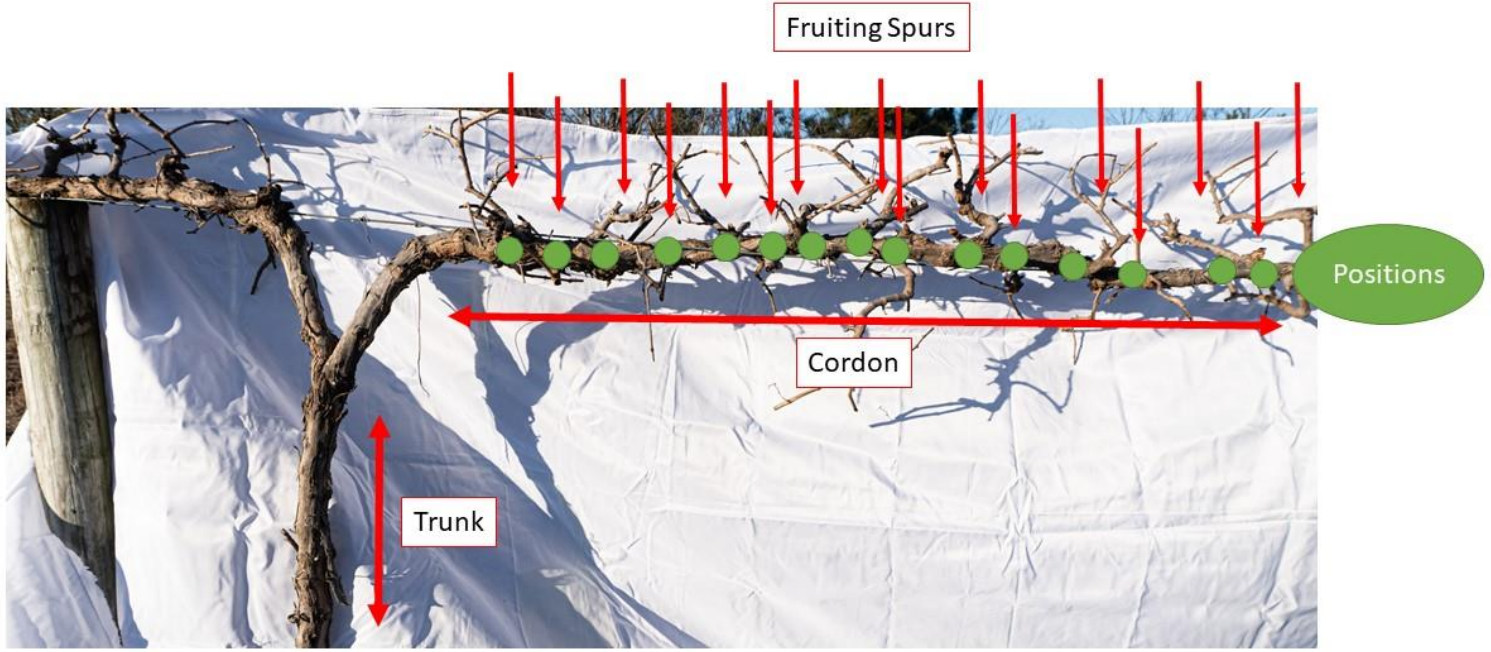
Planting Rules:

- Planting always in Spring of Year 2 after the last frost
- Young plants need **frequent water and fertilizer**
- Amount of water and fertilizer depends on soil type
- Clay/Loam soils: Less water/fertilizer than Sandy soils
- Min: 10-11 ft row spacing
- Cultivars such as Paulk or Ruby Crips needs to be ordered late Summer

Training

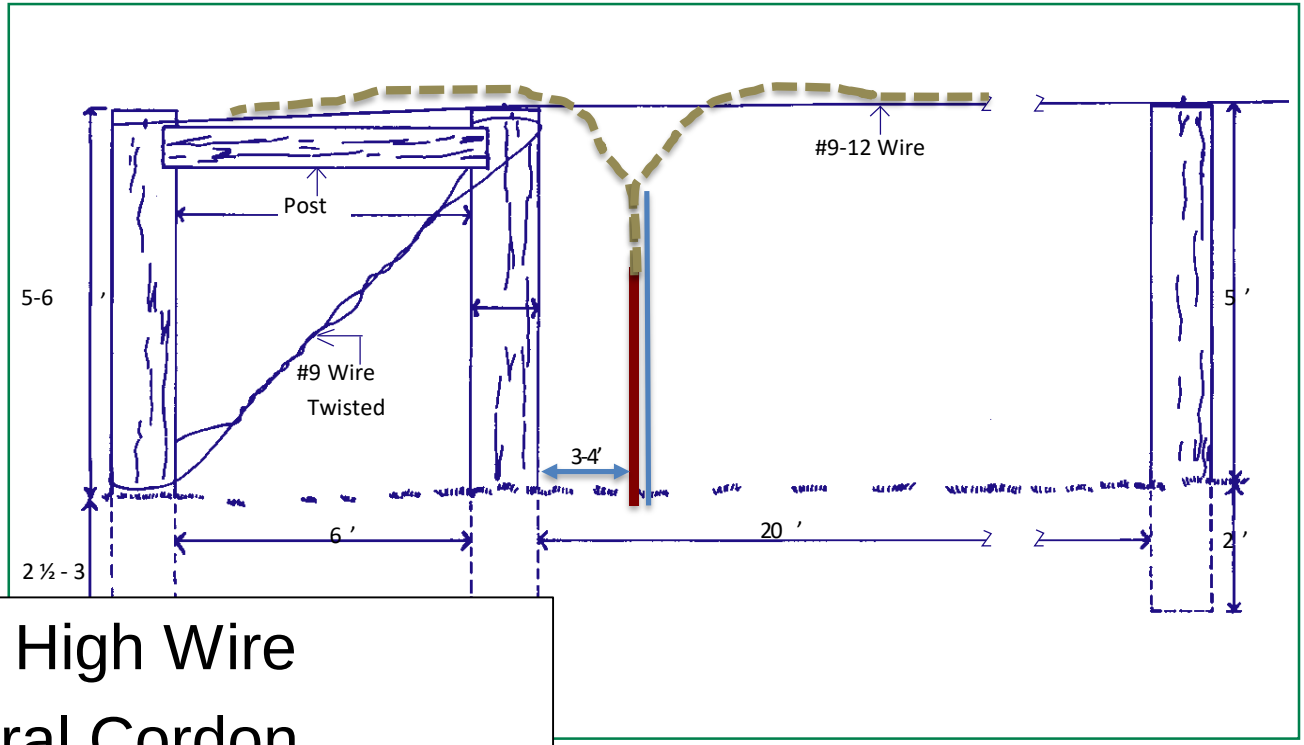
Photos by Emma Volk and Mark Hoffmann

Nomenclature



- Trunk: Structure from root system to wire
- Cordon: Arm along the wire
- Spurs: Structures established on positions along the cordon, bearing one-year old wood

Trellis



- Single High Wire
- Bi-lateral Cordon
- Spur Pruning System

Photos by Emma Volk and Mark Hoffmann

One year old vines (planted in Spring)

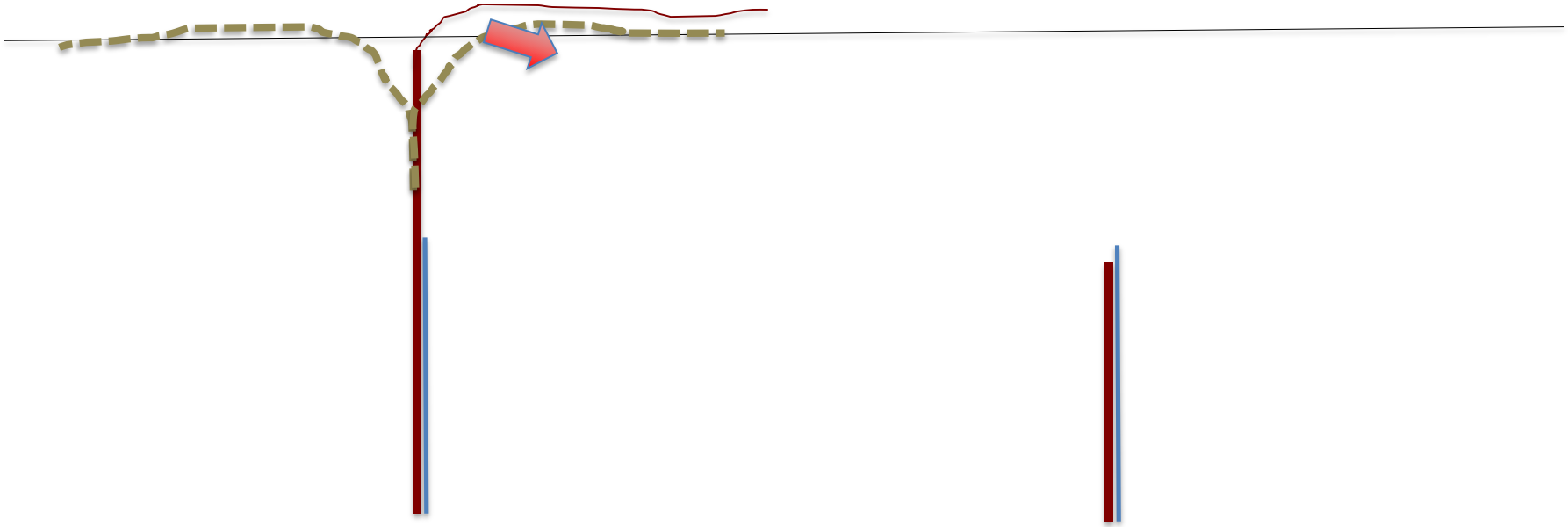
Good vigor

Weak vigor

One year old vines (planted in Spring)

Good vigor

Weak vigor



Two year old vines

Good vigor

Weak vigor

Two year old vines

Good vigor

Weak vigor

Fertility

Fertility

- Soil and plant nutrient testing: Routine task (every spring!!!)
- Whole leaf samples (60-80) should be collected and send to a tissue nutrient testing service during bloom

Fertility mature vines

Table 5. Appropriate levels of nutrients based on leaf analysis during bloom (Poling et al. 2003)

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

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

Fertility young vines

Vine Age	Irrigation	Fertilizer	Timeframe
First Year	Yes	Every 3-4 weeks, starting 2 weeks after planting	Planting – August
Year 2	Yes	Every 2 Months	April – August
Mature	No	2 times per year	April - June

- 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

Management

Summer Vineyard Management

- Fertilizing
- Weed Control (chemical and mowing)
- Hedging and Skirting;
- Disease and Pest Control

Weed Control

- Minimize competition for resources (especially young plantings)
- Give access to crew and machinery.
- Avoid the build up of pest populations.
- Herbicide Resistance is a problem.

Under Vine Weed Control

Vine Age	Vine Shelter ('Growtube')	Summer
First Year	Yes	Otyzalin + Paraquat; Fusalide, Poast or Clethodium
Year 2	Yes	Glyphosate, Paraquat, Glufosinate, Poast
Mature	No	Paraquat, Glufosinate, Poast

https://smallfruits.org/

Under Vine Weed Control

Row Middles Weed Control

Insect Pests

- Scout for Root Borer. Use root borer pheromone traps (1 trap/2acres of vineyard).
- Scout for stink bugs, beetles etc. Spray if necessary (especially in fresh-market operations)

Canopy Management

- Skirting is the process of trimming vine growth to increase air flow and avoid herbicides from damaging the vine.
- Skirting should be done in late Summer, when vines become vigorous.
- Vine canopy should be skirted **Knee High**

Skirting

Hedging

- Hedging is the process of cutting the growth at the top and sides of the vines
- Hedging allows more air flow into the canopy
- Hedging allows harvest machines or picking crew to go through the vineyard more efficient
- Hedging should be done shortly (1-2 weeks before harvest)

Resources

https://grapes.ces.ncsu.edu/

https://smallfruits.org/

https://content.ces.ncsu.edu/muscadine-grape-production-guide

Thank You

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