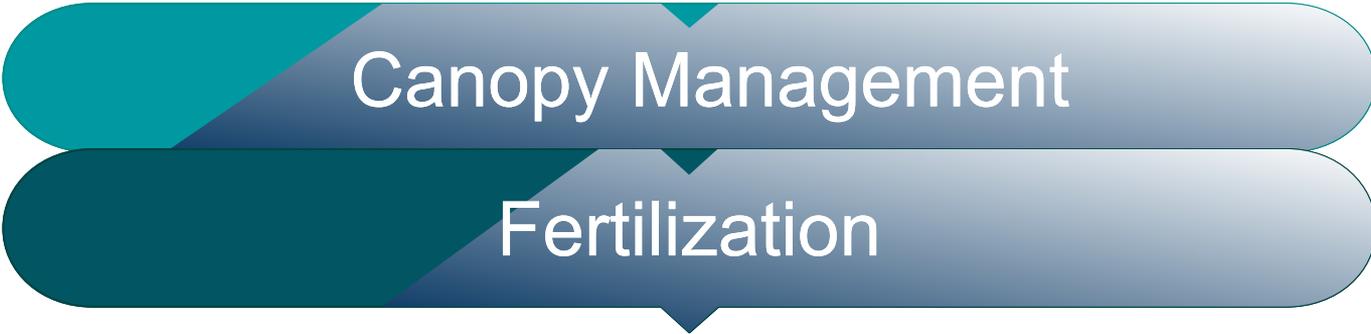


Muscadine Summer Chores & Fertility



Mark Hoffmann, NC State University



Canopy Management

Fertilization

Summer Vineyard Management

- Weed Control
- Insect Pest
- Disease Control

- Canopy Management;

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**



- 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)



Fertility

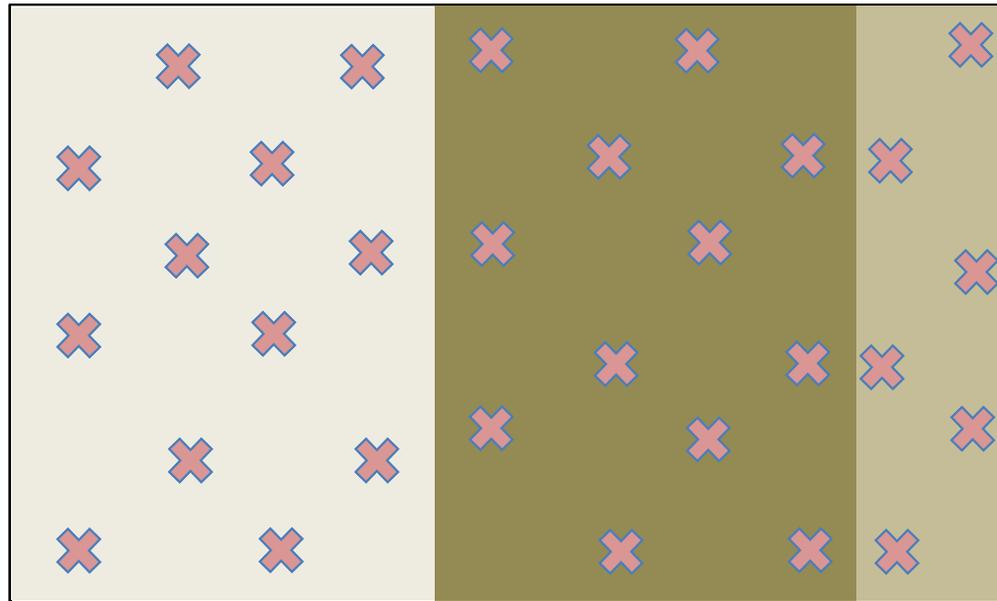
Fertility

- 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**
- **pH: between 6-6.5**
- **Do NOT FERTILIZE after June/July**

2. Soil pH: 6.0-6.5

Soil sampling :

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



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 Agronomic Service

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**

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 of young vines



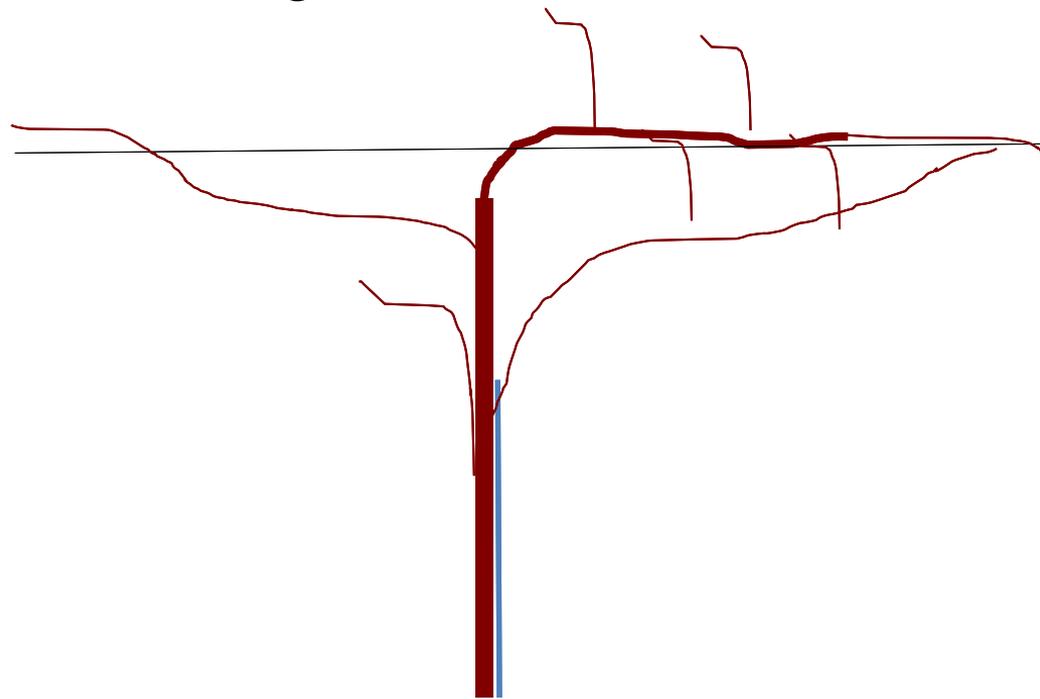
Vine Age	Irrigation	Fertilizer	Timeframe
First Year	Yes	Every 3-4 weeks, starting 2 weeks after planting	Planting – August
Year 2	Yes	Every 2 Months	April – August
Mature	No	2 times per year	April - June

- Fertilize in a 12-18 inch circle around the plant
- Water is the most important issue!

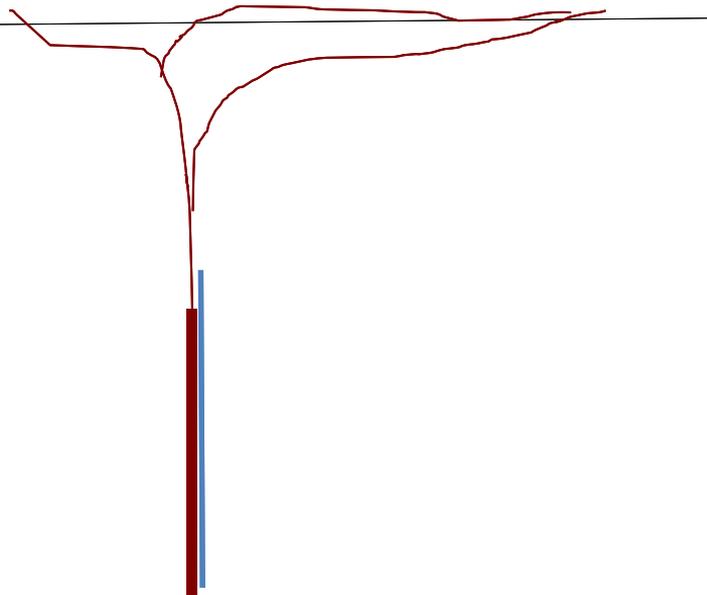
Vine Age	Irrigation	Fertilizer	Timeframe
First Year	Yes	Every 3-4 weeks, starting 2 weeks after planting	Planting – August
Year 2	Yes	Every 2 Months	April – August
Mature	No	2 times per year	April - June

- increase the circle
- fertilize less frequent,
- keep plant irrigated if longer stretches without rain

Good vigor



Weak vigor

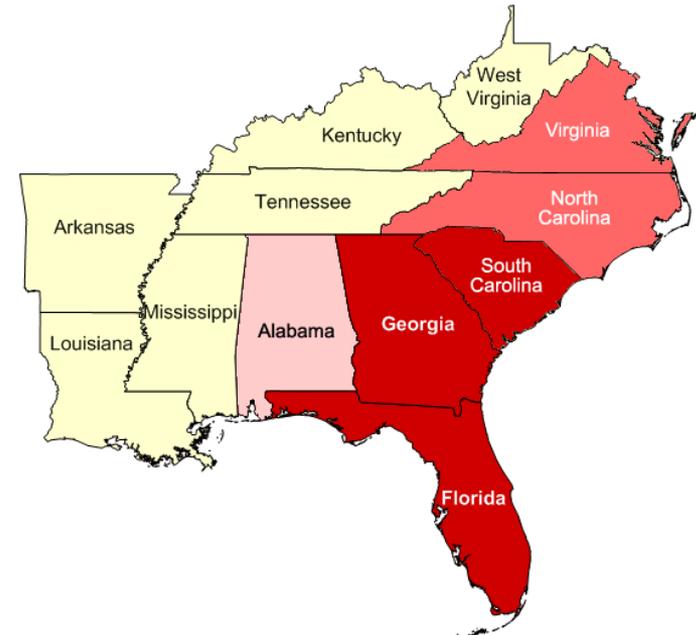


- Weaker plants: treat like one-year old plants

Fertility recent research

Does it matter where I live and which cultivar I grow?

The quick answer is: Yes, it might be



Leaf-tissue Nutrient Dynamics in Mature Muscadine Cultivars Carlos and Noble in Georgia and North Carolina

Tekan S. Rana¹, Erick D. Smith², Cain Hickey³, and Mark Hoffmann¹

HortTechnology 2021: 31(3)

N sufficiency range might be too low

Location, growth stage	Yr	N ^v	P	K
		Tissue nutritio		
Sufficiency range		1.65–2.15	0.12–0.18	0.80–1.20
Piedmont North Carolina ^z				
Bloom	2018	↑	↑	↑
	2019	↑	↑	↔
Véraison	2018	↑	↑	↔
	2019	↑	↑	↓
Postharvest	2018	↔	↔	↓
	2019	↔	↔	↓
North Georgia ^y				
Bloom	2018	↑	↑	↑
	2019	↑	↔	↔
Véraison	2018	↑	↔	↔
	2019	↑	↔	↓
Postharvest	2018	↑	↔	↔
	2019	↓	↔	↓
South Georgia ^x				
Bloom	2018	↑	↔	↔
	2019	↑	↔	↔
Véraison	2018	↑	↔	↔
	2019	↑	↔	↓
Postharvest	2018	↑	↔	↓
	2019	↑	↔	↓

Leaf-tissue Nutrient Dynamics in Mature Muscadine Cultivars Carlos and Noble in Georgia and North Carolina

Tekan S. Rana¹, Erick D. Smith², Cain Hickey³, and Mark Hoffmann¹

HortTechnology 2021: 31(3)

Carlos might have higher sufficiency ranges and fertility demands than Noble

	N	P	K
	Tissue nutrient		
Sufficiency range	1.65–2.15	0.12–0.18	0.80–1.20
2018			
Carlos	2.99	0.23	1.32
Noble	2.91	0.22	1.41
<i>P</i> value	NS ^z	NS	NS
Carlos	2.49	0.19	0.95
Noble	2.29	0.19	1
<i>P</i> value	0.0098	NS	NS
Carlos	2.02	0.14	0.61
Noble	1.76	0.13	0.64
<i>P</i> value	0.0039	0.0472	NS
2019			
Carlos	3.35	0.21	1.16
Noble	2.99	0.19	1.26
<i>P</i> value	0.0039	0.0232	NS
Carlos	2.62	0.2	0.68
Noble	2.49	0.23	0.79
<i>P</i> value	0.0058	NS	0.0031
Carlos	2.06	0.16	0.74
Noble	2.26	0.15	0.76
<i>P</i> value	NS	0.046	NS

Fertility recent research

Does it matter at which time and from which part of the plant I take tissue samples?

The quick answer is:
The timing matters,
but not the location
of the leaf



Mature leaf



Opposite the cluster



Petiole



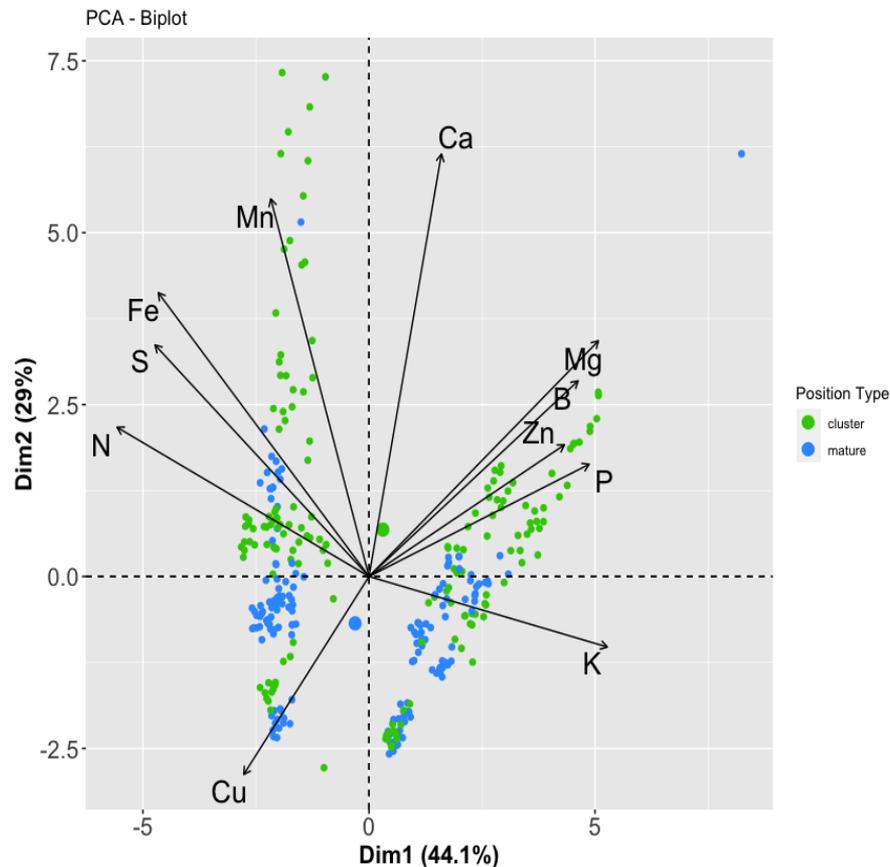
Whole leaf

Impact of sampling time and tissue type on nutrient concentration in petioles and leaves of mature muscadines.

Tekan S. Rana and Mark Hoffmann. In preparation. *unpublished*

Minimal differences between location of tissue

It does not matter if you take a sample opposite the cluster or a fully mature leaf

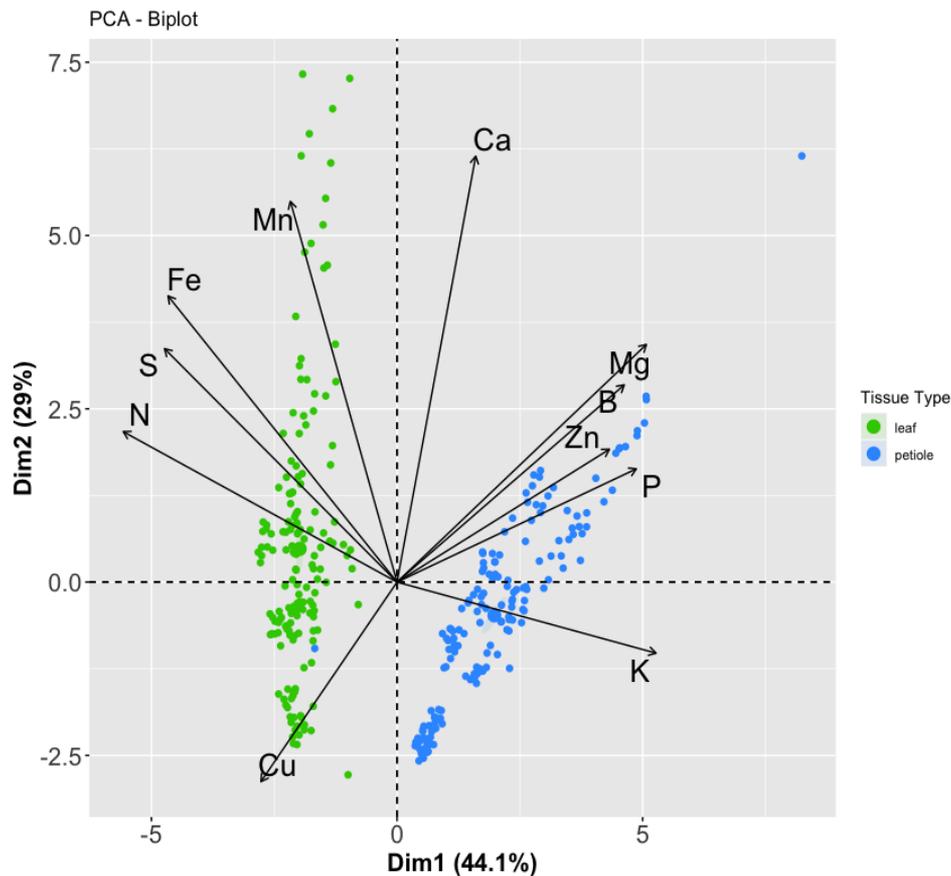


Impact of sampling time and tissue type on nutrient concentration in petioles and leaves of mature muscadines.

Tekan S. Rana and Mark Hoffmann. In preparation. *unpublished*

Strong differences between tissues

But it DOES matter whether or not you take a leaf or a petiole tissue



Research Conclusions

- Tissue nutrient content differ between cultivars and region and growth stage of the plant
- We found strong predictors for yield in both, petiole and whole leaf samples
- More research is needed to adjust muscadine sufficiency ranges

Take-home

- Soil samples can be taken in early spring
- Tissue samples can be taken during bloom
- **Take samples by cultivar and location**
- Don't fertilize after June!





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

<https://smallfruits.org/>

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



Thank You

mark.hoffmann@ncsu.edu