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Muscadine Production Updates

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- Pruning and early season disease control
- Research on Tissue Sampling
- NCDA New and Emerging Crops Grant
- Specialty Crop Research Initiative
- Resources

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Grapes are PERENNIAL Crops

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Every decision is a decision which will affect several years

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Especially True for :

Pruning
Fertilization
Vineyard Establishment
Disease Management

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<u>TWO THINGS IMPORTANT NOW</u>:

(1) Early season disease control

In fresh market!

If you have a lot of dead wood/problems before

Early application of Mancozeb will help!

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(2) Pruning:

Prune out dead wood!!!
Think of replacing cordons
Keep only the wood you need
Attend Pruning workshops
Manage your crop load (Gregs' talk)
Pruning decisions are decisions for the next two years!

Topics

Grape Trunk Diseases (GTDs)

- **Can cause serious long-term damage**
- **Often related to cold-damage, old wounds, cracks, insufficient pruning!!!**

Topics

	Trunk Diseases
Type of Pathogen	Fungal
Lethal to vine	Yes
Plant Age	Mature; young (ESCA)
Resistance/Tolerance	Not found
Can come with nursery stock?	Yes
Transmitted?	Open wounds, Rain, Pruning Tools
Systemic	No
Severity in NC	?

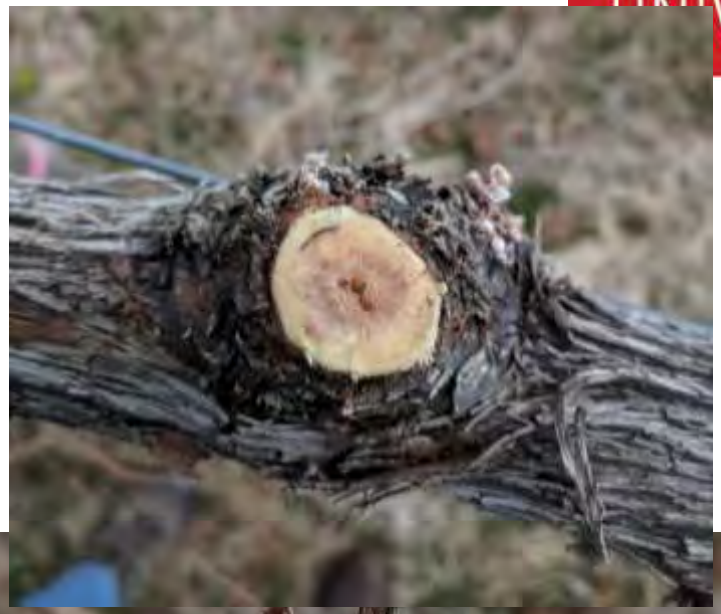
Trunk disease is NOT Crown Gall

Trunk disease is NOT Crown Gall

Both are related to physical damage

Trunk Diseases = Complex Diseases

- Eutypa Dieback
- Esca Disease Complex (‘Petri Disease’)
- **Botryosphaeria Dieback**



Botryodiplodia theobromae
Botryosphaeria dothidia
Greeneria species (found in NC)

Grapevine Trunk Diseases
Bortyospheria Dieback

- **21 different species of *Bortyopsphaeia***

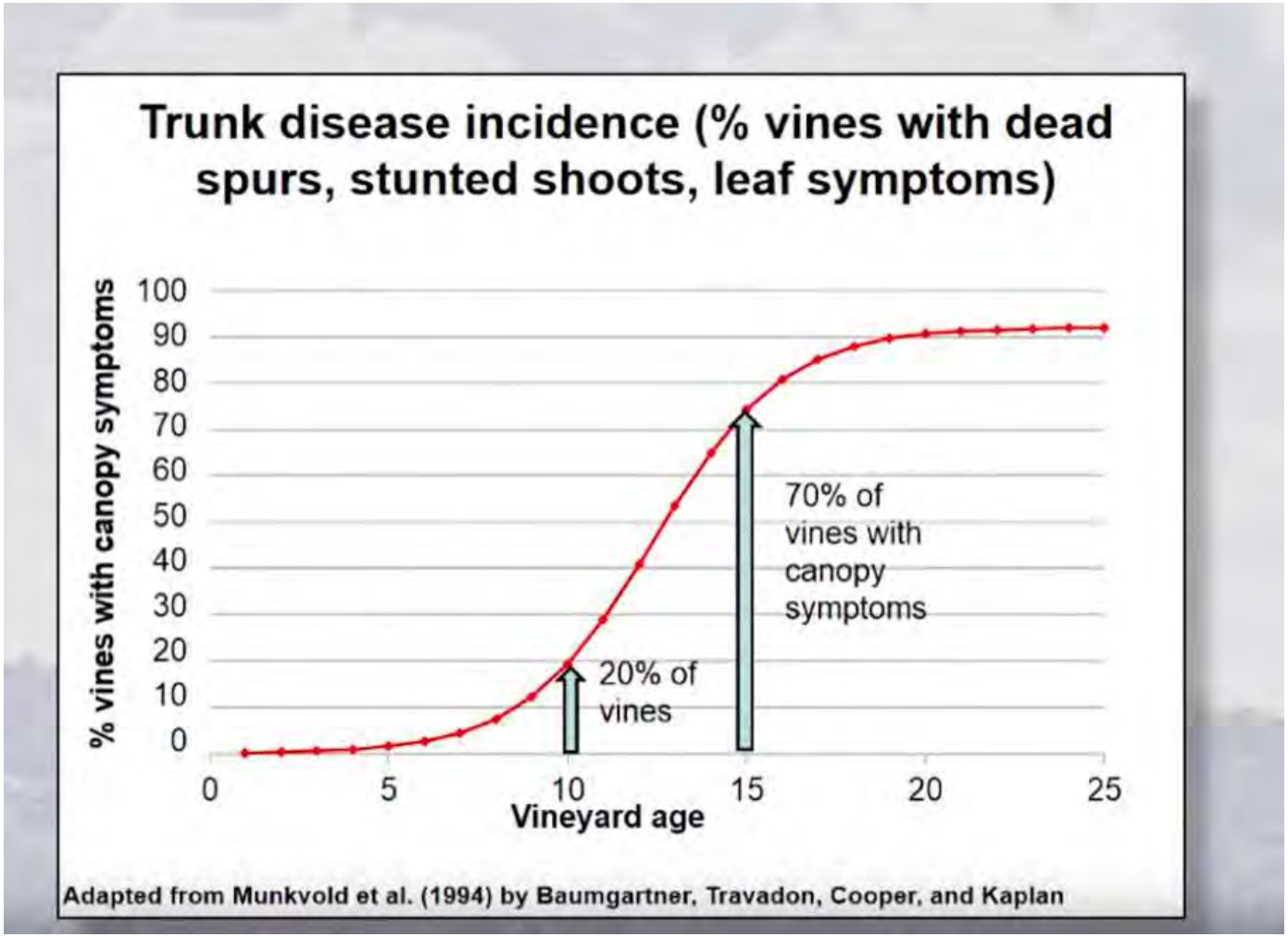
Many other fungi as well.

- Wood Symptoms
- Sudden death
- Apoplexy!

Grapevine Trunk Diseases
Effects

- Reduced Growth
- *Dieback / Death of Vine*
- **Reduces time span of a vineyard**
- **Dead Arm**
- **Reduced Yield**
- **COLD DAMAGE → PHYSICAL DAMAGE**

Often Dead Arm Disease Management starts too late!



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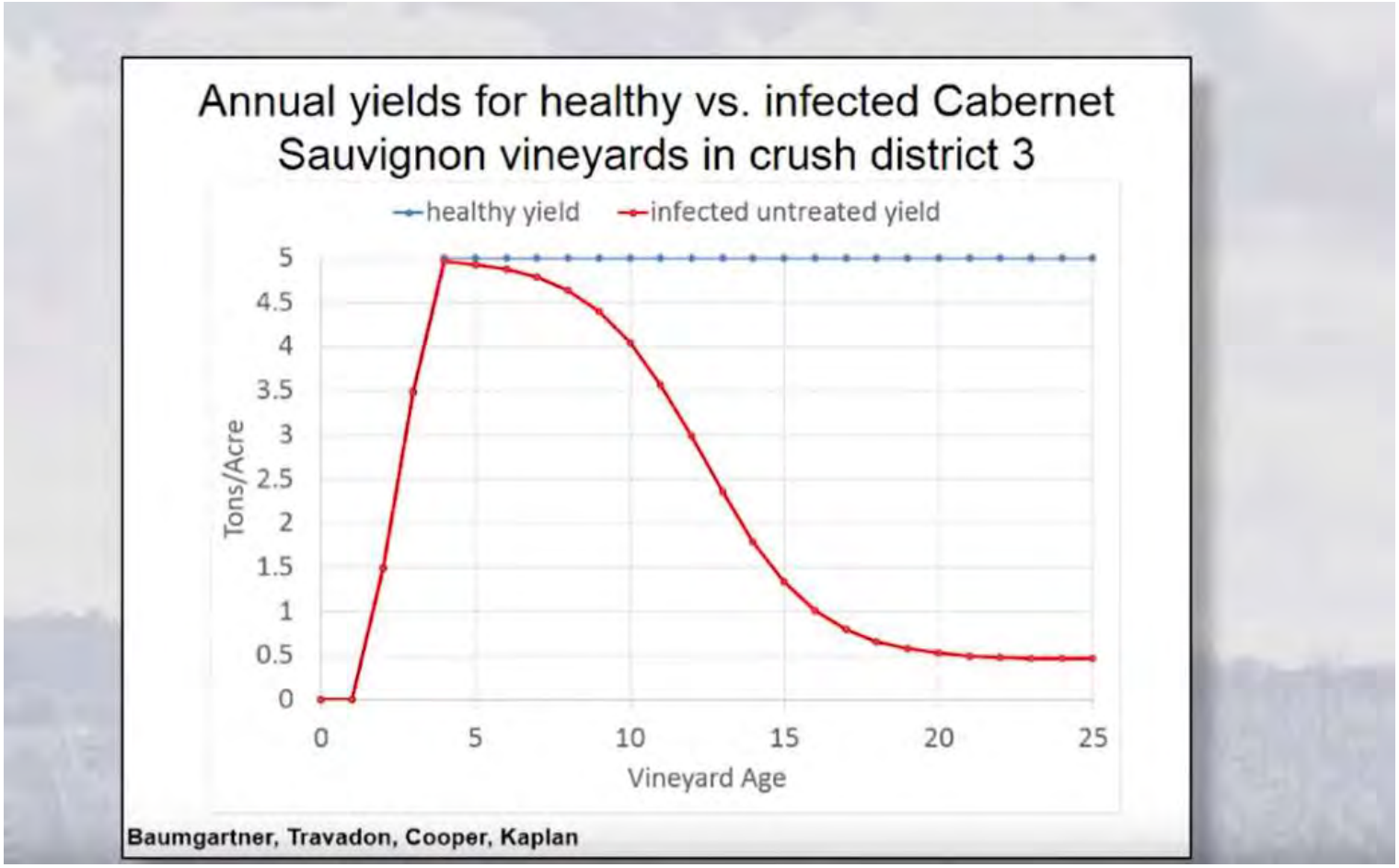

Grapevine Trunk Diseases
Prevention and Management

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- Having good soil drainage
- **Sanitize, remove infected wood after pruning**
- **Pruning wound protectants**

Grapevine Trunk Diseases Prevention and Management

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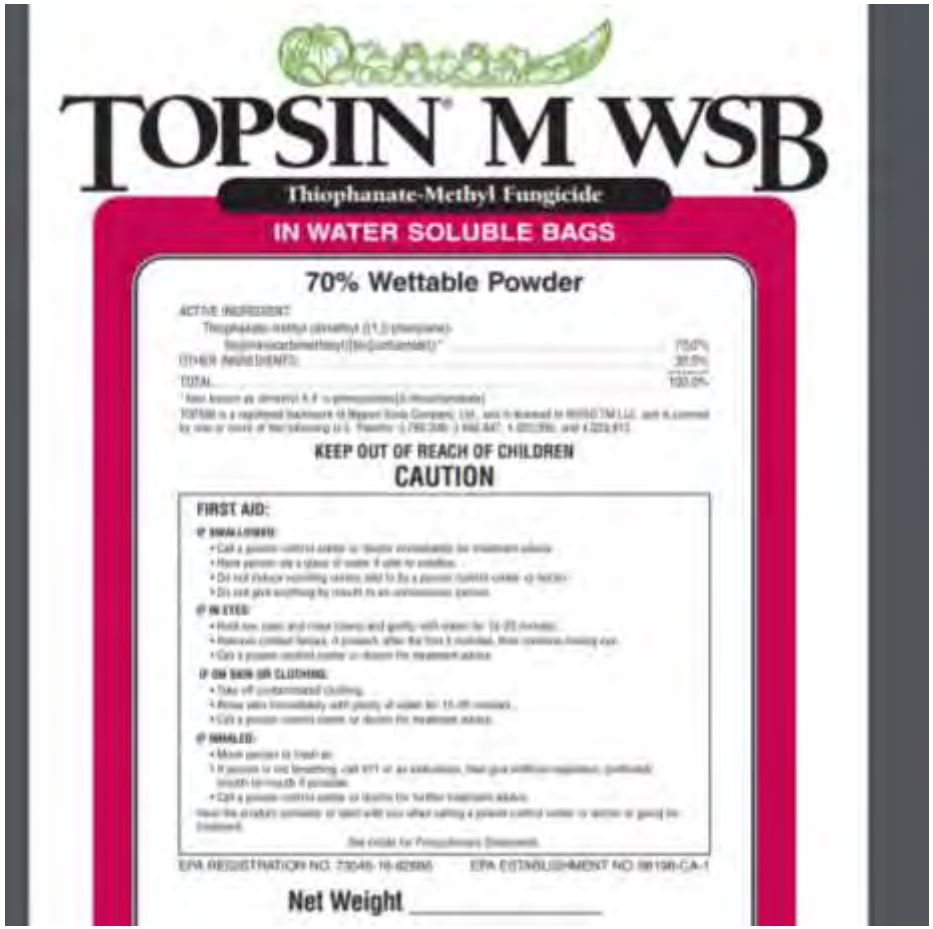
Pruning Wound Protectants!



- **0.75-1.5 lbs/A**
- **Requires a 24c label for your state! (Special Local Need). VA has it**

Grapevine Trunk Diseases Prevention and Management

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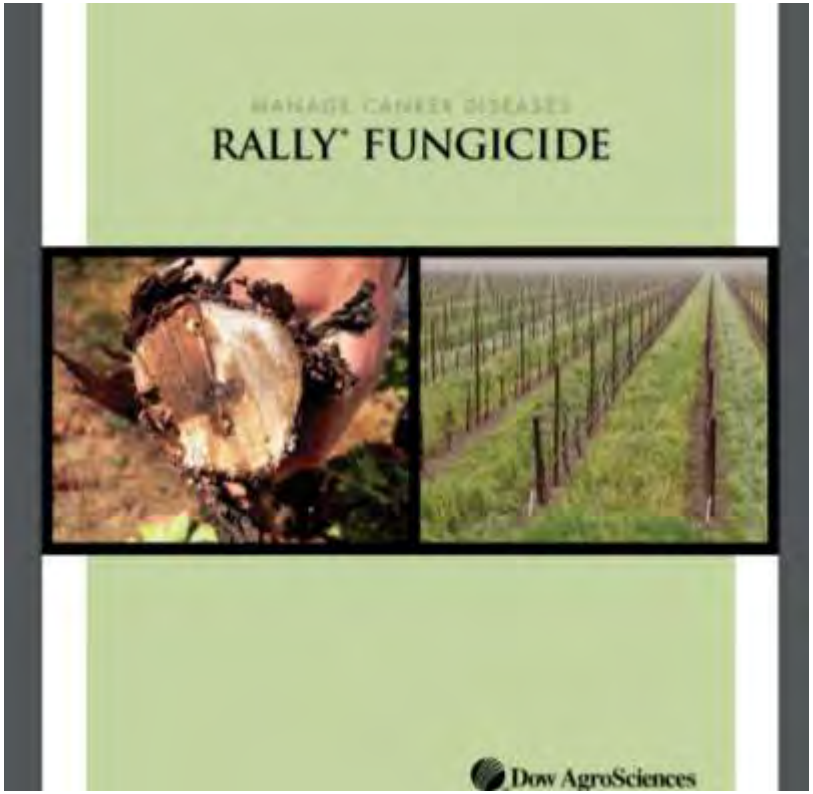
Pruning Wound Protectants!



- **4 oz/A in 33 gpa**
- **5 oz/A in 42 gpa**
- **6 oz/A in 50 gpa**

- Spray soon after pruning.
- 1-2 weeks of protection (if it doesn't rain!!!)
- REI 24hrs.
- Can be sprayed with standard vineyard sprayer

Grapevine Trunk Diseases Prevention and Management

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Pruning Wound Protectants!

- **B-Lock**

- Paint!
- 5% Boric Acid
- Apply on fresh pruning wounds
- NOT a Fungicide!
- Physical Barrier

Grapevine Trunk Diseases Prevention and Management

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Pruning Wound Protectants!

- **VitiSeal**

- Is also a barrier
- Is organic
- **Can be applied with a back-pack sprayer**

Contact Viti Seal Corporate
3251 Third Street
San Diego, CA 92103
619-239-0321,
info@vitiseal.com

Grapevine Trunk Diseases
Prevention and Management

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Pruning!

- Pune out dead wood!
- Retrain Cordons

Cordons should be retrained every 6-7 years.

Muscadine Fertilizer and Tissue Sampling Trial

2 year study, started Spring 2019
'Carlos', planted 2007
Scotland Co., North Carolina

Objectives:

(1) Optimal fertilizer rates for muscadines on sandy soils
(2) Optimize Tissue sampling for muscadines (collaboration with NCDA).

Muscadine Fertilizer Trial

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7 Treatments

(1) 2.5. lbs/vine 10-10-10, April and July
(2) 2.5 lbs/vine 6-6-18, April and July
(3) 1 lbs/vine 10-10-10, April and July
(4) 1 lbs/vine 6-6-18, April and July
(5) 1 lbs/vine 10-10-10, April
(6) 1 lbs/vine 6-6-18, April
(7) No Fertilizer

4 replicates per treatment/2 vines per replicate/randomized block design

Muscadine Tissue Sampling Trial

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4 Methods

(1) Youngest mature leaf, shoot
(2) Youngest mature leaf, opposite of cluster
(3) Petiole, shoot
(4) Petiole, opposite of cluster

3 Time Points:

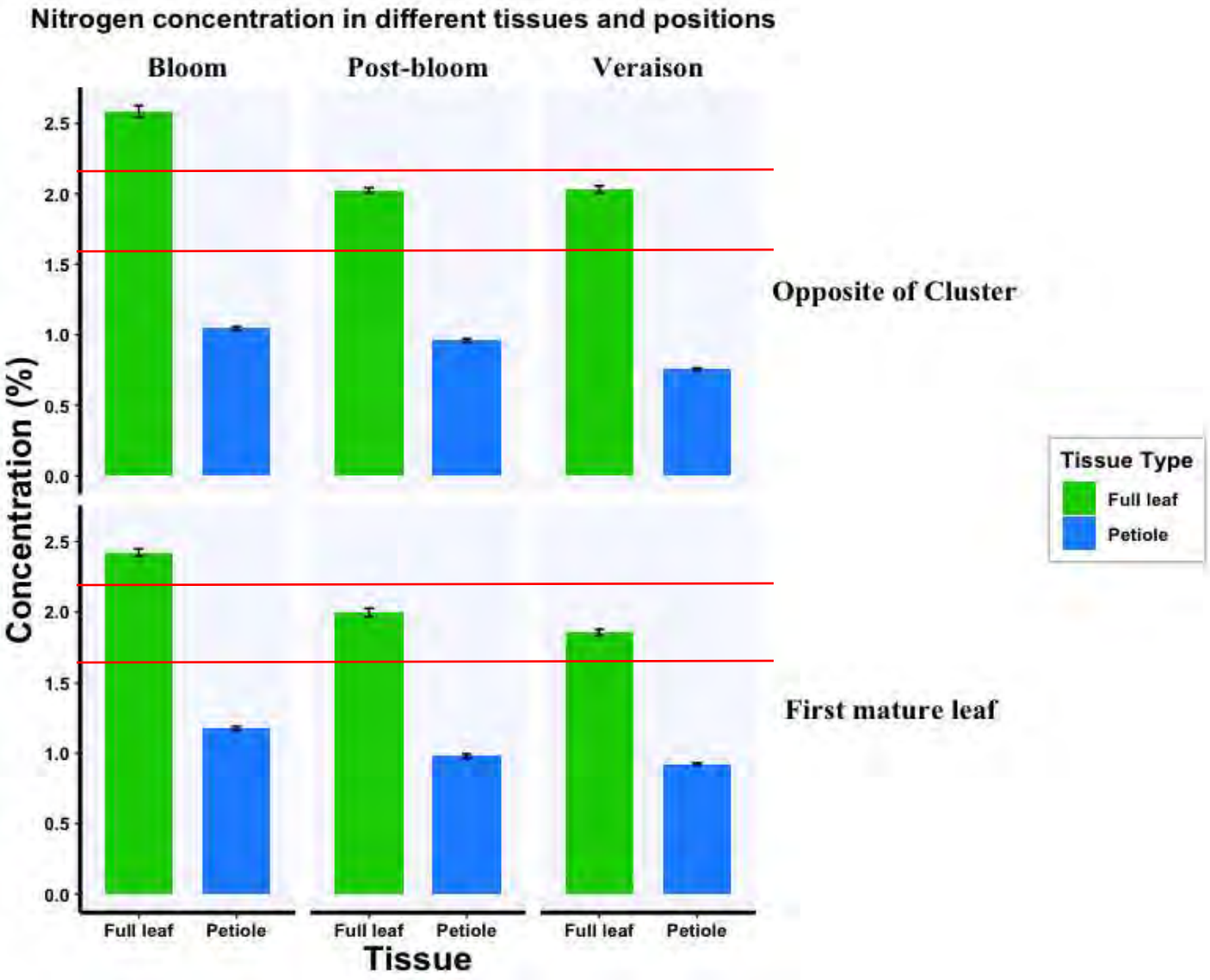
(1) Bloom
(2) Post-Bloom
(3) Veraison

2 replicates per method/2 vines per replicate

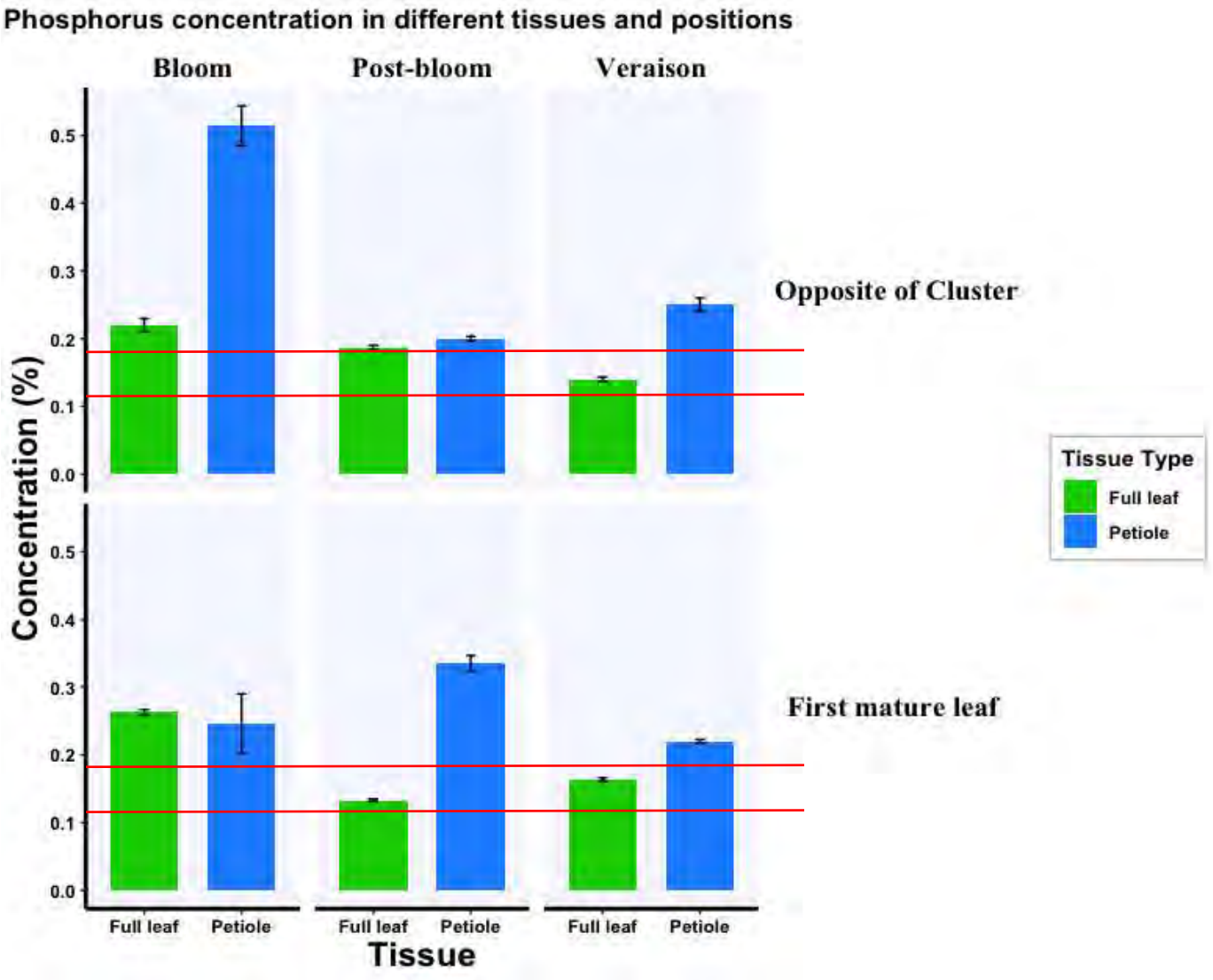
Tissue Sampling – Recommendations

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

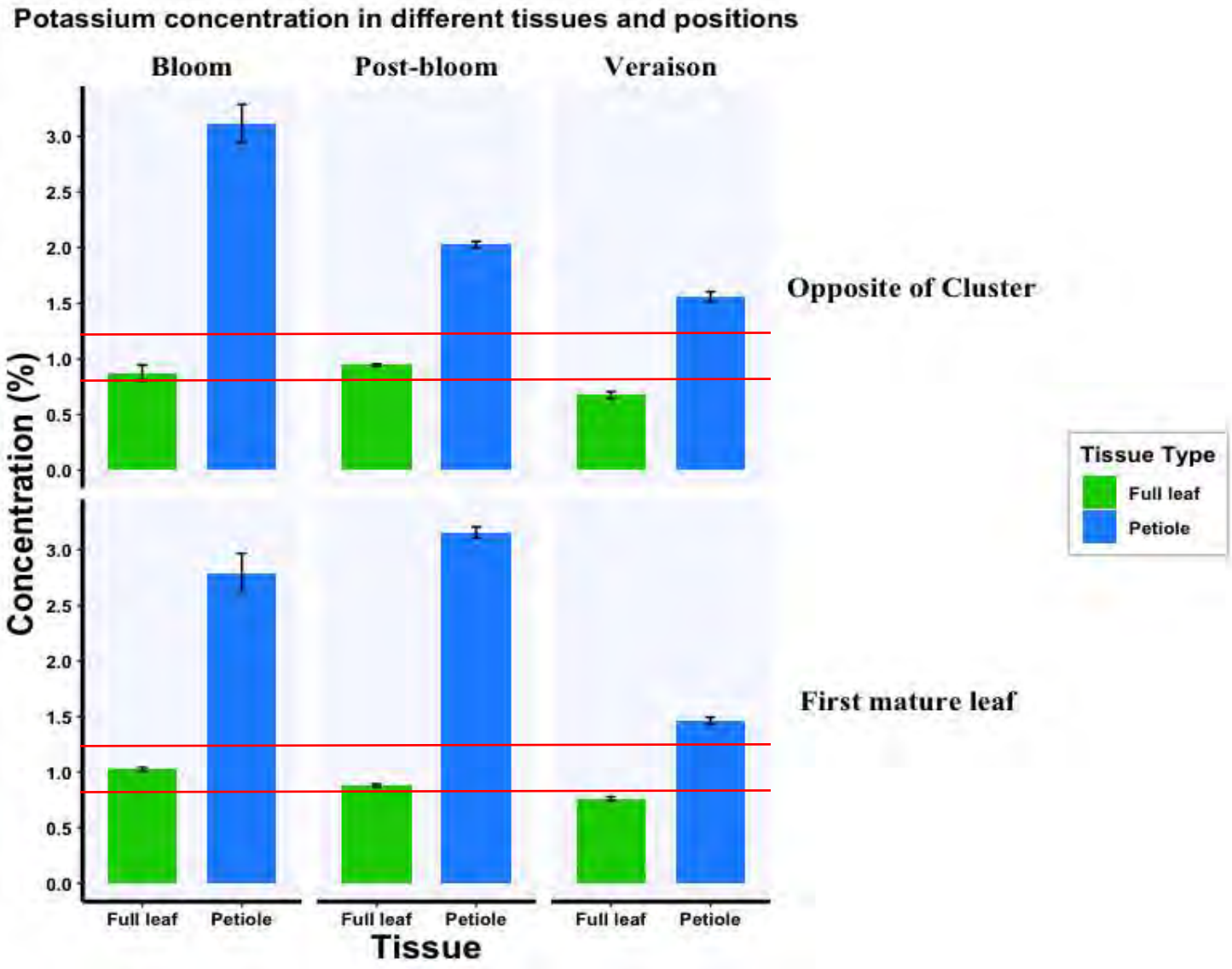
Tissue Sampling – Nitrogen



Tissue Sampling – Phosphorous



Tissue Sampling – Potassium



Survey – Design

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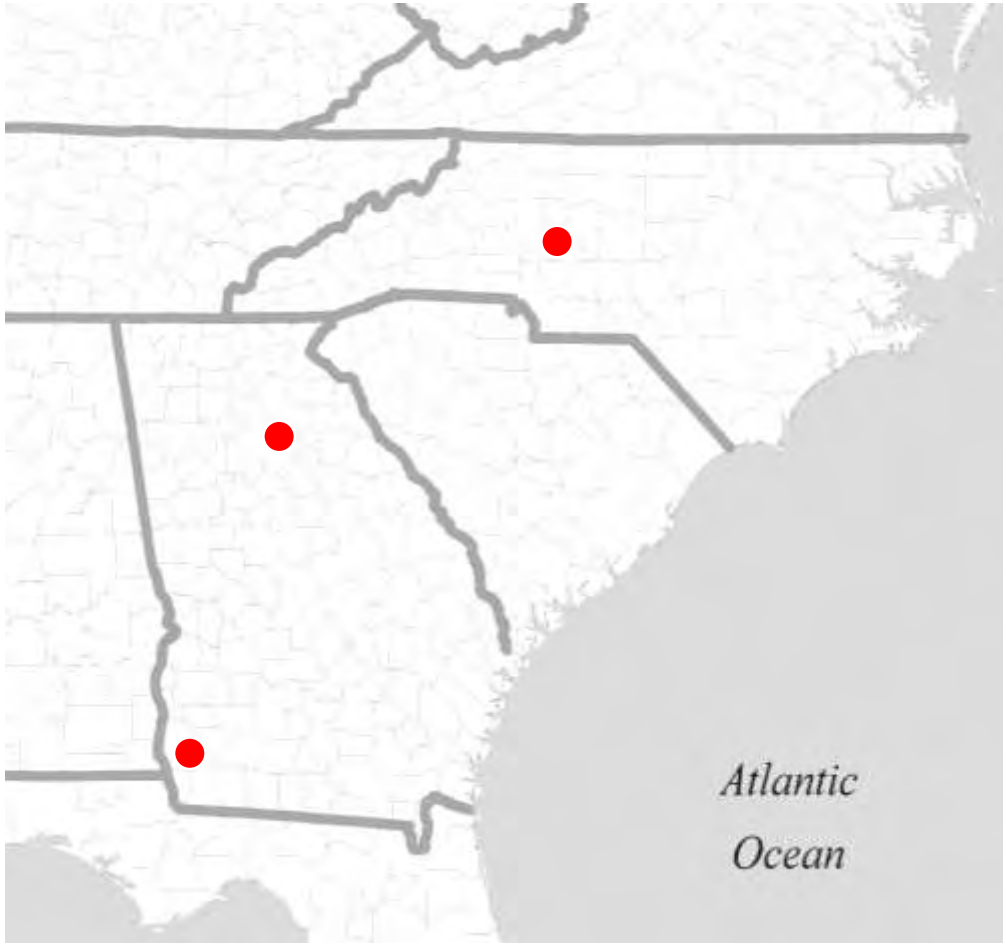
3 Locations

(1) Piedmont, North Carolina
(2) Northern Georgia
(3) Southern Georgia

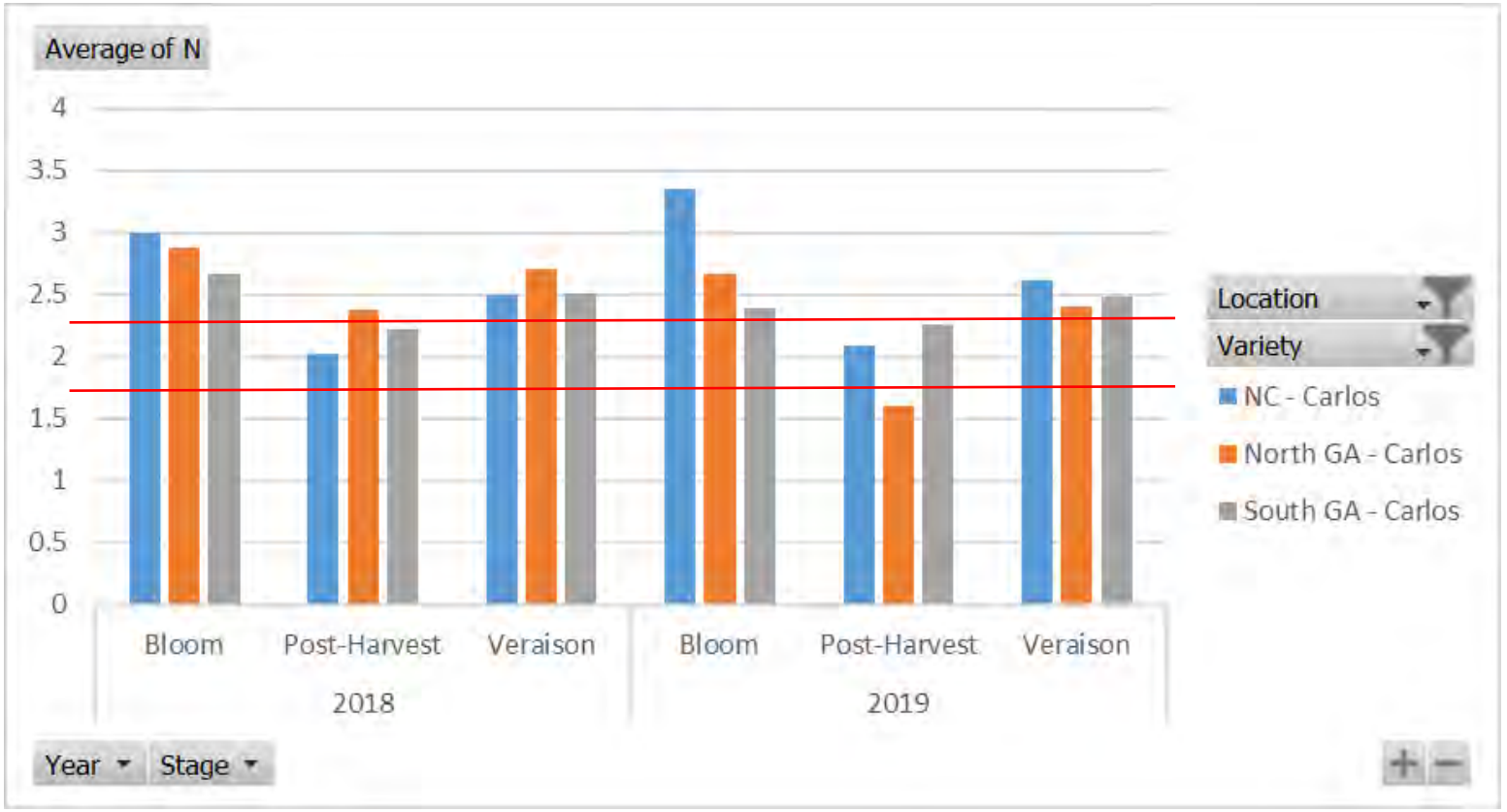
3 Time Points (only full leafs):

(1) Bloom
(2) Veraison
(3) Post Harvest

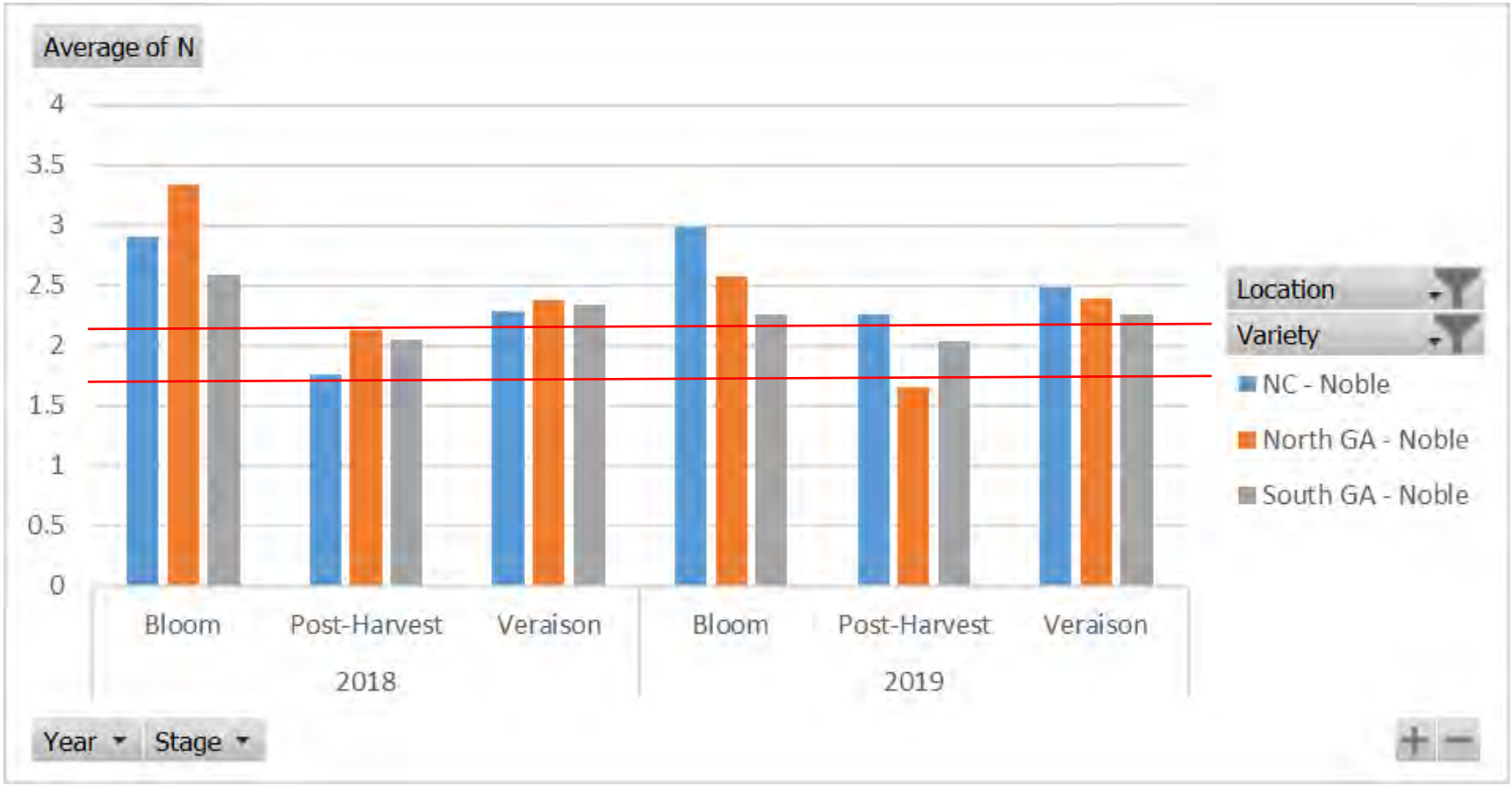
2 Years: 2018 and 2019
'Carlos' and 'Noble'



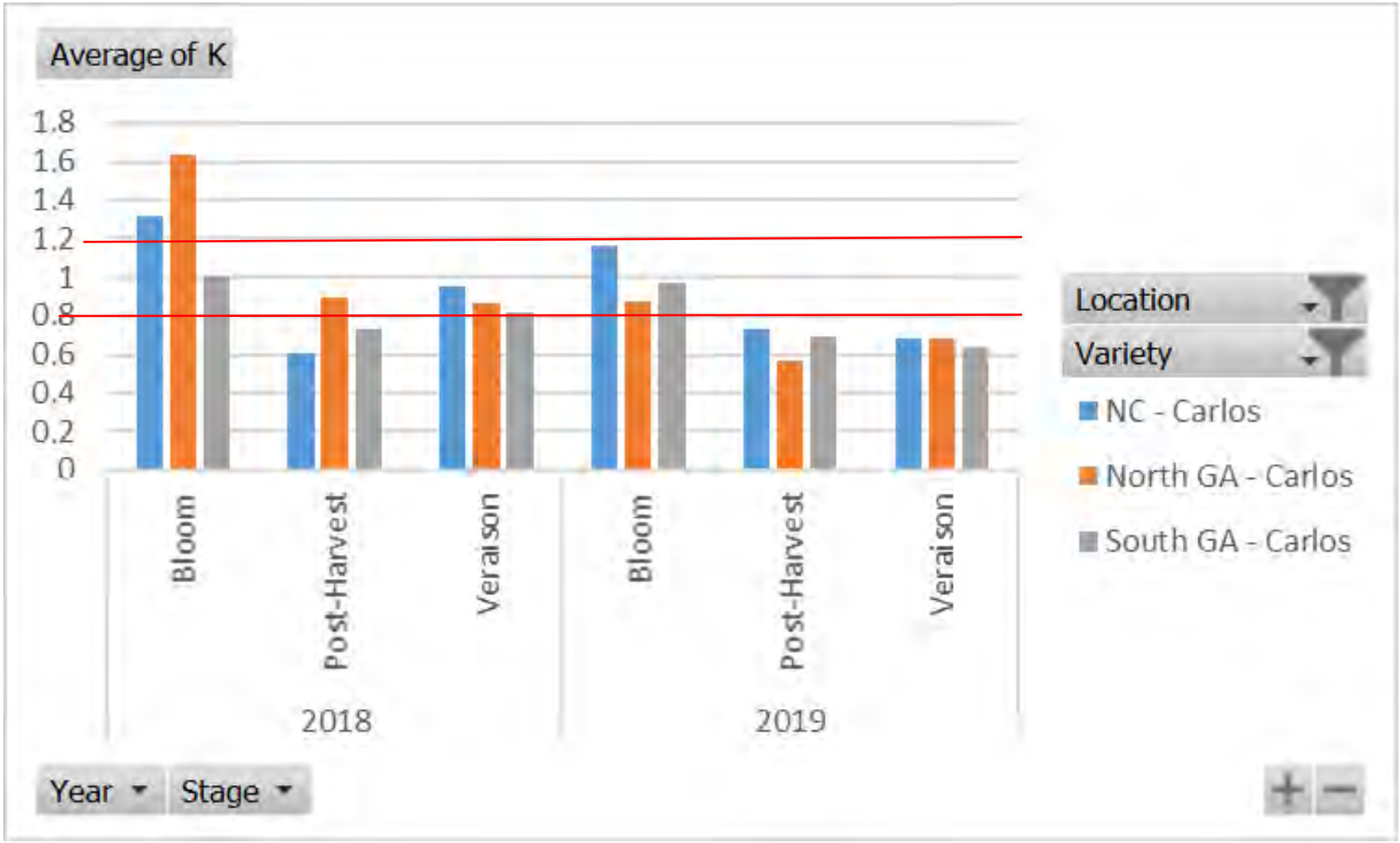
Results – Tissue Nitrogen Carlos



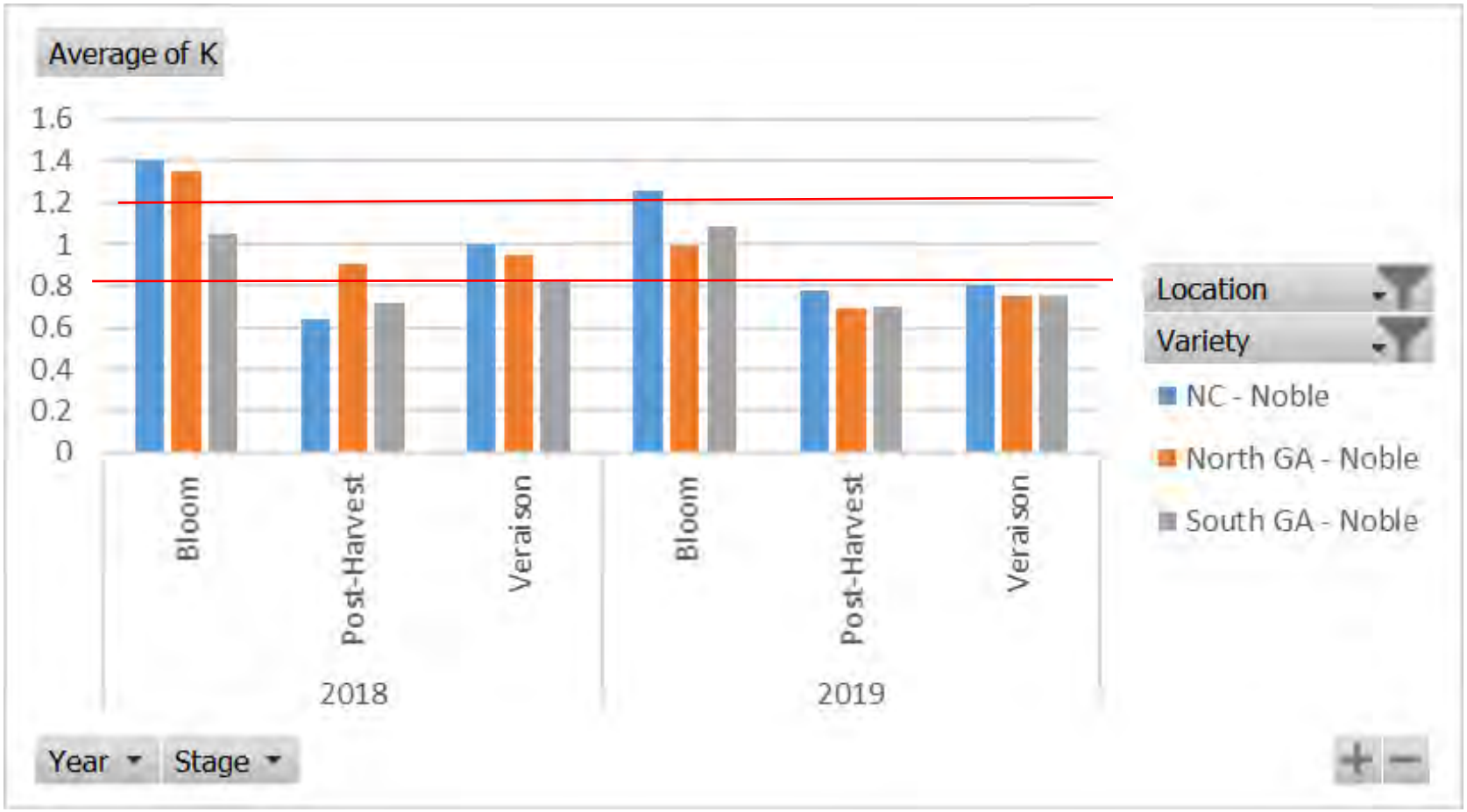
Results – Tissue Nitrogen Noble



Results – Tissue Potassium Carlos



Results – Tissue Potassium Noble



Takeaway

a) Carlos and Noble don't seem to act very differently
b) Sufficiency ranges are not applicable to all phenological stages
c) Opposite of Cluster versus Newest fully mature leaf does not seem to make an impact
d) Strong regional differences based on soil type.
e) Bloom and Veraison seem to be good stages to take samples

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Research and Development

Funded and Opportunities

Challenges and opportunities in 2020

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- Sufficient research funds is what keeps our program going

(a) NCDA&CS: New and Emerging Crops: Improving the NC fresh-market muscadine industry (funded);
(b) USDA SCRI: **Planning to enhance the economic situation of the southeastern muscadine industry** (8 different institutions) (invited for full proposal)

NCDA&CS New and Emerging Crops 2020-2022: Improving the NC fresh-market muscadine industry

(a) Developing management/pruning methods especially for: OhMy!, Paulk and Razzmatazz (Hoffmann)
(b) Improving shelf-life (Perkins)

Funds: 40% of a staff person for two years!

THANK YOU TO EVERYONE WHO SUPPORTED US!!!!

USDA: Specialty Crops Research Initiative: Enhance the economic situation of the southeastern muscadine industry

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(a) Invited for a full application
(b) U Ark, UGA, Texas A&M, NC State University, Clemson, Wake Health Institute, Auburn, UFL.

Focus on statewide collaboration in research and extension
We need to discuss potential national implications:

Health Benefits? Disease Resistance? Market Expansion?

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Resources:

Join the Association!

- **NETWORK!!!!!!**

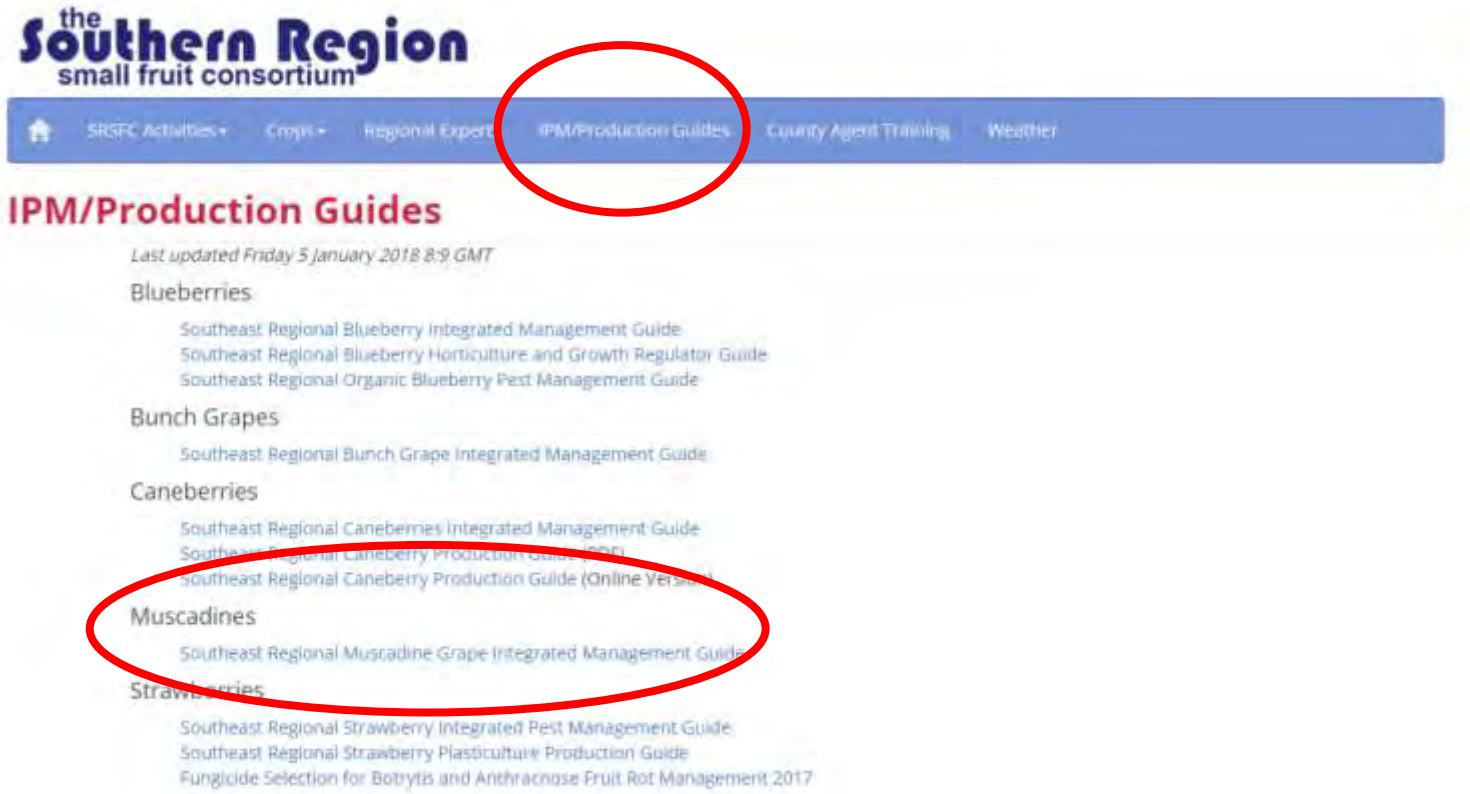
Resources

http://grapes.ces.ncsu.edu **(Grape Portal)**

http://www.smallfruit.org **(IPM Management Guides)**

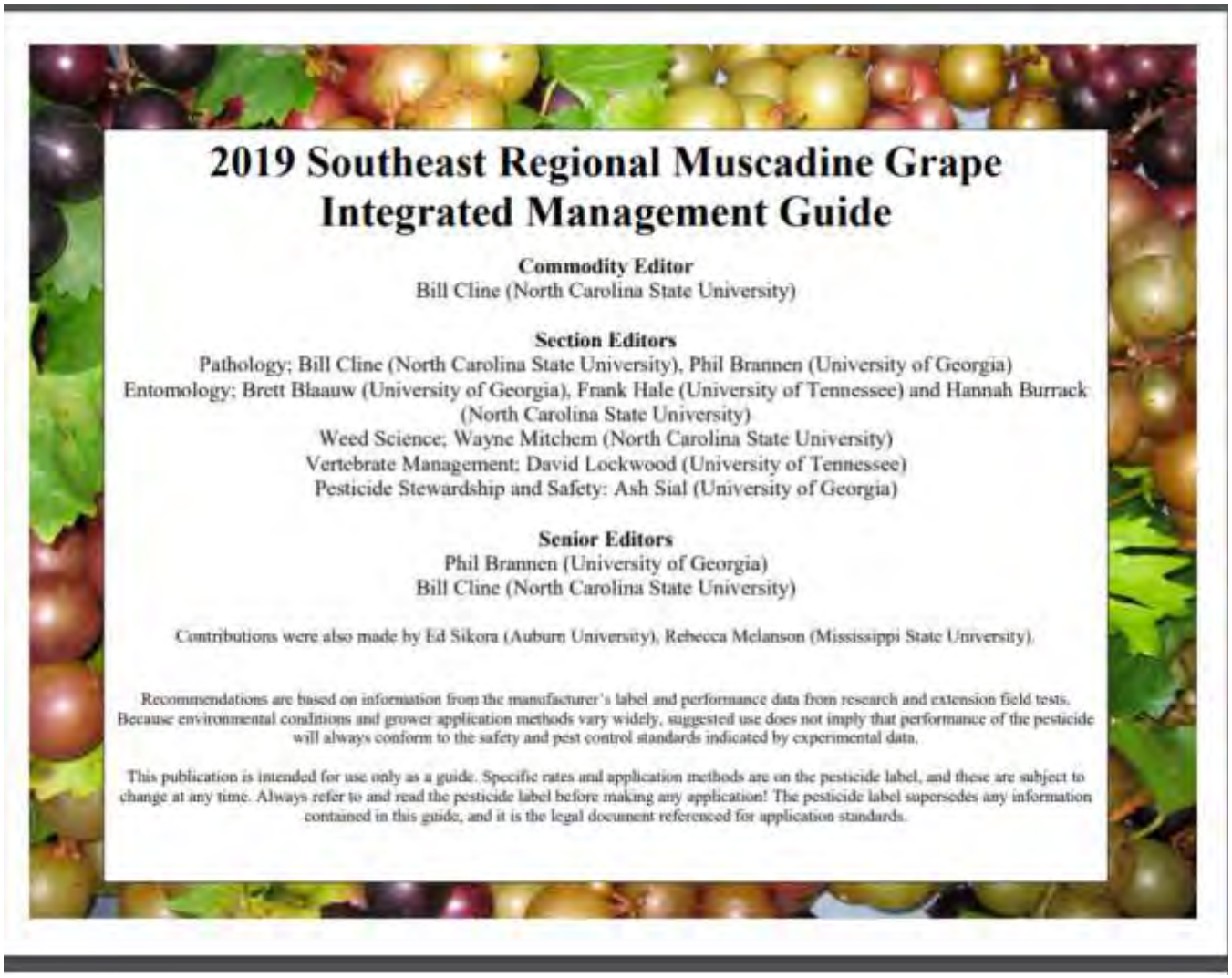
Resources: Vineyard Management?

www.smallfruits.org



Resources: Vineyard Management?

www.smallfruits.org



2019 Southeast Regional Muscadine Grape Integrated Management Guide

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Recommendations are based on information from the manufacturer's label and performance data from research and extension field tests. Because environmental conditions and grower application methods vary widely, suggested use does not imply that performance of the pesticide will always conform to the safety and pest control standards indicated by experimental data.

This publication is intended for use only as a guide. Specific rates and application methods are on the pesticide label, and these are subject to change at any time. Always refer to and read the pesticide label before making any application! The pesticide label supersedes any information contained in this guide, and it is the legal document referenced for application standards.

Resources: Disease/Pest Problems?

https://projects.ncsu.edu/cals/plantpath/extension/clinic/

Contact local agent

Submit photos AND physical sample

- We have a team of 4 full-time people working only on samples
- We will contact all specialists in the state
- AND we will contact specialists out-of-state

Thank you!

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Q+A
Thank you for your attention

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