

Update on Muscadine Diseases, Insects and Weeds –

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MUSCADINE DISEASES

Muscadines are Tough!

- Resistant to Pierce's Disease (*Xylella fastidiosa*) that kills many bunch grape types
- Often not sprayed for disease control when grown for wine production
- Muscadines in backyard plantings are usually not sprayed
- Sour rot rarely seen
- Muscadines are resistant to many fungal pathogens:
 - No Downy Mildew, Bunch Grape Anthracnose or Botrytis gray mold
 - Resistant to Phomopsis
 - Physically tough, thick-skinned
 - Sulfur can be used to control Powdery Mildew

Disease Concerns

- Mostly worried about FUNGAL PATHOGENS causing fruit rots, leaf spots, dead arm
- Bacteria -- Resistant to Pierce's disease, (and to Crown gall ?)
- Viruses, nematodes -- not a problem (?)
- Abiotic/Cultural – Poor site selection, wet soils, lack of adequate drainage

Control Methods

- **Resistance** -- muscadines, especially dark cultivars, are good at fighting disease
- **Cultural/Sanitation** – canopy and vineyard floor management to improve air flow
- **Pruning** -- removes infected plant parts
- **Fungicides** – must use before disease appears in the field

What is your fungicide spray strategy?

- Option #1 -- Do nothing – Sometimes this works!
- Option #2 -- Organic only – Sulfur or other organic products to minimize risk of a powdery mildew “wipe out”
- Option #3 -- Minimal fungicide use – Early-season sprays are the most effective
- Option #4 -- Full-season sprays – May be needed for maximum yields or for susceptible cultivars, ESPECIALLY fresh market

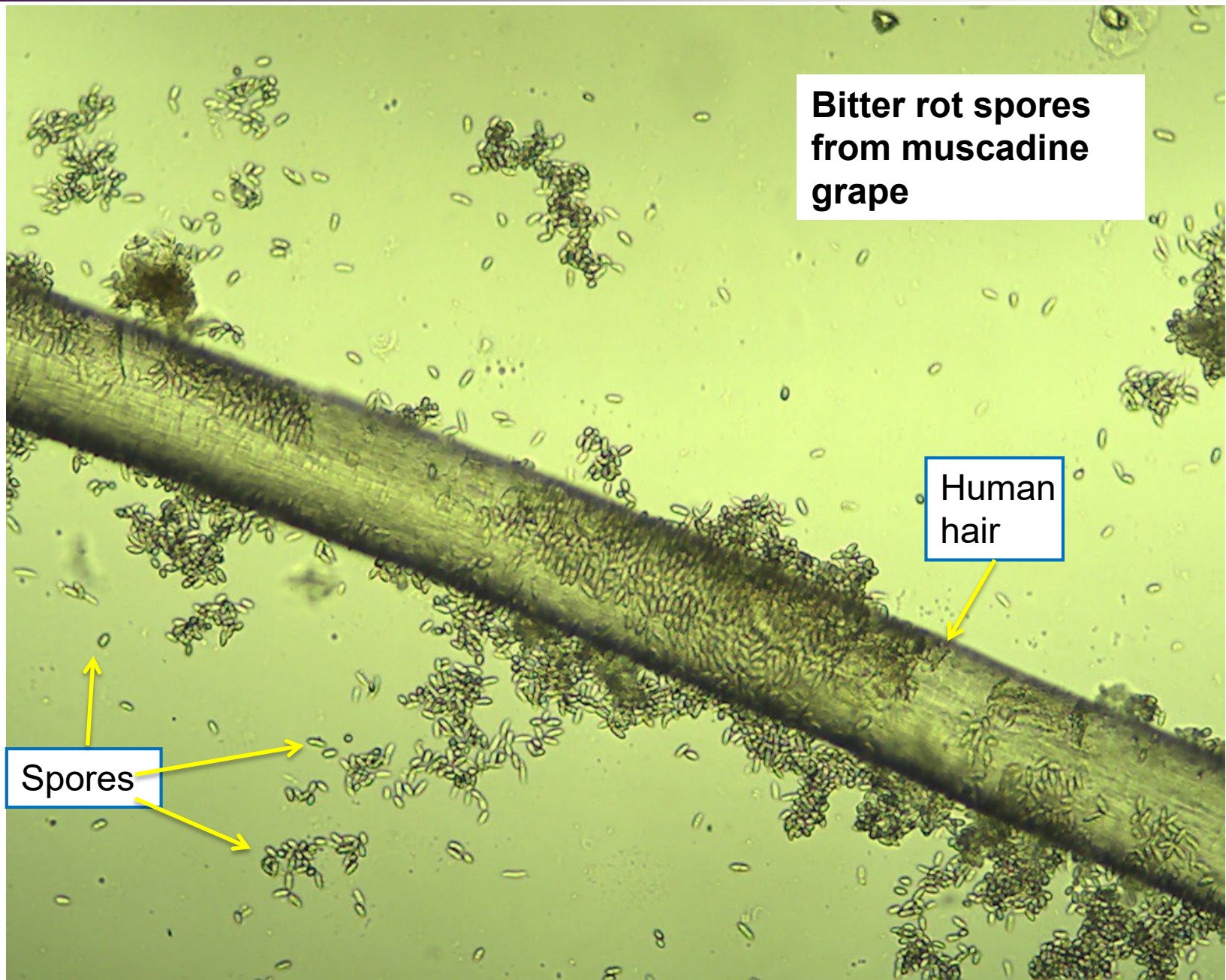
Basic spray concepts for using fungicides in the vineyard

- Apply fungicides BEFORE disease is visible
- Treat repeatedly (every 10-14 days) to provide continuous coverage for emerging shoots and flowers/fruit
- Coverage is critical – use enough water per acre (varies with different sprayer types)

Leaf and fruit diseases of muscadine grape

- Mostly caused by fungi
- Spores are microscopic
- Spread by wind, splashing rain, or insects
- Most spores require moisture to germinate and infect





**Bitter rot spores
from muscadine
grape**

Human
hair

Spores

Fungal pathogens overwinter in old, infected plant parts, releasing spores that infect new emerging shoots in the spring



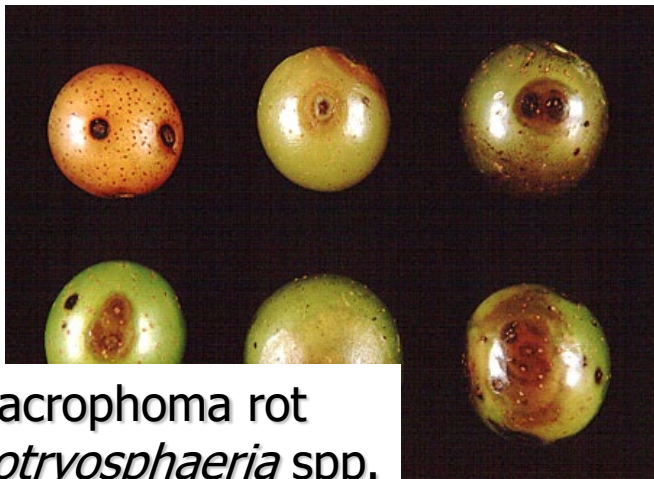




MUSCADINE FRUIT AND LEAF DISEASES

SIGNS & SYMPTOMS

Fruit Rots



Macrophoma rot
Botryosphaeria spp.



Ripe rot
Colletotrichum spp.



Bitter Rot
Greeneria uvicola

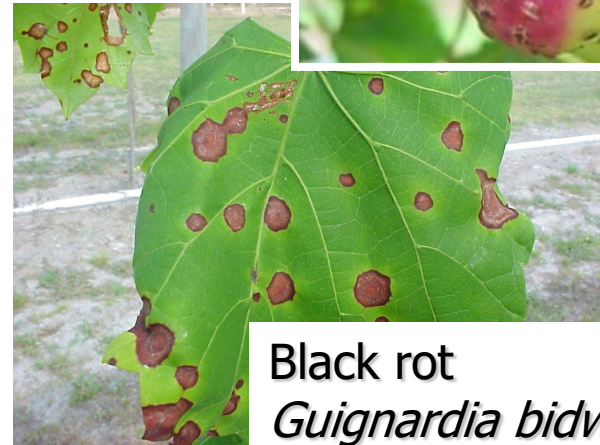


Sooty mold
Peltaster fructicola

Leaf Diseases



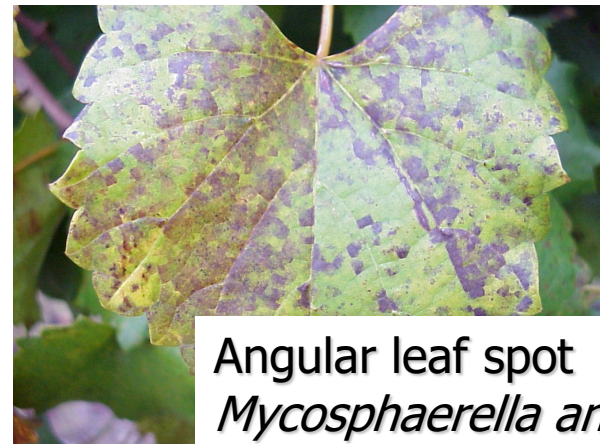
Bitter Rot
Greeneria uvicola



Black rot
Guignardia bidwellii



Pierce's Disease
Xylella fastidiosa



Angular leaf spot
Mycosphaerella angulata

Powdery Mildew

- Fungus (*Uncinula necator*)
- Appears as faint white “powder” on young fruit
- Causes brown russeting on surface
- Affected fruit cannot ripen normally; may crack



“Standard” Fungicide Recommendations for NC

- Mancozeb early (66 d PHI)
- Alternate or tank mix myclobutanil (Rally) with Captan, apply every 2 wks from Mid-May through August
- Where ripe rot is a problem (shown), replace or supplement Captan with a strobilurin fungicide (such as Abound, Pristine or Flint)
- ALWAYS READ AND FOLLOW THE LABEL!



Ripe rot



MUSCADINE INSECTS

Insect pests on muscadine

- Dr. Hannah Burrack is the entomology specialist covering muscadines at NCSU
- Although a number of insects feed on various parts of grape vines the grape root borer does the greatest long term damage
- Occasional leaf- and fruit-feeding insects are controlled on an as-needed basis

Insect pests on muscadine (continued)

- Thrips generally do not require control, and if present in large numbers are usually transient on muscadines
- Fire ant control where needed can be accomplished with bait materials (Extinguish, Esteem)

Adult Female Grape Root Borer





Aerial roots = stress indicator
Possible GRB injury to roots

Grape Root Borer Control Options

- Mounding – August 1 in NC, must remove mounds in Nov-Dec.
- Lorsban (chlorpyrifos) 4.5 pts/100 gal, apply 2 qts solution/vine, 35 day PHI
- Mating disruption – Isomate GRB – use 100 ties per acre (every other vine)

Japanese beetles cause obvious damage but vines survive and productivity is not usually diminished





Aphids (black) and predators (white), the waxy white insects are larvae of a lady beetle species



WEED CONTROL IN MUSCADINES

Weed Control (Example)

- On established vines, may need preemergence application in Spring. Can use flumioxazin (Chateau) 60 d PHI, or other preem. products
- Grow tubes protect 1-2 yr old vines
- Directed/shielded glufosinate (generic) 14 d PHI
- Mow aisles as needed
- Hand-removal of grapevine suckers
- Wayne Mitchem is our resource person for weed control questions

Gramoxone injury can occur on 2-yr-old trunks when multiple suckers are burned off



Gramoxone injury on Noble <2 yrs old





2021 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.