Spots, Rots and “Where did the grapes go?” – Identification and Control of Muscadine Diseases

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What Causes Fruit to Rot?

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

Black Rot

- Fungus (Guignardia bidwellii f. muscadini)
- Earliest leaf disease of the season
- Causes leaf spots and superficial scabs on fruit

Black Rot (Continued)

- Control with early-season fungicide sprays
- Monitor shoot growth and apply fungicides before disease appears

Powdery Mildew

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

Topics to be covered:

- How to identify fungal diseases on stems, leaves and fruit
- Other problems that can look like disease (but are not!)
- Disease resistance in muscadine
- Organic disease control
- Fungicides, sprayers and spray timing
**Bitter rot**
- Fungus (*Greeneria uvicola*)
- Common in ‘Carlos’ vineyards
- Infects fruit shortly after bloom
- Green berries may drop off
- Causes speckling on leaves

**Macrophoma rot**
- Fungus (*Botryosphaeria dothidea*)
- Small sunken round spots
- May eventually rot entire berry
- Common on ‘Carlos’ and ‘Triumph’ in older vineyards

**Ripe Rot**
- Fungus (*Colletotrichum* sp.)
- Spreads by splashing rain, insects
- Clustered in “hot spots” along the cordon
- Brown-colored rot with pink to orange spore masses

**Angular leaf spot**
- Fungus (*Mycosphaerella angulata*)
- Light yellow spots in early season
- Becoming angular by late season
- Causes premature defoliation, affects yield and fruit quality

**Pierce’s Disease (PD)**
- Bacteria (*Xylella fastidiosa*)
- Muscadines are fairly resistant to PD
- Causes marginal leaf burn on ‘Carlos’
- Over-fertilizing can also cause marginal leaf burn

Here are some problems that may look like fungal diseases but cannot be controlled with fungicides . . . .

- Insect injury (shown at right)
- Bacterial diseases (*Pierce’s Disease, Crown Gall, sour rot*)
- Abiotic injury (hail, rain splitting, drowning)
- Chemical injury (*herbicides, spray burn*)
Crown Gall
- Bacteria (*Agrobacterium tumefaciens*)
- Muscadines are commonly infected
- Fleshy, irregularly-shaped gall
- Associated with cold injury (note aerial roots above point of injury)

Japanese Beetle, June beetle
- Insects
- Leaves are “skeletonized”
- Also feeds on flower parts
- June beetles often feed on ripe fruit

Stink bugs
- Insect
- Egg masses on grape leaves
- Adults feed on many crops
- Punctures grapes and injures seeds, causing fruit drop

Stink bug injury – feeding punctures seeds and causes fruit drop on ‘Carlos’ in mid-July

Spittlebug
- Insect
- Foamy, sticky masses on stems and leaf petioles
- Immature insects hide in foam

Brevipalpid mite (flat mites) cause damage on ‘Carlos’; look for scars around the stem
Hail damage on stems, leaves and fruit

Gramoxone injury
- Herbicide (contact, non-selective)
- Drift from ground application
- Distorts young expanding leaves
- Yellow spots become tan to brown

Disease Resistance in Muscadines

Cultivars vary greatly in susceptibility to rots. In general, the dark-fruited types are more resistant

Unsprayed ‘Carlos’ ‘Doreen’ and ‘Summit’ retain leaves fairly well

At Castle Hayne, NC, unsprayed ‘Granny Val’ and ‘Tara’ may not retain enough leaves to ripen normally
In general, dark grapes are more rot resistant than bronze ones

Organic Grapes in SE US?
- Most organic grapes come from arid production regions (west coast of US)
- Organic production of bunch-type grapes in the eastern US is very difficult (diseases, weeds)
- Muscadines are a good candidate for commercial organic production
- Muscadines in backyard plantings are usually not sprayed

Muscadines are a good candidate for organic production --
- Immune to Downy Mildew
- Immune to Bunch Grape Anthracnose
- Resistant to Phomopsis
- Physically tough, thick-skinned
- Sulfur can be used to control the biggest disease threat, Powdery Mildew

Fungicides, Sprayers and Spray Timing

Spray Date #1. . . . .
- Mid-May (Before disease is visible!!)
- Shoots 6-10 inches in length
- Flowers not yet open
- Continue every 2 wk until early August

Fungicides – the short version
- Alternate Nova with Captan, apply every 2 wks from Mid-May through August
- Where ripe rot is a problem, replace Captan with Abound, Pristine or Flint
- Use enough water for adequate coverage
- ALWAYS READ AND FOLLOW THE LABEL!!
Sprayers

- Airblast with 20-40 gallons per acre, OR
- High-pressure sprayer with 50-100 gallons per acre
- Sprayer must be designed to reach grapes underneath the canopy

Fan-assisted “airblast” sprayers

Web Sites

- Southern Region Small Fruit Consortium
  www.smallfruits.org
- Fruit Disease Information Notes
  http://www.ces.ncsu.edu/depts/pp/notes/Fruit/fdin012/fdin012.htm
- Organic Grape Production