Organic Muscadine Grape Production

Southern Region Small Fruit Consortium

Agent Training
November 6, 2005

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 commerical organic production
- Muscadines in backyard plantings

Major Disease Concerns

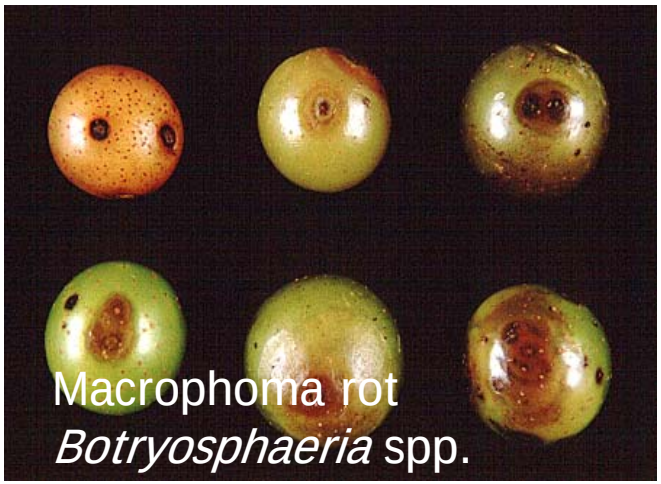
- Fungal pathogens are of primary concern (Powdery mildew, fruit rots, leaf spots, dead arm)
- Bacteria -- Muscadines resistant to Pierce's disease, and to Crown gall ??
- Viruses, nematodes are not a problem
- Abiotic/Cultural – Poor site selection, wet soils, lack of adequate drainage

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

Powdery mildew is the greatest threat, but easy to control with Sulfur

Fruit Rots

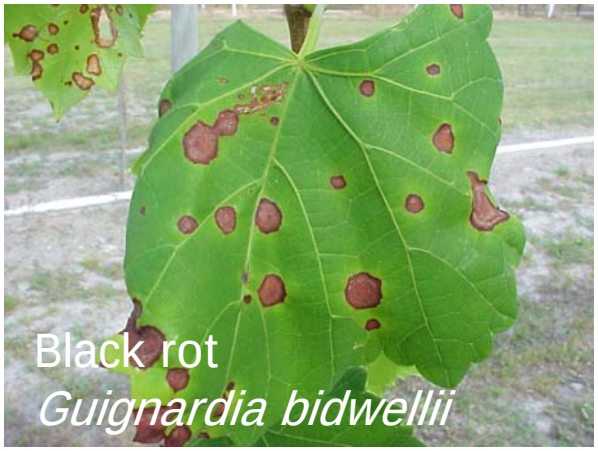

Macrophoma rot
Botryosphaeria spp.

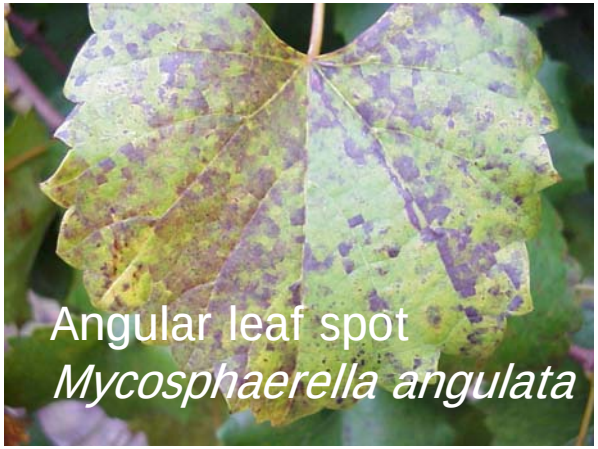

Bitter Rot
Greeneria uvicola


Ripe rot
Colletotrichum spp.


Sooty mold
Peltaster fructicola

Leaf Diseases





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

Table 1. Comparison of diseases observed on 'Carlos' muscadine grape vines from sprayed and unsprayed sites in NC during harvest 2001.

'CARLOS' 2001 (% infected)	Macro - phoma rot	Bitter rot	Powdery Mildew (fruit)	Black rot (fruit)	Black rot (leaf)*	Other leaf spots*
Unsprayed (Site # 1)	1.0	12.0	6.0	2.0	12.5	10.0
Unsprayed (Site # 2)	<1.0	7.5	45.0	21.0	32.0	60.0
(Avg. Unsprayed)	(1.0)	(9.75)	(25.5)	(11.5)	(22.25)	(35.0)
Sprayed (Site # 3)	<1.0	<1.0	0	0	0	<1.0
Sprayed (Site # 4)	0	0	<1.0	<1.0	0	22.5
(Avg. Sprayed)	(<1.0)	(<1.0)	(<1.0)	(<1.0)	(0.0)	(11.25)

* % of leaves with one or more spots. "Other leaf spots" includes Angular Leaf spot and Bitter rot.

Table 2. Comparison of disease levels observed on unsprayed vines of bronze 'Carlos' and black 'Noble' muscadine grapes at a single location in Bladen County, NC in 2001.

'CARLOS' vs 'NOBLE' Site # 2 (% infected)	Macro-phoma rot	Bitter rot	Powdery mildew (fruit)	Black rot (fruit)	Black rot (leaf)*	Other leaf spots**
'Noble'	0.0	2.8	22.5	0.0	0.0	5
'Carlos'	<1.0	7.5	45.0	21.0	32.0	50

* % of leaves with one or more spots
** % leaf area affected, includes both Angular leaf spot and Bitter rot leaf infections.

Major Insect Concerns on muscadine grapes

- Grape Root Borer -- Primary insect threat, can use soil mounding in July and August
- Japanese Beetle -- Feed on foliage, developing fruit clusters
- June Beetles, Wasps Feed on fruit
- Aphids – Occasional pests of growing tips

Major Weed Concerns

- Competition during establishment -- Consider starting the planting conventionally, then switching to organic, use grow tubes, weed matting
- Large-seeded carry-over weeds -- Sicklepod, Morning Glory
- Woody weeds – Trees, woody vines eventually invade around trunk and post

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
  http://attra.ncat.org/attra-pub/PDF/grape.pdf