

Muscadine Grape Diseases and Their Control

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Bitter Rot - *Greeneria uvicola*



Bitter Rot on fruit



Bitter Rot Leaf Spot



Bitter rot symptoms on flower buds, young berries, and petioles.

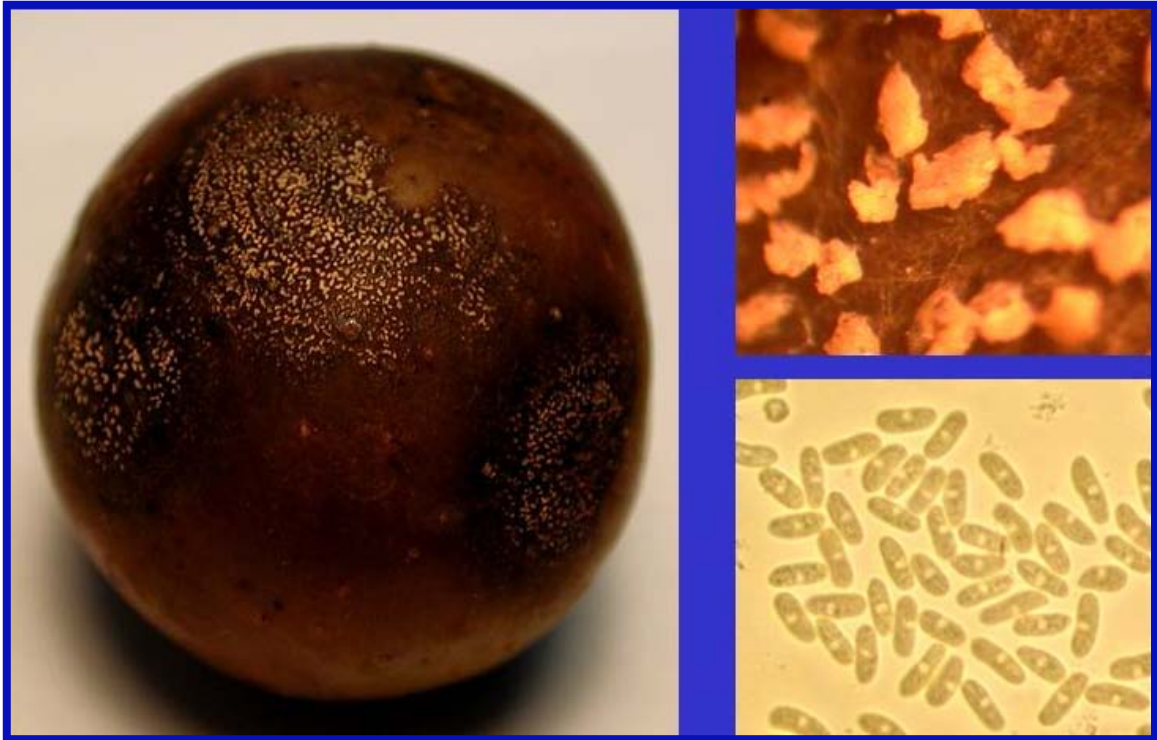
Bitter rot causes more berry loss on most cultivars than any other berry disease. It also reduces the quality of fresh market berries.

Bitter rot causes significant fruit losses beginning at bloom and continuing through harvest.

Fungicide sprays to control bitter rot must be applied starting at bloom and continuing on a 10 – 14 day schedule during early season.

Ripe Rot - *Colletotrichum sp.*

Photographs by - J. Chen



Black Rot - *Guignardia bidwellii*

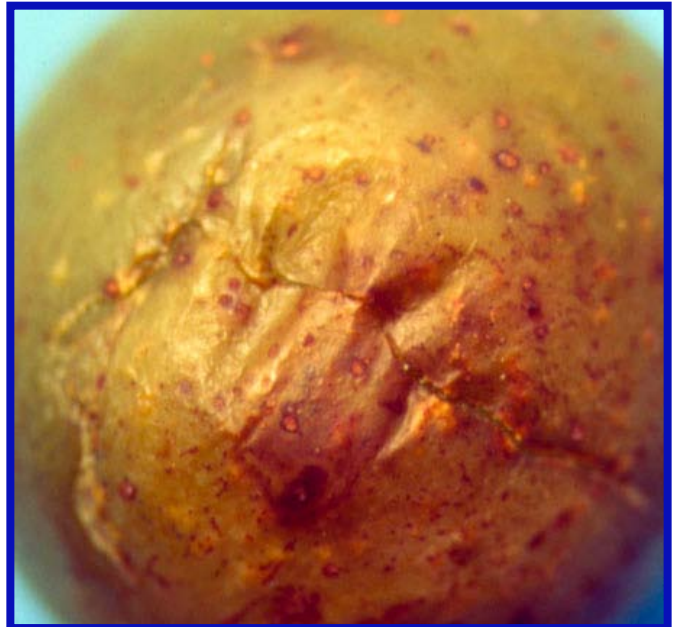
Fruit rot

Leaf Spot

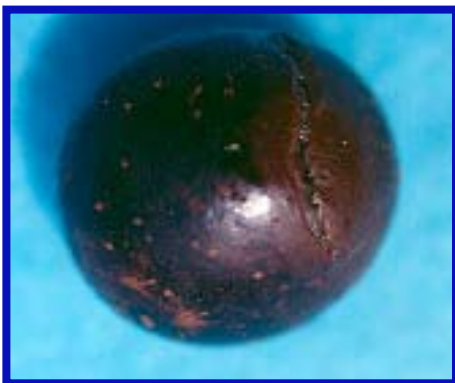


Macrophoma Rot

Botryosphaeria dothidea



Bees feeding on fallen muscadines



Berry diseases are often difficult to see on dark cultivars

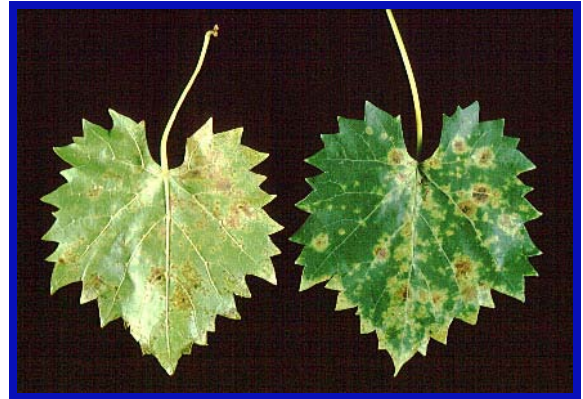
Powdery mildew

Uncinula necator



Angular Leafspot

Mycosphaerella angulata



Photos from: **Muscadine Grape Diseases and Their Control**, Fruit Disease Information Note 12. W.O. Cline. North Carolina State University.



Pierce's Disease

Xylella fastidiosa

Causes a marginal leaf burn on susceptible cultivars such as Carlos and may kill highly susceptible cultivars such as Pride.

Bacterial spread by insect vectors.

Primary factor limiting the winery industry in the southeastern US.

Muscadines are more resistant to Pierce's Disease than *Euvitis* grapes, but they are not immune.

There is no chemical control for this disease.

Control is through disease-free plants, resistant cultivars, and control of the insect vector.

Since many weeds are also hosts of this bacterial pathogen, good weed control in the vineyard should reduce the source of the bacterium.

Fungicide Trials at Poplarville

Objective: Determine the efficacy of some of the newer fungicides for control of fruit and foliar diseases of muscadine grape.

Materials and Methods

Six fungicides were applied individually at 30 day intervals to Summit and Doreen.

Nova and Switch;: May 15, June 14, July 13, August 13

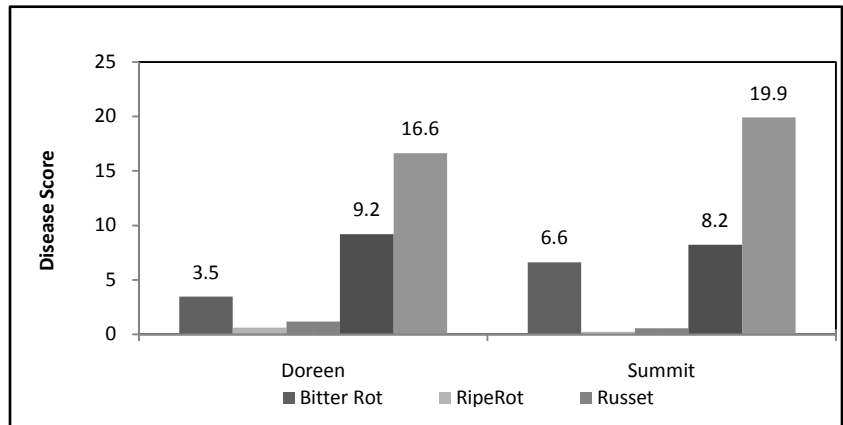
Abound and Zoxium;: May 25, June 25, July 24, August 23

Elite and Elevate: June 4, July 3, August 3, Sept. 4.

The individual fungicides were compared to a full season spray schedule beginning May 15 and continuing until September 4 - just before harvest.

Full Season Spray Schedule		
Date	#	Fungicide
15-May	1	Nova
25-May	2	Abound
4-Jun	3	Elite
14-Jun	4	Nova
25-Jun	5	Abound
3-Jul	6	Elite
13-Jul	7	Nova
24-Jul	8	Abound
3-Aug	9	Elite
13-Aug	10	Nova
23-Aug	11	Abound
4-Sep	12	Elite

Table 1. Effect of full season spray treatment on berry disease scores by cultivar.

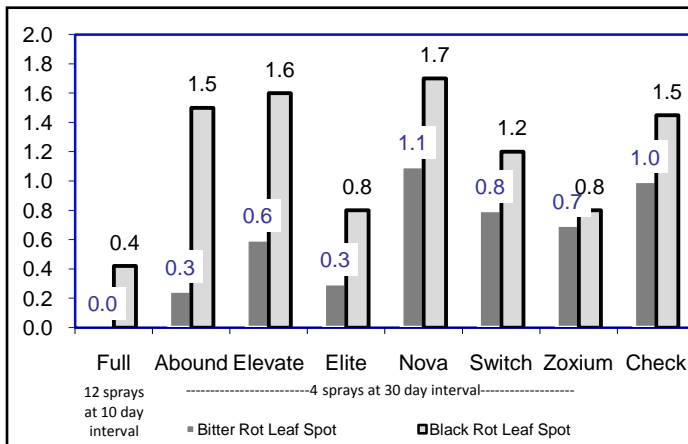


Higher scores indicate more severe disease. Summit's bitter rot disease score was almost twice as high as Doreen's score while Doreen had a slightly higher score for Macrophoma rot.

Both Doreen and Summit had very low scores for ripe rot and russet.

Overall Summit berries had more disease symptoms than Doreen as indicated by the higher Total Disease score.

Table 2. Effect of four applications of each of six fungicides on foliar disease score of muscadine grapes compared to full season combination spray and no spray.

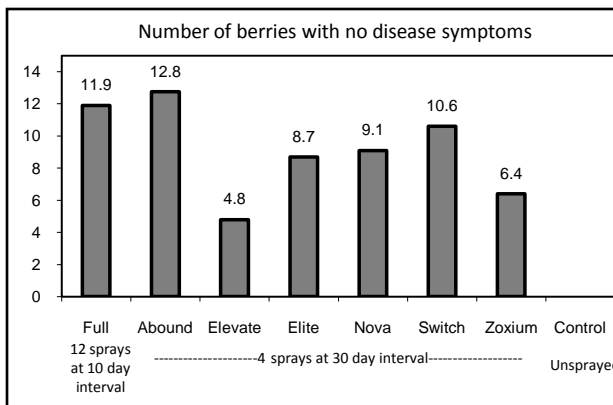


Full season spray schedule reduced bitter rot leaf spot to 0 and black rot leaf spot to 0.4 compared to unsprayed "check" vines with scores of 1.0 and 1.5 for bitter rot and black rot leaf spots, respectively.

Four applications of Abound and Elite each reduced bitter rot leaf spot to an average score of 0.3, while 4 applications of Elite and Zoxium reduced black rot leaf spot score to 0.8.

Fungicide Trials at Poplarville

Table 3. Effect of 4 applications of each of 6 fungicides on number of berries with no disease symptoms compared to full season combination spray and no spray treatments.

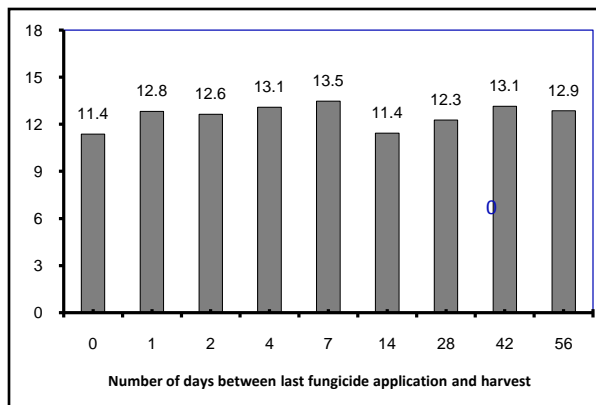


Higher number of berries with no disease symptoms indicates better disease control.

All 25 berries in the unsprayed “Control” treatment had symptoms of berry rot diseases.

Four applications of Abound provided disease control as good as the full season treatment of 12 applications of three fungicides. Four applications of Switch and Nova each also provided good berry rot disease control.

Table 4. Fungicide applications were stopped at various intervals before harvest (56 days, 42 days, 28 days, 14 days, 7 days, 4 days, 2 days, 1 day, 0 days).



There were no significant differences in the number of berries with no disease symptoms among the treatments.

Fungicide Trials at Poplarville - Conclusions

Each fungicide tested was effective against at least one of the diseases observed.

Alternating among the fungicides Nova, Abound and Elite resulted in very low foliar and fruit disease scores.

Fungicide applications could be stopped up to 56 days before harvest without an increase in the amount of berry rots.

Recommended Spray Schedule for Control of Berry Diseases

Begin fungicide applications at bud break – usually early to mid-May.

Continue applications at 10 – 14 day intervals alternating among three classes of fungicides such as Nova, Abound, and Elite.

It is important to alternate between fungicides with different modes of action to prevent the pathogens from becoming resistant to the fungicides.

Apply fungicides at a 10 day interval during rainy periods and at a 14 day interval during dry periods.

Fungicide applications may be discontinued two months before harvest.

If muscadines are being grown for juice it is not necessary to apply any fungicides to most cultivars because the berry rots are not severe enough to effect their yield or quality.

Spray equipment for fungicide applications on muscadine grapes

Fungicides must reach the flowers and berries in order to be effective.

Conventional spray equipment usually does a very good job of applying fungicides to the muscadine foliage, but the fungicides do not penetrate the dense foliar canopy and do not cover the flowers and berries very well.

Spray equipment may be modified so the spray nozzles are positioned beneath the arms of the vines and the spray is directed upward.

Some “air blast” sprayers may apply the fungicides with enough force to penetrate the canopy.