

PLANT & PEST ADVISORY

FRUIT EDITION \$1.50

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Grape Downy Mildew

Peter V. Oudemans, Ph.D., Specialist for Small Fruit Diseases



Downy mildew is a disease caused by a class of unique and destructive organisms more closely related to algae than molds and mildews. Each species of downy mildew is very specific to its host. For example, downy mildew of lettuce does not attack grape and likewise downy mildew of grape does not attack lettuce. Grape Downy Mildew is one of the most notorious of the downy mildew species. It is also famous because it was one of the first plant diseases controlled by fungicides. The pioneering work of a French Plant Pathologist around 1885 led to the discovery of Bordeaux Mixture. It is not surprising therefore, that *Vitis vinifera* varieties are very susceptible to this disease while American types and their hybrids are less so.

The downy mildews have many features in common. Most importantly, they are water loving. In fact, many, including grape downy mildew produce specialized spores capable of swimming in thin films of water to locate the stomata and infect the susceptible host. The pathogen grows best under cool (64-76°F), wet conditions and becomes inactive when temperatures exceed 86°F. The leaves, berry clusters and shoots are all susceptible to attack. Research at Cornell University has determined that berries and clusters have a definite period when they are susceptible and should be protected with fungicides from 2-weeks prebloom through 4-weeks postbloom.

For effective downy mildew control an aggressive integrated program is necessary. This starts with targeting factors that reduce risk of disease. One of the most important considerations is to maximize airflow through the canopy for efficient foliar drying. Practices such as pruning method, planting direction and weed control all influence the canopy microclimate. Another important consideration is the level of disease during the previous season. As with most diseases, inoculum will build-up over time and if this occurs more intensive disease management is required to bring the disease under control. With downy mildew, the inoculum overwinters in infected leaves that fall to the vineyard floor. Therefore removing this source of the pathogen will help reduce the risk for the following season.

There are several fungicides available for disease control (see table). Use of the fungicides should proceed with caution. Some fungicides such as Ridomil, Abound and Pristine are effective but at risk for resis-

SEE GRAPE DOWNY MILDEW ON PAGE 2

INSIDE

Grape Downy Mildew	1
Calendar of Events	2
Timely Viticulture - Crop Estimation	3
Prune Cherries Right after Harvest	4
Fruit IPM	5
Farm Safety Twilight Meeting - North Jersey	7
The 2006 New England Greenhouse Conference	7

tance. Others have very long re-entry or pre-harvest intervals (mancozeb). Some have very narrow spectra of action and only control one pathogen (phosphorous acid compounds). For those fungicides at risk of resistance, growers should avoid more than 2 sequential applications of materials with similar modes of action (i.e. Abound and Pristine have similar modes of action). Also, a scouting program is extremely helpful when determining what fields to spray and to assess if the pathogen is spreading.

Calendar of Events

July 27-30, 2006 - New Jersey Peach Festival, 4-H Fairgrounds Rt. 77 South of Mullica Hill, N.J. Contact Jerry Frecon at RCRE of Gloucester County at 856 307-6450 Ext. 1 or go to: <http://gloucester.rcrc.rutgers.edu/fairfest>.

August 1, 2006, 6-9:00 pm - Farm Safety Twilight Meeting, North Jersey, Rutgers Snyder Research Farm, Pittstown, NJ. Dinner \$10. RSVP: Diana Boesch at boesch@aesop.rutgers.edu or 908-788-1339.

August 3, 5:00pm – **A Behind the Scenes Look at Managing a Large CSA, Honey Brook Organic Farm, Pennington, NJ.** To register: call NOFA-NJ at (609) 737-6848 or email mazzara@nofanj.org. For directions: www.honeybrookorganicfarm.com.

Name	Active ingr.	REI (hr)	PHI (days)	Pho-mopsis	Black Rot	Downy Mildew	Powdery Mildew	Botrytis Rot
Abound	azoxystrobin	4	14	S	H	H	H	M
Captan	captan	96	0	H	S	H	N	S
Captan 80WDG	captan	72	0	H	S	H	N	S
Captec 4L	captan	96	0	H	S	H	N	S
Bordeaux Mixture	copper	24	0	S	S	H	M	S
Champ, Kocide, KOP	copper hydroxide	24		S	S	H	M	S
Tennocop 5E	copper salts of fatty and rosin acids	12	0	S	S	H	M	S
Dithane, Manzate	mancozeb	24	66	H	H	H	S	N
Ridomil Gold Copper	mefenoxam + copper hydroxide	48	42	M	S	H	N	N
Ridomil MZ	mefenoxam + mancozeb	48	66	S	M	H	N	N
Phosphonates (Agriphos, Fosphite, Phostrol, Prophyte)	na-, k- and ammonium phosphites	4	0	N	N	H	N	N
Pristine	pyraclostrobin	24	14	M	H	H	H	M
Basicop	tribasic copper sulfate monohydrate	24	14	S	S	H	M	S
H - highly effective	M - Moderately effective	S - Slightly effective		N - Non-effective				

Timely Viticulture – Crop Estimation

Joseph A. Fiola, Ph.D., Specialist in Viticulture
and Small Fruit, University of Maryland

Source: Electronic version received on July 11, 2006

Crop Estimation - I often hear experienced growers say that they were caught by surprise that their crop was either much less than or much greater than average or anticipated. Many grape growers do not use a formal method of estimating their crop yield - what appears on the vine is what is harvested. An important role of running an efficient business is to know your inventory. In the case of a winery, that is the quantity of grapes that you have on the vine and how that relates to the quantity of grapes that you need to achieve your wine production goals. In the case of a vineyard, that is the quantity of grapes that you will have available to sell to a winery.

The second aspect of crop estimation is to be able to control or adjust it to where you want to for quality.

Viticulture researchers have developed accurate systems for predicting yields. One is based on cluster weights during “lag phase” which is the period when the growth of berries slows temporarily (typically about 55 days after first bloom). The other traditional method is based on a running historical record of cluster weights for that variety block. In both cases, good results depend largely on the grower’s ability to provide accurate cluster/vine and vine/acre information. It is important to be able to predict your vineyard yields. Develop a system that works for you and your vineyard and use it every year.

- Lag phase crop estimating is based on the premise that cluster weights will double from lag phase to harvest.
 - Regretfully this multiplier is not a fixed number and may vary by variety, clone and seasonal variation (wet/dry).
 - The system works best when a historical record of lag and harvest weights have been collected.
 - An intuitive sense of berry and cluster size gained by experience will assist the grower in improving the accuracy of the estimate.
 - This method has not proven effective for estimating yields on young vines.
- To perform a lag phase estimate, a grower will need the following information:
 - Number of bearing vines per field/variety
 - count actual number of vines
 - select a “random sample area” (e.g. 5% of field/variety), count the vines in that area, and multiply by the appropriate number (e.g. 20).

- since many vineyards contain a significant number of missing vines it is critical to accurately determine this number as you can potentially greatly overestimate your yield.
- Number of clusters per vine:
 - select a “random sample area” (e.g. 20 “representative” vines), count the clusters in that area, and multiply by the appropriate number (e.g. 30 if 600 actual vines per acre)
 - measure the cluster weight at lag phase
 - weight a sample of clusters during the lag phase (typically about 55 days after first bloom.).
 - Plug into the formula:

Estimated Pounds/variety = vines/variety x clusters/vine x lag phase cluster x 2.

- Another, more traditional method of crop prediction relies heavily on the availability of harvest cluster weight data.
 - The advantage to this formula is it can be employed any time after clusters can be counted.
 - However, it will not take into account any annual variations in cluster development.
- To perform this crop estimate, a grower will need the following information:
 - Number of bearing vines per field/variety – as above;
 - Number of clusters per vine – as above ;
 - Historical average weight of clusters at harvest;
 - Plug into the formula:

Pounds/variety = vines/variety x clusters/vine x average final harvest cluster (lbs)

Collecting this data now will help you to get a feel for where your production currently is in the vineyard so you can compare it to you “target yield.” You will then be ready for crop thinning, if necessary, at the appropriate time.

Submitted by Jerome L. Frecon, Agricultural Agent. □

Prune Cherries Right after Harvest

Win Cowgill, Agricultural Agent

Pruning sweet and tart cherries right after harvest helps prevent **Bacterial Canker**, a serious bacterial disease of cherry in New Jersey, and all other regions where the climate is humid.

We learned from the Europeans that the first line of control for this disease is to *prune* immediately following harvest. Avoiding dormant pruning lessens the chance of infection in the pruning wounds. On infected branches, *leave stubs* of 6-8", this will prevent the canker from entering the trunk and scaffolds. The canker will not move down the stub. See the other control measures outlined below.

Bacterial canker or **bacterial gummosis** of sweet cherry is caused by several *Pseudomonas* bacterium. This disease infects flower buds and spurs. It can completely kill new spurs and leaves and then move into the trunk on cherry. This is especially problematic with our new Geslia Dwarf cherries as losing a scaffold or getting infection into the trunk will limit production as the tree rapidly declines.

This spring I observed a number of sweet cherry trees on Giesela stock that were infected last fall and collapsed this May after some heat and stress.

In our humid climate in New Jersey the cankers can continue to develop in lateral branches and the central leader. In some cases the cankers have grown to girdle and kill two-year wood. I have observed central leader dieback as a result. In older wood the canker looks very much like a fire blight canker in apple. In most cases the canker begins to ooze a brown to amber exudate. It appears that under our humid conditions this disease is very hard to control and can be devastating if control measures and the proper horticultural practices are not followed.

The source of inoculum may come from wild cherry trees in our hedgerows, Black Cherry, *Prunus serotina* may be one source of inoculum for the *Pseudomonas* during wind and rainstorms in the spring and summer months. Removal may be beneficial.

This bacterial disease is most troublesome in young plantings where it can cause losses of up to ten percent of the trees. On mature trees it can reduce yields from 10-50%.

Control

Cankers get started mainly in the fall after most of the leaves have fallen and the trees are beginning to go dormant. The only effective way to control this disease is to reduce the number of bacteria before the trees enter their susceptible period; avoid large, dormant pruning cuts, and use summer pruning to minimize the impact of

the disease. The bacteria that start these cankers are found on the surfaces of mature leaves and other green tissues, and *do not* come from existing cankers.

First, *only prune* in the summer immediately following harvest.

Second, the only successful control we have found is repeated applications of the old Bordeaux mixture in September, October, and November and repeated again in the spring. Bordeaux Mix consists of Hydrated lime and Copper Sulphate. The rates and methods of mixing are important. We began our sprays the first week in September. Note, however that sprays of Bordeaux applied to green leaves must be *saftened* with vegetable oil to avoid burning the foliage. Four additional sprays 14 days apart will be applied. Bordeaux mix will also be applied in the spring with several applications before bud break.

It would be my recommendation that in all cherry blocks a program of Bordeaux Mix applications should be made this September. Careful observation and scouting of older blocks should be done now to determine if this bacterial disease is present and control warranted.

Other Coppers

In a research trial at the Rutgers Snyder Farm, *Champ Flowable* copper was also evaluated against Bordeaux mix for phytotoxicity on cherry. The oil equally saftened Champ as it did Bordeaux.

For additional information please do not hesitate to contact me at Cowgill@aesop.rutgers.edu.

Fact sheets on Bacterial Canker

There are numerous fact sheets online for Bacterial Canker; many include color photographs for reference. Below are the listings for several:

Overall, the best information on this disease is from a fact sheet from Ontario Canada written by W.R. Allen "Bacterial Canker of Sweet Cherry" NO. 88-0886. You can find it at <http://www.omafra.gov.on.ca/english/crops/facts/88-086.htm>. It has good color plates and lists control measures.

West Virginia University

http://www.caf.wvu.edu/kearneysville/disease_descriptions/bactcank.html

Comparison of healthy trees vs. diseased trees:

http://www.caf.wvu.edu/kearneysville/disease_descriptions/disease_images/fig129c.jpg

University of California

<http://www.ipm.ucdavis.edu/PMG/r105101511.html> □

Fruit IPM

Dean Polk, Fruit IPM Agent and David Schmitt, Eugene Rizio, and Atanas Atanassov, Ph.D., Program Associates, Tree Fruit IPM

Peach

✓ Tarnished Plant Bug (TPB) and Other Catfacing

Insects: Catfacing pressure increased slightly in southern counties last week. Stinkbugs were commonly found in beating tray samples. Both stinkbug adults and nymphs are present in orchards, especially in tall weedy groundcover. Catfacing insects will be very active during the current hot spell, especially if orchards are not being irrigated. Mowing weedy groundcovers will also aggravate catfacing injury, since it tends to force the insects into the trees. Early post harvest sampling is showing about 1.5 to 1.6% total catfacing injury.

✓ **Oriental Fruit Moth (OFM):** Trap counts indicate a continued low pressure on the average farm, although high pressure was found in several southern orchards with trap counts of 100 or more. Old flagging is easily found in these orchards and is indicative of high pressure. However, the 3rd brood will begin to hatch by mid-week. The second treatments for the 3rd brood will be due in southern counties on or about 7/26. If growers are using Intrepid, then the timing should be moved up a little earlier to 7/25. Degree day spray timings are as follows for the third generation, updated since last week:

OFM 3rd Generation Application and Insecticide Type

County Area	Standard Insecticides	Intrepid
Southern	1 st 7/15-18, 2 nd trt 7/26-28	1 st trt 7/13-15, 2 nd 7/25-27
Central	1 st 7/16-19, 2 nd trt 7/28-30	1 st trt 7/15-18, 2 nd 7/26-28
Northern	1 st 7/25-27	1 st 7/23-25

✓ **Anthracnose:** Sections repeated since last week: Although not a regular problem, anthracnose has been seen during the past few years on Harrow Beauty, Sugar Giant, White Lady, and Klondike. It is the same disease that causes anthracnose on blueberries and bitter rot on apples. Captan and Ziram are two of the most effective anthracnose materials used on tree fruit. For blocks in the preharvest period (1-3 weeks prior to anticipated harvest) Flint and Pristine are very effective. Since the mid-summer period just prior to ripening can be a critical period for anthracnose infection, keeping an effective material in the spray tank is recommended for at least the sensitive varieties.

✓ **Thrips:** Thrips are still active in many peach and nectarine blocks. Spintor is the most effective material for quick knockdown of thrips populations. Spintor has a 1 day PHI for nectarine and a 14 day PHI for peach. In past years thrips have been troublesome on highly colored peach varieties from early July through mid-August.

✓ **June Bug; Japanese Beetle:** Pressure from Japanese beetles remains high. These insects can be troublesome on ripening fruit and usually peak around Redhaven season. Control tactics will often be required for several varieties following Redhaven. Sevin (3 days PHI) and Provado (0 day PHI) provide the best control and short PHI's. Lannate (4 day peach/1 day nectarine) will provide some suppression, but is limited to 3 applications per season.

Apple

✓ **Codling Moth (CM):** The second of two treatments for the second generation are due in southern and central counties – see table below. The first treatment for the second flight was due late last week in northern counties, while the second application will be due in those counties by the last of the month. North Jersey guidelines are from data taken at the Snyder Farm in Hunterdon County. Timings may vary in other parts of North Jersey. After 2 complete timed CM treatments have been applied, then trap counts can be used as a guide to help determine the need for supplemental applications. Use the following chart to time applications:

CM Application and Insecticide Type - 2nd Generation

County Area	OP's, Carbamates, Pyrethroids, Avaunt, Assail, Calypso	Intrepid
Southern	2 nd due 7/19-21	2 nd due 7/16-17
Central	2 nd due 7/19-21	2 nd due 7/16-17
Northern	1 st trt 7/14-15; 2 nd due about 7/25-26	1 st trt 7/12; 2 nd due about 7/22-23

✓ **European Red Mite:** Mites have been troublesome in southern counties. In several cases treatment with Nexter or Pyramite has only suppressed populations. With several different miticide chemistries available growers should be rotating to prevent or delay resistance. If Nexter has not provided acceptable control, growers should avoid Fujimite, which is a similar chemistry. Acramite, Envidor, or Zeal are the best choices at this time. Follow the label instructions for Acramite if you have "hard" water. Envidor may take a long time to show results. Predators are present in many blocks and will help to suppress populations. Predatory mites are the most common predator present in southern orchards and can be seen with a hand lens. Predatory mites are, depending on species: larger than red mites, smooth and whitish in color, and move very fast while searching for prey. When actively feeding they may be pinkish from feeding on red mites.

✓ **San Jose Scale (SJS):** Second generation SJS crawlers were observed on 7/17 in southern orchards. Crawlers will be present over the next week to 10 days. If you had scale on your fruit last year and did not apply dormant or delayed dormant controls, then now is the time to treat. *This timing applies to both peach and apple blocks.*

SEE IPM ON PAGE 6

Blueberry

✓ **Aphids:** About 70% of samples have been positive and 28% have been at or over the 10% infestation level. These levels are slightly lower than last week. Many predators are being seen.

✓ **Blueberry Maggot (BBM):** Trap counts of BBM picked up last week. While trap counts are low, adults are more wide-spread. Continued sprays are needed if BBM is present on traps.

✓ **Leafrollers and Other Lep Larvae:** No live worms have been seen in hanging fruit clusters. However, 17% of our shoot samples have been positive for worms. Most of these have been leafminer larvae in the form of leaf shelters, or the familiar teepee. This is an increase since last week.

✓ **Scarab Beetle Fruit and Foliar Injury:** Very little injury has been seen, and beetle presence on the bush has been rare. Several locations have shown yellow jackets feeding on soft fruit.

✓ **Anthracoze and Alternaria:** About 18% of our hanging fruit samples have been positive for anthracnose infection. This is an increase since last week. Several growers have reported significant levels of infected fruit on the sorting line. While the presence of the disease has increased, there is considerable variation in the amount seen from grower to grower or from field to field. Some Alternaria is also present, and was seen in 7% of fruit samples.

Scouting Calendar

The following table is intended as an aid for orchard scouting. It should *not* be used to time pesticide applications. Median dates for pest events and crop phenology are displayed. These dates are compiled from observations made over the past 5-10 years in Gloucester County. Events in northern New Jersey should occur 7-10 days later.

Pest Event or Growth Stage	Approximate Date	2006 Observed Date
CM 2nd gen 1200 DD target (IGR timing)	7/07+/- 4 days	7/6
CM 2nd gen 1250 DD target (Standard timing)	7/15+/- 10 days	7/9
CM 2nd gen 1450 DD target (IGR timing)	7/18+/- 4 days	7/16
CM 2nd gen 1550 DD target (Standard timing)	7/21+/- 3 days	7/19
SJS Crawlers-second generation	7/26+/- 0 Days	7/17

Insect Trap Counts

Tree Fruit Trap Counts – Southern Counties

Week Ending	STLM	TABM-A	CM	AM	OFM-A	DWB	OFM-P	TABM-P	LPTB	PTB
7/1/06	766	34	5		12		9	42	104	0
7/8/06	596	1	0		4		4	2	95	1
7/15/06	657	0	2		4		16	1	74	3

Tree Fruit Trap Counts – Northern Counties

Week Ending	STLM	TABM-A	CM	AM	OFM-A	DWB	OFM-P	TABM-P	LPTB	PTB
7/1	294	8.1	3.5	N/A	N/A	7.3	10.9	10.8	16.9	4.6
7/8	263	5.4	3.9	N/A	N/A	3.3	9.0	5.1	23.4	4.8
7/15	323.3	0.8	2.1	N/A	N/A	5.6	7.7	0.5	15.0	5.0

Blueberry Trap Counts – Atlantic County

Week Ending	CBFW	RBLR	OBLR	SNLH	OB	BBM
7/1	0.06	56.1	11.1	0.4	1677	0.14
7/8	0.05	36.1	8.3	0.3	1103	0.35
7/15		5.9	5.7	0.5	479	0.37

Blueberry Trap Counts – Burlington County

Week Ending	CBFW	RBLR	OBLR	SNLH	OB	BBM
7/1	0.8	37.0	22.3	3.6	961	0.4
7/8	0.36	21.1	10.3	1.6	668	0.59
7/15		2.8	2.6	0.8	464	0.62

Key: CBFW = Cranberry Fruitworm, RBLR = Redbanded Leafroller, OBLR = Obliquebanded Leafroller, SNLH = Sharpnosed Leafhopper, OB = Oriental Beetle, BBM = Blueberry Maggot

Farm Safety Twilight Meeting-North Jersey

Tuesday, August 1, 2006

6:00 p.m. – 9:00 p.m.

Rutgers Snyder Research & Extension Farm,
Pittstown, NJ

Sponsored by Rutgers Cooperative Extension and the USDA Risk Management Agency Outreach and Assistance Partnership Program in cooperation with Hunterdon County Board of Agriculture and Morris County Board of Agriculture

Join us for a Farm Safety Twilight Meeting and dinner to hear about tractor and equipment safety, learn where the 'death zones' are on farm equipment, pesticides and your fire department, first aid until the ambulance arrives, child safety on the farm, and chain saw safety in farm applications. We have put together an outstanding program with highly qualified instructors. A large part of the program will be hands on demonstrations.

Agenda:

- 6:00 Hands-on Demonstrations of Farm Equipment Safety
Staff of the Rutgers Snyder Farm and Dr. John Grande, Director of the Snyder Farm
- 7-7:30 Dinner (You must RSVP to eat!)
- 7:30 Farm First Aid – What to do Until the Ambulance Arrives
Chip McFadden, Peach Grower, Emergency Medical Technician Coordinator for Warren Hospital and a member of the State Faculty for the NJ Department of Health Emergency Management Services
- 7:50 Chain Saw Safety
Nick Polanin, Somerset County Agricultural Agent
- 8:15 Safety Tips for Youth and Children on the Farm
Ray Samulis, Burlington County Agricultural Agent
- 8:40 Pesticide Storage Safety and What You Need to do for Your Fire Department
Win Cowgill, Hunterdon County Agricultural Agent
- 9:00 Adjourn

Three Pesticide Core Credits will be awarded at the end of the meeting.

All who work on the farm are welcome.

Registration: \$10.00 per person or \$20 per farm (includes dinner).

RSVP: By July 25, 2006 to Diana Boesch at (908) 788-1339 or email boesch@aesop.rutgers.edu

For directions to Snyder Farm, call 908-730-9419 or go to: <http://www.snyderfarm.rutgers.edu>. □

The 2006 New England Greenhouse Conference

Featuring Alternative Crops including
Greenhouse Tomatoes, Salad Greens and
High Tunnel Production of Cut Flowers

The New England Greenhouse Conference will be held November 1-3 at the DCU Center in Worcester, Massachusetts with a trade show on November 2nd and 3rd. Wednesday, November 1st, is a pre-conference day featuring in-depth workshops and short courses.

The third day of this year's conference will offer workshops of interest to vegetable growers and greenhouse growers looking to extend their season.

Vern Grubinger, Director of the Center for Sustainable Agriculture at the University of Vermont, will be speaking on the organic production of greenhouse crops, focusing on tomatoes. Vern will cover the requirements for organic greenhouse production and discuss the specifics of growing greenhouse tomatoes.

Eliot Coleman, author, and part owner and operator of Four Season Farm in Maine, will be speaking on the greenhouse production of salad and root crops using no heat! Eliot will share his production strategies on growing a variety of profitable crops over the winter months.

The theme of season extension continues with several presentations on cut flowers.

Mark Bridgen from Cornell University and Ted Blomgren from Windflower Farm in New York will cover cutting edge research plus a farmer's practical experience on using high tunnels for cut flower production.

Greg Berger from Springledge Farm in New Hampshire, will discuss how he successfully grows and markets his cut flowers, which are sold at his farm stand and as a profitable "U-Pick" crop.


Susan Han from the University of Massachusetts will talk about harvesting and caring for cut flowers. Learn the whys and how to's of handling cut flowers for maximum longevity. This session is a must for anyone handling and selling cut flowers!

To be added to our mailing list to receive the 2006 New England Greenhouse Conference Program or for more information, contact: Cindy Delaney, Show Coordinator, 1 Main Street, No. 36, Winooski, VT 05404, Phone: 802-655-7769, Fax: 802-655-7769 Email: delaney@sover.net or visit our web site: www.negreenhouse.org.

Submitted by Jim Willmott, Agricultural Agent. □

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