



Cold Climate Grape IPM News

Lorraine P. Berkett, IPM Specialist

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Disease Management

The growth period from now until about 8-10 inch growth is the time when it pays to know what your disease problems were last year because if you did not have a problem with [Phomopsis cane and leaf spot](#) and [powdery mildew](#) last year, and particularly if it is dry, one or two of the early season sprays listed in [the 2007 New York and Pennsylvania Pest Management Guidelines for Grapes](#) would not be needed.

However, if you are relatively new to grape growing and you have not had the opportunity to study and know what disease risks you may have in your vineyard this year — what should you do, given these potential diseases and the other important diseases that need to be managed throughout the growing season and the number of different options to manage them? Disease management can get quite complex relatively quickly.

Is there a “skeletal” management program that can be followed while you gain more experience and the knowledge needed to “fine tune” and “customize” your program to fit your specific vineyard conditions?

Well, nothing can substitute for knowing the biological information about the diseases, the stages the pathogens go through, and the factors that impact the development of the diseases. Also, it is important to know the relative susceptibility of the grape varieties which you are growing to the various diseases and the cultural practices that will impact disease development. All of this knowledge will allow you to make informed decisions on the necessity of using a fungicide, what fungicide to use, and when to use it, -- and, thereby, minimize fungicide use. However, if you need some “guidance” *now* while you gain more knowledge and experience, the following can be viewed as a possible “starting point”, i.e., a “skeletal” management program to develop, expand, and modify to your specific conditions.

Note that the program assumes resistance has not developed to the sterol-inhibitor class of fungicides and the strobilurin fungicides.

***An Example of a “Skeletal” Disease Program for Cold Hardy Cultivars
which can be Modified to your Conditions:***

Stage of Growth - A Fungicide Option(s) [for specific diseases listed]

- **5” – 8” shoot** - **Mancozeb** [for Phomopsis, Black Rot (BR), and Downy Mildew (DM)]
- **Immediate Pre-Bloom to Early Bloom** - **Nova** [Powdery Mildew (PM), BR] + **Mancozeb** [BR, DM, Phomopsis]
- **1st Post-Bloom (10-14 days from last spray)** - **Nova** [PM, BR] + **Mancozeb** [BR, DM, Phomopsis]
- **2nd Post-Bloom (10-14 days from last spray)** - **Sovran or Abound* or Pristine*** [BR, DM, PM] [These are ‘big guns’; use if have very favorable weather for disease.] **OR Sulfur*** [PM] + **Mancozeb** [BR, DM] [if outside 66 days to harvest and if under the maximum amount allowed per season per acre] **OR Sulfur***[PM] + **Captan** [DM] [note captan has a restricted-entry interval of 72 – 96 hours] [*denotes potential phytotoxicity issues - check labels]
- **Additional Summer Sprays** - possible options include **Sulfur*** for PM; **Captan** **OR** a phosphonate product for DM

Red denotes **critical period** for disease management.

For rates of materials and further details see the
2007 New York and Pennsylvania Pest Management Guidelines

Note: If your vineyard had a Phomopsis or Black Rot problem last year,
the first spray should go on earlier, at 3”- 5” shoot growth.

**ALWAYS READ PESTICIDE LABELS VERY CAREFULLY
— THE LABEL IS THE LAW ON HOW THE MATERIAL CAN BE USED—**

Fact Sheets to Further your Knowledge about these Diseases:

Phomopsis - <http://www.nysipm.cornell.edu/factsheets/grapes/diseases/phomopsis.pdf>

Black rot - http://www.nysipm.cornell.edu/factsheets/grapes/diseases/grape_br.pdf

Downy mildew - http://www.nysipm.cornell.edu/factsheets/grapes/diseases/downy_mildew.pdf

Powdery mildew - http://www.nysipm.cornell.edu/factsheets/grapes/diseases/grape_pm.pdf

Fungicide Resistance Management - Why knowing the chemical “class” matters

As outlined in [last year's May 19 issue](#) of this newsletter, there are several important considerations in the selection a fungicide, one of which being the risk of developing resistance in the various fungal populations to the fungicide, thereby making the fungicide “ineffective”. With certain chemical classes of fungicides, the question is not “if” resistance will develop but “when”. A general description of how pesticide resistance develops can be found at: <http://grapes.msu.edu/pesticideResist.htm> . Below is an illustration from that webpage of how a resistant population builds up, in this case, a resistant mite population, but one can substitute fungal spores for mites and see the general concept.

The following fungicide chemical classes have a **high risk for resistance development**:

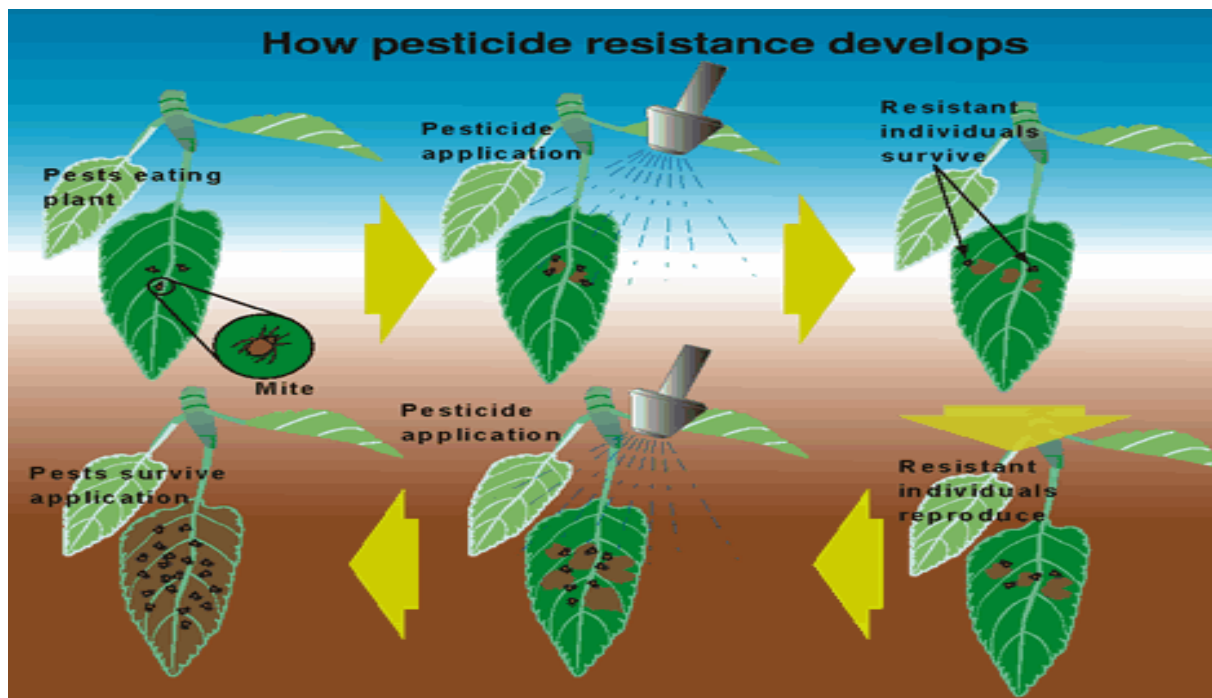
Sterol Inhibitors - includes Nova, Elite, Procure, Rubigan, Vintage

Strobilurins - includes Sovran, Flint, Abound [Note: Pristine is a combination product which contains both a strobilurin fungicide and a carboxin fungicide]

Anilinopyriidine - includes Scala, Vangard

Phenylamide - Ridomil products

Dicarboximide - Rovral



Source: <http://grapes.msu.edu/pesticideResist.htm>

Resistance management strategies have been developed to try to slow the development of resistance. For example, for the **sterol-inhibiting (SI) fungicides**, one should:

- (1) Limit the total number of SI applications to a maximum of 3 sprays per year
- (2) Maintain full recommended rates on the vine (i.e., full rates in the tank PLUS good spray coverage).
- (3) Do not use the SI fungicides if more than a very modest amount of powdery mildew is present
- (4) Do not exceed 14-day spray intervals, even when labels allow it

For the **strobilurin fungicides**, one should:

- (1) Make no more than a total of 2 strobilurin applications per year
- (2) Use appropriate label rates and spray intervals
- (3) Assure thorough spray coverage
- (4) Always rotate them with unrelated fungicides even on varieties receiving a minimal number of fungicide sprays per season.

Additional information can be found in the [2007 New York and Pennsylvania Pest Management Guidelines for Grapes](#)

Thus, you need to know what fungicides belong to the same “class” so that you can limit the total use of that class (e.g., 1 application of Nova + 1 application of Elite = 2 SI sprays) and so that you will know what fungicides are unrelated or, in other words, are in a different class, when you choose a fungicide for rotation. “Class” matters.

My advice — use the fungicides that have a high risk for fungicide resistance judiciously. As I described in [an issue of this newsletter last year](#), I consider these fungicides the “big guns”. They have an important role to play in grape disease management but if another fungicide which has a lower risk for fungicide resistance can “get the job” done, use it and save the high risk materials to when you really need them.

Sprayer Application Technology - A Must-Read

Chapter 7, [Sprayer Application Technology](#), in the 2007 New York and Pennsylvania Pest Management Guidelines is a “must-read” before you begin your disease management program. Hopefully, you have already read this chapter, have completed the pre-season maintenance checklist, and have calibrated your sprayer. Spraying under calm conditions and going the correct speed is important. Thorough coverage of the canopy and fruit is critical. Everything is for naught if you do not get the materials in the right amounts to the intended target.

Pesticide Safety

Grape production involves the use of pesticides, whether they be synthetic or organic pesticides. Anyone using pesticides needs to be knowledgeable about their safe use and storage. Do you know what the REI, the PHI, and the PPE requirement are for each material you intend to use? The following are links to a series of fact sheets by the University of Missouri that explains important information that you should know:

[Understanding the Pesticide Label](#)

[Pesticide Application Safety](#)

[Personal Protective Equipment for Working with Pesticides](#)

And, after you have sprayed, follow [Tips for Laundering Pesticide-Contaminated Clothing](#) which are on the back, inside-cover of the 2007 New York and Pennsylvania Pest Management Guidelines for Grapes

Be safe, not sorry.

Arthropod Management

Insecticides were not included in the disease management program outlined on page 2. Key insects to monitor and manage include the **grape berry moth**, **leafhoppers**, and the **leaf form of Phylloxera**. These are not the only insect pests that you may encounter but they are the more likely ones.

If you have a problem with **Phylloxera-leaf form** on certain cultivars, an effective time to manage this insect would be when galls are first noticed (**around Immediate Prebloom**) and at the time of **First Post Bloom spray**.

If **grape berry moth and leafhoppers** are above threshold levels or your vineyard is considered at high risk for damage, these insects can be managed by using an effective insecticide(s) in the **1st Post-Bloom spray** and in the **summer**.

The ideal insecticide option would be one which would effectively manage all of these pests, have low toxicity to humans, have a low risk for resistance development, and have no impact on the natural beneficial organisms in the vineyard which contribute to biological control. As so described, that material does not exist. For example, Danitol is a pyrethroid and has broad spectrum activity against these insects but is considered harsh on beneficial insects and mites (i.e., natural predators and parasites). Assail (a neonicotinoid) is an insecticide that has activity against leafhoppers and Phylloxera (but, not grape berry moth) but is considered not as harsh as Danitol on beneficials. Dipel (Bt) has activity against grape berry moth but not

against leafhoppers and Phylloxera, but conserves beneficial insects and mites. Sevin (a carbamate) conserves some predator mites but can be harsh on beneficial insects; it has activity against grape berry moth and leafhoppers but not Phylloxera. Confused yet ? - and those are not all the pro's and con's for the few examples of materials — did I mention resistance management considerations ?!

The bottom line is that, like disease management, there are many considerations in choosing an insecticide(s). Again, while you are learning about the biologies of the various insect pests and what factors impact their development plus learning about the various insecticide options, one possible spray program would be to use Assail in the Immediate Pre-Bloom spray if you have a Phylloxera problem (this material would also have activity against rose chafers at this time) and see if this is enough to knock down the population. If you need to manage only grape berry moth and their populations are not very high, Dipel can be used at First Post-Bloom spray and again in the summer. If grape berry moths and leafhoppers are a problem, Sevin at First Post-Bloom and again in the summer would have activity against these two insects. Determining the need for and timing of summer applications would be based on monitoring.

At least with insects, there are some monitoring techniques that can be used to determine whether threshold levels have been reached — more on monitoring in the next issue.

Contact Information

Lorraine P. Berkett
Plant Pathologist and IPM Specialist
Dept. of Plant & Soil Science
105 Carrigan Drive, UVM
Burlington, VT 05405
Phone: 802/656-0972
E-mail: lorraine.berkett@uvm.edu [*best way to contact me*]

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