An Initial Integrated Pest Management (IPM) Strategy For New Cold Climate Winegrape Growers

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Integrated pest management (IPM) is a sustainable approach to managing pests which combines biological, cultural, physical, and chemical tools in a way that minimizes economic, health, and environmental risks. IPM is based on knowledge such as knowledge about the biology of the different pests, how they interact with the crop, and how the environment/weather affects this interaction. IPM is also information-driven including information on the development stage of particular pests, size of the pest population (i.e., whether threshold levels have been reached that require action), and whether there are sufficient natural predators in your vineyard which might manage a pest situation without your intervention. Note that "pests" not only refer to insects but also to other arthropods such as mites, pathogens that cause disease, weeds, and vertebrate pests such as birds, voles, raccoons, deer, etc.

Is IPM organic? It can be depending on what management tools and options are used. It is an *approach* to managing pests that is compatible with "sustainable" agriculture and "organic" agriculture.

As a new cold climate winegrape grower, you are on a very steep learning curve regarding all aspects of production. IPM is only one area of management, albeit an important one, that will impact your production and profitability. Quality wine comes from quality grapes and IPM is an important factor in the production of quality grapes. There are numerous diseases and insect pests which will need to be managed effectively during the growing season.

The following is a **"strategy"**, i.e., a plan, to get up to speed quickly in your knowledge of the various diseases and insects that can significantly impact grape production.

1. Read. A *starting point* would be the IPM Primer which introduces some basic concepts and components of an IPM program. Also, reading through past issues of the Cold Climate Grape IPM Update Newsletters will give you an idea of what diseases and insects have been observed in Vermont vineyards over the past few years and will provide pictures and links to further information. Studying disease and insect Fact Sheets to become familiar with the various stages of disease and insect development and key times for management are very important -- links to this information can be found on the Cold Climate IPM webpage and within this article. Since grape

production will involve the use of pesticides whether they be organic or synthetic pesticides, it is extremely important that you become knowledgeable about their safe use and storage to minimize health and environmental risks. A starting point would be to study and obtain your Vermont Pesticide Applicator License and to read through the pesticide safety fact sheets that are linked on the Cold Climate IPM webpage.

2. Attend. There are numerous opportunities to attend grower-oriented grape conferences and workshops throughout the year in which basic and new information on pest management is presented. These occur in New England, New York, the Mid-Atlantic states, and Minnesota, etc. At these meetings you have the opportunity to interact with university and extension personnel and other growers which can be very informative. Some of the meetings are listed on the Cold Climate Grape Production homepage. Also, if would be important to subscribe to various grape listserves which will send out notifications of conferences and workshops.

3. Ask Questions. At organized grape meetings or informal gatherings of growers ask questions of people who have experience and who are succeeding in cold climate grape production. Many growers have said that they initially learned from a grower "mentor" who was willing to share insights and knowledge. University and extension personnel are also available to help. Everyone had to start at some point in time and most people are willing to share what they have learned with people who are just starting to grow winegrapes.

4. Observe. Nothing substitutes for you getting out into your vineyard *at least* once a week during the growing season to specifically observe vine development and to apply what you have learned about key times to manage specific diseases, insects, and other pests. Through observation, you become the 'expert' in your vineyard.

Disease Management

Diseases are of major concern in grape production and the risk of disease increases if they are not managed in a new vineyard and inoculum levels build up. This presents a problem 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 growing season and the most optimal methods to manage the key diseases. 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?

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 - Rally [Powdery Mildew (PM), BR] **+ Mancozeb** [BR, DM, Phomopsis]

--1st Post-Bloom (**10-14 days from last spray) - Rally** [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 48, 72, or 96 hours depending on the label] [*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
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

Insect Management

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.**

There are methods to monitor whether the insect(s) have reached a level which warrants intervention. Like disease management, there are many considerations in choosing an insecticide(s). The 'ideal' insecticide 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.

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 **1st Post-Bloom spray** and **again in the summer**; other options include **Intrepid, Avaunt or Delegate.** If **grape berry moths and leafhoppers** are a problem, **Sevin** at **1st 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. The Risk Assessment protocol developed by Martinson, et. al. for the grape berry moth and eastern grape leafhoppers can be found at: http://www.nysaes.cornell.edu/pubs/fls/OCRPDF/138a.pdf

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Fact Sheets to Further your Knowledge about Insect Pests:

Grape Phylloxera - http://ohioline.osu.edu/hyg-fact/2000/2600.html

Grape Berry Moth - http://www.nysipm.cornell.edu/factsheets/grapes/pests/gbm/gbm.pdf

Grape Leafhopper - http://www.nysipm.cornell.edu/factsheets/grapes/pests/glh/glh.pdf

Various Insect & Mite Pests - http://www.oardc.ohio-state.edu/grapeipm/index.htm

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 New York and Pennsylvania Pest Management Guidelines for Grapes *Be safe, not sorry.*

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Where trade names or commercial products are used for identification, no discrimination is intended and no endorsement is implied. Always read the label before using any pesticide. **The label is the legal document for the product use. Disregard any information in this article if it is in conflict with the label.**