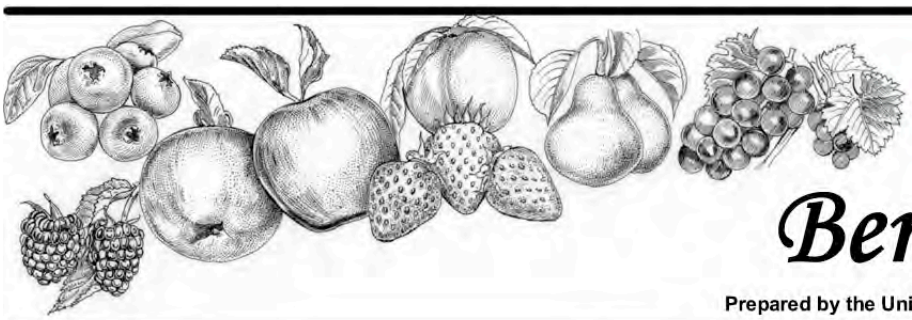

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Prepared by the University of Massachusetts Fruit Team

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NOURSE
Growers of the Finest Small Fruit Plants

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IN THIS ISSUE:

Message from the Editor:

New England Small Fruit Pest Management Guides are available for purchase though supplies are limited. This is the same guide that was available last year, so if you bought one within the year, that is the most current issue. Amendments and additions will be posted via this newsletter and on the UMass Fruitadvisor website soon. Guides may be purchased by check (made out to the New England Vegetable & Berry Growers Association or NEV&BGA) by mailing in order forms to me, Sonia Schloemann, at 22 West Experiment Station/UMass, Amherst, MA 01003. The cost is $10 plus $4 for S&H for a total of $14.

New Supplemental Label for Indar® fungicide for Blueberries: EPA has issued a federal supplemental label for the use of Indar® to control mummyberry in blueberries. You must have a copy of the supplemental label in your possession at the time of application. In addition to mummyberry, the label also includes alternaria, anthracnose, phomopsis, powdery mildew and rusts. Only 4 applications are allowed per year. It has a preharvest interval of 30 days. Please read the label for additional information. Copies of the Label can be obtained at www.umass.edu/fruitadvisor. **A newer formulation, Indar 2F, has blueberries on the main label (doesn't require supplemental) is also available but may not have state approvals yet.**

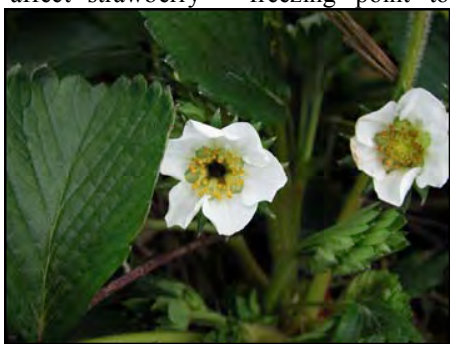
Subscriptions: To subscribe to the 2007 volume of Massachusetts Berry Notes and other fruit publications **and to make program donations**, go to www.umass.edu/fruitadvisor and click on the subscriptions link at the top of the page. Please be generous with your donations. Receipts will be provided for tax purposes.

Frost Protection in Strawberries

*Marvin Pri*tts *Cornell* University

*S*trawberry growers can ensure a full crop of berries only if they exert some influence on temperature during the year. Temperature control is especially important during the winter and early spring when flowers are susceptible to frost. Excessive summer temperatures inhibit growth as well.

Of all the factors that negatively affect strawberry production, frost can be the most serious. Frost can eliminate an entire crop almost instantaneously. Strawberries often bloom before the last frost free date, and if a frost occurs during or just prior to bloom, significant losses can result. The strawberry flower opens toward the sky, and this configuration makes the flower particularly susceptible to frost damage from radiational cooling. A black (rather than yellow) flower center indicates that frost damage has occurred.



Strawberry growers occasionally delay the removal of straw mulch in spring to delay bloom and avoid frost. Research has demonstrated, however, that this practice also results in reduced yields. Also, applying straw between the rows just prior to bloom will insulate the soil from the air. This will increase the incidence of frost injury as solar radiation will not be absorbed by the soil and re-radiated at night. If additional straw is to be applied between the rows in spring, delay its application for as long as possible before fruit set.

Overhead irrigation is frequently used for frost control because flowers must be kept wet during a freeze in order to provide protection. As long as liquid water is present on the flower, the temperature of the ice will remain at 32F because the transition from liquid to ice releases heat. Strawberry flowers are not injured until their temperature falls below 28F. This 4 degree margin allows the strawberry grower to completely cover a field with ice and yet receive no injury from frost. However, if insufficient water is applied to a field during a freeze event, more injury can occur than if no water was applied.

Several principles are responsible for the ability of ice to protect strawberry flowers from injury. First, although pure water freezes at 32F, the liquid in the strawberry plant is really a solution of sugar and salt. This depresses the freezing point to below 32F. Also, ice crystals need nucleators to allow them to form initially. Certain bacteria serve as nucleators. Sometimes, in strawberry flowers, the bacteria that allow ice to form are absent, allowing the freezing point to be lowered.

The temperature of the applied water is usually greater than the temperature of the plants, so this serves to warm the flowers before heat is lost to the air. As long as liquid water is continually applied to the plants, the temperature under the ice will not fall below 32F. When one gallon of water freezes into ice, 1172 BTUs of heat are released.

Several factors affect the amount of water that is required to provide for frost protection, and the timing of application. At a minimum, apply water at 0.1 - 0.15 in/hr with a fast rotating head (1 cycle/min.) Water must be applied continuously to be effective. A water source of 45 - 60 gal/min-acre is required to provide this amount of water. Choose nozzle sizes to deliver the amount of water required to provide protection under typical spring conditions in your location.

Under windy conditions, heat is lost from the water at a faster rate, so more water is required to provide frost protection. For every gallon of water that evaporates, 7760 BTUs are lost. The application rate then depends on both air temperature and wind speed (Table 1). Under windy conditions, there is less chance of flower temperatures falling below that of the air because of the mixing of air that occurs at the boundary of the flower. Winds are beneficial if the temperature stays above the critical freezing point, but detrimental if the temperature approaches the critical point. Less evaporation (and cooling) will occur on a still, humid night.

Under extremely windy conditions, it may be best not to irrigate because the heat lost to evaporation can be greater than the heat released from freezing.

Table 1. Water application rate (in/hr) for a given humidity and wind speed*

Wind Speed					
Temp (F)	0-1	2-4	5-8	10-14	18-22
Relative humidity of 50%					
27	0.10	0.20	0.30	0.40	0.45
24	0.10	0.30	0.35	0.45	0.60
20	0.15	0.35	0.45	0.60	0.75
18	0.20	0.40	0.50	0.65	0.80
Relative humidity of 75%					
27	0.05	0.10	0.20	0.25	0.25
24	0.10	0.20	0.30	0.35	0.40
20	0.10	0.25	0.40	0.45	0.60
18	0.15	0.30	0.45	0.55	0.70

**FROSTPRO model from North Carolina State Univ.*

Stage of development. Strawberry flowers are most sensitive to frost injury immediately before and during opening. At this stage, temperatures lower than 28F likely will injure them. However, when strawberry flowers are in tight clusters as when emerging from the crown, they will tolerate temperatures as low as 22F. Likewise, once the fruit begins to develop, temperatures lower than 26F may be tolerated for short periods.

The length of time that plants are exposed to cold temperatures prior to frost also influences injury. Plants exposed to a period of cold temperatures before a frost are more tolerant than those exposed to warm weather. A freeze event following a period of warm weather is most detrimental.

Rules of thumb

- ❖ Store sufficient water for 2 or 3 consecutive nights of frost protection
- ❖ Use small diameter nozzles (1/16 - 3/16 in. diameter)
- ❖ A 30 X 30 ft. staggered spacing of nozzles is preferable
- ❖ Use metal sprinklers to minimize icing
- ❖ Minimum rotation of once per minute

Flower temperature. The temperature of all flowers in a field is not the same. Flowers under leaves may not be as cold as others, and those near the soil generally will be warmer than those higher on the plant. On a clear night, the temperature of a strawberry flower can be lower than the surrounding air. Radiational cooling allows heat to be lost from leaves and flowers faster than it accumulates through conduction from the surrounding air.

Soil also retains heat during the day and releases heat at night. It is possible that on a calm, cloudy night, the air temperature can be below freezing yet the flowers can be warm. Wet, dark soil has better heat retaining properties than dry, light-colored soil.

Using row covers. Row covers modify the influence of wind, evaporative cooling, radiational cooling, and convection.

Because wind velocity is less under a row cover, less heat will be removed from the soil and less evaporative cooling will occur. Also, relative humidity will be higher under a row cover, reducing heat loss from evaporation. In addition, convective and radiational heat loss is reduced because of the physical barrier provided by the cover. Plant temperature under a cover may eventually equal that of the air, but this equilibration takes longer than with uncovered plants. In other words, row covers do not provide you with additional degrees of protection, but they do buy time on a cold night as flower temperatures will fall less rapidly inside a cover. Often the temperatures fall so slowly under a row cover that irrigation is not needed. If irrigation is required, less water is needed to provide the same degree of frost protection under a row cover.

Water can be applied directly over the row covers to protect the flowers inside.

Turning on the water. Since cold air falls to the lowest spot in the field, a thermometer should be located here. Place it in the aisle at the level of the flowers, exposed to the sky, and away from plants. Air temperature measured at this level can be quite different from the temperature recorded on a thermometer at the back of the house. The dewpoint temperature measured in the evening is often a good indication of how low the temperature will drop on a clear night, and is related to the relative humidity. Air temperature will fall less if the humidity is high. If the air is

very dry (a low dewpoint), evaporative cooling will occur when water is first applied to the plants, so irrigation must be started at a relatively warm temperature.

Most local weathermen can provide the current dewpoint, or it can be obtained from World Wide Web-based weather information services (see article below).

If the air temperature falls below 34F on a clear, calm night, especially before 3 A.M., it would be wise to start irrigating since flower temperatures could be several degrees colder. On the other hand, if conditions are cloudy, it may not be necessary to start irrigation until the temperature approaches 31F. If conditions are windy or the air is dry, and irrigation is not turned on until the temperature approaches 31F, then damage can occur due to a drop in temperature when the water first contacts the blossom and evaporation occurs. Therefore, the range in air temperatures, which indicates the need for irrigation at flowering is normally between 31 and 34F, depending on cloud cover, wind speed and humidity, but can be as high as 40F. Admittedly, these numbers are conservative. Flowers can tolerate colder temperatures for short periods of time, and irrigation may not be needed if the sun is about to rise. Obviously, one does not want to irrigate too soon since pumping is expensive, and excess water in the field can cause disease problems.

Table 2. Starting temperature for frost protection based on dewpoint.

Dewpoint	Suggested starting air temperature (F)
30	32
29	33
27	34
25	35
24	37
22	38
20	39
17	40

Turning off the water. Once irrigation begins, it should not be shut off until the sun comes out in the morning and the ice begins to slough off the plants, or until the ice begins to melt without the applied water.

Waterless frost protection agents. Future solutions to frost protection could lie in waterless methods, such as genetically engineered bacteria that do not promote the formation of ice. However, to date, these materials have not been consistently effective, so they are not recommended as the sole basis for frost protection. (***Source**: New York Berry News, Vol. 5, No. 2, March 31, 2006*)

RASPBERRY

Spring Bramble Chores

Gina Fernandz, NC State and Marvin Pritts Cornell University

Chores and timing may be somewhat different in your area or for your cropping system.

Plant growth and development

- ❑ Plants deacclimate quickly
- ❑ Bud differentiation (additional flowers formed)
- ❑ Bud break
- ❑ Flowering
- ❑ Primocane emergence

Pruning and trellising

- ❑ Finish pruning and make sure all floricanes are tied to the trellis before budbreak.
- ❑ Rotate shift trellises to horizontal position before budbreak; rotate to upright position immediately after flowering.

Weeds

- ❑ Weed growth can be very vigorous at the same time as the bramble crop peaks. Don't let weeds get out of control.
- ❑ Weed control is best done earlier in the season before harvest commences.
- ❑ Hand-weed perennial weeds in and around plots.

Insect and disease scouting

The period of time in the spring when the plant is flowering is the most important season for control of insects and diseases. Know what your pests are and how to control them.

Water management

- ❑ Bramble plants need about 1"-2" water/ week. This amount will be especially critical during harvest.
- ❑ In the South onsider installing an overhead system for evaporative cooling. Turn on once or twice a day from 10 am to 3 pm for short periods of time (approx. 15 minutes) until mid afternoon.

Nutrient management

- ❑ Apply second half of nutrients if doing split application.

Marketing and miscellaneous

- ❑ Service and clean coolers.

- ❑ Make sure you have enough containers for fruit in the coming season.
- ❑ Prepare advertising and signage for your stand.
- ❑ Contact buyers to finalize orders.
- ❑ Hire pickers.
- ❑ Prepare signage for field orientation; it is easier to tell pickers where to go if rows are numbered.

(***Source***: *THE BRAMBLE, SPRING 2006*)

BLUEBERRY

Blueberry Disease Fast Fact Sheet; Mummy berry

Dena Fiacchino, Cathy Heidenreich, and Wolfram Koeller, Cornell University

Figure 1.

What: Mummy berry is caused by the fungus, *Monilinia vaccinii-corymbosi*, and is one of the most important blueberry diseases in New York State. If left untreated, mummy berry can reduce yields by 30-40%. Early control and detection is necessary to reduce the impact of this disease.

When: The fungus overwinters in infected berries, or "mummies" on the soil under bushes. Mushroom-like structures (apothecia) grow out of the mummies (Figure 1). In early spring, ascospores are released from the apothecia to infect the newly emerging leaf tissue. These spores are disseminated by wind and rain. This step is the primary or shoot blight phase of the disease. Shoot blight symptoms typically develop 2 weeks after infection. Infected shoots and leaves wilt, turn brown, and die (Figure 2). Masses of secondary spores (conidia) are produced on infected shoot surfaces

Figure 3.

(Figure 3), which then infect flower blossoms, starting the second phase of the disease.

Where: Mummy berry occurs in most regions where blueberries are commercially grown. This fungus only infects cultivated blueberries and a few wild blueberry species. Generally, the disease is introduced from neighboring infected plantings or from wild blueberries in nearby woods.

How: Under moist conditions in early spring, apothecia

Figure 2.

begin to form from mummified fruit remaining on the soil surface. The apothecia slowly develop as moisture levels and temperatures rise. At low temperatures such as 35° F, spores mature slowly taking 10+ hours to release, however at an increased temperature of 61° F, apothecia take about 4hrs to fully mature.

Conidia form on infected shoots, then are carried to flower blossoms by wind and pollinating bees (who are tricked by color changes and sugar secretion into thinking that the infected leaves might be flowers). Once the fungus has been introduced to the flower, it will germinate with the pollen and slowly infect the developing fruit. Evidence of blossom infection does not appear until the fruit begins to ripen. As normal berries ripen, the infected berries begin to shrivel and turn a pinkish color. (Figure 4) These "mummy berries" become filled with fungus, and have a hard grayish white center.

They fall to the ground, shrivel up becoming pumpkin-shaped, and turn dark brown or black. These serve as an

inoculum source the following spring when apothecia form and disease cycle begins again.

Control Strategies: Mummy berry can be a difficult disease to control. An integrated pest management program including both cultural and chemical control strategies is needed for best results. The best time to achieve control of this disease is during the primary infection phase.

• Rake or disk soil beneath the blueberry bushes or cover the fallen mummy berries with a 3-4 inch mulch layer before apothecia appear in the spring.

• Apply 200lbs/A of 50% urea to burn out apothecia.

Figure 4.

• Fungicides may be used to control this disease during both disease phases. For control of the primary infection phase applications should begin at green tip and continue on 7-10 day intervals when conditions favor infection.

For secondary infection control, make applications beginning at bloom on the same type of schedule. Different fungicides are required to control primary vs. secondary infections.

For more information see *Cornell Pest Management Guidelines for Berry Crops* [or *2006 New England Small Fruit Pest Management Guide*]. Apply all pesticides according to label rates and instructions.

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(***Source**: New York Berry News, Vol. 5, No. 2, March 31, 2006*)

Cankerworm and/or Winter Moth in Blueberries

Bob Childs and Deborah Swanson, UMass Extension

(adapted for blueberries by Sonia Schloemann, UMass Extension)

In recent years, many blueberry growers in eastern, and especially southeastern Massachusetts, have reported serious damage from early season feeding of a small green caterpillar originally thought to be green canker worm. Last year, we determined that this caterpillar is more likely the larval stage of an insect called Winter Moth and the potential for serious damage to blueberries and other host plants is high.

Photographer: Louis-Michel Nageleisen, Département de la Santé des Foréts - France

Winter Moth is a new pest in Massachusetts. Prior to its introduction, both spring and fall cankerworms were not uncommon in our area. However, the level of damage from Cankerworms was typically less severe and occurred less frequently compared to the damage we are now finding from Winter Moth. Cankerworms, both fall and spring, are native insect pests.

Cankerworm populations will appear in an area and exist in damaging numbers for several years before going into decline due to natural controls. Then they may not reappear in that area for one or more decades. The winter moth, however, is an introduced insect pest and as such does not have sufficient natural controls yet to cause

the populations to decline. Here is what we know about Winter Moth, its life cycle, damage and how to control it.

Winter Moth (*Operophtera brumata* (L.))

Origin: Winter moth is an insect pest that was introduced to North America from Europe. Its introduction has been known for years in various regions of eastern Canada, including: Nova Scotia, Prince Edward Island, and parts of New Brunswick. It has also been a pest in the northwestern region, namely Vancouver, British Columbia.

Winter Moth was introduced into the United States and has warranted control measures in Washington and Oregon. This pest is now in Massachusetts in, at least, the southeastern region and parts of Cape Cod. It is the first known occurrence of it in outbreak proportions in New England. It is also, currently, a problem in the United Kingdom (England and Scotland).

Injury and Host Plants: Many different deciduous plants are susceptible. These include: oaks, maples, basswood, white elm, crabapples, apple, **blueberry**, and certain spruces such as Sitka spruce (Scotland). Young larvae or caterpillars, resembling inchworms, tunnel into and feed inside buds, especially on fruit trees (apple, **blueberry**, cherry, and crabapple) in the early spring before bud break.

These caterpillars move from bud to bud as they feed. Delayed bud opening due to cool weather conditions can lead to bud death as the caterpillars have longer time to feed. Older larvae feed in the expanding leaf clusters and are capable of creating defoliation in high populations.

Research in Canada has shown that four consecutive years of partial defoliation of deciduous hosts can lead to branch mortality while complete defoliation in each of those years leads to tree mortality. In certain regions of Nova Scotia, this pest is responsible for a 40% red oak mortality in forested stands.

Life Cycle: Moths, or the adult stage, of the winter moth emerge from the soil usually in late November and can be active into January. The adults are strongly attracted to light and can often be found flying around outside lamps or holiday lights. The male moths are 4 cm , light brown to tan in color and have four wings that are fringed with small elongate scales that give the hind margins a hairy or fringed appearance. The female is gray, wingless and, therefore, cannot fly. She emits a sex pheromone or scent that often attracts clouds of male moths.

Females are usually found at the base of trees but can be found almost anywhere. After mating, the female deposits an egg cluster on tree trunks and branches, in bark crevices, under bark scales, under loose lichen, or elsewhere. The adult moths then die and the eggs over-winter. Eggs hatch when temperatures average around 55°F. It is believed that egg hatch in Massachusetts occurs when 20 – 50 Growing Degree Days (base 50) have accumulated. This means that this usually occurs in the spring, before bud break of most of its host plants. Newly hatched larvae often crawl up tree trunks and produce a long 8 silken strand of silk which makes them air buoyant. This larval dispersal method is known as "ballooning". In certain situations, winter moth caterpillars can arrive in areas where they have not expected to be a problem, given topography and wind patterns. Larvae are pale green caterpillars with a white longitudinal stripe running down each side of the body. Winter moth larvae are loopers or inchworms and have just 2 pairs of prolegs. At maturity, these caterpillars will be approximately one inch long. They will feed voraciously until mid- June, whereupon they migrate to the soil for pupation. They will stay in the soil in the pupa stage until they emerge in late November as adult moths.

Feeding: In certain years, winter moth eggs may hatch in March. After ballooning, the larvae will tunnel into buds, especially the flower buds of fruits (apple, blueberry, cherries, and flowering trees). They will feed on both fruit and foliar buds but fruit buds are preferred. Once a bud has been devoured from within, the caterpillar will migrate to other buds and repeat the process. Once leaf buds open, the small caterpillars can be found within the tight clusters of new leaves during the day. During cool springs, if weather hinders leaf expansion, the winter moth caterpillar can cause high levels of injury to these leaves. Winter moth caterpillars often leave these clusters to become free feeders at night. They may also "drop" or "balloon" to plants that are located beneath infested trees. These caterpillars may then feed on a whole host of herbaceous perennials, roses etc. that are near or beneath these trees. Winter moth caterpillars are often found in association with both the fall and spring cankerworms, which look and have similar feeding patterns to the winter moth caterpillar.

What can be done?

•- **Scout**: Orchardists need to be particularly aware of the winter moth. The potential exists for both apple and blueberry crops to be heavily damaged. By the time one realizes that the flower buds have been consumed, it will be too late for action. Therefore, favored host plants in susceptible areas should be monitored carefully. Bark crevices should be inspected for egg clusters. By late winter, winter moth eggs will be reddish-orange in color. Upon

hatching, winter moth caterpillars climb high into the host plant and produce a long strand of silk to make themselves air buoyant. They will be carried by the wind to a new host plant. This process of dispersal is called "ballooning".

•- A **dormant oil spray** to the blueberry bushes may be helpful in killing the overwintering eggs before they hatch. However, some egg clusters are under bark flaps and loose lichen and may be protected from oil sprays. Eggs may also be in other locations on or off the host plant. Caterpillars may also invade host plants by ballooning onto them after treatment has been applied.

•- ***Bacillus thuringiensis*** (B.t. (kurstaki), a bacterium specific to caterpillars of butterflies and moths, works very well on the younger larvae of both winter moth and cankerworms while they are free feeders.

• **Spinosad** products (SpinTor® and Entrust®), both of which are labeled on blueberries are a biorational compound that works well against both of these species.

• **Insecticidal soap** may be effective against the younger caterpillars but only when they are exposed on the host plant.

• **Chemical insecticides.** Few compounds, are labeled for this pest although many are being tested and may receive supplemental labels in the future.

Confirm® insecticide is labeled for loopers, spanworms and other lepidopterous pests in blueberry and should be effective. Imidan® may also be effective. Consult your local supplier and always read, understand and follow all label directions for pesticide products.

• **Plants heavily defoliated** by winter moth caterpillars will be severely stressed. Blueberry bushes must put out a second flush of growth in order to survive. **Water is critical to the bushes at that time.** Supplemental watering of bushes will be necessary if a drought or little rainfall occurs naturally. (***Source****: Reprinted from Mass Berry Notes, Vol. 17, No. 2, Feb 2005*)

GRAPE

Weed Control In Vineyards

Alice Wise and Andy Senesac, Cornell Cooperative Extension of Suffolk County

Weed control, that is the management of weeds in the 2-3 ft. strip under the trellis, is a major challenge for vineyards. The first step in developing a management strategy is to know what you are dealing with. Weeds of the Northeast, the bible on weed ID co-authored by CCE Weed Specialist Dr. Andy Senesac, is a very useful reference for diagnosing weed species and developing management strategies.

How much weed competition can vines tolerate? Young vines with shallow, developing root systems may be negatively impacted by anything more than light weed cover. Older vines with deeper root systems can likely tolerate more weed competition, assuming the vines are not otherwise stressed. Between bloom and veraison is the most critical time to minimize weed competition. After veraison, it is not necessary to maintain a pristine strip under the trellis. Controlling tall weeds later in the season may be necessary so that they do not interfere with harvest. At any point in the season, controlling younger, smaller weeds is easier than older, lignified, deep rooted weeds. Also, allowing weeds to reach maturity only increases the number of propagules (seeds, tubers, rhizomes) that will be present to deal with in the future.

Weed control can be achieved without herbicides although increased labor inputs will be required. Hand hoeing is fine periodically but an impossibility for long-term weed control in a commercial vineyard. Mechanical weed control has become more popular on Long Island in recent years. It can be effective if done properly; however, timing is everything. Once weeds become well-rooted and lignified, cultivation is much more difficult. Use of a cultivating implement requires a skilled tractor driver to avoid vine trunk and root damage and trellis destruction (it has happened). Mechanical weeding long term may be detrimental to soil organic matter and may increase soil erosion. Alternating cultivation with a timely postemergent herbicide such as glyphosate or under trellis mowing may be one way around that concern.

Beyond cultivation, there is interest in under-trellis mowing and living mulches or groundcovers as a means of reducing or eliminating herbicide use. Commercial under-vine-row mowers are now available. Repeated under-trellis mowing allows low growing weeds, notably grasses and dandelion, to persist. Vines should be monitored to ensure that yield and quality do not suffer. A postemergent material or timely cultivation may be required if competition develops. We are experimenting this season with minimally competitive groundcovers, both alone and in combination with reduced rates of herbicide to control escaped weeds.

Herbicides are divided into two groups: those that prevent weed seed from germinating (emerging), known as preemergent materials, and those that are applied to existing weeds, known as postemergent materials. It is also

necessary to plan for control of broadleaf weeds like horseweed, dandelion, groundsel, pineappleweed etc., as well as grasses such as bluegrass, quackgrass, crabgrass etc.

If planning on using preemergent materials for both broadleaf and grass control, it is usually necessary to combine two materials. If weeds are existing in the vineyard, a postemergent material may also be included. Be aware that only Prowl, Devrinol and Surflan are labeled for non-bearing vineyards. For established vineyards, preemergent grass herbicides include Devrinol, Surflan and Karmex. Note that Solicam is no longer labeled for use on Long Island. Broadleaf herbicides for established vineyards include Princep, Goal and Karmex. Some points about each one follow. This is not a substitute for reading the label - read the label thoroughly for complete information. Check the Cornell PIMS website <http:// pmep.cce.cornell.edu/pims> to make sure the product you would like to use is registered for use on grapes in NY and on Long Island.

Chateau SW: Newly labeled in 2006. A maximum rate of 6 oz per application should be made on soils containing 80% or more sand or on vines established less than 3 years. Since most eastern LI soils have less than 80% sand, the maximum application rate is 12 oz. In situations with heavy soils and high weed pressure, a split application in early May and before grape bloom may be needed for full-season control. For control of broadleaves and grasses; requires a postemergence material for emerged weeds. Do not contact green foliage with Chateau.

Devrinol: Necessary to have 0.25 to 1.0 " of rain within a few days of application. Under warm summer conditions, significant losses can occur if water incorporation does not occur. In the cooler early spring, this is not so much of a concern.

Oryzalin 4AS/Surflan: The standard for preemergent grass control, use 6 to 8 pts/sprayed acre in a tank mix with a broadleaf herbicide such as Princep or Goal.

Karmex: Considered to be tricky on Long Island because of the risk of damage on sandy soils. However on mature vines, the labeled rate for our soil types does provide good broadleaf weed control for most of the season.

Goal: Must go on before bud swell, can cause burning of foliage close to ground due to volatility and 'splash up' of treated soil onto green tissues.

Princep: Kills weeds by inhibiting photosynthesis after they emerge so it needs incorporation with rain though less time restricted than Devrinol.

A typical spring herbicide application might be Chateau or Princep or Surflan and either Roundup or Gramoxone, the latter two being postemergent materials for established weeds. Postemergent herbicides will be covered in a future newsletter.

Calculation of area to be treated can be done by first noting the spray swath of the herbicide rig. For example, at the research vineyard, we use an 18" Enviromist. Since we drive this down both sides of the trellis, our spray swath is 36". For traditional application devices, measure the spray swath by filling the tank with water and turning on the unit while on pavement. Our row width is 8 ft. or 96". Our calculation for area to be sprayed is 36/96 = 0.375. Thus for every acre of vineyard, we will spray 0.375 acres with herbicide. This 0.375 acres is referred to as the "sprayed acre" on herbicide labels.

An article on Alternative Weed Management for NY Vineyards will soon be published under the auspices of VineBalance, the NY sustainable viticulture program. This will be distributed to LI growers. (***Source**: Long Island Fruit & Vegetable Update, No. 4, APRIL 6, 2007*)

General Information

2nd Annual Specialty Food Show

Mark Latanzzi, Community Involved in Sustaining Agriculture CISA

There's space available at the 2nd Annual Specialty food Show May 31 in Northampton. The Franklin County CDC's Food Center program is putting on its second annual Specialty food Show. There are still spaces available for the May 31 show being held at the Clarion Hotel and Conference Center in Northampton from 12:00 Noon to 6PM. The show is nearly twice the size of last year, and we expect to see an even larger number of buyers this year.

Last year, 35 exhibitors of specialty, natural, organic, and farm value-added products had a captive audience of more than 100 buyers. Among the attendees were representatives from co-ops, natural/specialty/organic stores, independent chains, and large players such as Whole Foods (nearly all of the individual New England stores), Associated Buyers, United Natural Foods, and brokers to the specialty food trade.

Don't miss out! If you have specialty products that you would like to exhibit, please contact Herb Heller at herbh@fccdc.org for registration details. (***Source**: CISA April 2007 Newlsetter*)

Dormant Disease Management

Janna Beckerman, Purdue University

Dormant season fungicide use is a very important second step in disease management, immediately following removal of infected tissue in the late spring. Ideally, dormant fungicides act as an insurance policy, killing any overwintering pathogens that may have escaped the late winter cleanup. In reality, dormant application of fungicides, coupled with pruning, greatly reduces disease problems, but does not eliminate them. However, any reduction in initial inoculum early in the season means less control is necessary later on. In other words, an ounce of prevention pays pounds of cures.

Dormant fungicides are applied when the plants are dormant. These compounds, many of which are organic, are general biocides, meaning they are as toxic to green plant material as they are to the pathogen. For this reason, they must be applied when the plants are dormant to avoid the toxic side effects.

Two major dormant groups of fungicides are used: Coppers and Sulfur.

Copper Fungicides

The first copper fungicide, Bordeaux mixture, was discovered in the mid-1800's in Bordeaux, France. Bordeaux is a mixture of copper sulfate and hydrated lime in water (usually in an 8 lb copper sulfate- 8 lb hydrated lime—100 gallon water ratio). It has tremendous persistence, giving good control of fire blight on apple and pear, peach leaf curl, and major grape diseases (black rot, downy mildew, phomopsis, and powdery mildew of grape). On the downside, it is corrosive, cannot be mixed with other pesticides, and has more phytotoxicity issues.

Unlike Bordeaux, fixed copper formulations are less persistant, but they are less phytotoxic to plant tissues than Bordeaux mixture. However, their use is still limited because of their potential to injure plants and lack of compatibility with other pesticides. Some common commercial formulations of fixed copper include Cuprofix, Kocide 101, C-O-C-S, and Tribasic Copper Sulfate. There are several fixed copper fungicides registered for use by home fruit growers.

Sulfur Fungicides

Threophrastus first described the oldest fungicide, sulfur, for the control of powdery mildew on wheat. Sulfur is used as a dormant application as available as liquid lime sulfur. Liquid lime sulfur fungicide can be applied as a dormant spray to control plum pockets or peach leaf curl, both caused by the fungus Taphrina. Lime-sulfur can be applied on brambles for cane blight, spur blight and anthracnose. It can cause severe damage if applied after green foliage appears. Depending upon how it is used, lime-sulfur can be an effective pesticide. It is also an effective people deterrent, smelling like rotten eggs. (***Source**: Facts for Fancy Fruit, 07-01, March 22, 2007*)

Upcoming Meetings:

UMass Extension Fruit Twilight Meetings

Program for all meetings:

5:30 PM Farm tour including update on phenology and current pest status.

6:30 PM Speaking program will include updates of current cultural practices and integrated pest management approaches.

!!! WIN COWGILL, RUTGERS COOPERATIVE EXTENSION WILL BE PRUNING PEACHES during the April 11 meeting !!!

Pesticide-license recertification credit (2 hours) will be offered.

Please be there on time to receive pesticide credits.

$20/person registration fee. Light refreshments will be served.

WEDNESDAY, April 11 Ragged Hill Orchard 94 John Gilbert Rd., West Brookfield, MA

THURSDAY April 12 Dowse Orchards 98 North Main St., Sherborn, MA

For more information contact Jon Clements at clements@umext.umass.edu or go to http://www.umass.edu/fruitadvisor/meetinginfo/april07twilight.pdf

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