IPM Alert

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Stage of Development

UVM Hort. Center Elev. 71 M	Shoreham Addison Co. Elev. 107 M	South Hero Grand Isle Co. Elev. 54M	Bennington Bennington Co. Elev. 370 M	Dummerston Windham Co. Elev. 171 M
95% Petal Fall (5/28)	95% Petal Fall (5/22)	95% Petal Fall (5/28)	95% Petal Fall (5/25)	95% Petal Fall (5/26)

Disease Management

2003 Estimated Degree-Day Accumulation (Base 32F, from McIntosh Green Tip) for Selected Vermont Sites [1]

Date 6/01	So.Burlington	Shoreham	South Hero	Bennington	Dummerston
DD	909	878	856	907	934
Maturity	93-100 %	93-100 %	86-100%	93-100%	93-100%

[1]Degree Days received from Skybit E-Weather Service: http://www.skybit.com/

Apple Scab - At all five sites, we have reached the 'final phase' of ascospore maturity based on the ascospore maturity model. Conservatively, once 900 DD have accumulated, the final ascospore release in commercially managed orchards is predicted when there is a daytime, soaking rain of at least 0.1 inch and the temperature is at least 50 F during the wetting period. However, it will take about two weeks for any lesions to develop from the last primary infection period so it is not yet time to reduce fungicide use. Actually, now is a good time to check cluster leaves and the oldest 3-4 leaves on terminals for scab lesions that may have developed from the earliest infection periods. If they are present, the last ascospore release loses significance since the lesions are producing conidia which can infect susceptible tissue in the orchard. The potential for ascospore infection and lesion development has been great this year with all the wet weather. The following pictures of apple clusters were taken on Monday, June 2, on non-sprayed McIntosh trees. They illustrate lesions on the sepals and the stem of the developing apples. I shudder when I think of the number of conidia these lesions are producing and the fact that the lesions from the infection periods of May 21 and 24 or last week have not developed yet. Let's hope that in managed blocks, fungicides have been effective in protecting the leaves and fruit from infection.


Lesions are circled on stem and on apple. Note: Some of these infected fruit will drop to the ground but only after adding to the inoculum load of the orchard.

What should you do if you have scab lesions? The following is from the 2003-2004 New England Apple Pest Management Guide. Please note that in seasons like this one where there are many cloudy, damp days, the risk of captan injury to foliage is greater because of the development of a thinner cuticle. If captan is applied with a spray adjuvant that increases uptake into the plant, phytotoxicity (leaf spotting and yellowing) can result. The risk of captan injury decreases if it is applied after a few days of sunny, dry weather.

"Two full-rate captan applications 5–7 days apart can reduce conidial inoculum, and is especially effective when temperatures exceed 80°F in the days following application. Because of the need to cover all scab lesions with fungicide, thorough coverage is essential. Relatively high volume, low concentrate applications (no more than 4X) will give the best results. …Another option is two applications of Topsin M, in combination with captan at half the full label rate, where benzimidazole resistance is not a limiting factor. Two applications of Syllit plus a half label rate of captan is an effective tactic where Syllit has been used sparingly and resistance to it has not developed. ….Combining it with captan will help manage summer diseases and reduce the chance of a buildup of fungal strains resistant to Syllit. Other fungicides such as the sterol inhibitor (SI) fungicides (e.g., Nova, Rubigan, Procure) and the strobilurins (e.g., Flint and Sovran) have 'anti-sporulant activity'. *Using these materials as anti-sporulants must be balanced with serious concerns about developing resistance if they are used in this manner.* "

Cedar Apple Rust - The first orange rust lesions were observed this week on cluster leaves. With the frequent rains, conditions were favorable for rust infection this spring.

Powdery Mildew – Now until terminal growth ceases is an important period in managing infections of young terminal leaves. Cultivars that are most susceptible to powdery mildew infections include: Cortland, Ginger Gold, Braeburn, Gala, and Paulared.

Fire Blight – If fire blight infection did occur on May 20th, it is predicted that the earliest blossom blight symptoms will appear next week.

Blossom End Rots - Extended rainy periods around bloom, petal fall and fruit set are favorable for the development of blossom end rots**.** Symptoms of either calyx end rot or dry-eye rot may be evident in about a month.

Arthropod Management Update:

2003 Estimated Degree-Day Accumulation (Base 50F, from Jan. 1) for Selected Vermont Sites [1]					
Date	**So.Burlington**	**Shoreham**	**South Hero**	**Bennington**	**Dummerston**
06/01	300	299	287	242	297
[1]Degree Days received from Skybit E-Weather Service: http://www.skybit.com/					

Plum Curculio - Fruit damage in non-sprayed blocks at the UVM Hort. Research Center was first observed on June 2. We have started to track Degree Days (DD) to estimate the end of PC activity using a model developed by researchers in NY. As Dr. Art Agnello from Cornell has stated: "This model is based on the assumption that residues from control sprays after petal fall only need to be maintained on fruit and foliage until about 40% of the oviposition cycle is complete, which is predicted by the model to occur at 340 DD (base 50 F) after petal fall. Probably, this strategy works because, after 40% of PC oviposition is complete, adults usually are not moving into the orchard from outside sources, or moving around within orchards from tree to tree. Therefore, by this time, adults residing in treated trees have already been killed by insecticide residues and are unable to complete the remainder of their normal oviposition cycle.
In order to use this strategy: (1) Treat the entire orchard at petal fall with a broad spectrum insecticide. (2) Start calculating the accumulation of DD after petal fall (base 50 F). (3) No additional sprays are necessary whenever the date of accumulation of 340 DD falls within 10-14 days after a previous spray."

DD accumulation for 5 sites around Vermont can be viewed at:

http://orchard.uvm.edu/uvmapple/pest/insects/2003PCddAccumulation.html

As of June 1st, 43 DD have accumulated at the UVM HRC, 82 DD in Shoreham, 43 DD in So. Hero, 53 DD in Bennington, and 54 DD in Dummerston.

European Apple Sawfly - Trap captures significantly increased last week. Early damage usually appears at the calyx end as a puncture from which a winding scar develops as the larva moves under the "skin".

Codling Moth – The first codling moth adults were observed in pheromone traps at the UVM HRC on May 27. There is a Michigan Degree Day (DD) model that helps to identify the most effective time to manage this insect. The model uses the first capture of codling moths as a 'biofix' from which DD (base 50F) are accumulated. It is predicted that there is 3% egg hatch when 250 DD are accumulated and, when population pressure is high, a spray applied at this time would be effective, followed by another application 10-14 days later. If pressure is not severe, one spray applied at 360 DD after the biofix date should manage the first generation population.

Leafminer – Sap-feeding mines should begin to appear on the undersurface of the leaf if they are not already present. These mines are often very difficult to see and appear as a "lightened" area where the tissue begins to separate in the leaf because of the presence of anearly instar larva. Monitoring for leaf mines should begin at petal fall. Check 10 fruit cluster leaves per tree in at least 10 trees throughout the orchard for signs of mine development. The action threshold for leaf mine monitoring at petal fall is 7 mines/100 leaves for McIntosh trees and 14 mines/100 leaves for non-McIntosh trees. The following options appear in the 2003-2003 New England

Apple Pest Management Guide for leafminers (and white apple leafhopper) at petal fall. Note that Lannate is highly toxic to mite and aphid predators.

	Amount to use per 100 gallons dilute *OR Per Acre* (dilute defined on page 126)
Apple blotch leafminer, Spotted tentiform leafminer, White apple leafhopper (WAL) *	
1. Agri-Mek 0.15EC + horticultural spray oil	2.5 fl. ozs.
2. Provado 1.6F	2 ozs.
3. SpinTor 2SC *	1 - 2.5 fl. ozs.
4. Lannate 2.4L	12 fl. ozs.
5. Lannate 90SP	4 ozs.
Lannate cannot be used after a Pick-Your-Own site is opened to public entry.	
6. Intrepid 2F	8 - 12 fl. ozs. Per Acre

Leafminer and leafhopper treatment is equally effective at First Cover, at which time population density can be more accurately evaluated. See European red mite for note on Agri-Mek dose and combination with penetrating adjuvant.

Agri-Mek, Lannate or Provado applied at Petal Fall may also control Rose leafhoppers that subsequently migrate into the orchard.

* Intrepid and SpinTor not labeled for leafhoppers. Spintor must be applied with penetrating surfactant to be effective on leafminers. Additional options for White apple leafhopper are carbaryl (Sevin), Danitol, dimethoate (Digon, Dimate), and endosulfan (Thiodan). See Summer Pests for rates. Carbaryl (Sevin) applied within 30 days of Petal Fall is likely to act as a fruit thinner. Assail 70WP labeled for leafminer control, but efficacy rating not yet determined.

Additional Arthropod Observations -- The following are additional observations and information from **Dr. Art Agnello** of Cornell University which appeared in recent issues of the Scaffolds Fruit Journal:

"Obliquebanded Leafroller -- We have yet to catch the first obliquebanded leafroller adult in western N.Y., but it won't be too much longer before the first moths start showing up. Depending on the location, larvae can be found now in many stages of development, from the relatively small to the pupal stage in some of the more advanced sites. This would therefore be an advisable time to hang a pheromone trap in problem apple blocks, to fix the date of first emergence in your specific area. Recall that we recommend sampling at 600 DD (base 43F) after the first adult catch, to determine the need and timing for treatment. It pays to keep an eye on the daily highs and lows for your area if you are doing your own trapping, as it's likely that our "normal" first sampling date of July 5 won't turn out to be necessarily appropriate this year."

"San Jose Scale-- Minute SJS adult males emerge in the spring from beneath scale covers on the trees, usually during bloom, and mate. We caught the first adult males in our traps on 5/29. On average, the first catch occurs at 251 DD (base 50F), so they're a little late. The females produce live crawlers within 4-6 weeks of mating; these make their way to new sites and insert their mouthparts into the tree, secreting a white waxy covering that eventually darkens to black. SJS infestations on the bark contribute to an overall decline in tree vigor, growth, and productivity. Fruit feeding causes distinct red-purple spots that decrease the cosmetic appeal of the fruit. Insecticidal sprays are most effective when directed against the first generation crawlers, specifically timed for the first and peak crawler activity, which are usually 7-10 days apart. The most reliable method of determining first appearance of the crawlers in your specific area is by putting sticky-tape traps on the tree limb near encrusted areas and checking them at least twice a week, starting about the second week of June. Alternatively, a degree-day accumulation of 310 (50F base) from the date of first adult catch has also been shown to be reliable if the degree-days are known with some accuracy. In the Geneva area, first crawler emergence has tended to occur sometime around mid-June. If warm weather (that's predicted) holds, we will accumulate about 10-15 DD (base 50F) per day, so it looks like it might be late June this year. Lorsban used to be the standard recommended treatment for scale, and since it's no longer labeled for summer use, we're fortunate to have a new product available that is reportedly quite effective against this pest. Esteem 35WP can be applied at 4-5 oz/acre at first crawler emergence; a low rate (0.25% or 1 qt/100) of a highly refined summer oil (see above) has been shown to improve penetration and, therefore, control. The remaining OP's such as Guthion, Imidan, diazinon and dimethoate, are the conventional standby choices."

EQIP INCENTIVE PROGRAM - Deadline Extended to June 13th.

As I had mentioned previously, I am aware of two Vermont apple growers who are already participating in the USDA Farm Bill's Environmental Quality Incentives Program (EQIP). It is my understanding that growers enrolled in the program can receive incentive payments to develop an IPM program in accordance with the USDA Natural Resources Conservation Service (NCRS) practice standards for Pest Management. If you are interested, you need to call your local Farm Service Agency (FSA) or NCRS office. Telephone numbers are listed in the phone book under "United States Government". The deadline for submission of an application has been extended to June 13, 2003.