



Vermont Apple IPM News

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Stage of Development:

2005 Reports of Apple Bud Stage (McIntosh) for Selected Sites				
Date	UVM HRC South Burlington Chittenden Co. Elev. 71 M	Shoreham Addison Co. Elev. 107 M	South Hero Grand Isle Co. Elev. 54M	Dummerston Windham Co. Elev. 171 M
4/04	Dormant	Dormant	Dormant	Dormant
4/10	Dormant, slight swelling Silver Tip (4/15)	Dormant Silver Tip (4/12)	Dormant	Silver Tip
4/18	Green Tip (4/19)	Green Tip (4/19)	Silver Tip Green Tip (4/20)	Green Tip (4/15)
4/25	1/2" GT	1/4" GT (4/21) 1/2" GT (4/25)	1/2" GT	1/2" GT / Early Tight Cluster
5/02	Early Tight Cluster	Tight Cluster	1/2" GT	Late Tight Cluster

Disease Management Update

Apple Scab - - At the UVM Hort. Res. Center in South Burlington, as of today (May 3) we have had 3 primary scab infection periods: April 23-24, April 27-28, and April 30– May 1. Although no squash mounts were done this year, I suspect the dry weather we had during the first part of April may have delayed somewhat the maturation of ascospores at Green Tip. However, one should assume there were ascospores released during the first infection period. We are entering the period of high risk for apple scab. When 300 DD (base 32F) have accumulated from Green

2005 Estimated Degree-Day Accumulation (Base 32F, from McIntosh Green Tip) for Selected Sites

	UVM HRC South Burlington Chittenden Co. Elev. 71 M	Shoreham Addison Co. Elev. 107 M	South Hero Grand Isle Co. Elev. 54M	Dummerston Windham Co. Elev. 171 M
Date	4/19 (GT)	4/19 (GT)	4/20 (GT)	4/15 (GT)
4/27	156	158	129	232
4/30	202	206	175	281

Tip, the “accelerated phase” of ascospore maturity begins. A high percentage of mature ascospores can accumulate rapidly in the fruiting bodies in the leaf litter during dry weather and then be released in rains. Between 215 DD –325 DD, it is estimated that the cumulative percent of mature ascospores has reached 12-25%. Suffice to say, susceptible tissue should be well covered with a protective coat of fungicides and if an infection period is missed, a fungicide with good post-infection activity should be used. Note: The post-infection activity of the strobilurin fungicides (Sovran and Flint) may be only 48 hours if used in orchards that have scab fungal strains which have developed resistance to the sterol-inhibiting fungicides (e. g., Nova, Rubigan, Procure)

Powdery Mildew - From Pink through Petal Fall is the time to manage powdery mildew. The following is an excerpt from an article on “Options for Controlling Powdery Mildew on Apples” written by Dr. David Rosenberger of Cornell’s Hudson Valley Lab which appeared in the May 2, 2005 issue of SCAFFOLDS Fruit Journal:

“The fungus that causes powdery mildew on apples overwinters in infected apple buds and then colonizes new tissue as leaves and shoots emerge in spring. Flower clusters and terminal shoots that develop from infected buds support the primary infections that produce conidia for secondary spread to other leaves and fruit. Primary infections appear as white powdery deposits on malformed flower clusters and terminal leaves. These primary infections become visible sometime between the tight cluster and pink bud stages.

Mildew infections on fruit cause net-like russetting similar to that attributable to phytotoxicity from pre-bloom copper sprays. Fruit russetting usually results from mildew infections prior to petal fall, so pink sprays may be needed to prevent mildew fruit russetting. Under New York conditions, however, fruit infections are relatively uncommon and seem to occur only in high-inoculum orchards of susceptible cultivars, and then only in years that are unusually favorable for mildew development. In New York, mildewcide sprays are needed primarily to protect new leaves that are formed during the spring growth flush that begins during bloom and often extends into late June.

Fungicide options for controlling mildew include sulfur, the strobilurin fungicides (Sovran, Flint), the SI scab fungicides (Nova, Rubigan, Procure), or the SI mildewcide (Triadimefon). Triadimefon is a generic substitute for Bayleton, which is no longer marketed for tree fruits. Mildew is NOT controlled by dodine, captan, Vanguard, Scala, Polyram, or the mancozeb fungicides. Benlate and Topsin M may still control mildew in some orchards, but mildew is resistant to these benzimidazole fungicides in most orchards.

Sulfur has only protectant activity against mildew, and it therefore must be in place on new tissues before mildew infections occur. Where sulfur is used as the primary protection against mildew, the sulfur sprays should be initiated at tight cluster, at about the same time that the first signs of primary mildew infections appear in trees.

Sovran and Flint work both as protectants and anti-sporulants. They provide effective mildew control if they are applied beginning at pink or bloom. If no mildewcides are applied until petal fall, however, Sovran and Flint are not the best choices for initiating mildew control because they do not provide enough post-infection activity to arrest mildew infections initiated during bloom.

The SI fungicides are extremely effective against apple mildew because they provide post-infection and antispore activity. In orchards with light to moderate mildew pressure, the SI fungicides have provided excellent mildew control when applied at petal fall and first cover even if no other mildewcides were applied prior to petal fall. However, omitting mildewcides prior to petal fall and then using the SI's to "clean up" the problem may increase selection pressure for SI-resistant strains of powdery mildew. In recent years, we have recommended that mildewcide sprays be started at pink or bloom so as to minimize selection pressure for SI resistance, but no one really knows if apple powdery mildew is capable of developing resistance to full label rates of SI fungicides. In some orchards, low rates of triadimefon (Bayleton) and other SI fungicides no longer control mildew like they did when those products were introduced in the 1980's. However, I am not aware of any orchards where mildew cannot be controlled when SI fungicides are used at higher labeled rates. It is possible that the mildew fungus may be incapable of overcoming high rates of SI fungicides.

In orchards where SI fungicides are no longer effective for controlling apple scab, Triadimefon 50W at 3-4 oz/A can be mixed with Polyram, mancozeb, or captan in bloom, petal fall and first cover sprays to control mildew and cedar-rust diseases. When triadimefon was first introduced as the active ingredient in Bayleton, rates as low as 1.5 oz/A of the 50W formulation provided good mildew control. Because of the shift toward SI resistance, 4 oz/A of Triadimefon may now be needed to ensure good mildew control in many orchards. Even at this higher rate, Triadimefon may be less expensive than the other SI fungicides. Because triadimefon never had any scab activity, using this mildewcide should not have any stimulator effect on SI-resistant apple scab, even though triadimefon is in the SI chemistry group.

None of the mildew fungicides will completely eradicate powdery mildew from terminal shoots that had primary infections, although the SI fungicides may suppress symptoms on some leaves on shoots that are carrying primary infections. The objective of mildewcide sprays is to prevent secondary infections. Good mildew control during 2005 will reduce the number of primary infections for 2006, but don't expect sprays in 2005 to eliminate the primary infections or "flag shoots" that resulted from poor

mildew control during the 2004 season.

In orchards that contain mildew-susceptible apple cultivars, a mildewcide should always be included in at least the petal fall and first cover sprays, even if inoculum pressure is very low. Mildew control programs initiated after first cover are almost always ineffective. “

Arthropod Update

2005 Estimated Degree-Day Accumulation (Base 50F, from Jan. 1) for Selected Vermont Sites ¹

Date	So.Burlington	Shoreham	South Hero	Dummerston
5/01	77	91	72	106

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

Insect Activity at UVM HRC — Over the past few weeks, we have been monitoring **Tarnished Plant Bug (TPB)** and **Leafminer (LM)** activity with sticky visual traps. The following tables are the average number of insects observed per trap. The threshold levels at Tight Cluster for TPB are: 5/trap (retail), 3/trap (wholesale). For LM, the threshold level for McIntosh is 4/trap. You can see that in our non-sprayed blocks we have a very high number of LM adults active.

TPB	IPM Blocks		Non-Sprayed Blocks		
	Date	New Capture AVERAGE	Cumulative AVERAGE	New Capture AVERAGE	Cumulative AVERAGE
	4/11	0.33		0.17	
	4/18	0.44	0.78	1.17	1.33
	4/26	0.44	1.22	1.00	2.33
	5/02	1.33	2.56	0.17	2.50

LM	IPM blocks		Non-Sprayed Blocks		
	Date	New Capture AVERAGE	Cumulative AVERAGE	New Capture AVERAGE	Cumulative AVERAGE
	4/11	0.00		0	
	4/18	0.25	0.25	19.75	19.75
	4/26	0.17	0.42	36.12	55.88
	5/2	0.25	0.67	48.5	104.38

Early Pink is the time to position **European Apple Sawfly** traps in your orchard. Sticky white rectangular traps should be hung at head height, on south side of tree, within 18" of tree dripline near group of blossoms (but remove blossoms within 12 " of trap). It is recommended to use 1 trap/ 3-5 acres, with a minimum of 5 traps/block. The **action threshold** for this pest is:

- ◆ an average cumulative capture of 5/trap by petal fall in blocks receiving no pre-bloom insecticide, or an
- ◆ average cumulative capture of 9/trap by petal fall in blocks with pre-bloom insecticide.

The following are some expected arthropod “events” as DD increase:

Arthropod ‘Events’ Based on Degree-Day Accumulation ¹	
Pest/Phenology Event	Estimated DD Base 50 F for Event (from Jan 1)
STLM - 1st egg observed	58-130
Rosy Apple Aphid	56-116
Obliquebanded leafroller (OBLR) - 1st overwintered larvae observed	64-160
STLM - 1st generation adult peak flight	112-210
European Red Mite (ERM) - egg hatch observed	100-168

¹ Source of Estimated DD (Base 50F) for arthropod pest events: Pest Management Guidelines for Commercial Tree-Fruit Production 2005. A Cornell Cooperative Extension Publication, Table 14: "Degree-day accumulations (from January 1) corresponding to selected fruit phenology and arthropod pest events."

Azinphos methyl, USApple, and the EPA

FYI - -The following information was contained in an email from James R. Cranney, Jr. of USApple on April 29, 2005, and sent to State and Regional Producer Organizations including Steve Justis of the VT Agency of Agriculture. It outlines USApple's activity with EPA in regards to azinphos methyl:

“Approximately three years ago, the U.S. Environmental Protection Agency (EPA), Bayer CropScience and Makhteshim-Agan agreed to an arrangement that cancelled or phased out some uses of azinphos methyl (Guthion®), while maintaining other uses, such as apples, under a temporary registration. The apple use was retained on a temporary basis while Bayer CropScience developed additional data regarding azinphos methyl exposures to farm workers.

Bayer CropScience has completed its exposure studies, and submitted the data to EPA for review. USApple met with EPA in Nov. 2004, and discussed this issue at recent meetings with the agency to stress the need for azinphos methyl and the apple industry's interest in providing information to support the apple use.

According to EPA officials, the agency hopes to make decisions regarding the re-registration of azinphos methyl in the coming months, possibly by the end of the summer. Meanwhile, USApple has contacted EPA to determine if additional data are needed for the agency to conduct its benefits assessment.

The apple industry will face ongoing challenges on issues related to the impact of azinphos methyl use on endangered species, the role of azinphos methyl in relationship to other pesticides in controlling important pests and efforts by special interest groups to cancel the apple use.

Over the next several months USApple plans to continue its work with the U.S. Department of Agriculture, registrants and the apple industry to preserve the azinphos methyl apple use. This process is likely to include conference calls and meetings to generate use information that would improve EPA's benefits assessment.”

Read Labels Carefully

Please note that the **Calypso™ 4 Flowable Insecticide** label contains the following under the “Endangered Species” section of its label:

To protect the Indiana Bat and the Gray Bat in the states of Alabama, Arkansas, Connecticut, Georgia, Iowa, Illinois, Indiana, Kansas, Kentucky, Maryland, Michigan, Missouri, North Carolina, New Hampshire, New Jersey, New York, Ohio, Oklahoma, Pennsylvania, Rhode Island, Tennessee, Virginia, Vermont, and West Virginia, do not apply from one-half hour before dusk to one-half hour after dawn.

Thanks to Alan Eaton from UNH for giving a “heads-up” on this label restriction!

Contact Information

A Commitment to Excellence and Service:

If you have any questions or want to arrange for an orchard visit regarding your concerns, please call or write.

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