



UMassAmherst Outreach **UMass Extension**

Healthy Fruit

Volume 15, 2007

Prepared by the University of Massachusetts Fruit Program






Healthy Fruit, Issue 7, May 15, 2007

http://www.umass.edu/fruitadvisor/healthy_fruit/

Current DD accumulations

Location	Base 43F	Base 50F
Belchertown, UMass CSO observed (01/01/07 – 05/14/07)	522	312
Belchertown, UMass CSO SkyBit (01/01/07 – 05/14/07)	408	NA

Current bud stages

Location	McIntosh apple	Honeycrisp apple	Bartlett Pear	Redhaven peach	Cavalier sweet cherry
Belchertown, UMass CSO (05/14/07)	 petal fall	 late bloom	 petal fall	 petal fall	 petal fall

More bud stages at: <http://www.umass.edu/fruitadvisor/clements/2007budstages/050707/050707.html>

Upcoming meetings/events

Date	Meeting/event	Location	Time	Information
May 15	Fruit Team Twilight Meeting	UMass Cold Spring Orchard , 391 Sabin St., Belchertown MA	5:30 PM	Jon Clements 413-478-7219
May 16	Fruit Team Twilight Meeting*	Brookdale Fruit Farm , 36 Broad St., Hollis, NH	5:15 PM	George Hamilton 603-641-6060
May 17	Fruit Team Twilight Meeting*	Jaswell's Farm , 50 Swan Rd., Smithfield, RI	5:30 PM	Jon Clements 413-478-7219

Pesticide re-certification credits offered at each Fruit Team Twilight meeting. Please be on time to receive credit

* In cooperation with New Hampshire Fruit Growers' Assoc. and UNH Cooperative Extension

** In cooperation with Rhode Island Fruit Growers' Assoc.

The way I see it

Well, bloom and weather have looked pretty good across the state. The only issues have been an apparent lack of bee activity in the orchard, despite placement of hives, and the fire blight risk that sprung up late last week with the heat. Some growers were blaming the heat on lackluster bee activity, so we will wait and see how fruit set shakes out. Growers with high-risk blocks for fire blight likely applied strep late last week. Another potential period of high fire blight risk is upcoming tomorrow, so if you have open bloom, another strep application is in order in at-risk blocks of apples. (Pears are pretty well done bloom?) We have only had two scab infection periods since green tip, however, another significant wetting event is upcoming this week so be advised to cover up with a fungicide sometime during the period. After all, we are smack-dab in the middle of the accelerated phase of ascospore maturity. With petal fall comes the bugs -- please see the guest article on insecticide options at petal fall. And petal fall is time to think about chemical thinning and using Apogee to control growth -- Duane Greene has submitted his thoughts to Healthy Fruit on these topics.. Finally, thanks to all who ordered the 2007 New England Tree Fruit Pest Management Guide. You can still order on-line at the UMass Fruit Advisor -- <http://www.umass.edu/fruitadvisor/> -- and we will have them for sale at this week's twilight meetings. Which, by the way, hope to see you there! J. Clements.

Healthy Fruit Disease Elements

The apple scab watch. With trees at bloom to petal fall, ascospore levels high and rain in the forecast, this is the high risk part of scab season. What does that mean in terms of fungicide selection?

The key word here is **protect**. Post-infection treatments with today's fungicide options are riskier in terms of both control and resistance development. In orchards where effectiveness of SI is not known, that is, most New England orchards, the conservative approach is to assume that there is significant resistance. Where there's SI resistance, there are really two primary types of options for scab management at the present time, with variations on each one.

First, there are the broad-spectrum protectant fungicides, mancozeb and captan. Recent fungicide trials in orchards with SI-resistant scab have shown that the low rate of mancozeb (3 lb. per A of Dithane 75DF) plus a mid-range rate of captan (2.5 lb of Captan 80WP) provides scab control equal to that of other fungicides, including the strobilurines. In the tests, applications were made after an infection period.

In orchards where protection is being kept up, the first choice of protectants during this phase of the scab season would be a full rate of captan, the second a full rate of mancozeb (for example, 6 lb. per A of Dithane 75 DF), and the third a low rate of mancozeb. The combination would be the most effective approach, useful where there is a risk that some infection may have started, but it's obviously a little more expensive.

Mancozeb is a very good scab material, but the lower rates of mancozeb fungicides are not as effective as the high rates or as effective as captan, particularly when scab risk peaks, as it's doing now. Using the low rates of mancozeb early in the season, and up to the PHI limit after petal fall allows these fungicides to be used most effectively.

The second option at this time of year is to use a strobilurine, Flint or Sovran, in combination with a broad-spectrum fungicide. The strobilurines are very effective scab fungicides, but don't plan to use these fungicides as a bail-out. It will only shorten their useful lives. Instead, apply strobilurines as protectants, with a maximum of two applications from bloom through first cover. The strobilurines will also control powdery mildew, not a big issue in New England yet.

The scab season has moved past the recommended time for the anilinopyrimidine fungicides, Scala and Vanguard. These materials are best used before bloom, and are not as effective after that time.

By the way, mildew may not be a problem in our part of the world because it takes a few years for the disease to build up, SI fungicides will control it, and most orchards have used these fungicides over the past 15 years. And we all know that New England is cooler than the areas where mildew is a problem, such as Pennsylvania, New Jersey and the lower Hudson Valley.

Fire blight alarms. Last Thursday and Friday, warm, humid weather punctuated by some rain meant fire blight weather. Both of the models generally used in New England, Maryblyt and CougarBlight, indicated a high risk of infection.

Should we expect that within a few weeks, large numbers of apples and pears will start dying? No. Most orchards in the region don't have fire blight bacteria in or near them, and so even though the weather may set off warnings, without a source of inoculum, there will not be wide-spread fire blight infections.

Okay, so how does inoculum first get into an orchard? There are a few routes. For isolated orchards not near other growers fire blight is most likely to arrive on new trees. It may also come in on other kinds of nursery stock, because fire blight bacteria infect a number of species in the rose family. A new cotoneaster planting around the neighbor's house could bring fire blight into an orchard. Fire blight bacteria also produce a kind of biological super glue that allows them to stick together in long, invisible strands that can get blown for a half mile, perhaps more. Finally, insects may increase their foraging distances out to a half-mile or so, and carry the bacteria.

One of the most frustrating aspects of managing blossom blight on apples is the problem of knowing whether or not the bacteria are present when models say there's an infection. Applying a spray is an expense and a pain. However, a conservative approach would suggest applying streptomycin, the most effective fire blight material, when the models go off.

Fire blight, while still sporadic, has increased in New England over recent years. It's difficult to see a few infections that might hit one year, and be the start of a significant epidemic the next. And once a fire blight epidemic gets going, it is difficult to slow it down.

As of today, this is shaping up to be a high risk season for fire blight. More infections periods are predicted for the next few days.

Applications of streptomycin made Sunday won't be effective on Wednesday. A streptomycin application has a maximum working life of 72 hours. New blossoms open, and the material loses efficacy. After 3 days, start looking for the next infection period.

For maximum effectiveness, it's best to apply streptomycin at 4 to 8 oz. per 100 gal. dilute, or 12 to 24 oz. per A, with a material such as Regulaid before an infection. Regulaid improves absorption of the streptomycin. Streptomycin will have an effect if applied within 24 hours of an infection, but it is not as effective as a protective application.

Here are a few quick words on other materials. Yes, copper fungicides are effective against bacteria, but at the expense of tissue damage, including fruit russetting. Serenade and other biocontrols can also be effective, but results are inconsistent. In testing programs around the country, the standard for efficacy is streptomycin, which consistently performs better than other options.

Serenade and other options can be useful where streptomycin resistance has developed, but fortunately we do not appear to have that problem in New England. D. Cooley

Thinning and Apogee at petal fall

Petal fall is considered by most to be the first opportunity to thin apples. Since we have no idea about the weather conditions that will occur at other more traditional times to thin, it is important to start the thinning process at this time. Perhaps the most unsettling thing about petal fall thinning is that we can

not make an accurate assessment of initial set, thus there is a certain amount of guess work involved. However, the whole chemical thinning season might be considered a series of best guesses.

Petal fall thinning is recommended if bloom in the orchard was adequate and the pollination period, including bee activity, was fair to good. Over-thinning rarely occurs as a result of a petal fall thinning spray. Petal fall application of thinners is the one situation where you should not wait for favorable weather to be forecast before making an application. Once the bees are removed from the orchard petal fall application should be made. The only weather conditions to be considered for a petal fall application are do not apply in the rain and make the application under somewhat calm conditions to assure good spray coverage.

There are three thinners that can be effectively used at petal fall. Carbaryl is undoubtedly the most commonly used thinner. It has many advantages including the fact that it rarely over-thins, it can be applied again alone or in combination with other thinners at a later date, and it is capable of breaking up clusters. Many also feel that it may make thinning easier and safer for later thinner applications since it may establish growth differential of fruit within clusters. It is typically applied at 0.5 to 1.0 lb/100 gal. Where more aggressive thinning is required NAA (Fruitone-N) is a very good choice. It is a stronger thinner than carbaryl thus it should be used alone or in combination with carbaryl on more difficult to thin varieties. NAA is not as potent a thinner when applied at petal fall. For example an application of 8 ppm NAA at petal fall is somewhat comparable to an application of 4 ppm at the 7 to 12 mm stage. NAAm (Amidthin) may also be used at petal fall. It is frequently used at this time on Macoun or on early maturing varieties. Rates of 25 to 50 ppm are generally used.

Apogee is a plant growth regulator that inhibits terminal growth by suppressing the synthesis of gibberellins. The initial application should be made when terminal growth is 1 to 3 inches which generally occurs at petal fall or slightly earlier. Apogee is absorbed through the leaves. Early application is necessary for effective growth control since it requires 10 to 14 days for Apogee to start to reduce growth. While earlier applications may be desirable, there is generally insufficient leaf area available for effective uptake if application is made much earlier than petal fall. A second application of Apogee is recommended 2 to 3 weeks after the first and often an additional application is recommended 3 weeks after the second.

Apogee is effective over a relatively wide range of concentrations. We generally recommend an initial application of 3oz/100 gal based upon a tree row volume dilute calculation. While higher initial rates may slow growth slightly earlier, we recommend using the lower rate. Apogee reduces normal June drop thus making Apogee-treated trees more difficult to thin. In addition to early application other keys to successful use of Apogee are application with an effective nonionic surfactant and a water conditioner. The Apogee label suggest putting 1 pound of ammonium sulfate in the tank for every pound of Apogee used. Water conditions such as Quest or Choice at 2 quarts per 100 gallons have been as effective as ammonium sulfate.

Apogee is one of the most effective treatments to control the shoot phase of fire blight. Hence application for this purpose starts at petal fall but higher rates are used. Higher rates are required since part of the inhibitory activity of Apogee is due to metabolic changes in the tree brought about by Apogee. Subsequent follow up sprays will be required to maintain growth control and inhibition of fire blight. D. Greene

Guest article: apple insecticide options at petal fall

Peter Jentsch and Mike Fargione, Cornell University Hudson Valley Lab, reprinted from Tree Fruit Recorded Message for Saturday, May 12, 2007

Following is a summary of apple insecticide options at petal fall prepared by Peter Jentsch, Entomologist at the Hudson Valley Lab. Peter has also prepared companion videos on these subjects that are available on our web site. Primary insects of concern during and after petal fall include plum curculio (PC), European apple sawfly (EAS), obliquebanded leafroller (OBLR), codling moth (CM), mullein plant bug (MPB), tarnished plant bug (TPB) and rosie apple aphid (RAA). Secondary insects include white apple leafhopper (WALH), spotted tentiform leafminer (STLM) and the aphid complex.

Carbaryl as a thinner and insecticide:

Given the strong bloom in most varieties this season, the use of carbaryl or Sevin XLR at petal fall and 1st cover for thinning is going to be an important facet of crop load management. As a stand-alone insecticide, Sevin XLR when used at thinning has been shown in research trials to give good control of PC in light to moderate pressure blocks. If you're using Sevin for thinning, it will give control of the insect complex including PC, EAS, and CM. In heavy PC pressure blocks, it may not provide adequate control but will increase PC management when combined with other insecticides.

Organophosphate Insecticides:

Guthion 50WP is one of the most effective OP's for controlling PC, EAS and the lep. complex. It is not effective against the OBLR in most HV orchards due to insecticide resistance. Guthion is limited to 8 pounds per acre per season. In some cases the REI may prohibit the use of Guthion. At 32 oz./A we can use four applications per season. The re-entry interval for 2 lbs of product or less per acre is 14 days. In orchards where PC pressure is very heavy, this rate may be marginal. If you are including Carbaryl or Sevin as a thinner at either PF and or 1C, than additional insecticidal activity will be achieved, in which case the 32 oz./A rate may provide good results. In heavy pressure blocks 10 to 12 oz./100 or 40 to 48 oz./A may be needed, especially if carbaryl is not used as a thinner. The re-entry intervals at the higher rates are 21 days.

Imidan 70WP is also a broad spectrum with similar degrees of control to Guthion. Imidan can be used up to 30 pounds per season with re-entry intervals of 3 days and a pre-harvest interval of 7 days in commercial orchards and 14 days in pick-your-own orchards. At the high rate of 5 1/3 pound./A, it can be used a total of 5 times during the season. It is not very effective against OBLR and would require specific leafroller materials in the mix. For comparable control of PC using Imidan, the higher range of rates should be used.

Lorsban 75WG can be used only once post bloom. Lorsban has a maximum use rate of 2.67 pounds per season and a re-entry interval of 4 days. It is effective against PC, EAS, the lep. complex, and is very effective against the overwintering generation of OBLR.

Pyrethroids (IRAC class 3):

Unlike the OP's, the pyrethroids all have greater plantbug activity along with the broad spectrum activity for PC, EAS, OBLR and the internal lep complex. You will have reduced feeding damage during the last few days of high temperatures if you used a pyrethroid at late pink last week.

The pyrethroids are very similar to each other in activity against the pest complex. In studies conducted in vegetable crops on lepidopteran larvae, they decreased in efficacy as temperatures increased, suggesting that they are most effective during the spring.

They are effective against PC at their high rates, and when used with carbaryl at PF - 1C for thinning, will give excellent control of the full complex of insects.

Ramifications of the use and or overuse of the pyrethroids includes the significant reduction of the beneficial phytoseiid *Typhlodromus pyri* and possible development of resistance by both the internal lepidopteran larvae complex (codling moth, oriental fruit moth and lesser appleworm to name but a few) and obliquebanded leafroller. As OP replacements, they should be employed judiciously.

Asana has been used extensively since the mid-1980's. Warrior (Lamda-cyhalothrin) and Proaxis (Gamma-cyhalothrin) both have a 2.56 to 5.12 fl. oz./A rate range on pome fruit. Proaxis appeared to have greater residual in comparative tests on vegetable crops and a longer delay of aphid re-infestation than other pyrethroids (Michigan State '06).

Baythroid (cyfluthrin) was registered in NYS on apple last year and is restricted to two applications per year and a total of 2.8 oz per season.

Danitol (fenpropathrin) up to last year was used at 10 2/3 fl.oz./A in NY, or half the federally labeled rate. It can now be used at 16 fl. oz./A. It has good control of the pest complex, has demonstrated strong miticidal activity at the old NY reduced rate, and has been used extensively on the west coast for managing their stink bug complex at the federal rate. It has yet to be a proven management tool for the stink bug complex in NY with the reduced rate.

Neonicotinamides (IRAC class 4):

Neonicotinamides available for use on NYS apple include Provado, Assail, Actara, and Calypso. They have strikingly different impact on the insect pest complex. They have in common excellent control of the leafhopper complex, yet poor efficacy against the OBLR.

Assail stands out as an excellent internal lepidopteran larvae, apple maggot (AM) and aphid complex management tool, yet is weak on PC.

Actara and Calypso are excellent materials for PC and EAS. Calypso has also demonstrated superior activity against the green aphid complex and the internal lepidopteran larvae and will perform well at petal fall for these reasons. Calypso is allowed only 2 applications per season and placement of Calypso based on its pre-harvest interval of 30 days will limit its use near harvest on early varieties.

Provado has been the industry standard for the past ten years in leafminer management, and its use with reduced rates for leafhopper and aphid management has made it significantly more cost effective. It can be used to clean up RAA populations post bloom. It has been shown to increase European mite populations in trials at the Hudson Valley Lab, even with reduced rates.

Other Chemistries:

Avaunt has been used widely as a OP replacement for managing the PC, EAS, AM, leafhoppers, CM and the oriental fruit moth. With a 12 hour re-entry and 14 days to harvest it can be used as a late season material. With 4 allowable applications it can also be used during the petal fall timing as an OP replacement for PC and CM management at PF through 2nd cover. In field trials, it is comparable to Imidan against PC while in large blocks it has provided good commercial control of this pest.

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