UMassAmherst EXTENSION

Healthy Fruit

Volume 13, 2005

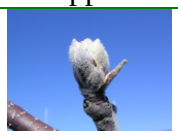
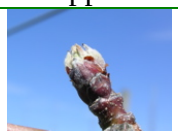
Prepared by the University of Massachusetts Fruit Team

Issue 2, April 12, 2005

Current DD Accumulations

Location	Base 43F	Base 50F
Belchertown, UMass CSO observed (01/01/05 – 04/11/05)	115	45

Current Bud Stages

Location	McIntosh apple	Honeycrisp apple	Pear	Peach	Cavalier sweet cherry
Belchertown UMass CSO (04/10/05)					
	green tip	green tip	swollen bud	swollen bud	swollen bud

Current bud stages also available on UMass Fruit Advisor, http://www.umass.edu/fruitadvisor/

Upcoming Meetings/Events

Date	Meeting/Event	Location	Time	Information
April 13	Fruit Team Twilight Meeting*	Brookdale Fruit Farm 36 Broad St. (Rte. 130) Hollis, NH	5:30 PM	Jon Clements 413-478-7219 George Hamilton 603-641-6060
April 14	Fruit Team Twilight Meeting**	Keown Orchards 9 McClellan Rd. Sutton, MA	5:30 PM	Jon Clements 413-478-7219 Heather Faubert 401-874-2750

Two pesticide recertification credits offered at each Fruit Team Twilight meeting. Please be on time to receive credit
* In cooperation with New Hampshire Fruit Growers' Assoc.
** In cooperation with Rhode Island Fruit Growers' Assoc.

It's here…

It seems like it was just yesterday the snow finally melted, but as usual, the weather catches up and there is no doubt spring is here now. Apples are showing green-tip and peach buds are swollen. All indications are the winter has not been too hard on trees or fruit buds. Fruit buds are numerous and robust, so we can be optimistic at this early point in the season. An important orchard activity now is getting brush cleaned up so that first spray of the season can go on. J. Clements

Gear up for that oil spray

Despite the recent appearance of several new (and very effective) miticides, an early season oil spray is still the best hedge against a mite problem later in the season. A 2% oil spray from now through ½"-green, then reduced to 1% through tight cluster should be applied whenever weather conditions are

favorable – this means no frost for 48 hours preceding and after the oil. (That is a 4-day window.) Wind should also be minimal as good coverage is essential. And, in the ideal world, oil sprays should be applied dilute. A temptation is to concentrate (both water and oil) oil sprays, but it is not recommended. What follows is an excerpt from an article that appeared in the April 4, 2005 Scaffolds Fruit Journal. (http://www.nysaes.cornell.edu/ent/scaffolds/) It is Art Agnello's response to a grower question about coverage and concentrate oil sprays. Makes sense to me. (Don't forget oil and Captan are not compatible within a week of each other – use an EBDC fungicide if tank mixing and scab control near an oil application are necessary.) J. Clements

I have to confess that this seemingly standard recommendation (which we have been giving for many more years than I've been here) appears not to be as straightforward to some as we thought. Our recommendations for ERM control using oil are given in terms of gallons per 100 gal of spray solution, so the 2 gal/100 at green tip would mean a 2% solution, and 1 gal/100 at TC means 1%. These rates come directly from the efficacy studies conducted on ERM eggs by Paul Chapman and Sieg Lienk as far back as 1948, and published in the proceedings of many Hort Society meetings since then.

The studies showed that good coverage of ERM eggs using 2% oil when the trees were at the green tip stage caused 98% mortality of all the eggs present, which in most cases was enough to prevent mites from building up to damaging levels for the rest of the season. Naturally, because these were **research** trials, and Chapman was a very meticulous researcher, an important aspect of the work needs to be clarified -- "good coverage" means that the eggs were completely covered with a film of the spray solution, so the actual amount (of water **and** oil) needed per acre had to do with how big the trees were.

In Chappie's time, most of the trees were standards on seedling rootstocks, so he applied 300 gallons of spray solution per acre to ensure that all surfaces of the tree's canopy, including the eggs deposited on them, were thoroughly wetted. This would result in 6 gal of oil per acre being applied. In spraying smaller trees, which might need only 100-200 gal of spray solution per acre to thoroughly cover all the surfaces, Chapman never recommended concentrating the oil -- mixing more than the 2 gallons per 100 gallons in the tank -- to maintain that per-acre rate of 6 gal of oil. If 200 gallons of spray solution were applied per acre, that would equate to 4 gal of oil per acre; if only 100 gallons, that would result in 2 gal oil per acre. If the trees are sufficiently wetted to cover the eggs, then this amount (i.e., 2%, or 2 gal of oil per 100 gallons in the tank) is enough to suffocate the eggs and achieve control. Concentrating the oil so that the effective strength of the spray solution is 4% (4 gal per 100) or 6% (6 gal per 100) was never recommended, firstly because such a high "dose" wasn't needed to smother the eggs, and secondly, using those high rates would increase the chances of phytotoxicity -- oil is an effective penetrant, which means too much of it could carry unwanted external materials (like the a.i.'s of fungicides) into the internal tissues, or, in combination with low temperatures it can cause cell damage. This is a case where, because of its **physical** mode of action, the use of oil differs a bit from what growers are accustomed to doing when they concentrate insecticides and fungicides.

You will also have noted the passage that refers to being able to get acceptable control using a 3X, or 100 gal/A, application. This is a concession that Chappie made as a compromise to balance the need for optimal coverage of the tree canopy and the time efficiency needed to justify the time and effort involved in making an oil application instead of using a chemical miticide. So in large, standard trees that otherwise should be getting 6 gal of oil in 300 gallons of spray per acre, he conceded that adequate control **might** be possible by putting those 6 gal of oil in 100 gallons of spray per acre -- naturally, he always said it wouldn't be good enough to carry you through the whole season, which is why rescue miticide treatments are so often needed later on in the summer.

So far, I've only addressed the 2% rate recommended during green tip. The recommended rate needed for effective control decreases as the bud stage develops. ERM egg development is closely tied to tree phenology, and in our part of the world, Chapman found that when the buds were at tight cluster, the eggs were so much closer to hatching (i.e., respiring more actively) that it took a less strong oil solution to kill them -- just 1%, or 1 gal per 100 gallons in the tank.

This long-winded preamble was necessary in order to be clear in my response to your questions: "How much oil per 100 gallon in the tank?"

As stated above, use 2 gal per 100 if the trees are at green tip (to half-inch green), and reduce it to 1 gal per 100 if they've reached tight cluster (the exception being as discussed in the "3X compromise", above).

"How much water to throw per acre?"

This is the critical determining (and sometimes limiting) factor. None of these recommendations make any sense if you don't apply enough to get **good** coverage. This is why, for growers with big trees, oil is not a popular option (too much water to haul, too much time, etc.) If you cut the water actually needed to cover all the tree surfaces, this means that some of the tree won't be thoroughly wetted by the spray, so any ERM eggs on those surfaces won't be

contacted. Concentrating the oil back up to 3X only increases the strength of the droplets that actually land on and cover a mite egg; those not contacted will hatch as normal; in contrast to a chemical miticide, the mites aren't susceptible to the oil's effects once they start walking around.

"How much oil do I spray per acre?"

This question now takes care of itself, once you've determined a) the rate of oil per 100 gallons (in other words, the % solution) to use based on the tree phenology stage, and b) the amount of finish spray solution to apply per acre in order to get that good coverage.

Reprinted from Scaffold Fruit Journal, Vol. 14, No. 3, April 4, 2005

Peach leaf curl

Because some peach orchards were minimally sprayed last year (no crop from a winter freeze), the threat of peach leaf curl may be higher than average this year. If you did not apply a copper spray last fall after leaf drop, you can still apply one now through bud swell. Copper has the added benefit of providing some control of bacterial canker and spot at this time too. If buds have broken and green leaves start to show, you will be better off using a fungicide such as Bravo or Ziram. J. Clements

Copper for sweet cherries

Copper is also timely now for sweet cherries to help control bacterial canker. Bacterial canker is one of the bigger threats to sweet cherry tree health in our cool and wet growing environment. Cultivar susceptibility varies widely, and trees under stress or heavily pruned are more susceptible. Bacterial canker spreads and infects trees in the spring (and fall) during cool, rainy weather. Open leaf scars, pruning cuts, and frost damage are sites of infection. A copper spray should be applied around bud swell, at lower label rates in the spring. A fall copper application (higher rate) is also advisable. Pruning of sweet cherries should be done AFTER harvest. J. Clements

Time for Notching is Nearly Over!

Notching is one of the few reliable means of enhancing branch development in apples. Young trees particularly can benefit from notching as a way to encourage new branches in specific parts of the tree. The process is simply to make a cut through the bark into the wood, perpendicular to the stem, and just above a bud that you wish to produce a shoot. The cut can be made with a hacksaw blade and should be about ½" long. The best timing is between 4 and 2 weeks before bloom, but is still somewhat effective at bloom. Two-year-old wood is ideal for notching, but it can work on older wood as well. Results are nearly as good on one-year-old wood, but chances of breakage in the notching process increase dramatically. Choose the largest buds, since they will result in the longest shoots. Overall, you should expect in excess of 70% of these notch buds to produce useable shoots. W. Autio

The Smell of Captan in the Morning

Green-tip, in the world of apple diseases, starts the blood racing, and maybe the stomach acid as well. This is particularly true now. In the past, growers could consistently depend on different types of post-infection scab fungicides to manage the disease. These fungicides were a significant improvement over materials that needed to be sprayed before, or in some cases, during an infection period. For several years, in orchards that were free of scab, first applications of fungicide could be delayed to tight cluster with no problem.

Those days are apparently over. The news from Cornell and New York is ominous. Resistance is becoming an increasing threat, and there really aren't any post-infection fungicides that don't carry with them the risk of scab resistance. That's the bad news.

The good news is that we haven't yet seen wide-spread problems with resistance in Massachusetts to even the oldest of these fungicides, dodine (Syllit) or the benzimidazoles (Topsin M, Methyl T). There have been isolated cases, but many growers in the state still use these fungicides successfully.

The reality is that the clock is ticking, not just on these materials but on other groups of fungicides. This is important: in looking at resistance, fungicides fall into groups. Different trade names, and even different chemicals fall into groups that generate the same types of resistance in the scab fungus. Dodine is it's own "group", but Topsin M and Methyl T fall into the benzimidazole group; Rubigan, Nova and Procure are in the SI's; Sovran and Flint are in the strobilurines; and Vangard and Scala (pending registration on apples in MA) fall into the anilinopyrimidines. Using one fungicide from a group is the same, in terms of resistance, as using any other fungicide in that group.

The research from Cornell indicates that any fungicide has a limited life. This has been expressed in terms of the number of applications. For example, The SI fungicides appear to be good for about 60 applications, while it has been estimated that the strobilurines may be effective for only 24. How exact these estimates are is still open to some debate, but the bottom line is that for most of our more modern fungicides, there is a limited life and they need to be used carefully. In addition, it's not good to be depending on a fungicide for post-infection activity, only to discover there isn't much there.

What to do? Probably the best approach is to use a mixture of fungicides that is centered around the older, broad-spectrum materials that do not generate resistance: the EBDCs and captan. It's also a good idea to get into the practice of inoculum reduction, particularly in blocks that had scab the previous year. Finally, to get a read on the extent of resistance to different fungicides, just so there are fewer nasty surprises, it's now possible to test orchards for the degree of scab resistance.

Captan and the EBDCs remain relatively inexpensive. However, they are protectants. Mancozeb, the most common EBDC, if used at the 3 lb./acre rate, doesn't allow much room for timing or rate errors. And as Jon points out, captan needs to be kept away from oil. The spraying season for these materials should not be delayed, particularly if there is any suspicion that scab was present the previous season. Start with green tip sprays.

Reserve the post-infection fungicides for "as needed" applications in the high-risk part of scab season. That is, use them from pink through petal fall. In some seasons, it would be reasonable to use a scab program that depends exclusively on mancozeb (or other EBDC) and/or captan. However, if there's some reason to think that fungicide protection was not adequate during an infection period, a post-infection fungicide could be used as appropriate to deal with the problem.

This year, it's possible for growers to test scab from their orchards for resistance. For many fungicides, such as the Sis, the shift is gradual. It's possible to determine whether problems are just around the corner, or remain distant. Wolfram Koeller at Cornell in Geneva is gearing up to offer this diagnostic test service for the 2005 season on a limited scale, for an $800 fee. Growers interested in this service should contact Wolfram Koeller at wk11@cornell.edu or 315-787-2375. D. Cooley