scaffolds

Update on Pest Management and Crop Development

F R U I T J O U R N A L

March 22, 2010 VOLUME 19, No. 1 Geneva, NY

GENERAL INFO

WE'RE BACK

NATURAL ORDER (Art Agnello, Entomology, Geneva)

❖❖ Last November, a beetle was brought into my lab for identification by someone from the local hospital. It had arrived in their kitchen in a shipment of leaf lettuce from California. Over an inch long, shiny black, and extremely active, it would no doubt have caused quite a scene had it ended up in someone's salad. I was able to identify it as a tenebrionid, a type of ground beetle, and it closely resembled a field guide photo of a California broad-necked darkling beetle, a night-active species that feeds on fungi, lichens and other plant materials. I put it in a clear plastic clamshell on my desk, expecting it would last only a few days more so that I could pin it for my collection, but after a week or two, it showed no signs of slowing down. Curious to see how long it would hang on, I transferred it to a terrarium with some potting soil, bracken fungi and an old bird's nest, supplying it with water, apple pieces and of course, leaf lettuce. The beetle did very well in this captivity, so I brought the terrarium home when we reached the Christmas break.

Late in January, I noticed him moving a little slowly, and one morning I found him floating on his back in the water dish; however, he gave a few kicks when I picked him up by one leg, so I set him on the soil to pass away in peace. The next day, however, he was back on his feet, clambering over the apple slice as usual. This false-death scenario was repeated several times, each time followed by a recovery to apparently normal status, and he's still alive today. Some friends have by now taken an active interest in the "super beetle", although they probably think it's a bit odd to devote so much time to this insect. Nevertheless, I suppose it's only fair to wait it out now just to see how long he'll last, having officially made it to spring. Besides, he's served to keep me aware of the insect world these past 4 months, until it comes time to pay attention to the species slumbering (but due to awaken soon) in the orchards.

continued...

IN THIS ISSUE...

Playing Post Office

As before, Scaffolds will be offered only via email and the web this year, formats that seem to be fairly reliable and practical for most readers. We encourage subscribers to inform us of any address changes, so that there are no interruptions in delivery of this newsletter; if we don't hear from you (or get error messages when we email), we won't know where you are.

We will again be sending Scaffolds out as a pdf file via email each Monday afternoon. For those desiring a more screen-friendly format than the double column we currently use, I am willing to send an unformatted plain text version to anyone who requests it, in addition to or in place of the pdf. There is also a web version available from the NYSAES server, which is normally up by Tuesday or Wednesday each week, at: http://www.nysaes.cornell.edu/ent/scaffolds.

As always, we are happy to consider contributions (particularly from N.Y. sources) in the form of articles on topics in any of the fruit crop protection or crop production areas, as well as N.Y. field observations, trap data, etc.❖❖

EVENT REMINDER

Save the Date - 2010 Cornell Fruit Field Day

Thursday, July 29 is the date set for the 2010 Cornell Fruit Field Day, to be held at the Experiment Station in Geneva, NY. Program and registration details, as well as sponsorship information will be forthcoming soon. Potential corporate sponsors are requested to send contact information to Debbie Breth, dib1@cornell.edu.

PHENOLOGIES

Highland: Red Delicious, McIntosh at green tip. Stone fruits, pear at sswollen bud.

WHAT'S NEW?

PRODUCT REGISTRATION UPDATE (Art Agnello, Entomology, Geneva)

CHEM NEWS

Label Changes

• The use of Guthion/azinphosmethyl products this year continues to change slightly from its previous rates, in accordance with the scheduled phase-out guidelines previously established by EPA. In both apples and pears, a total of 4 lb formulated product/A is allowed in 2010 — a reduction from 2009 in apples, but the same as last year for pears. This will change to 3 lb/A for both crops in 2011–2012, before being completely phased out. In cherries, it's 1.5 lb/A for 2010–2012. Recall that there is a 60–ft buffer required from permanent bodies of water and occupied buildings, and a PHI in Pick-Your-Own operations scaled from 33–44 days, according to use rate. Read your labels carefully. These products had been previously excluded from use on peaches, nectarines, plums, prunes, and apricots.

continued...

scaffolds
is published weekly from March to September by Cornell University—NYS Agricultural Experiment Station (Geneva) and Ithaca—with the assistance of Cornell Cooperative Extension. New York field reports welcomed. Send submissions by 3 pm Monday to:

scaffolds FRUIT JOURNAL
Dept. of Entomology
NYSAES, Barton Laboratory
Geneva, NY 14456-1371
Phone: 315-787-2341 FAX: 315-787-2326
E-mail: ama4@cornell.edu

Editors: A. Agnello, D. Kain

This newsletter available on CENET at: news://newsstand.cce.cornell.edu/cce.ag.tree-fruit
and on the World Wide Web at:
http://www.nysaes.cornell.edu/ent/scaffolds/

• Warrior (1EC), EPA Reg. No: 100-1112, has been phased out. There may be some still in spray sheds and dealers' hands that can be used up, but from this point on, any Warrior shipped to dealers will be Warrior II (2.08EC), EPA Reg. No: 100-1295.

New Labels

Some new products added to the 2010 NY Pest Management Guidelines for Commercial Tree Fruit Production include:

• Adament (Bayer) fungicide, EPA Reg. No: 264-1052. This is a pre-mix product containing the strobilurin trifloxystrobin (the a.i. in Flint) and the SI tebuconazole (the a.i. in Elite); registered in pome and stone fruits.

• Altacor (Dupont) insecticide; active ingredient: chlorantraniliprole/ Rynaxypyr, EPA Reg. No: 352-730. This product belongs to a new chemical class, the anthranilic diamides. Altacor is labeled for the control of a range of insect pests in pome and stone fruits, including codling moth, oriental fruit moth, and obliquebanded leafroller.

• Movento* (Bayer) insecticide; active ingredient: spirotetramat, EPA Reg. No: 264-1050. Movento is a tetramic acid registered for the control of a number of indirect pests in pome fruits and stone fruits, primarily aphids (including woolly apple aphid), mealybugs, pear psylla, and San Jose scale. (*see note below on current registration status)

• Portal (Nichino America) acaricide, insecticide; active ingredient: fenpyroximate, EPA Reg. No: 71711-19. Portal is a phenoxypyrazole acaricide and insecticide labeled for use in apples and pears to control European red mite, twospotted spider mite, pear rust mite, leafhoppers, mealybugs and pear psylla.

• Rage (FMC) herbicide, EPA Reg. No: 279-3307. This product is a pre-mix of the active ingredients glyphosate (a.i. of Roundup) and carfentrazone (a.i. of Aim).

• Vintage (Gowan) fungicide, EPA Reg. No: 10163-275, is the new name for fenarimol, previously sold as Rubigan, which it replaces; registered in apples, pears and cherries.

A few additional products received a NYS registration too late to make it into the Tree Fruit Guidelines, so please make a note of the following:

• Centaur (Nichino America) insecticide; active ingredient: buprofezin, EPA Reg. No: 71711-21. This product is an insect growth regulator registered in pome and stone fruits for the control of San Jose scale, mealybugs, leafhoppers and pear psylla.

• Isomate-PTB Dual (Pacific Biocontrol/CBC America) pheromone, EPA Reg. No: 53575-34. This polyethylene "rope" or "tie" dispenser is formulated for mating disruption of both greater and lesser peachtree borer in stone fruits; it replaces the Isomate-LPTB product.

• Voliam Xpress (Syngenta) insecticide; active ingredients: lambda-cyhalothrin, chlorantraniliprole; EPA Reg. No: 100-1320. A pre-mix of the a.i. of Altacor plus the a.i. of Warrior, registered in pome and stone fruits for a wide range of pests.

The Lorsban Situation

Keeping current with Lorsban product labels continues to be a challenge. Last year (Issue No. 5, April 20), I printed a table summarizing the use guidelines for each of the three Lorsban products (Lorsban 4E, Lorsban Advanced, and Lorsban 75WG). Any of those products purchased last year that are still in growers' hands may continue to be used as per their respective labels. However, Lorsban 75WG purchased this year has a new label that 1) eliminates the petal fall use in apples, and 2) eliminates the use of more than 1 application per season. Therefore, unless you are using 2009 Lorsban 75WG, it is now prohibited to apply ANY chlorpyrifos product in apples more than ONCE per season, whether it be as a pre-bloom foliar spray or as a pre- or post-bloom trunk spray. Read the label carefully.

The Movento Situation (so far)

Early in 2009, environmental groups brought a lawsuit against EPA in the Southern District of

continued...

New York challenging EPA's decision to register spirotetramat, the active ingredient in Movento and Ultor brand insecticides. The lawsuit sought to invalidate the registrations of Movento and Ultor, based in part on the procedure EPA followed in processing the registration. Specifically, EPA did not publish a notice in the Federal Register when the application for registration was submitted, announcing the application and soliciting public comment on it. Movento received a NY registration in August; however, on December 23, 2009, the court concluded that because EPA failed to publish a notice of its receipt of the application for registration, the EPA's registrations of Movento and Ultor would be vacated.

After several rounds of court motions and rulings, the EPA issued an Interim Cancellation Order for Movento and Ultor on March 12, stating that "use of product in the possession of the applicators is permitted provided such use is consistent with the previously approved labeling for the products." Growers can continue to use material they have purchased that is in their possession. However, until the EPA publishes a final order either continuing or modifying the registration situation, it isn't possible to purchase any additional Movento or Ultor. Stay tuned.

Rimon 24(c) NY Registration

On March 4, the NYS DEC granted Chemtura Corp. a FIFRA 24(c) Special Local Need registration for the use of Rimon 0.83EC (EPA Reg. No: 66222-35-400) insecticide on apples for the control of a range of pests including codling moth, oriental fruit moth, obliquebanded leafroller, spotted tentiform leafminer, and redbanded leafroller. This product, which contains the a.i. novaluron, is an insect growth regulator that disrupts chitin synthesis in immature insects and eggs deposited on residues; it has no effect on adult stages, and must be ingested to be effective. One application per season is allowed, and users must have the SLN label in their possession at the time of application.

Actara 24(c) NY Registration

Today we received word that the NYS DEC has issued a new Special Local Need label for Actara 25WDG (Syngenta, EPA Reg. No: 100-938). Unlike the previous such registration in effect for the past several years, this label allows a maximum of 0.172 lb a.i./A each year, which is 2 applications at the 5.5 oz/A (high) rate of formulated product. Also, the new label expands its use to all stone fruits. The list of pest species covered includes aphids, leafminers, leafhoppers, plum curculio, European apple sawfly, pear psylla, mealybugs, plant bugs, stink bugs, and thrips. The PHI varies depending on crop and use rate; users must have the

DELE

PROOFER'S MARKS
(Art Agnello,
Entomology, Geneva)

ADDENDUM

❖❖ We've never managed to publish a Tree Fruit Guidelines that was completely free of errors (at least not for more than a week or so), and this year is no exception, so get out your red pens and make the following corrections to the hard copy of the 2010 edition (we managed to correct most of these errors in the online version):

p. 176, Section 17.3: delete the last 4 sentences on Thionex, as the current label no longer includes the section on preplant dips. Only Lorsban products retain this use.
p. 178, Tarnished plant bug: the Leverage entry should be deleted, as it is not allowed to be used pre-bloom.
p. 198, Japanese beetle: the PHI for Provado is 7 days.

❖❖

DISEASES

BUMMER CROP

A NEW PARADIGM FOR CONTROLLING APPLE SCAB

(Dave Rosenberger, Plant Pathology, Highland)

❖❖ Many apple growers in the northeastern United States had difficulty controlling apple scab in 2009 due to the cool, wet summer that allowed scab to remain unusually active right up until harvest. As a result, the average NY apple orchard probably has more scab ascospore potential this spring than anytime during the previous 40 years. A wet spring in 2010 could cause disastrous losses to apple scab if corrective strategies are not implemented for the 2010 season.

Even though the "average" NY orchard had scab problems last year, there were still some orchards where scab was well controlled (i.e., virtually no leaf scab at the end of summer). In orchards where scab was not a problem last year, the same control programs that worked in 2009 will probably work again in 2010. Growers who had clean orchards last fall can stop reading here because they probably have better things to do (and they already know what is working in their orchards!).

If scab was not well controlled last year and one of the DMI fungicides (Rubigan, Rally, Procure, Inspire Super, or Indar) was applied two or more times after bloom, then there is a high probability that resistance to DMI fungicides played a role in the scab control failure. Where DMIs are still active, back-to-back applications of a DMI fungicide anytime after bloom almost always arrest further scab development, provided the applications are made in a way that ensures complete coverage of the tree canopy. Furthermore, resistance testing conducted by Kerik Cox over the past three years has shown that 78% of the 93 orchards that he tested contained populations of DMI-resistant scab that would be expected to trigger control failures. Note that this was not a random sampling of orchards since most samples presumably came from "problem orchards." But orchards that had scab last year are now "problem orchards," so generalizing the results from Cox's resistance testing may be appropriate.

In orchards with DMI resistance and a high level of overwintering scab inoculum, new paradigms for scab control must be explored. None of the other fungicides that are currently available can fill the gap that occurs when scab becomes resistant to the DMI fungicides because none of the remaining fungicides can stop scab development after infection with the same effectiveness as the DMIs.

Where DMI resistance is documented or suspected, apple growers MUST take extra precautions to protect green tissue ahead of rains. An important corollary is that all fungicides, but especially protectant fungicides, provide better disease control in low-inoculum orchards than in high-inoculum orchards. Therefore, growers with DMI-resistant scab now have a critical incentive for using inoculum reduction strategies to control scab. A triple whammy consisting of a high-inoculum orchard, a wet prebloom period, and resistance to DMI fungicides will very likely result in sub-par scab control. Fortunately, there are a number of documented methods for converting high-inoculum orchards into low-inoculum orchards, or at least lower inoculum orchards.

For high-inoculum orchards, growers should employ one of seven options noted below, all of which have been shown to reduce ascospore production by 50 to 90 percent:

1. Apply a urea spray (42 lb/A in 100 gal of water/A) to leaves on the trees just prior to leaf drop in autumn.

2. Apply a urea ground spray (same rate as #1) to fallen leaves in late autumn (mid-November or later).

continued...

3. Apply dolomitic limestone at 2.5 to 3 tons/A to fallen leaves in late autumn.

4. Shred leaf litter with a flail mower in late autumn after leaves are blown or brush-raked from beneath trees.

5. Shred leaf litter as described above in spring.

6. Apply a urea ground spray in spring (same rate as #1).

7. Rake or vacuum up leaves and physically remove them from the orchard.

Option 7 is most useful for homeowners and small orchards where a riding mower with a leaf-bagging attachment can be used to collect leaves weekly as they fall in autumn. Of course, it will prove effective only if leaves beneath trees are raked or blown into the sodded row middles where they can be accessed by the riding mower.

Growers who employed one of options 1–4 noted above should not require any additional inoculum-reduction treatments in spring. Where an inoculum reduction strategy was applied last fall, the next critical component of the scab control program is to ensure that buds are protected with copper or a fungicide prior to the first scab infection period.

Where nothing was done last fall to reduce scab inoculum, growers can still employ options 5 or 6. The treatments suggested in options 1–4 generally work (i) by softening leaves so as to enhance removal of leaf litter by earthworms; (ii) by providing nitrogen to enhance growth of saprophytes that degrade fallen leaves; and (iii), in the case of flail mowing, by enhancing breakdown via better soil contact and more leaf edges that can be invaded by microbes. Given those factors, one might assume that inoculum-reduction strategies implemented in spring would be less useful because there is less time for leaf degradation to occur following treatment and prior to the time that ascospores are released. Fortunately, some additional mechanisms come into play when leaf shredding or urea sprays are applied in spring.

Research has shown that urea applied in spring causes direct toxicity to the apple scab fungus in the leaf litter. Ascospores in leaves treated with urea in spring either fail to develop or fail to discharge. Thus, urea ground sprays can suppress ascospore production even if the urea is applied after green tip. However, if urea is applied via airblast sprayer after green tissue is present on trees, the uptake of urea into the green tissue may "soften" the tissue and make it more susceptible to subsequent damage from oil, copper, sulfur, or captan sprays that are applied within a week of the urea application. Thus, if a urea ground spray is applied after green tip, it might be safer to apply the urea with a boom sprayer rather than with an airblast sprayer, because the latter would also deposit the urea throughout the tree canopy.

Leaf shredding applied in spring can still speed leaf degradation prior to peak ascospore discharge, which usually occurs when trees reach the pink bud stage. More importantly, however, leaf shredding in spring re-orients the pieces of leaf litter so that about half of the leaf litter will be upside-down. In our region, the scab fungus begins in late winter to form the pseudothecia that eventually hold ascospores that are ejected into the air in spring. The fungus orients the ascospores to shoot out of the upper surface of the leaves as they are positioned on the ground. If the leaf litter is turned over in late March or April, ascospores in those pieces of leaf litter will discharge harmlessly into the soil surface, and this mechanism probably explains why spring leaf shredding was effective when it was tested in New Hampshire in the early 1990s.

Using an inoculum reduction technique does not negate the need for regular fungicide sprays beginning at the green tip bud stage. Rather, inoculum reduction should be viewed as a necessary supplementary tool for keeping scab in check where DMIs are no longer effective and where scab was not controlled the previous year. Inoculum reduction should be viewed as a policy to insure against failure of normal protectant fungicide programs.

continued...

Until we find a replacement for DMI fungicides, inoculum reduction will become part of the standard paradigm for controlling apple scab in commercial orchards where scab was not well controlled the previous year.

In next week's issue of Scaffolds, I will discuss various fungicide options for controlling scab from green tip through early cover sprays. ❖❖

FIELD NOTES

SCAB UPDATE

SCAB UPDATE FOR THE HUDSON VALLEY
(Dave Rosenberger, Plant Pathology, Highland)

❖❖ At the Hudson Valley Lab, we had five consecutive days (March 17–21) with daytime high temperatures >65°F. Piles of plowed snow were still evident at the edges of some parking lots, thanks to the heavy snow that we received February 24–26, but early-blooming apple trees in our orchards were at green tip on March 21. Some early cultivars on M.26 rootstocks were at quarter-inch green by this morning (March 22), and even some later-blooming cultivars (such as Golden Delicious) are now showing green tissue. The March 21st date for green tip at the Hudson Valley Lab matches the earliest date in nearly three decades, with only 1990 having an equally early date for green tip. Average date for green tip at the Hudson Valley Lab over the 30 years for which we have records is April 5.

Fritz Meyer completed a traditional ascospore squash mount and discharge test with leaves collected this morning (March 22) from an eastern slope in our orchards. He found <1% mature ascospores and no discharge in the shooting tower.

Given those spore counts, we would normally state that growers could ignore the scab infection period that started today just before noon. However, our previous experience in using our spore counts to advise delays in early season scab sprays may be irrelevant this year because many orchards have high inoculum levels and because orchards with DMI-resistant scab will have no way to stop a scab epidemic if the current infection period allows scab to become established on even a very small number of buds.

Thus, despite a very low scab spore count, we advise that all Hudson Valley apple orchards should receive a fungicide spray ASAP if they have not already been covered with copper or a fungicide. Mancozeb will be very effective even if it is applied during a light drizzle. Alternatively, if one can find a period between rains when sprays can dry, Scala and Vangard will both provide at least 72 hours of post-infection activity (counting from the start of the rains) under the temperatures predicted for this week (30s and 40s). Syllit (dodine) would also be a good choice for post-infection activity if the orchard does not contain dodine-resistant apple scab.

Scala, Vangard, and Syllit will NOT perform well if applied during rains, and all three of these should be applied in combinations with mancozeb. Mancozeb should be combined with Syllit to ensure against failures if dodine resistance is present where it is not expected. Mancozeb should be combined with Scala and Vangard because these latter fungicides do not redistribute very well. Tests at the Hudson Valley Lab suggest that the lower end of labeled rates for Scala and Vangard will still provide 72 hr of post-infection activity when these fungicides are combined with mancozeb. ❖❖

The Super Beetle

PEST FOCUS

Highland:
Pear psylla egg laying has begun. **Green fruitworm** 1st catch 3/19. **Redbanded leafroller** 1st catch today (3/22).

UPCOMING PEST EVENTS

	43°F	50°F
Current DD accumulations (Geneva 1/1–3/22/10):	64	22
(Geneva 1/1–3/22/2009):	48	13
(Geneva "Normal"):	39	11
(Highland 3/1–3/22/10):	80	21

Coming Events:	Ranges (Normal ±StDev):	
Green fruitworm 1st catch	58–130	16–58
Pear psylla adults active	31–99	8–34
Pear psylla 1st oviposition	40–126	11–53
Redbanded leafroller 1st catch	107–175	38–78
Spotted tentiform leafminer 1st catch	111–197	41–91

NOTE: Every effort has been made to provide correct, complete and up-to-date pesticide recommendations. Nevertheless, changes in pesticide regulations occur constantly, and human errors are possible. These recommendations are not a substitute for pesticide labelling. Please read the label before applying any pesticide.

This material is based upon work supported by Smith Lever funds from the Cooperative State Research, Education, and Extension Service, U.S. Department of Agriculture. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the view of the U.S. Department of Agriculture.