scaffolds

Update on Pest Management and Crop Development

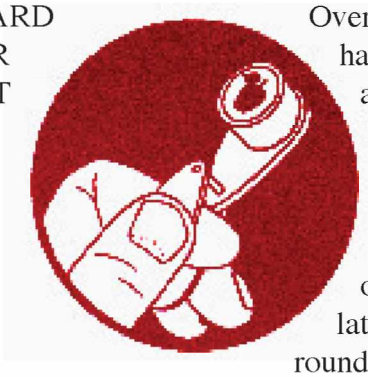
F R U I T J O U R N A L

August 18, 2008 VOLUME 17, No. 22 Geneva, NY

INSECTS

LAST LAP

ORCHARD RADAR DIGEST



Over the last four growing seasons, we have tested a number of insecticides against these borers. Lorsban is very effective for this use and we would strongly urge growers to take advantage of it where needed. In 2001-2003 we compared some other materials, including white latex paint, endosulfan, Avaunt, Surround, Intrepid, Danitol, Imidan, spinosad and Esteem with Lorsban, with varying results. To make a long story short, only Avaunt, Danitol and, possibly Esteem, applied two or three times in midsummer, provided control comparable to one application of Lorsban. Assail and rynaxypyr were effective when applied only once in midsummer but, obviously, will control only the summer generation. Rynaxypyr's trade name is now Altacor, which we anticipate should be registered for use in NY by next season.

Our tests so far have shown that borers can be controlled season-long by applying Lorsban at various times in the spring and summer.

continued...

Geneva Predictions:

Codling Moth

Codling moth development as of August 18: 2nd generation adult emergence at 81% and 2nd generation egg hatch at 46%.

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BRRRR KNOTS

FALL BORER CONTROL CONSIDERATIONS
(Dave Kain and Art Agnello, Entomology, Geneva)

[Ed. note: This is an update from a 2004 article on borer management, reprinted because of its timeliness and applicability to the situation in many commercial orchards recently.]

❖❖ There is increasing concern throughout the Northeast about damage done to apple trees by borers. The species of primary concern is dogwood borer, but American plum borer can be prevalent in western New York apple orchards that are close to tart cherry and peach orchards. While we do not yet fully understand the effects these borers have on dwarf trees, we do know that they reduce vigor and can, in time, completely girdle and kill trees.

IN THIS ISSUE...

While postbloom trunk applications of Lorsban are still allowed, enabling growers to spray at the peak of the dogwood borer flight, applying this material prebloom as early as half-inch green works well, too, and may be more convenient. Fall also may be a good time to control dogwood borer. Results from 2002 indicated that Lorsban applied postharvest the previous year (sprays went on in October 2001) controlled both the overwintering and the summer generations of dogwood borer. An October 2002 application of Lorsban similarly provided season-long control of dogwood borer in 2003. Lorsban works when applied in the spring and fall because it infiltrates burrknot tissue and kills larvae concealed within. It is also very persistent in wood so it continues to work for a considerably long time after it is applied (apparently 9-12 months in our trials). Fall application may offer growers a more convenient alternative for applying borer control sprays.

In a survey we conducted recently, we observed some relationships between borer infestation and various orchard parameters such as the proportion of trees with burrknots, proximity to stone fruit orchards and presence of mouseguards. Conventional wisdom has held that borer problems are worse where mouseguards are in place. Mouseguards can contribute to increased expression of the burrknots that borers invade, and may shield borers from predators and insecticide sprays. This has led some growers to contemplate removing mouseguards under the premise that mice are easier to control than the borers. However, results of our survey indicate that dogwood borer larvae may be found as readily in trees without mouseguards as in those with them. (American plum borer may be a different story in orchards near tart cherry or peach trees.) The orchard in which we have conducted borer control trials has never had mouseguards and there is no shortage of dogwood borers. If mouseguards are deteriorated and no longer protect the tree, there may be some small advantage, in terms of borers, to removing them. But, in orchards where mouseguards still provide protection against rodents, removing them for the sake of borer control is probably not worth the risk. Instead, we would recommend the use of trunk sprays to control borers. Even with mouseguards on, insecticides will give adequate control if they are applied carefully (i.e., a coarse, low-pressure, soaking spray with a handgun).

Bottom line: as we go into fall, consider using Lorsban after harvest to control borers, and reconsider removing mouseguards on trees where they still afford protection. ❖❖

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DISEASES

WHAT THE HAIL?!

PREHARVEST AND POSTHARVEST STRATEGIES FOR HANDLING HAIL-DAMAGED APPLES

(Dave Rosenberger, Hudson Valley Lab, Highland)

❖❖ The New York apple industry faces an unusual dilemma this fall as we consider how to deal with a large volume of hail-damaged fruit. At this point, it appears likely that the industry will harvest and store hail-damageD fruit because so much of the crop has been damaged and because projected prices for both fresh and processed fruit may be high enough to cover increased costs for sorting out damaged fruit when it comes out of storage. Given this situation, are any special measures required to minimize decay-related losses in hail-damaged fruit?

To the best of my knowledge, there are no published reports documenting the relationships between hail injury and fruit decay problems. Thus, I can only provide "best-guess" responses based on extrapolation from what we know about apple physiology, fruit decay pathogens, and fungicide activity.

After conversations with several growers and packers from different parts of the state, it became apparent to me that we need to define some of the variables that will affect storage issues for hail-damaged fruit:

1 - Timing and type of hail injury: Hail injury incurred in June and early July should have scarred over enough to make those wounds resistant to both late-summer fruit rots (white rot, black rot, bitter rot) and to the usual postharvest decays caused by Penicillium (blue mold) and Botrytis (gray mold). The only exception might be cases where the scar tissue cracks open again close to harvest as a result of fruit growth that exceeds the expansion capabilities of the scar tissue. Fruit with fresh cracks or with hail injury that occurs within 30–40 days of harvest may develop more of the summer fruit rots than would otherwise be expected, and cracks or injuries that occur within a few days of harvest may also remain susceptible to blue mold and gray mold infection if spores reach those injuries during harvest or postharvest handling.

2 - Fruit varieties and preharvest weather conditions: These two factors are linked because fruit become increasingly susceptible to summer fruit rots as they mature and because summer fruit rots are most prevalent when fruit are exposed to warm temperatures (>80°F) and abundant rainfall during the last 30–40 days before harvest. These factors coincide more frequently with early maturing than with late-maturing cultivars. (There are also genetic differences in cultivar susceptibility to the summer fruit rot pathogens, but they won't be discussed here.) For fruit with intact skin, relatively high inoculum levels are required before the summer fruit rot pathogens can invade fruit. Fruit cracks and hail injuries may allow these pathogens to bypass the normal fruit defenses provided by undamaged fruit skin. Cultivars that retain thinned fruitlets (fruitlet mummies) tend to carry higher inoculum levels within trees than cultivars that are less prone to carry fruitlet mummies. Honeycrisp, Cortland, Northern Spy, Fortune, and Monroe are examples of cultivars that almost always retain fruitlet mummies and therefore have a high inoculum potential for summer fruit rots.

3- Pathogens of concern: Inoculum for the summer fruit rots spreads to fruit only in the field, not during harvest or storage. Summer fruit rots may appear prior to harvest, but they also cause quiescent or lenticel infections that are invisible at harvest and that then appear as postharvest decays. These pathogens cannot grow at cold storage temperatures, but lenticel infections can expand rapidly during the interval between harvest and the time that fruit are cooled to below 40°F. The summer fruit rots generally will not spread from fruit to fruit after harvest. They cannot be reliably controlled by any postharvest treatments although the fungicide Scholar may suppress these

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decays to some extent. By comparison, the most common postharvest pathogens (Penicillium and Botrytis) rarely cause decays in the field, although some spores are present in the field and theoretically could initiate infections at hail injuries during the first two or three days after those injuries are incurred. I suspect, however, that blue mold and gray mold will become problems on hail-damaged fruit only when these pathogens get into wounds created during harvest and postharvest handling.

4 - Summer fungicide programs: Research at the Hudson Valley Lab and elsewhere has shown that decays caused by black rot and white rot can be initiated almost any time during the growing season, even though the probability of infection increases with fruit maturation. I have found that omitting sprays during July resulted in an increased incidence of black rot and white rot lenticel spotting on Golden Delicious harvested in early October even when those fruit received several fungicide sprays during August. This illustrates that spores that get into fruit lenticels early in the season can later cause preharvest and/or postharvest decays that will not be completely controlled by subsequent fungicide applications. Nevertheless, a grower who skipped sprays during July but later decided that the crop was salvageable will still benefit from applying late-season fungicides to control black rot, white rot, and bitter rot. Pristine is undoubtedly the most effective fungicide, but it may not be cost-effective. A combination of Captan 80WDG at 2 or 3 lb/A plus Topsin M at 1 lb/A should provide excellent control of summer fruit rots, especially if it is applied with a good spreader-sticker. Preharvest applications (within 2–3 weeks of harvest) of any of these fungicides greatly reduce the number of Penicillium and Botrytis spores on fruit surfaces at harvest and may help to minimize the incidence of blue mold and gray mold if fruit do not receive any postharvest treatment.

Given the variables noted above, it is impossible to come up with a strategy that can be recommended for all blocks of hail-damaged fruit. Below are some additional factors to consider in devising block-specific management strategies for hail-damaged fruit.

• Fruit that received a normal full-season fungicide program will be a better storage risk than fruit where summer fungicides were reduced or eliminated.

• Fruit showing limited decays around hail wounds may well have a lot more quiescent decays that will show up during storage. One strategy for pre-testing some of these fruit lots is to harvest a sample 10–14 days before the block will be harvested and store the sample at room temperature (75°F) for at least 10 days in a closed plastic bag with wet paper toweling. This warm incubation period will allow time for quiescent decays to appear, thereby allowing a better assessment of what to expect.

• Postharvest losses to black rot, white rot, and bitter rot can be minimized by rapid cooling of fruit after harvest.

• Postharvest drenching of fruit with recycling fungicide solutions may cause increased decay problems unless the drench solution includes one of the new fungicides, Penbotec or Scholar. Mertect-resistant spores in recycling drench solutions will be especially problematic if fruit have an abnormally large number of entry sites (e.g., unhealed hail marks and/or lep injury due to cut-backs in summer insecticide programs). If Penbotec and Scholar are deemed too expensive, then it may be preferable to move fruit (especially processing fruit) into storage without any postharvest treatment. Or use a preharvest fungicide spray in the field rather than the postharvest treatment.

• The Cadillac program for preventing storage decays would be at least one Pristine spray in August followed by postharvest treatment with Scholar fungicide. However, I doubt that this approach is cost-effective for hail-damaged fruit. Scholar is recommended over Penbotec only because Scholar may suppress latent infections of black rot and white rot, whereas Penbotec is less effective against these organisms.

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In next week's Scaffolds, I'll provide a more detailed discussion of postharvest treatment options for apples. In the meantime, don't forget that storage room sanitation can help to reduce carry-over of Penicillium inoculum that otherwise remains in the storage room from year to year. Even if you cannot afford the time and effort to spray down or fog storage walls and ceilings, every storage room should get a floor spray of a quaternary ammonium sanitizer every year before new apples are moved into storage. Huge numbers of Penicillium spores settle to the storage room floor as the stored fruit is removed, and these spores become airborne again as soon as forklifts enter to refill the room. Just cleaning up the floors can provide a significant reduction in airborne inoculum that contributes to postharvest decays. ❖❖

INSECT TRAP CATCHES (Number/Trap/Day)

Geneva, NY				Highland, NY	
	8/11	8/14	8/18		8/4
Redbanded leafroller	0.1	0.2	0.1	Redbanded leafroller	0.1
Spotted tentiform leafminer	11.9	8.8	18.9*	Spotted tentiform leafminer	41.9
Oriental fruit moth	0.6	0.5	0.5	Oriental fruit moth	0.9
American plum borer	0.3	0.0	0.1	Codling moth	1.2
Lesser peachtree borer	0.0	0.0	0.0	Lesser appleworm	3.9
Lesser appleworm	0.4	0.0	0.1	Obliquebanded leafroller	0.2
San Jose scale	322	317	244	Tufted apple budmoth	0.0
Codling moth	0.1	0.0	0.5	Fruittree leafroller	0.0
Obliquebanded leafroller	0.1	0.0	0.3	Apple maggot	0.1
Peachtree borer	0.0	0.0	0.0	Lesser peachtree borer	0.1
Apple maggot	1.9	1.0	0.4	Dogwood borer	0.2

* first catch

UPCOMING PEST EVENTS

	43°F	50°F
Current DD accumulations (Geneva 1/1–8/18/08):	2716	1845
(Geneva 1/1–8/18/2007):	2756	1906
(Geneva "Normal"):	2771	1873
(Geneva 1/1–8/25 Predicted):	2906	1987

Coming Events	Ranges (Normal ±StDev):	
Oriental fruit moth 3rd flight begins	2349–2753	1606–1902
Oriental fruit moth 3rd flight peak	2650–3242	1828–2252
Apple maggot flight subsides	2772–3374	1908–2368
Codling moth 2nd flight peak	2005–2835	1337–1977
Spotted tentiform leafminer 3rd flight peak	2607–3043	1782–2118
Comstock mealybug 2nd gen. crawlers subside	2735–2771	1794–1958
Lesser appleworm 2nd flight peak	2197–3217	1471–2233
Redbanded leafroller 3rd flight begins	2657–2969	1827–2085
Redbanded leafroller 3rd flight peak	2767–3237	1903–2325
Obliquebanded leafroller 2nd flight peak	2620–3016	1784–2108
Peachtree borer flight subsides	2525–3145	1710–2194
San Jose scale 2nd flight subsides	2639–3349	1785–2371
San Jose scale 2nd gen. crawlers emerging	2746–2852	1916–2104

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