RUTGERS COOPERATIVE RESEARCH & EXTENSION AT THE NEW JERSEY AGRICULTURAL EXPERIMENT STATION

PLANT & PEST ADVISORY

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INSIDE

Whole Crop Resistance Management for Brown Rot

Norman Lalancette, Ph.D., Specialist in Tree Fruit Pathology

The earliest maturing peach and nectarine fruit are now being harvested. Of course, these fruit are just the "tip of the ice berg" as we move toward mid- and late-season cultivars that constitute the bulk of the New Jersey crop. As these cultivars mature and ripen, they become susceptible to infection by *Monilinia fructicola*, causal agent of **brown rot**. Thus, fungicide sprays are required during each cultivar's ripening period in order to protect the fruit from infection. If left uncontrolled in a wet season, brown rot can cause 100% fruit loss.

A Matter of Scale

When implementing brown rot management, we focus on a single cultivar or physical block within our orchards. We know that the ideal application timing for each cultivar is to apply fungicides during ripening. A typical two-spray program, effective under light to moderate infection pressure, consists of applications at 14 and 7 days preharvest. Under highly disease-favorable conditions, as experienced here in blocks at RAREC, a three-spray 18-, 9-, and 1-day preharvest spray program has provided 95% or better disease control over the years.

When implementing brown rot fungicide resistance management, we no longer have the luxury of focusing on a single cultivar or block. Since, *Monilinia fructicola* can easily infect all cultivars and spores can readily move from one [often adjacent] block to the next, the pathogen does not "see" a single cultivar or block. In fact, as each successive cultivar matures and ripens from about mid-July through early September, *M. fructicola* comes in contact with an entire summer smorsgabord of susceptible fruit to infect! Thus, we must think of the whole season's crop when implementing strategies for fungicide resistance management.

Sins of the Past

Not too long ago, we only had the sterol inhibitor (SI) fungicides Indar, Elite, and Orbit (= PropiMax) to apply for preharvest brown rot control. The resistance management strategy was to use other chemistries, such as anilinopyrimidines (Vangard), benzimidazoles (Topsin M), or protectants (Bravo, Captan, Ziram) during bloom for blossom blight. This approach would "save" the more effective SI's for use during the critical preharvest program.

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Of course, on a larger crop scale, the pathogen was not necessarily being exposed to only two or three sprays of an SI! For example, assume an average grower (wholesale or direct retail) had ten cultivars that spanned the harvest period from mid-July through earlier September. This contiguous period of susceptibility would require anywhere from 20 to 30 consecutive sprays of an SI! When viewed in this manner, we shouldn't be surprised that brown rot resistance eventually developed [in Georgia]. Hopefully, this will not be the fate for New Jersey and the Mid-Atlantic region.

A New Old Strategy

The solution to our fungicide resistance management challenge is to alternate different chemistries during the entire crop harvest period. This old strategy could not be implemented until some new classes of fungicides, namely the strobilurins (SB) and anilides, were found to be effective against brown rot. These fungicides, labeled as Pristine, Flint, and Abound, can now be integrated into the preharvest programs without any loss in control. However, since these new fungicides are also prone to resistance development, they cannot simply replace the SI's, but must be used in conjunction with the SI's. In essence, when used together, the SB's and SI's cross-protect each other while providing a high level of disease control.

The recommended three-spray program during fruit ripening consists of the alternation SI – SB – SI. An example of this program, which utilizes some of the most effective fungicides for brown rot control (see Hort News 85(3):10-21), is Elite 45DF (5-6 oz/A) at 18-days PHI, Pristine 38WG (13-14.5 oz/A) at 9-days PHI, and Indar 75WSP (2 oz/A) at 1-day PHI. If disease pressure is high (frequent rains, much inoculum), then the higher rates of Elite and Pristine rates should be used. For a two-spray program, an SB – SI program should be utilized, such as Pristine followed by Indar. In this case, the final cover spray should be captan to protect against early brown rot development. Indeed, the last cover spray may play an important role in resistance management and for that reason captan is recommended over sulfur.

In summary, the alternation of fungicide chemistries should help prevent of delay onset of resistance, thereby preserving the efficacy of our most important tools for brown rot management. ❑

Controlling Flyspeck on Apples

Dave Rosenberger, Plant Pathology, NYAES, Cornell University

Reprinted from Scaffolds Fruit Journal, June 26, 2006, Cornell University, NYAES

Flyspeck has caused more commercial losses in New York and New England over the past few years than during most of the previous decade. What has contributed to those losses? How can we prevent them from re-occurring this year? Let's start by enumerating what we know about flyspeck biology:

1 - Flyspeck infects a wide range of host plants. That means that the flyspeck fungi can grow on the waxy cuticle of most bushes and trees in orchard perimeters, and these hosts can produce inoculum that blows into orchards. (Recent work in Iowa suggests multiple species may be involved in causing flyspeck, so in this article I will refer to the causal organisms as flyspeck "fungi.")

2 - After a spore from one of the flyspeck fungi lands on an apple, the apple must be exposed to 270 hr of accumulated wetting (hrAW) before the flyspeck colonies become visible on the fruit. Brown and Sutton in North Carolina were the first to identify the incubation period for flyspeck, and they found the best correlations when they ignored wetting periods of less than 3 hr duration. I have since found good correlations with the 270 hrAW over several years in the Hudson Valley when we included all measurable wetting periods. Variability among types and locations of wetness sensors is so great that quibbling about the details of whether to include or dismiss short wetting periods is probably meaningless.

3 - In Massachusetts, Cooley and Lerner showed that ascospores for flyspeck are released around petal fall. Therefore, flyspeck colonies initiated by ascospores may begin appearing on unsprayed fruit at 270 hrAW after petal fall (hrAWPF). However, scab sprays usually control the ascospores, so ascosporic infections are not common in commercial orchards.

4 - Infections initiated by ascospores in wild hosts begin releasing conidia as soon as those infections become visible (after 270 hrAWPF). Once those infections produce conidia, orchards in the northeast are exposed to a continuous supply of conidia blowing throughout the remainder of the summer and fall. If fungicide residues on fruit drop below effective levels, then the conidia will initiate flyspeck infections on fruit.

5 - Where trees are left unsprayed after 2nd cover (i.e., they are protected from flyspeck ascospores but not

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Dwarf Apples and Dogwood Borer

Win Cowgill, Agricultural Agent and Dean Polk-IPM Agent

All apple trees on size controlling rootstocks should be periodically checked for infestation by the **dogwood borer**. *We have caught moths in Northern New Jersey orchards since the beginning of June.* Apple growers in our NJ IPM scouting program have traps placed to monitor the adult moth. Infestations of this clearwing moth in apple are almost always ***located in burrknots or graft unions*** that are planted above ground level. Burrknots are aggregations of root initials that can develop on the above-ground portion of the rootstock; all commercial dwarfing and semi-dwarfing rootstocks have a tendency to develop burrknots. After infesting the burrknot the larvae continue to feed in other tissue and can severely weaken the tree.

It is important that we plant dwarf apples with the graft union at least four inches out of the ground to avoid self-rooting of the scion. However the trade-off is the development of burrknots, which are susceptible to the dogwood borer. Mark rootstock is known for this.

The adult dogwood borer moth seeks out these spots (burrknots) to lay eggs, particularly if they are surrounded by vegetation or protected by something, such as mouse guards or weeds. Moreover, mouse guards and weeds shield the lower trunk from exposure to insecticide cover sprays. Sustained feeding by dogwood borer at the graft union may severely weaken the tree at this juncture, or girdle the trunk and cause a slow decline in tree health. Orchards in which mouse guards are emplaced should be examined for signs of damage. The tight spiral plastic guards provide a perfect place for the borers to get established and are not recommended for this reason.

Treatment- Lorsban 4E has a supplemental label for dogwood borer control on apple. Since Lorsban remains in the tissue you will also control the larvae from any egg laying occurs in the months of June and July as well as any that has occurred to date. A second application may be more effective according from work done in New York State than one application.

The best control is the dilute trunk applications with a handgun with an insecticide with good residual activity to provide control of established infestations. Lorsban 4E now has a supplemental label for apples and is the most effective material for control. If one application is made it should be applied during the period between July 15 and August 15, bearing in mind the specific pre-harvest intervals. Two applications are labeled and may be more effective**.**

The following directions and restrictions are from the label:

Mix with water and apply directly to trunk from a distance of no more than 4 ft using low volume handgun or shielded spray equipment.

Do not allow spray to contact foliage or fruit. Up to 2 applications may be made with a minimum spray interval of 14 days between applications.

Restrictions:

- Treat only the lower 4 feet of the apple tree trunk.
- Do not make more than two applications per year for borer control.
- Do not apply when wind speed is greater than 10 mph.
- Do not apply within 28 days of harvest (watch your PHI on early maturing cultivars)

White latex paint brushed/sprayed on the exposed portion of the rootstock will help prevent new infestations of the borers, and also protect against southwest injury to the bark. We utilize a white wash of about 50% white latex with low acrylics and 50% water to spray all dwarf rootstocks in the fall to prevent southwest injury.

Other Sources of Information

Cornell has a great fact sheet on dogwood borers in fruit trees that can be found on their IPM web site at:

http://www.nysipm.cornell.edu/factsheets/treefruit/pests/dwb/dwb.asp. ❑

American Viticultural Area

Jerome L. Frecon, Agricultural Agent

A proposed American viticultural area is listed and defined in the Federal Register for a 60 day comment period. The following is a summary in the register which was listed beginning on July 3, 2006.

"The Alcohol and Tobacco Tax and Trade Bureau proposes to establish the Outer Coastal Plain viticultural area in southeastern New Jersey. The proposed viticultural area consists of approximately 2,255,400 acres and includes all of Cumberland, Cape May, Atlantic, and Ocean Counties and portions of Salem, Gloucester, Camden, Burlington, and Monmouth Counties. We designate viticultural areas to allow bottlers to better describe the origin of their wines and to allow consumers to better identify the wines they may purchase. We invite comments on this proposed addition to our regulations."

The following is a link for the information in the register:

http://a257.g.akamaitech.net/7/257/2422/01jan20061800/edocket.access.gpo.gov/2006/E6-10384.htm

Jim Quarella of Bellview Winery in Landisville is the petitioner on this proposal. Procedures for comments and review are defined in the listing. ❑

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from conidia), flyspeck incidence and severity on fruit increases dramatically around 540 hrAWPF. Thus, flyspeck requires 270 hrAWPF to produce conidia on wild hosts and another 270 hrAW to infect and produce visible colonies on apples.

Results of two recent trials that indicate limitations of current fungicides:

1 - Two inches of heavy rain may be enough to eliminate fungicide residues. In an experiment at the Hudson Valley Lab in 2004, we applied all of the common summer fungicides to test plots on 17 Aug. We received 2.15 inches of rain on 20-22 Aug. We had 270 hr of accumulated wetting between 22 Aug and 26 Sept. Incidence of flyspeck on Golden Delicious fruit on 27 Sep was 64, 50, 31, 27 and 8%, respectively, for plots treated with Captan alone (30 oz of 80W/A), Flint, Sovran, Topsin-plus-Captan, and Pristine. Pristine had the best residual activity, but none of the fungicides had adequate residue to completely protect against flyspeck after 2.15 inches rain.

2 - Fungicides applied after flyspeck infections have been initiated can arrest growth of the flyspeck fungus temporarily, but they do NOT eradicate the infections. In a 2005 experiment, summer fungicide sprays were initiated at either 337 or 450 hrAWPF to determine if these fungicides could provide post-infection activity that would reach back through either 67 hrAW (i.e., 337 hr minus the 270 hr threshold for conidial infections) or through 180 hrAW from the start of infections. None of the postinfection treatments provided satisfactory disease control. By 26 Sep, flyspeck incidence exceeded 19% in all treatments, even though we maintained fungicide coverage up until harvest (i.e., <2 inches of rain between sprays and between the last spray and harvest). Sovran was significantly better than Pristine or Flint for suppressing infections but it was not significantly better than the Topsin-plus-Captan standard. Thus, Pristine provides the best residual protection, but Sovran and Topsin M provide the best post-infection activity, even though the post-infection suppression is less than we had hoped for.

Results from these recent trials have caused me to re-evaluate earlier hypotheses. The long incubation period required for flyspeck coupled with our inability to accurately predict or monitor fungicide residues on fruits makes it difficult to interpret results of fungicide trials in dry years. Did fungicides applied in July or August really eradicate earlier infections, or did they just slow fungal growth enough to allow fruit to be harvested before flyspeck appeared on fruit? Wet years such as we have had in the Hudson Valley in 2004 and 2005 provided more definitive evidence concerning the limitations of our fungicides.

Combining all that we know about flyspeck along with some working hypotheses, I've compiled the following statements to help formulate options for controlling flyspeck.

1 - The period of least risk for significant flyspeck infection occurs between petal fall and 270 hrAWPF for reasons noted above.

2 - After 270 hrAWPF, fruit should be continuously protected with fungicides. Any gaps in protection after 270 hrAWPF may allow flyspeck infections to be initiated.

3 - Two inches of rain can remove virtually all fungicide protection.

4 - Fungicides applied after infections are initiated do not eradicate all infections. Post-infection sprays will arrest incubating infections for varying (and at this point, unpredictable) periods of time. When the fungicide residues drop below inhibitory levels, the surviving flyspeck infections begin growing again. Predicting when suppressed lesions resume growth is difficult because we can't accurately predict when fungicide residues are exhausted.

5 - The 270-hrAW incubation period for flyspeck can perhaps be viewed as a "grace period" for lapses in fungicide coverage. If apples are consistently protected from infection during summer and fungicide residues are removed by heavy rains on September 1st, then flyspeck will not appear on fruit so long as fruit are harvested AND COOLED before they are exposed to 270 hr of wetting. However, if apples are left unprotected through 90 hr of wetting in July and/or August after conidia are being released, then part of the grace period will have been used in July-August and flyspeck may appear on fruit more quickly than otherwise expected in September.

6 - In real life, the total grace period for lack of fungicide protection during the growing season is probably less than 270 hrAW because flyspeck can continue to grow on wet fruit surfaces after harvest until fruit are cooled below roughly 45°F. Fluctuations in air temperatures as storage rooms are filled can cause condensation on surfaces of cold fruit already in the room, and that moisture can allow continued growth of flyspeck. I don't know how much of a 270 hr incubation period can be completed after harvest, but I suspect that up to 70 hr of the required 270 hr incubation period could occur after harvest if fruit a are not cooled rapidly. Application of a postharvest fungicide drench might suppress growth during the cool-down period after harvest, but I am not aware of any data that addresses this question.

7 - Given all of the above, the safest approach for controlling flyspeck will be to maintain fungicide coverage throughout summer after the 270-hrAWPF threshold has been reached. If extended rainy

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Fruit IPM

Dean Polk, Fruit IPM Agent and David Schmitt, Eugene Rizio, and Atanas Atanassov, Ph.D., Program Associates, Tree Fruit IPM

Peach

✔ **Tarnished Plant Bug (TPB) and Other Catfacing Insects:** Stinkbugs are being found in beating tray samples in some blocks. Overall catfacing pressure is low to moderate in southern counties.

✔ **Oriental Fruit Moth (OFM):** The second brood is 100% hatched in southern counties, and is almost completely hatched in northern counties. Trap counts indicate low pest pressure on the average farm. However we are seeing low amounts of flagging from second brood larvae, indicating building populations on some farms. Third brood hatch is predicted to begin on or about 7/15 in southern counties. The first treatment for the 3rd brood will be due in central counties a few days later (see table). Degree day spray timings are as follows for the third generation, updated since last week:

OFM 3rd Generation Application and Insecticide Type

County Area	Standard Insecticides	Intrepid
Southern	1st 7/15-18, 2nd trt 7/26-28	1st trt 7/13-15, 2nd 7/25-27
Central	1st 7/16-19, 2nd trt 7/28-30	1st trt 7/15-18, 2nd 7/26-28
Northern	1st about 7/21-23	1st about 7/20-21

✔ **Anthracnose:** This disease is not a regular problem, but has been seen during the past few years on Harrow Beauty, Sugar Giant, White Lady, and Klondike. It is the same disease that causes anthracnose on blueberries and bitter rot on apples. Captan and Ziram are two of the most effective anthracnose materials used on tree fruit. For blocks in the preharvest period (1-3 weeks prior to anticipated harvest) Flint and Pristine are very effective. Since the mid-summer period just prior to ripening can be a critical period for anthracnose infection, keeping an effective material in the spray tank is recommended for at least the sensitive varieties.

✔ **Thrips:** Adult thrips were found feeding on several Easternglo blocks last week. Spintor is the most effective material for quick knockdown of thrips populations. Spintor has a 1 day PHI for nectarine and a 14 day PHI for Peach. In past years thrips have been troublesome on highly colored peach varieties from early July through mid-August.

✔ **June Bug; Japanese Beetle:** June bugs and Japanese beetles are now flying. These insects can be troublesome on ripening fruit and usually peak around Redhaven season. While most OP insecticides work for control of these pests, growers have wanted materials with quick knock-down ability and a short PHI. Sevin has been the most commonly recommended material and is effective even at low rates. Sevin 4F used at 2 qts./ac is usually sufficient to knock down populations. Provado is also labeled and should provide good control when applied @ 6-8 ozs.acre. Provado has a 12 hour REI and a 0 day PHI.

Apple

✔ **Codling Moth (CM):** In southern counties, the time to treat for codling moth will be on or about 7/9. If using Intrepid, applications need to go on about 3 days earlier than if using standard materials. ***Do not use trap counts as a guide for this second generation degree day timed spray***. Treatments should be completed at the optimum timing with the correct rate and volume. After 2 complete timed CM treatments have been applied, then trap counts can be used as a guide to help determine the need for supplemental applications. Use the following chart to time applications:

CM Application and Insecticide Type - 2nd Generation

County Area	OP's, Carbamates, Pyrethroids, Avaunt, Assail, Calypso	Intrepid
Southern	1st trt 7/9; 2nd application due about 7/19-21	1st trt 7/6; 2nd application due 7/16-18
Central	1st trt 7/8; 2nd application due about 7/19-21	1st trt 7/6; 2nd application due 7/16-18
Northern	1st trt 7/14; 2nd trt about 7/26-28	1st trt 7/12; 2nd trt about 7/25

✔ **Summer Diseases – Sooty Blotch and Fly Speck, Rots:** In addition to white rot and black rot, these are critical diseases to control at this time. Topsin-M, Sovran, Flint, or Pristine can be included for control. Anthracnose can also be troublesome on apples (see peach section above), especially where much dead wood is present. Captan, Ziram (rated good) and Pristine (rated Excellent) are effective bitter rot materials. Good coverage and open canopies are essential for control. See the accompanying article for more information.

✔ **Stink Bugs:** Stinkbug injury on apples has been observed in some apple orchards over the past few years. Orchards at risk for injury are usually those with located next to wooded areas or hay fields. Injury often occurs during hot days mid to late summer or when haying operations are occurring. If using intrepid for CM control, include another material for stinkbug control, particularly if a history of the pest is known to exist in your orchard.

The following excerpt is taken from "the Orchard Monitor on August 29, 2005 – Dr. Henry Hogmire, West Virginia Cooperative Extension (or http://www.wvu.edu/~agexten/orchardmon/om082905.htm**):**

Stink bugs have become an increasingly important pest complex causing late season injury to apples during the past 4-5 years. Because injury resembles the physiological disorder cork spot, it has probably occurred at low levels and been misdiagnosed for quite a few years. Reasons for the recent increase in injury are not com-

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pletely understood, but changes in chemistries used for pest management (substitution of Confirm, Intrepid and neonicotinoids for Penncap-M and other organophosphates) and possible resistance are believed to be contributing factors.

The stink bug complex attacking apple consists primarily of three species (brown, dusky, and green stink bugs) that cause most of the injury during August until harvest by puncturing maturing fruit. Although the injury can be confused with cork spot, Dr. Mark Brown, USDA entomologist has found that it differs in three ways: 1) the edge of the depression on the fruit surface from stink bug feeding is gradual instead of abrupt as in cork spot; 2) the corky flesh is always immediately beneath the skin in stink bug injury, but may not be in contact with the skin in cork spot; and 3) a puncture is present from stink bug feeding.

Dr. Brown also found that apple cultivars differ in susceptibility to stink bug injury. Of 31 cultivars that were evaluated, the highest levels of injury occurred on 'Braeburn', 'Jonica', 'Jonagold', 'Starkspur Dixiered', 'Granny Smith' and 'Stayman Winesap'.

Orchards most likely to experience stink bug injury are those with poor weed control that are adjacent to woods and/or weedy borders. Stink bugs are very difficult to manage because they: 1) are highly mobile; 2) have a broad host range, including many crops and broadleaf weeds; 3) move frequently between weed hosts and fruit trees; and 4) are therefore not continually exposed to insecticide residues for long periods of time. Pyrethroids (Asana, Danitol, Proaxis, Warrior) are likely to provide the most effective control, followed by organophosphates (Guthion, Imidan) and Lannate. Depending upon the situation, spraying the border rows of orchards adjacent to woods may provide sufficient control. Improved broadleaf weed management will also reduce stink bug injury.

Blueberry

✔ **Leafrollers and Other Leps:** Searches among fruit clusters are showing no worm presence and only 7% of shoot terminals show low levels of live larvae. Even though 60% of fruit samples show low levels of miscellaneous worm/bug injury, all of this injury is old.

✔ **Cranberry Fruitworm Injury:** A small amount of old injury is present. It is only mentioned here as a caution, since injured fruit can still end up on the packing line. In the field, most of the injured fruit has fallen or has been picked.

✔ **Aphids:** About 68% of samples are positive for aphids and 32% are over the 10% infestation level. This is similar to levels of the previous week. Aphid predators have been seen in several locations.

✔ **Mummy Berry:** Levels of mummy berry infection have been low this year, but infected fruit can be found. We are seeing infected fruit in 12% of our fruit samples.

✔ **Anthracnose:** Field levels are increasing some, especially in Bluecrop fields where picking has fallen behind. Field level disease is present in 12% of fruit samples, ranging from .5 to 1.8% of clusters infected.

✔ **Oriental Beetle:** Trap counts peaked this past week, but flight activity is still high. Past experience has shown that when trap counts peak at over 1000 – 1500 beetles per trap there is usually a problem grub population somewhere on the farm. We have seen some very high counts this season – some up to 9,000 beetles per trap. If you have high beetle counts and have not yet applied Admire, there is still time (before the end of the month). Any applications on Bluecrop not yet treated will have to wait until immediately after harvest. Some **Japanese Beetles** were also seen this past week. If these are present, effective materials and (PHI) include: Guthion (7days), Imidan (3 days), Provado (3 days), Asana (14 days), Pyronyl (0 days), Actara (3 days), and Sevin (7 days).

See Insect Trap Counts on page 7

Scouting Calendar

The following table is intended as an aid for orchard scouting. It should *not* be used to time pesticide applications. Median dates for pest events and crop phenology are displayed. These dates are compiled from observations made over the past 5-10 years in Gloucester County. Events in northern New Jersey should occur 7-10 days later.

Pest Event or Growth Stage	Approximate Date	2006 Observed Date
CM 2nd gen 1200 DD target (IGR timing)	7/07+/- 4 days	7/6
CM 2nd gen 1250 DD target (Standard timing)	7/15+/- 10 days	7/9
CM 2nd gen 1450 DD target (IGR timing)	7/18+/- 4 days	Not yet observed
CM 2nd gen 1550 DD target (Standard timing)	7/21+/- 3 days	Not yet observed
SJS Crawlers-second generation	7/26+/- 0 Days	Not yet observed

Calendar of Events

July 17, 5:00pm - Bio-diesel and Waste Vegetable Oil as Fuel, North Slope Farm, Lambertville, NJ. To register: call NOFA-NJ at (609) 737-6848 or email mazzara@nofanj.org. For directions: www.nofanj.org

July 27-30, 2006 - New Jersey Peach Festival, 4-H Fairgrounds Rt. 77 South of Mullica Hill, N.J. Contact Jerry Frecon at RCRE of Gloucester County at 856 307-6450 Ext. 1 or go to: http://gloucester.rcre.rutgers.edu/fairfest.

August 3, 5:00pm – A Behind the Scenes Look at Managing a Large CSA, Honey Brook Organic Farm, Pennington, NJ. To register: call NOFA-NJ at (609) 737-6848 or email mazzara@nofanj.org. For directions: www.honeybrookorganicfarm.com.

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periods preclude timely respraying of blocks after heavy rains, then that lapse in coverage may use up part of the preharvest "grace period."

8 - Wet autumn weather such as we have had in recent years may be contributing to elevated inoculum levels in hedgerows and woodlots. Thus, extra caution (i.e., extra sprays in September and perhaps even in early October for late varieties) may be warranted until we get a dry summer-fall combination to break the current high inoculum cycle.

9 - Late summer sprays for flyspeck can be compromised by incomplete coverage of fruit surfaces. Including a surfactant with the fungicide during late summer may be helpful, but an excess of surfactant will only cause excessive run-off, thereby leaving less residue on fruit than a spray applied with no surfactant. Probably the best way to improve coverage in late summer sprays is to reduce tractor speed and increase the volume of water applied per acre.

Submitted by David Schmitt, Program Associate, Tree Fruit IPM. ❑

Insect Trap Counts

Tree Fruit Trap Counts – Southern Counties

Week Ending	STLM	TABM-A	CM	AM	OFM-A	DWB	OFM-P	TABM-P	LPTB	PTB
6/10/06	766	34	5		12		9	42	104	8
6/17/06	1111	21	5		1		11	23	82	0
6/24/06	1191	14	5		5		6	15	55	0
7/1/06	766	34	5		12		9	42	104	0
7/8/06	596	1	0		4		4	2	95	1

Tree Fruit Trap Counts – Northern Counties

Week Ending	STLM	TABM-A	CM	AM	OFM-A	DWB	OFM-P	TABM-P	LPTB	PTB
6/10	357.3	25.5	6.5			20.0	17.9	30.6	33.5	0.8
6/17	665.0	19.7	3.2	N/A	N/A	19.5	14.7	18.6	30.4	3.0
6/24	738	14.1	6.0	N/A	N/A	14.3	16.4	18.2	32.4	3.2
7/1	294	8.1	3.5	N/A	N/A	7.3	10.9	10.8	16.9	4.6
7/8	263	5.4	3.9	N/A	N/A	3.3	9.0	5.1	23.4	4.8

Blueberry Trap Counts – Atlantic County

Week Ending	CBFW	RBLR	OBLR	SNLH	OB	BBM
6/10	2.3	59.7	39.2	0.16	7	0
6/17	2.2	96.3	27	0.27	61.8	0.02
6/24	1.2	97.9	16.6	1.8	1341	.03
7/1	0.06	56.1	11.1	0.4	1677	0.14
7/8	0.05	36.1	8.3	0.3	1103	0.35

Blueberry Trap Counts – Burlington County

Week Ending	CBFW	RBLR	OBLR	SNLH	OB	BBM
6/10	19.1	4.0	35.3	12.8	11.7	0.025
6/17	25.4	16.9	44.4	6.5	10.3	0
6/24	12.1	45.1	45.5	7.5	803	0
7/1	0.8	37.0	22.3	3.6	961	0.4
7/8	0.36	21.1	10.3	1.6	668	0.59

Key: CBFW = Cranberry Fruitworm, RBLR = Redbanded Leafroller, OBLR = Obliquebanded Leafroller, SNLH = Sharpnosed Leafhopper, OB = Oriental Beetle, BBM = Blueberry Maggot

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