

PLANT & PEST ADVISORY

FRUIT EDITION \$1.50

APRIL 29, 2008



*Rusty spot lesion on immature peach.
Source: Scaffolds Fruit Journal*

Peach and Nectarine Disease Management: Shuck Split Stage

Norman Lalancette, Ph.D., Specialist in Plant Pathology

The shuck split stage is arguably one of the most important times for disease control on peach and nectarine. At this stage, the shuck or calyx tissue which surrounds the developing fruit splits open as the fruit enlarges. This splitting exposes the fruit surface to infection by plant pathogens. Fungicide sprays are usually timed according to the percentage of flowers that have split shucks.

Rusty spot. Early shuck split, which is defined here as <5% of the flower shucks split, is the correct timing for the second rusty spot fungicide application on susceptible cultivars. Beginning at this stage, two approaches are possible. To continue with the conventional program, Rally 40W (Nova 40W) should be applied and is recommended for the most susceptible cultivars (see previous petal fall article for rates). To use the integrated program, apply either Serenade Max at 2-3 lb/A or a potassium bicarbonate product, such as Kaligreen or Armicarb 100, at 3 lb/A. The integrated program is described in footnote 4 on page 70 in the *2008 NJ Commercial Tree Fruit Production Guide*. For further details, read the 2006 article "An Integrated Peach Rusty Spot Disease Management Program for Commercial Orchards" in *Horticultural News* 86(2):18-23.

Scab. Infection of peach and nectarine fruit by the scab pathogen *Fusicladosporium carpophilum* also begins in earnest at early shuck split. At this stage, spores produced on twig lesions are dispersed by rain to nearby fruit and new shoot growth. Due to a very long incubation period, infected fruit will not show symptoms (lesions) until 35-42 days after infection. Since twig lesions can be scattered throughout the canopy and cause no obvious flagging of shoots, pruning out this source of initial inoculum is not practical. And since all cultivars are susceptible to scab, fungicides are the primary form of control.

Bravo WeatherStik (or Ultrex) is the recommended fungicide for scab control at shuck split, which is the latest timing allowed (see label). Gem or Abound can also be applied, and will provide anti-sporulant activity as well as protection, which will be beneficial for high inoculum orchards. However, use of these strobilurins should be limited to avoid resistance development. Topsin M + Captan or Captan alone are other alternatives and perfectly acceptable when scab has not been problematic.

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Bacterial spot. Although early season copper sprays may have been attempted to reduce epiphytic inoculum for bacterial spot, early shuck split is the first stage at which bactericides are applied to protect fruit. Only two types of bactericides are currently available for bacterial spot control: (1) the antibiotic oxytetracycline (Mycoshield, FlameOut) and (2) organometallic copper (Tenn-Cop). Inorganic copper bactericides are currently being investigated for use at this and subsequent stages.

When applied and timed properly, preferably 24 hours before an infection period (warm, wet, and windy conditions), oxytetracycline can provide excellent control. However, residual activity with this antibiotic is at most 5 days. Furthermore, applications should be made at high volume and preferably in the evening to promote slow drying, which enhances systemic movement into plant tissues. Given these application constraints, disease control is often less than desirable. In contrast, Tenn-Cop has less applications requirements and somewhat longer residual. So, although its inherent efficacy may be less than the antibiotic, field experiments have shown that Tenn-Cop often performs as well as the antibiotic.

Given all of the above, if weather conditions appear favorable for bacterial spot infection at shuck split, and the application can be properly timed, oxytetracycline is recommended. However, if conditions don't appear threatening, then a Tenn-Cop application appears prudent, particularly on the most susceptible cultivars. Application rates for both products are listed in the production guide.

Apogee Tips for Apple Production for 2008

Win Cowgill, County Agricultural Agent

Labeled rates are 3-12 ounces/100 gallons dilute spray. We do know that the higher rates of Apogee have caused some fruit set issues, primarily variability in set. In some cultivars it increases fruit set, in some it reduces set. Based on the consensus of research the last three years we are recommending utilizing multiple applications of the lower rate, three ounces/100gallons.

- **Our suggestion is make four applications of the 3 ounce rate.** Begin at 1-3 inches of growth bloom-petal fall, and repeat at two week intervals.
- More vigorous varieties in the North may need a fifth application as may orchards located in Southern NJ where the growing season is longer.
- Water Conditioner- Always use a water conditioner, Ammonium Sulfate (AMS)@ one pound/100 gallons –use the spray grade AMS.
- Adjuvant- always use a non ionic surfactant to improve leaf coverage.
- **Do not use Apogee on Empire!**
- Do not use with Boron or Calcium, reduced efficacy may result
- Be aware of the mixing order when combining with other chemicals; consult the label.
- Do a jar test of materials before combing in the tank; consult the label.
- Apogee is rainfast 8 hours after application.
- Note that Apogee should not be applied the same season with PGR's that contain Gibberellic Acids, these include Provide and Promalin. They may interact and prevent one another from working effectively.
- The label is the law, follow it! ☐

PEACH AND NECTARINE DISEASE MANAGEMENT PROGRAM – Fungicide and Bactericide Timing														
Disease	Dormant	Pink	Bloom	Petal Fall	Shuck Split	Covers						Preharvest		
						1	2	3	4	5	6	PH3	PH2	PH1
Leaf Curl														
Brown Rot Blossom Blight														
Rusty Spot														
Scab														
Bacterial Spot														
Key		= Optimum timing				= Some control possible								

As I See It - Weather is a Challenge this Spring

Win Cowgill, County Agricultural Agent

Two and a half weeks of warm sunny weather have passed, great weather for getting trees in the ground and finish up pruning. In Northern NJ we have moved to cold cloudy and rain with apple bloom starting last Friday in Hunterdon County.

We have just come through a very significant apple scab infection period. Mike Fargone, Cornell, reports that in the Hudson Valley, NY cedar apple rust galls have opened and released spores. Orchards that lacked adequate contact fungicide protection during this long infection period should be treated with a protectant plus SI fungicide within 96 hours of the start of the rain (in many places that was late Saturday or early Sunday morning, so you have until tomorrow night to recover). Wait until the rain stops to spray SI's.

Thursday through Monday are forecast for showers and cool weather. Our challenge will be to get adequate pollination with the cool temperatures.

Make sure you are covered up for scab and rust before the next rain events.

Promalin can be applied to Delicious or Gala to enhance the typiness of these cultivars. The best application timing is when king blooms are open up to 50% full bloom. Later timings and high rates may cause fruit thinning. The best response is when air temperatures are above 70oF.

We strongly suggest growers should focus on thinning off most fruit on one-year wood on Gala (except in poor bloom or frost-damage seasons). Ignore all the bloom on last year's Gala wood when deciding when to apply this material or else it will go on later than optimal. The recommended rate is 1-2 pints per acre applied as a fine mist using 50-100 gal of water per acre. Use of a surfactant will increase both the typiness and thinning responses. □

Consider Controlling the Tops of Your Overly Vigorous Dwarf Apple Trees

Wes Autio, Professor of Pomology, UMASS and Win Cowgill, County Agricultural Agent

Over the last several years, we have recommended different approaches for reducing growth specifically in the tops of apple trees. Scoring (a knife cut completely around the trunk of a tree through the bark into the wood) and ringing (a saw cut completely around the trunk) can very effectively slow tree growth. Applied near the top of a vigorous tree at about a week after petal fall will increase fruit set for this season and increase flower-bud formation for next season. Reduced shoot growth will be seen for the next couple of years. These physiological changes will shift a tree from vigorous vegetative growth in the tree top to more fruit production and weaker growth in the top. The down side of ringing and scoring is the amount of time required to perform the treatment.

We have been working on alternative top-control procedures for the last two years. One of the approaches uses high concentrations of NAA to slow growth in just the top of the tree. At this point the most effective treatment appears to be on 1-year-old wood and is applied as Sucker Stopper Concentrate (Monterey Chemical) mixed in pruning/grafting compound at a rate of one part Sucker Stopper to nine parts pruning/grafting compound (1.5% NAA in the application solution). Paint a 3-inch wide band completely around the trunk near full bloom. To be effective, you must treat your trees before they reach the desired height, probably when they have been in the orchard for a year or two.

Apogee also can provide excellent control if directed just at the top of the tree. Our research has only used the 12-ounce/100 gallon rate. Multiple applications of lower doses may also be effective, but since the treatment is directed only at the tree tops, special trips into the orchard will be required for each application. Remember that you should apply Apogee with a non-ionic surfactant and with a water conditioner (equal weight of spray-grade ammonium sulfate to the amount of Apogee added). Apogee also may increase fruit set, but this may be advantageous if the trees are excessively vigorous in the top. Treat with Apogee near bloom to begin controlling growth early. □

Fruit IPM

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

Peach

✓ **Oriental Fruit Moth (OFM):** The first of two full insecticide covers for OFM control should have been applied in southern counties by the time you read this newsletter. A second full insecticide cover should be applied between 350-375 DD. If using Imidan for OFM control do not use less than 3#/ac. The following timings are dates and projected dates for the 2, 1st generation sprays, timed as full cover, every middle.

Oriental Fruit Moth Degree Day Spray Timing		
Area	Standard Insecticides	IGR's
Gloucester Co.	1 st spray – 4/22-25, 2 nd spray – 5/6-9	Intrepid Do Not Use
Monmouth Co.	1 st spray – 4/25-29, 2 nd spray – 5/8-11	Do Not Use
Middlesex Co.	1 st spray – 4/25-29, 2 nd spray – 5/9-12	Do Not Use
Hunterdon Co.	1 st spray – 4/26-5/2, 2 nd spray – 5/11-14	Do Not Use

There are many materials that control OFM. Of the newer materials, Assail is labeled for all pests present at this time, but is not the best product to use for PC, and use for OFM takes a significantly higher rate than use for aphids (see page 75 of the TFGP). Delegate is a new material related to Spintor, but will control OFM, tarnished plant bug, and leafrollers. Avaunt will control OFM, leafrollers, catfacing insects, **and plum curculio**. Of course Imidan, Lannate and the pyrethroids are all broad spectrum materials.

✓ **Green Peach Aphids (GPA):** A few aphid colonies have been found in several orchards in southern counties. No blocks with populations above threshold have been seen. At this time of year, growers should not tolerate more than 2 colonies per tree on peach or 1 colony per tree on nectarines. While this is a very conservative estimate for peaches, aphid populations should definitely not be tolerated on nectarines, since they will directly damage and deform the fruit. Lannate, Thiodan, and Provado/Actara/Assail (neonicotinoids) are labeled for control, with the neonicotinoids giving the best (and most expensive) control. Aphids would be the only pests present at this time of year that Provado would control. Actara will control plum curculio, tarnished plant bug, and stink bugs (at a higher rate of 4.5 to 5.5 oz/A as opposed to 3-4 oz/A for aphids). Assail will also control OFM at the high rate. Lannate, and the pyrethroids will control OFM. In order to minimize costs, growers may wish to delay aphid treatments if possible, use a pyrethroid or OP only, or if needed, use a pyrethroid plus a low rate of a neonicotinoid compound. Actara/pyrethroid combinations may offer better PC control than pyrethroids alone.

✓ **Tarnished Plant Bugs and Stink Bugs (TPB and SB):** This is the time of the season when treatments are also targeted for these two pests. Growers who have experienced past problems have either had weedy ground covers and/or had plantings with considerable wooded borders. Our early sampling has shown that the first stinkbugs seen were in border rows next to woody areas. Where hedgerows, weeds, and woods are near peach trees, growers should be particularly mindful of catfacing insect control.

✓ **Flower Thrips:** Although early thrips injury is sometimes seen on both peaches and nectarines at harvest, they are generally considered more damaging to nectarines. Thrips have been observed in very few orchards in southern counties as of this date. Where thrips have been observed they have been at very low levels.

✓ **Blossom Blight:** The weather during bloom has been unfavorable for blossom blight infections. Once shuck off begins growers can begin a sulfur based program. This does not apply to blocks known to have peach scab inoculum. In these blocks growers should continue a Captan based program until at least third cover.

✓ **Constriction Canker:** Some constriction canker is starting to show up, particularly around the blossoms. This may be confused with blossom blight, but will not have the characteristic sap or oozing at the base of the blossom that is associated with true blossom blight. Constriction canker will gradually enlarge in concentric rings around the blossom, the blossom falls off, and the twig becomes girdled. The only control at this time is to observe the blocks that get the canker, and in about a month prune off below the cankers.

✓ **Peach Scab:** If a minimal or incomplete spray program was used during 2006, or if scab was a problem, large amounts of overwintering scab inoculum may be present on last year's wood. Fruit is infected from conidia on overwintering twig lesions. Spores are splashed onto the fruit during rainy periods from shuck split through the following six weeks. The lesions appear from 40 to 70 days after infection. They first appear as small (1-2 mm) green spots, but enlarge to 2-3 mm and become black as spores are produced. Most lesions are found on the shoulders of the fruit where spores were splashed down from the twig. Some will coalesce, covering larger areas of the fruit, and cause cracking of the fruit surface. Since conidia are now being formed, scab sprays should go on now. Combinations that

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include Gem, Bravo, or Captan are suggested. Unlike Bravo, Gem is a protectant and an anti-sporulant. A strong scab control program that also manages for resistance would be a complete cover at petal fall with Gem, followed by a complete cover at shuck split with Bravo. Keep in mind that Bravo is not labeled past shuck split.

Apple

✓ **Apple Scab:** Continue solid applications with very effective materials. We are now at peak spore discharge in all growing regions. Cedar apple rust is also a concern. The strobilurin fungicides, Flint and Sovran and the combined strobilurin/boscalid Pristine are considered weak rust materials and if they are used, they can be combined with a half rate of an EBDC where rust is known to be a problem.

✓ **Fire Blight:** Blossom sprays using antibiotics should be applied on a 3-7 day schedule or anytime temperatures are 65° F or above and the relative humidity is 60% or above. Refer to the production guide for recommended materials and rates.

✓ **Plum Curculio (PC):** PC adults are usually active by this time. This is a key insect target from now through early June. Any petal fall applications made on apples or pears should include control for PC.

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 since 1995 in Gloucester County. Events in northern New Jersey should occur 7-10 days later.

Pest Event or Growth Stage	Approximate Date	2008 Observed Date
1/4" Green Tip Red Delicious	March 27 +/- 10 Days	April 2
First Apple Scab Infection Period	April 5 +/- 18 Days	Not yet observed
Pink Peach	April 10 +/- 9 Days	April 4
Tight Cluster Red Delicious	April 8 +/- 10 Days	April 10
Oriental Fruit Moth Biofix	April 8 +/- 10 Days	April 11
First Blossom Blight Infection (Brown Rot)	April 10 +/- 5 days	Not yet observed
Full Bloom Peach	April 16 +/- 7 days	April 11
Pink Red Delicious	April 13 +/- 11 Days	April 17
Green Peach Aphid in Beating Trays	April 15 +/- 14 Days	April 18
Petal Fall Peach	April 16 +/- 14 Days	April 18
Oriental Fruit Moth - 175 DD	April 19 +/- 12 Days	April 23
Plum Curculio Injury	May 10 +/- 11 days	Not yet observed
Oriental Fruit Moth - 375 DD	May 10 +/- 8 Days	Not yet observed

Blueberry

✓ **Leafrollers and Other Leps (Other than Gypsy Moth):** Larvae (worms) rarely present in samples. Only 3% of samples have been positive for live worms other than Gypsy. Spanworms and Green Fruitworm are the 2 species being seen most often.

✓ **Gypsy Moth Larvae (GML):** We took 117 tray samples this past week and 84 (72%) were positive for GML. Of these, 21% of samples were above 1 larvae/100 clusters, and some sites have levels well above this. The highest level seen thus far has been above 20/100 clusters. This site was also a major hot spot last year and is in Atlantic County. It has been common to find fields, which have high levels at wooded edges with levels just as high 1000 feet from the woods. At this point worms are about 1/4 - 5/16" long, and a small amount of leaf feeding has been seen in the form of holes about 1/16" diameter. The newer foliage is preferred. Just as was seen last year the newer blocks are being infested at higher levels than older fields. Growers should watch these young blocks carefully since they can be stripped quickly.

Unlike most other pests seen at this time, population increase comes almost solely from the surrounding woods. Therefore, if the woods are not treated, and a treatment is applied to the blueberry field, re-treatment is likely to be required as more larvae drift in from the surrounding trees. Treatment thresholds are also difficult to define for several reasons: 1) The population is always changing, and likely to increase, particularly in the early stages, even if an insecticide is applied; 2) Not all insecticides work the same. Some require thorough coverage and have to be eaten, such as B.t. and IGR's (Intrepid and Confirm). B.t. and IGR's can be applied during bloom. Others are contact materials and may need less coverage (pyrethroids, Lannate, Sevin), but can NOT be applied during bloom; 3) Insecticide efficacy that is rated for forests, landscape and ornamentals is not the same as what is needed for a food crop with a very low tolerance for pest damage. A pest that consumes both foliage and fruit should have a very low threshold, since the value of the fruit is high; and 4) There is a phytosanitary factor in that if only a very few larvae are missed in a control program (perhaps 1 every 2-3 bushes), they can pupate, and remain hanging on the bushes (not susceptible to insecticide), until they are machine "picked" along with the fruit. They, like the larvae, have hairs that some people are allergic to, and will need to be removed from any process (or fresh) pack.

SEE BLUEBERRY ON PAGE 6

✓ **Plum Curculio (PC) Adults:** PC is not common as of this writing. Recent temperatures have been cool, and only 3% of samples are positive for adults. The first PC was seen early (4/17) this season - which may suggest the potential for increased activity or fruit injury as more fruit is set although cooler temps thru bloom may reduce activity. Growers with a history of PC problems may want to consider timely removal of bees so that treatments can be applied early before significant injury occurs.

✓ **Thrips:** No significant populations seen as of this date.

✓ **Cranberry Weevil:** Activity has decreased since last week, with only spotty presence.

✓ **Mummy Berry:** Some primary strikes have been seen in wild and unsprayed sites, but no disease has been seen in commercial fields.

Trap Counts

Tree Fruit

Southern Counties

Weekend	STLM	TABM-A	CM	AM	OFM-A	DWB	OFM-P	TABM-P	LPTB	PTB
4/8	0				0		0			
4/12	0				0		0			
4/19	154				1		4			
4/26	73	0			4		14	0		

Northern Counties

Weekend	STLM	TABM-A	CM	AM	DWB	OFM-P	TABM-P	LPTB	PTB	OBLR
4/13	8.0					0.0				
4/19	171.5					3.5				
4/26	1300.0	0.0	0.0			11.1	0.0			

Blueberry

Atlantic County

Week End	CBFW	RBLR	OBLR	SNLH	OR BEET	BBM
4/19			118.8			
4/26			80.6			

Burlington County

Week End	CBFW	RBLR	OBLR	SNLH	OR BEET	BBM
4/19			77.9			
4/26			46.3			

Pesticide Applicator Storage Inventory and Cover Letter Submittal

Due May 1st to Fire Department

All licensed pesticide applicators who store pesticides are required by law to send a copy of their storage inventory(ies) with an explanatory cover letter to the local fire company **along with the actual location of each storage area** by May 1st each year. In New Jersey, all licensed pesticide applicators who store pesticides are required per N.J.A.C. 7:30-9.5 to maintain a list of the pesticides stored or likely to be stored during the license year. This includes storage in the vehicles. A storage inventory should be kept separate from the actual storage area.

The Rutgers New Jersey Agricultural Experiment Station Cooperative Extension Pest Management Office 'Records & Forms' webpage at: www.pestmanagement.rutgers.edu/PAT/record_forms.htm has template forms for what is required as explained below.

1. See www.pestmanagement.rutgers.edu/PAT/Record-Forms/storageinventoryr.pdf for a **template storage inventory form** that meets the requirements for either a single storage location or address. The purpose of the inventory is to provide local fire departments with an accurate description of things stored by location in case of fire or other emergency. We suggest filling out a form per storage address of your establishment. You may also devise a form that suits your needs as long as it meets the requirements of N.J.A.C. 7:30-9.5.
2. See www.pestmanagement.rutgers.edu/PAT/Record-Forms/InventoryLetter.PDF for a **template cover letter** that meets the requirements. Specifically, NJDEP regulations provide; "The cover letter shall explain that this list has been sent pursuant to N.J.A.C. 7:30-9.5(b).4".

Submittal to the fire department is required annually by May 1st of each year. (This does not pertain to pesticides stored for personal use, or to those storing pesticides at loading or application areas for less than 7 days.) Applicators must keep the cover letter on file for a minimum of three years and should have it available for NJDEP upon request. □

Programs for NJ Fruit Growers

May 1, 2008 - Twilight Blueberry Growers Meeting, 5:30 p.m., Variety Farms, Inc., 548 Pleasant Mills Rd., Hammonton, NJ 08037 Contact: Gary Pavlis, 609 625-0056 Fax 609 625-3646 pavlis@njaes.rutgers.edu

May 7, 2008 - Twilight Fruit Meeting, McLeaf Orchard, 104 West Guernsey Rd. Biglerville, Pa. - Penn State Cooperative Extension, Adams County. For information contact: Tara A. Baugher 717-334-6271, ext. 314.

May 14, 2008 – Twilight Tree Fruit Meeting 6:00 p.m., Larchmont Farms, Rte. 77, Elmer, NJ 08318. Contact: Jerome Frecon at 856-307-6450 Ext 1 or frecon@njaes.rutgers.edu

May 28, 2008 – Twilight Wine Grape Meeting, Plagido's Winery, 570 North 1st Road, Hammonton, NJ 08037 (609) 567-4633, Contact: Jerry Frecon at 856 307-6450 Ext 1 or frecon@njaes.rutgers.edu or Gary Pavlis, 609 625-0056 Fax 609 625-3646 pavlis@njaes.rutgers.edu

June 5, 2008 - Twilight Blueberry Growers Meeting, 5:30 p.m., Atlantic Blueberry Company, 7201 Weymouth Road, Hammonton, New Jersey. Contact: Gary Pavlis, 609 625-0056 Fax 609 625-3646 pavlis@njaes.rutgers.edu

June 10, 2008 - Twilight Fruit Meeting, Kimes Orchard and Cider Mill - State Cooperative Extension, Adams County. For information contact: Tara A. Baugher 717-334-6271, ext. 314.

June 22-25, 2008 – International Fruit Tour South Carolina and North Carolina. Will visit J.W. Yonce & sons Farm, Titan Peach Farms, Cotton Hope peach Farm, Watsonia Packing, Strawberry Hill USA, Apple Wedge Packers, Smile Factory, and Mountain Horticultural Crops Research Station. Contact Jerry Frecon or go to www.ifruit-tree.org/short-tour-location-dates

June 26, 2008 – Fruit and Wine Grape Research Twilight Meeting, Tour and Picnic, 4:00 p.m., Rutgers NJAES Agricultural Research and Extension Center, 121 Northville Road, Bridgeton, NJ. Pre-registration is required. Contact: Jerome L. Frecon at 856-307-6450 Ext 1 or Frecon@aesop.rutgers.edu

July 24 through 27, 2008 – New Jersey Peach Festival and Gloucester County 4-H Fair, Rt 77, Mullica Hill, NJ. Contact: Jerome L. Frecon at 856-307-6450 Ext 1 or at <http://gloucester.njaes.rutgers.edu/fairfest/>

Cooperative Extension faculty and staff in Maryland, New Jersey and Pennsylvania primarily sponsor these programs. There are other educational programs run by non extension organizations. □

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Pesticide User Responsibility: Use pesticides safely and follow instructions on labels. The pesticide user is responsible for proper use, storage and disposal, residues on crops, and damage caused by drift. For specific labels, special local-needs label 24(c) registration, or section 18 exemption, contact RCE in your County.

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