

PLANT & PEST ADVISORY

FRUIT EDITION \$1.50

JUNE 26, 2007

Japanese Beetle Management

Peter W. Shearer, Ph.D., Specialist in Entomology



INSIDE

Japanese Beetle Management	. 1
Fireblight in North and Central New Jersey 2
Fruit IPM 3
Calendar of Events 5

The Japanese beetle has started to emerge throughout the state. They are present in high numbers this year. This pest was introduced into New Jersey on nursery stock from Japan in 1913. Since its introduction, it has spread to most states east of the Mississippi River. It is now a seasonal pest and can cause extensive damage to many crops. The larvae feed on roots of plants and are especially damaging to turf and pasture. The adults feed on over 275 species of plants such as fruit trees, flowers, and vegetables.

Adults are about 3/8-1/2 inch long and metallic green to greenish bronze in color. They have white tufts of hair along the bronze forewing. Larvae are C-shaped white-to-cream-colored grubs with brown heads and are about 3/4-1 inch when full grown.

The Japanese beetle overwinters as a grub in the soil. In the spring, they move up towards the soil surface and feed on roots. Adults begin to emerge in late June and are active until late September. Females can lay about 50 eggs apiece 2-6 inches deep in the soil. It takes about 2 weeks for the eggs to hatch and newly emerging larvae feed on decaying matter then plant roots.

Adult feeding damages both leaves and fruit. Leaf damage usually takes the form of skeletonizing. Fruit feeding results in large holes in the fruit. Ripening fruit is often attacked making control necessary yet difficult because of pre-harvest interval (PHI) limitations of certain insecticides. Early peach and apple varieties in addition to cherries and grapes are most susceptible to adult attack because their time of ripening occurs during Japanese beetle emergence.

Occasional scouting is required to determine if this pest is causing damage. Several products can be used stone and pome fruits and grapes when adult populations are high and damage is observed. Sevin has a 3 day PHI for apples, peaches and nectarines, and a 7 day PHI for small fruits and berries. On apple, Imidan is effective and not considered disruptive to IPM programs. Imidan has a 7 day PHI for apple; 14 days for peaches, nectarine, apricots, and grapes. These materials do provide knockdown and residual control but new beetles often invade from outside the orchard giving the appearance that control measures are ineffective. Newer products such as Provado and Assail are also effective when used at higher rates. Provado has a 0 day PHI for peaches, nectarines, and apricots and a 7 day PHI for cherries. Assail has a 7 day PHI for grapes and pome fruit. Under high pressure, control measures should be applied more frequently. Always read and follow the label. □

Fireblight in North and Central New Jersey

Win Cowgill, Agricultural Agent and Dean Polk,
Fruit IPM Agent

Fireblight is showing up in apple and Asian pear orchards all over north and central New Jersey. Extensive fireblight has also been observed throughout Massachusetts and New Hampshire. The primary source of infection was some blossom blight on cultivars that had very late bloom on one year wood. Fuji, Gala, Honeycrisp, Suncrisp (NJ55) usually have extensive flowering on one year wood. These flowers open 1-2 weeks later than our regular bloom on two year wood. This year we had very hot humid weather for a week while these flowers were still active. This bloom on one year wood is undesirable as the fruit it produces never sizes well; it is our goal during chemical thinning to remove all fruit on one year wood.



The strikes appearing now have shown on new shoot tips spread by rain and hail.

What to Do Now?

- On non bearing trees copper and maneb can be used effectively. Copper should not be used on bearing apples as it will russet the fruit.
- Apogee - Some growers have inquired about Apogee for the shoot blight phase, but it is too late to apply, according to Dr. Keith Yoder of VPI. "It will take about 7-10 days before Apogee takes effect to harden off growth so the value of applying it for fire blight shoot blight control now really depends on how much growth is still going on and how much spread occurs after the Apogee effect would have set in. In other words, how much spread might occur one to three or four weeks from now."

For Apogee to be of value, applications must begin at bloom or shortly after.

- Streptomycin - should not be used, it is ineffective against shoot blight and its use now will just hasten resistance.
- Phosphites- there is some indication that these products may have some effect on fireblight, and are labeled for it, one example is Phostrol. Repeat applications are necessary.

- Pruning out strikes- the following was prepared by Dr. Dave Rosenberger of Cornell:

1. If orchards have a little bit of blight and have lots of root suckers on M.9 or M.26, the first priority should be to cut out and burn down root-suckers before blight can get into them. One orchard in the Champlain Valley was lost last summer primarily due to blight getting into root suckers that had growth out through hardware cloth mouseguards and that became infected with shoot blight. Burning down suckers with the NAA formulation that is sold for that purpose is probably the best option, but longer suckers will need to be cut first on hot dry days.
2. Young orchards 3-8 yr old with only a few strikes should be top priority: cutting strikes 2-3 times/week in these blocks may quickly limit further spread. Any severely affected trees in such blocks should be pulled out immediately, especially if there are only a few badly affected trees in one disease locus. The first loss is the best loss, so yanking a few trees quickly can sometimes stop the epidemic before it gains steam.
3. Young orchards 3-8 yr old with more severe strikes would be a second focus provided that the amount of pruning required is not overwhelming. These need attention every 2-3 days for the next few weeks. With susceptible cultivars like Gala and Honeycrisp, be certain to cut at least 12 inches below visible signs of blight, even if that leaves only a stump with a few bare scaffold limbs.
4. Older orchards of susceptible cultivars with just a few strikes would be my third priority. Older orchards of Empire, Delicious, Mac and other cultivars of similar susceptibility will often "heal" themselves and may not benefit from summer pruning.
5. The toughest group is the "walk away from it" category. These may be either younger trees in the 3-8 yr old category or older trees. If blight is so severe that most of the wood in the entire orchard will be removed on the first or second pruning pass, or if the cost of removing strikes on older trees will be exorbitant, then attempts to prune out blight are probably a waste. Severe pruning often stimulates secondary growth that keeps trees susceptible to shoot blight even later into the summer, and it is quite possible that such severely affected orchards will be lost anyway. Walk away from them and see what is left by October.

Insect Control on Apple

Transmission of fire blight from one inoculum source to a new site or tree has long been associated with various insect populations. While the exact role

SEE FIREBLIGHT ON PAGE 5

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 second brood is about 39% hatched in southern counties, and about 2% in northern counties. Degree day spray timings are as follows for the second generation, updated since last week:

OFM Treatment Timings – 2 nd Generation, 2 Sprays/Generation		
Application and Insecticide Type		
County Area	Standard Insecticides	Intrepid
Southern	1 st trt past, 2 nd trt 6/27-29	1 st trt past, 2 nd trt 6/25-27
Central	1 st trt past, 2 nd trt 6/29-7/1	1 st trt past, 2 nd trt 6/27-29
Northern	1 st trt 6/24-26, 2 nd trt 7/6-9	1 st trt 6/22-25, 2 nd trt 7/4-6

✓ **Tufted Apple Budmoth (TABM):** Treatments for the first brood are over throughout the state. TABM hatch is 100% complete in southern counties and about 93% complete in northern counties. The next treatments will be due for the second generation by the end of July in southern counties and the beginning of August in northern counties.

✓ **Catfacing Insects (Tarnished Plant Bugs-TPB and Stink Bugs-SB):** As we move into summer heat, catfacing insects become a primary target, especially in dry seasons. Many orchards have ground covers composed of flowering weeds and clover, which makes an ideal habitat for catfacing insects. These insects breed and multiply in the ground cover, and then find their way to the peach fruit. Damage may appear as water soaked areas, bleeding spots on the fruit, or depressed calloused tissue. Because there are pit injury and bacterial spot symptoms present in some orchards, be sure to distinguish between those symptoms and catfacing. Fresh catfacing injury will appear as single or multiple bleeding sites on the fruit surface. Cutting into the bleeding area will reveal a shallow injury. Injured pits will appear similar to catfacing injury, however, but when the fruit is cut the injured area appears as a “water-soaked” area extending through to the pit. Bacterial spot often begins with multiple bleeding spots that will eventually heal over leaving blackened spots.

✓ **Brown Rot; Anthracnose:** Thundershowers and overhead irrigation done around periods of warm temperatures and high humidity can provide good opportunities for brown rot infection, particularly in blocks that were hurt by frost at bloom. An improved fungicide schedule should be initiated 2 to 3 weeks prior to the first picking. Pristine (a combination of strobilurin and boscalid chemistries) along with the SI's Elite, Bumper and Indar are rated the best for brown rot control on ripening fruit. Rotating different chemistries is the best strategy for resistance management. Where anthracnose has been a problem in past years, Pristine or Gem are the materials of choice.

✓ **European Red Mites (ERM):** Mites have not yet been a problem in most orchards. However this is the time of the year when populations typically begin to build. If mites become an issue most growers will want a quick knock down material. Be aware that Apollo and Savey can be slow acting and they have long REIs (21 and 28 days). Enviodor is a new chemistry that is very effective for mites and is a product that should be included for resistance management. It works faster than Apollo or Savey, but like those products it is best used before mites build up large populations. Nexter and Acramite are the two best options for quick knockdown of large mite populations. Make sure to alternate these materials, use enough spray volume, and apply to both sides of the tree. Acramite does not work in alkaline water. Make sure the spray mix is neutral or slightly acidic when using Acramite.

Apple

✓ **European Red Mites (ERM):** Mites have been showing up in apple blocks over the past few weeks. The treatment threshold for mites in apples for late June/early July is 5 motile mites/leaf. Very few orchards have reached this threshold and in general there are more beneficials present in orchards than we have seen in recent seasons. In addition to the miticides mentioned above for peach, apple miticides include several additional products: Zeal, Fujimite and Kanemite. Nexter (formerly Pyramite) has begun to lose efficacy over the past few seasons, presumably due to building resistance. Fujimite and Kanemite have the same mode of action as Nexter. They are all classified as mitochondrial electron transport inhibitors (METI) that block cellular respiration. Use no more than one application of a miticide from this group per season. If Nexter has performed poorly in your orchard then materials from the METI group may not be the best choice. Be sure to rotate chemistries by not using the same material more than once per season.

✓ **Codling Moth (CM):** Since we are between 1st and 2nd generations, very little activity is present except in orchards with a history of CM problems. We expect that the first sprays for the second generation will be due in southern counties by around 7/9 with standard materials, or around 7/6 with Intrepid. The following chart updates timings outlined in last week's newsletter.

SEE IPM ON PAGE 4

Codling Moth 2 nd Brood Timing		
Application and Insecticide Type		
County Area	Standard Insecticides – Avaunt, Neonicotinoids, Carbamates, OP's, Pyrethroids	IGR's - Esteem, Intrepid, Rimon
Southern	1 st trt 7/9-10	1 st trt 7/5-6
Central	1 st trt 7/10-11	1 st trt 7/6-7
Northern	About 1 st 7/16	About 1 st 7/11-13

✓ **Tufted Apple Budmoth (TABM):** See peach section.

✓ **Summer Diseases – Sooty Blotch (SB), Fly Speck (FS), Black and White Rots (BR, WR) (and Anthracnose – Bitter Rot):** All of these diseases are important to control at this time. The most economical program for SB/FS, BR and WR is a combination of Topsin and Captan. If Bitter Rot is an issue, then maintain a higher rate of Captan, or use Ziram. Pristine or Sovran can also be used alone in alternating sprays. Good coverage is essential for control.

✓ **Fireblight:** The statewide epidemic has slowed in southern counties, but new infections have recently appeared in northern counties. Varieties where fire blight has been seen in northern counties include: Gingergold, Granny Smith, Honeycrisp, Suncrisp, Jonagold, Jonathan, Mutsu, Gala, Rome, Idared, Red Delicious, McIntosh, Cortland, Paula Red, Smoothee, Stayman, Fuji, and Cameo. Please see accompanying article on fire blight and control. Potato leafhopper (PLH) is the only insect present at this time that is known to transmit fireblight. PLH should not be tolerated where fireblight is present.

✓ **Aphids: Spirea and Apple (green) Aphids; Potato Leafhoppers (PLH):** Aphid populations are stable or dropping statewide, either from treatment or biological control. PLH are present in a number of orchards. The neonicotinoids, (e.g. Provado, Calypso, Actara, and Assail) will control both leafhoppers and aphids at this time.

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	2007 Observed Date
SJS Crawlers-first generation	June 02 +/- 08 Days	May 25
TABM 1st gen. 475 DD target (start)	June 02 +/- 07 Days	June 1
Peach Scab symptoms	June 14 +/- 13 Days	June 1
2nd Pear Psylla hatch	May 30 +/- 02 Days	June 2
CM 1st generation 450 DD target	June 04 +/- 08 Days	June 3
CM 1st generation 550 DD target	June 09 +/- 07 Days	June 8
TABM 1st gen. 475 DD target (end)	June 18 +/- 10 Days	June 16
CM 2nd generation 1250 DD target	July 15 +/- 10	Not yet observed

Blueberry

✓ **Aphids:** This is the primary insect target at this time. About 70% of samples are positive for aphid colonies. About 33% of our samples were over 10% of terminals infested with healthy colonies.

✓ **Oriental Beetle:** Adults are very active, mating and laying eggs. Growers who have high populations in their fields should be using Admire or the generic version of this product before the end of July. Make sure to irrigate in immediately after application.

✓ **Leafrollers and Other Similar Leps:** About 5% of our samples have been positive for live leafroller larvae. All levels seen have been below threshold.

✓ **Blueberry Leafminer:** Some larvae are present, and were seen in 5% of samples taken. This is not a pest that needs to be treated.

✓ **Cranberry Fruitworm (CBFW):** Overall the amount of injury seen so far this season has been light compared to previous seasons. About 9% of fruit samples have been positive for CBFW injury, but only 4% of samples have exceeded 1% actual fruit cluster injury.

✓ **Plum Curculio:** Only 1 adult was seen across all sampling. All injury is old, and present in about 34% of fruit samples. Most levels are very low. However, if growers are boiling fruit for the detection of blueberry maggot larvae, some PC larvae may still show up, especially in early varieties. These will be much larger than a maggot larva, be "C" shaped and have a distinct head capsule.

✓ **Anthracnose:** Some anthracnose is starting to appear in field samples. The highest level seen to date was .4%.

SEE INSECT TRAP COUNTS ON PAGE 5

Trap Counts

Tree Fruit Southern Counties

Week End	STLM	TABM-A	CM	AM	OFM-A	DWB	OFM-P	TABM-P	LPTB	PTB
6/2	14	25	3		3	25	2	34	80	
6/9	398	34	4		0	15	1	39	60	
6/16	1062	27	3		1	25	5	34	68	0
6/23	1297	13	4		4	22	3	14	62	0

Tree Fruit Northern Counties

Week End	STLM	TABM-A	CM	AM	DWB	OFM-P	TABM-P	LPTB	PTB
6/2	65.6	18.1	7.7		27.0	4.3	23.5	30.8	0.0
6/9	125.9	30	3.1		14.5	2.9	27.8	30.9	0.5
6/16	711.9	25.0	1.9		2.5	1.6	28.0	16.9	0.6
6/23	597.8	17.0	1.1		1.7	6.9	18.5	14.8	0.6

Blueberry

Atlantic County

Week End	CBFW	RBLR	OBLR	SNLH	OR BEET	BBM
6/2	1.89	0.09	12.09	0.00		0.00
6/9	0.57	22.68	25.78	0.09		0.00
6/16	0.73	63.34	18.54	0.24	48.05	0.01
6/23	0.45	60.43	13.54	0.27	427.61	0.05

Burlington County

Week End	CBFW	RBLR	OBLR	SNLH	OR BEET	BBM
6/2	0.98	0.00	12.20	0.00		0.00
6/9	0.84	0.08	27.00	5.27		0.06
6/16	1.42	7.92	26.86	6.91	54.00	0.16
6/23	0.61	19.50	7.86	4.29	359.44	0.38

FIREBLIGHT FROM PAGE 2

of which insect species are responsible for the bulk of fire blight transmission is still being investigated, new research has shed some light on the problem.

The influence of insects can be divided into 2 parts: 1) Those that may physiologically vector the disease by carrying the bacteria from site to site, and 2) Those that may cause injury sites through normal feeding, thus creating small wounds that may allow bacteria to enter. Various species of sucking insects are usually associated with the first group.

The two main groups of sucking insects present at this time of year are the aphids and leafhoppers. The green apple/spirea aphid complex is no longer thought to be a key problem in fire blight transmission. The leafhopper story is a little more complex. There are 3 species present in most orchards at this time of year: 1) white apple leafhopper, 2) rose leafhopper, and 3) potato leafhopper. Of the 3 species, potato leafhopper has been most often implicated in the transmission of fire blight. Potato leafhoppers are yellowish to pale green, and nymphs move sideways when disturbed. They overwinter in southern states and near the Gulf coast, move into our area in early June, and are present until the end of the season. Physical feeding injury will appear along leaf margins as a dried "burned" look, and may often be confused with nutrient deficiencies. While the action threshold for leafhoppers is 3 nymphs or adults per leaf, potato leafhoppers should not be tolerated if fire blight is present. Provado, Actara, Assail and Calypso can be used to control potato leafhopper populations.

Other insects may help spread the disease by causing wounds that the bacteria can invade, but not physically vector the disease. These may include other leafhoppers, and plant bugs. In general if these insects are present along with fire blight, they should be tolerated at only low levels. □

Calendar of Events

June 26, 2007 - 5:15 p.m. Twilight Tree Fruit and Wine Grape Research Meeting, Tour and Picnic, Rutgers Agricultural Research and Extension Center, 121 Northville Road, Bridgeton, N.J. Program information and directions at <http://gloucester.rutgers.edu>. Preregistration required; No charge. Contact Alice Rogers at 856 307-6450 Ext 1 or gloucester@aesop.rutgers.edu.

July 12, 2007 - Penn State University Fruit Research and Extension Center Grower Field Day, Penn State Fruit Research and Extension Center, 290 University Drive, Biglerville, Pennsylvania. Noon to 5:00 p.m. Cost is \$15.00. Contact Dr. Greg Krawczyk at 717-677-6116. Registration required and forms available at: <http://frec.cas.psu.edu/>.

July 26, 27, 28, 29, 2007 New Jersey Peach Festival, Gloucester County 4-H Fairgrounds, Rt. 77 (South), Mullica Hill, N.J. Grower reception on Friday evening July 27 at 7:00 p.m. Information available at: <http://gloucester.rce.rutgers.edu/fairfest/> or by contacting 856-307-6450.

Plant & Pest Advisory
Rutgers School of Environmental
and Biological Sciences
ASB II, 57 US Hwy. 1
New Brunswick, N.J. 08901

New Jersey Agricultural
Experiment Station

RUTGERS

FIRST CLASS
POSTAGE PAID
PERMIT #576
MILLTOWN, NJ 08850

PLANT & PEST ADVISORY

FRUIT EDITION - CONTRIBUTORS

Rutgers Cooperative Extension (RCE) Specialists and Program Associate

George Hamilton, Ph.D., Pest Management
Norman Lalancette, Ph.D., Plant Pathology
Bradley A. Majek, Ph.D., Weed Science
Peter Oudemans, Ph.D., Small Fruit Plant Pathology
Cesar Rodriguez-Saona, Ph.D., Cranberry/Blueberry Entomology
Peter W. Shearer, Ph.D., Entomology
Daniel Ward, Ph.D., Pomology
Gail Lokaj, Program Associate in Pomology

Rutgers NJAES

Joseph Goffreda, Ph.D., Breeding

RCE Agricultural Agents and Program Associates

Atlantic County, Gary C. Pavlis, Ph.D. (609-625-0056)
Gloucester County, Jerome L. Frecon (856-307-6450)
Hunterdon County, Winfred P. Cowgill, Jr. (908-788-1338)
Morris County, Peter J. Nitzsche (973-285-8300)
Passaic, Elaine F. Barbour, Agric. Assistant (973-305-5740)
Warren County, William H. Tietjen (908-475-6505)
Fruit IPM, Dean Polk (609-758-7311)
Atanas Atanassov, Ph.D., Program Associate (908-788-1338)
Gene Rizio, Program Associate (856-566-2900)
David Schmitt, Program Associate (856-307-6450)

Newsletter Production

Jack Rabin, Associate Director for Farm Services, NJAES
Cindy Rovins, Agricultural Communications Editor

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.

Use of Trade Names: No discrimination or endorsement is intended in the use of trade names in this publication. In some instances a compound may be sold under different trade names and may vary as to label clearances.

Reproduction of Articles: RCE invites reproduction of individual articles, source cited with complete article name, author name, followed by Rutgers Cooperative Extension, Plant & Pest Advisory Newsletter.

For back issues, visit our web site at:
www.rce.rutgers.edu/pubs/plantandpestadvisory

THE STATE UNIVERSITY OF NEW JERSEY
RUTGERS

Cooperating Agencies: Rutgers, The State University of New Jersey; U.S. Department of Agriculture; and County Boards of Chosen Freeholders. The U.S. Department of Agriculture (USDA) prohibits discrimination in all programs and activities on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, or marital or family status. (Not all prohibited bases apply to all programs.) Rutgers Cooperative Research & Extension is an Equal Opportunity Program Provider and Employer.