

PLANT & PEST ADVISORY

VEGETABLE CROPS EDITION \$1.50

JUNE 20, 2007

IPM Update

Kristian Holmstrom, Research Project Coordinator II, Vegetable IPM Program



Sweet Corn

European corn borer (ECB) adult numbers are now in decline in much of the state, although there are a few areas of higher activity in parts of Atlantic, Camden, Cumberland and Sussex counties (see ECB map). Feeding is increasing on whorl stage sweet corn in all areas as eggs continue to hatch. Within the past week, feeding percentages into the forties have been recorded as far north as Morris County. In areas where no **corn earworm (CEW)** adults have been caught, a weekly silking spray schedule is warranted to prevent injury from later emerging ECB larvae.

For sweet corn in the whorl stage, check 5 consecutive plants each in 10 random locations throughout the planting. Look for the presence of "shot-hole" type feeding that is characteristic of ECB larvae. On pre-tassel stage plants, look for discoloration or actual caterpillars in the emerging tassels. Consider treating if fresh damage is found on 12% or more plants. Be sure to treat again at the full tassel to first silk stage to protect the forming ears from ECB larvae that are leaving the tassel and traveling down the stalk.

The highest nightly ECB catches for the previous week are as follows:

Indian Mills	3	Hammonton	2	Burlington	1
Beemerville	2	Seabrook	2	Clinton	1
Elm	2	Shirley	2	Elmer	1
Folsom	2	Blairstown	1	Sergeantsville	1

Corn earworm (CEW) catches have become more concentrated in parts of Atlantic, lower Burlington and Camden Counties (see CEW population map), although adults continue to be captured as far north as Holmdel in Monmouth County. Pheromone traps in southern NJ show an overall decrease in CEW adult numbers over the past week. Generally, CEW adults decline to very low numbers by late June and into the first half of July. This trend appears to be starting. If CEW adults are present when plantings go to silk, there is a threat of infestation. The shaded area on the map (blue on the web version, found at: www.pestmanagement.rutgers.edu/IPM/Vegetable/Pest%20Maps/maparchive.htm) corresponds to a 5-day silk spray schedule. The cross-hatched area (green on the web) corresponds to a 3-4 day silk spray schedule.

SEE IPM ON PAGE 2

INSIDE

IPM Update1
Pest Notes3
When to Begin Spraying for Downy Mildew on Cucurbit Crops4
Vegetable Disease Update4
Vegetable Diseases of the Week5
Whole Foods Market Low-Interest Loan Program for Local Food Producers6
Weekly Weather Summary6

The highest nightly CEW catches for the previous week are as follows:

Cinnaminson	2	Tabernacle	2	Elm	1
Folsom	2	Beckett	1	Matawan	1
Hammonton	2	Burlington	1	Medford	1
Indian Mills	2	Downer	1	Shirley	1

Tomatoes

Tomatoes are subject to infestation by aphids, even early in the season. Check 5 consecutive plants each in 10 random locations in the planting. Look at two complete leaves per plant. Aphid colonies may be tolerated on plants for a time as long as they are not numerous and heavy enough to result in honey dew (sticky droppings) on the surface of fruit. Aphids may be controlled by natural predators and parasites if broad spectrum insecticides are not used. Note whether colonies are increasing in number and note the presence of predators such as ladybird beetles/larvae, lacewing larvae, syrphid maggots and the presence of bloated, gold colored aphid mummies (indicating parasitism by aphidiid wasps). If aphid colonies are still present when fruit begin to size, and are heavy enough to result in honey dew deposition in several samples, consider a foliar insecticide application to control them.

Thrips have been on the increase in tomato blossoms in the northern counties over the past week. While numbers are reasonably low (generally 1-3 thrips per sampled flower cluster in less than 25% of clusters), their appearance is an indication that additional sampling must be undertaken. This pest is capable of causing the "gold fleck" symptom on ripening fruit, as well as significant foliar injury should the population get very large. When sampling for other pests, tap a fresh flower cluster over an index card or other small piece of paper. Look for very small, yellow thrips to be shaken out onto the paper. Low to moderate populations are often best found using this method. If the population gets very high, thrips will be seen moving about on the leaflets and will cause clear patches to develop as they feed on foliage. While it is not necessary to treat if thrips are found in one or two flower clusters, consider treating for this pest if they are increasing in sampled flower clusters and fruit are present. Treatment is also warranted if thrips are numerous enough to be present on foliage. A damaging population was discovered this week on tomato transplants in a Morris County greenhouse. This situation is not uncommon, and it is a good idea to inspect transplants prior to planting to insure that they do not get placed in the field with a thrips infestation. Check the *2007 Commercial Vegetable Production Recommendations* for labeled insecticides.

When scouting for other pests, note the presence of whitish "pin-spots" on the surface of lower leaves. Upon closer inspection, **two-spotted spider mites**

(**TSSM**) may be found on the lower surface of leaves with the pin-spots. This pest is best dealt with before it becomes widespread in the field. Spot treatments with miticides may be sufficient to prevent larger infestations. Be sure to take several samples from field edges to account for potential mite migration into the field from grassy edges or other near by host crops.

Tomato hornworm (THW) adults are now appearing regularly in light traps, and eggs were found on tomato plants in all counties. THW larvae consume large quantities of foliage and can damage green fruit. Generally, they are not numerous enough to cause economic injury, but in some instances they have been a problem. Look for stems that have been stripped of leaflets. There will be obvious droppings on leaves and plastic mulch below. The caterpillar can be difficult to spot, even when large. If droppings are fresh, and injury is found in approximately half the sites, consider an insecticide treatment.

Peppers

It is important to check peppers weekly for the presence of **ECB** eggmasses, as well as aphids and **TSSM** at this time. ECB eggmasses are flat and waxy looking, having the appearance of fish scales on the underside of the pepper leaf. As the larvae emerge, they will look for a place to bore into the plant. In the absence of fruit, they will enter the stem, causing flagging of branches or the upper portion of the plant. This effectively eliminates the early fruit set on affected plants. Check 5 consecutive plants each in 10 random field locations. Look at the underside of 2 leaves per plant. If 2 or more ECB eggmasses are found in the total sample, consider an insecticide application to minimize plant injury. As fruit develop, this threshold still applies, and additional weekly treatments are recommended if the ECB adult catch in local light traps averages 1 or more per night. This level of activity corresponds to the shaded and cross-hatched areas on the ECB map (blue and green on the web version, found at: www.pestmanagement.rutgers.edu/IPM/Vegetable/Pest%20Maps/maparchive.htm#2007%20Weekly%20Pest%20Maps)

Snap Beans

Potato leafhopper (PLH) is active now in much of the state, and is capable of causing major injury to beans. Feeding from PLH causes leaves to curl downward and results in significant yield loss. If a sweep net is available, consider treating if more than 100 nymphs and adults are present in 20 sweeps of pre-bloom stage plants. This threshold increases to 250 during bloom and to 500 per 20 sweeps during pod development. If no sweep net is available, check plants in 10 random field locations and consider treating if adults and nymphs are found throughout.

ECB are a threat to plants with developing pods at this time. Treat at full bloom and again at pin-pod if

SEE SNAP BEANS ON PAGE 3

Pest Notes

Gerald M. Ghidui, Ph.D., Specialist in Vegetable Entomology

✓ **General:** FMC announced that EPA approval was received for the new insecticide Hero 1.24. This insecticide is a combination of the pyrethroids zeta-cypermethrin and bifenthrin, and is labeled on succulent peas and beans, head lettuce, sweet corn, peppers, eggplant, tomatoes and head and stem brassica crops. Hero is effective against various **worms**, including **corn earworm**, **European corn borer**, **fall armyworm**, **cutworms**, etc., and against various **beetles** including **sap beetles**, **rootworm** adults and **cucumber beetles**, **flea beetles**, **Japanese beetles**, etc. These pyrethroids also control the **sucking insect pests**, such as **stink bugs**, **aphids**, and others. Hero is a Restricted Use Pesticide – refer to label for all rates, restrictions, directions, etc.

Populations of **thrips** have exploded to high levels during the past week in many crops, partially because of favorable hot, humid weather. Most Atlantic coast vegetable growing areas, including Long Island and Virginia, also report high levels of thrips. At RAREC thrips have been found in peppers, onions, tomatoes, and even in developing carrots. Monitor closely for thrips to detect populations early in the season. Tap the plants/flowers lightly over a light-colored piece of paper or cardboard to detect thrips as they fall onto it. Depending on the crop, several effective materials are available for control of thrips, including SpinTor, Entrust, Lannate, Assail, Proaxis, imidacloprid (or generics), Monitor (tomatoes in NJ), Baythroid, Danitol, lambda-cyhalothrin (or generics), and Venom. Check label for use rates and restrictions, and ensure that adequate coverage is obtained. Use high-pressure, high volume to force the spray material into the flowers, cracks and crevices, and tight spots within the plant where thrips like to hide to ensure effective control.

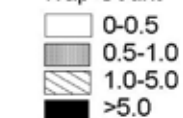
Mexican bean beetles have been attacking bean plantings in southern New Jersey. Although populations are not high yet, it is unusual to find this pest at all on snap and lima beans. Treatment is recommended if defoliation exceeds 20% during prebloom, or 10% during podding and the population remains high. Monitor crop closely to determine if this pest is approaching those levels. Treat with any of the labeled pyrethroids (Asana, Mustang, Warrior or generics), Hero, or the non-pyrethroids such as azadirachtin (neem related materials), Orthene, Lannate, or carbaryl (Sevin). □

SNAP BEANS FROM PAGE 2

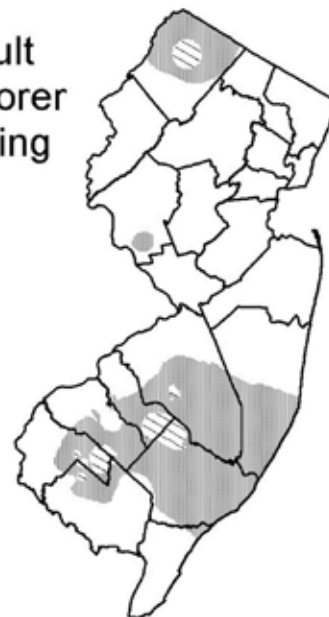
moths are being caught in local light traps. Continue treating if ECB catches exceed 2 per night on average for the previous week. Cross-hatched areas on the ECB map (green on the web version) indicate a weekly spray schedule through pod development.

Distribution of Adult European Corn Borer for the Week Ending June 20, 2007

ECB Avg. Nightly Trap Count



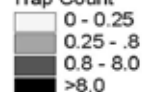
10 0 10 20 Miles



Data collected and processed by: Kris Holmstrom, Marilyn Hughes
Rutgers Cooperative Extension & Center for Remote Sensing

Distribution of Adult Corn Earworm for the Week Ending June 20, 2007

CEW Avg. Nightly Trap Count



10 0 10 20 Miles



Data collected and processed by: Kris Holmstrom, Sally Walker, Marilyn Hughes
Rutgers Cooperative Extension & Center for Remote Sensing

When to Begin Spraying for Downy Mildew on Cucurbit Crops?

Andy Wyenandt, Ph.D., Specialist
in Vegetable Pathology

One of the biggest questions each summer is when to start spraying for Cucurbit Downy mildew control? Remember that downy mildew in a normal year has to work its way up north from cucurbit crops grown in the south each year, and there needs to be favorable weather patterns which spread the disease to our region. Presently, downy mildew has been detected in southern Florida and in greenhouses in Ontario, Canada. Each source poses a threat to the mid-Atlantic region and should be watched carefully. The latest report from the Downy Mildew Forecasting Center at NCSU has our region on a low level alert from the Ontario source due to weather patterns out of the Midwest. The best approach on determining on when to spray for Downy mildew will be to be aware of weather patterns and to scout on a regular basis. As cucurbit crops begin to develop canopy make sure to scout on a regular basis, especially if wet weather has been around for a few days. *Once Downy mildew has been detected in our region, basic fungicide maintenance programs should be adjusted to include Downy mildew control.*

To track the progress of Downy mildew in the eastern US and to keep up with reports of Downy mildew from other states please visit North Carolina State University's Cucurbit Downy Mildew Forecasting Center at <http://www.ces.ncsu.edu/depts/pp/cucurbit/>. For more information on cucurbit Downy mildew control please see the *2007 New Jersey Commercial Vegetable Production Recommendations Guide*. □

Vegetable Disease Update

Andy Wyenandt, Ph.D., Specialist in Vegetable Pathology
and Wesley Kline, Ph.D., Cumberland County Agricultural
Agent

✓ **Powdery mildew – Cucurbits** – Powdery mildew typically occurs from mid-July until the end of the season. Symptoms typically begin on older, lower leaves and can develop and spread rapidly under dry, humid conditions. **Control of Powdery mildew begins with regular scouting for symptoms and weekly fungicide applications.** Fungicide resistance management of the fungus which causes Powdery mildew is critical. Fungicides with a high risk for resistance development such as the strobilurin (Pristine, Group 11) should be tank mixed with a protectant fungicide such as chlorothalonil (M5) or sulfur (M2) and rotated with fungicides of a different chemistry such as chlorothalonil + Nova or Procure (FRAC code 3). FRAC code 3 fungicides are also high-risk and should never be applied alone. Growers need to read and follow restrictions on labels carefully. For more information on control of Powdery mildew and other important diseases of cucurbits please see the *2007 New Jersey Commercial Vegetable Production Recommendations Guide*.

✓ **Pepper - Bacterial leaf spot** – Symptoms of Bacterial spot on pepper leaves include small, brown water-soaked lesions that turn brown and necrotic in the centers. Spots may coalesce and form large blighted areas on leaves and premature defoliation can occur. On fruit, brown lesions can form which have a roughened, cracked wart-like appearance. High temperatures, high relative humidity and rainfall favor Bacterial spot development. Loss from Bacterial spot can be reduced somewhat by maintaining high levels of fertility, which will stimulate new growth. Applying a fixed copper (M1) at labeled rates plus maneb (M3) at 1.5 lbs 75DF/A or 8 to 10 oz Tanos (famoxadone + cymoxanil, 11 + 27) may help suppress spread. For more information on control of Bacterial spot of pepper please see the *2007 New Jersey Commercial Vegetable Production Recommendations*.

✓ **Pepper – Phytophthora blight**

For control of the crown rot phase of blight:

Apply 1 pt Ridomil Gold 4E/A or 1 qt Ultra Flourish 2E/A (mefenoxam, 4). Apply broadcast prior to planting or in a 12- to 16-inch band over the row before or after transplanting. **Make two additional post planting** directed applications with 1 pint Ridomil Gold 4E or 1 qt Ultra Flourish 2E per acre to 6 to 10 inches of soil on either side of the plants at 30-day intervals. Use formula in the "Calibration for Changing from Broadcast to Band Application" section of *Calibrating Granular Application Equipment* to determine amount of Ridomil Gold needed per acre when band applications are made.

When using polyethylene mulch, apply Ridomil Gold 4E at the above rates and timing by injection through the trickle irrigation system. Dilute Ridomil Gold 4E prior to injecting to prevent damage to injector pump.

✓ **Tomato – Bacterial spot, speck and canker** – Bacterial diseases can cause serious problems in the field if infections are allowed to spread. Apply Actigard (P) at 0.33 oz 50 WG/A, or fixed copper (M1) at 1 lb a.i./A plus a mancozeb (Dithane, Manex II, Manzate, Penncozeb, M3) at 1.5 lb 75DF or OLF, or ManKocide (M1 + M3) at 2.5 to 5.0 lb

SEE DISEASE UPDATE ON PAGE 5

DISEASE UPDATE FROM PAGE 4

61WP/A, or Cuprofix MZ (M1 + M3) at 1.75 to 7.25 lb 52.5DF/A on a 7 day schedule.

✓ **Tomato - Stem Rot/Pith Necrosis** – Symptoms begin to develop as green fruit begins to mature. Bacteria are most likely ubiquitous to tomato fields and develop when weather conditions and cultural practices lead to favorable conditions for disease development. Symptoms include the development of irregular brown lesions on main stems and branches. Late pruning (suckering) can provide entry points for both bacterial diseases, especially during wet conditions. Internally, stems will become brown and mushy. High humidity is necessary for disease development in both cases. High nitrogen and low night temperatures are associated with Pith Necrosis development. Control of both begins with cultural practices such as avoiding working in fields with wet foliage, avoiding late pruning and watching the amount of N applied to plantings.

✓ **Tomato – Buckeye Rot** – Wet weather and wet soils favor the development of Buckeye rot. Symptoms of Buckeye Rot on green fruit include brownish-tan lesions that have a **definitive concentric appearance**. As lesions form the fruit will begin to soften up, this is quite different than Late blight which will cause a dark brownish/black lesion with the fruit remaining somewhat firm. Unlike Late blight, Buckeye rot won't attack the foliage. For more information on control please see the *2007 New Jersey Commercial Vegetable Production Recommendations*. □

Vegetable Diseases of the Week

Andy Wyenandt, Ph.D., Specialist in Vegetable Pathology



Hail damage on Bell Pepper.



Hail Damage on Cucumber.



Phytophthora crown rot of tomato.

Whole Foods Market Announces Low-Interest Loan Program for Local Food Producers

Whole Foods Market, the leading organic and natural foods supermarket, is seeking local farmers and other food producers who are interested in participating in its new Local Producer Loan Program. As part of a company-wide initiative supporting local agricultural producers and food artisans, the company plans to provide up to \$10 million annually in low-interest loans to small producers in the U.S.

At five to nine percent, the interest rates currently offered through Whole Foods Market's pilot program to small agricultural producers can be extremely attractive. The program has other attributes geared to small producers: loan application paperwork is minimized; there are no penalties for early repayment; and loan terms may be from a few months to ten years.

The Local Producer Loan Program is part of Whole Foods Market's renewed commitment to local agriculture. This includes hosting farmers markets at stand-alone stores, refocusing in-store marketing to highlight locally-produced products, and hiring regional staff focused specifically on sourcing local products.

"It is Whole Foods Market's intention to help finance local food production all over the United States," said John Mackey, co-founder and CEO of Whole Foods Market. "We are going to 'walk our talk' with financial support for local, small-scale agriculture. We believe this financial assistance of up to \$10 million per year can make a very significant difference in helping local food production grow and flourish across the United States."

Producers throughout the U.S. are invited to participate in the program. Those interested can find more information and a loan application at the website: <http://www.wholefoodsmarket.com/products/localygrown/lplp/index.html>. They can also contact the program coordinators at lppl@wholefoods.com.

Submitted by Rick VanVranken, Atlantic County Agricultural Agent. □

Weekly Weather Summary

Keith Arnesen, Ph.D., Agricultural Meteorologist

Temperatures averaged slightly below normal, averaging 67 degrees north, 68 degrees central and 69 degrees south. Extremes were 89 degrees at numerous locations on the 18th, and 49 degrees at Charlotteburg on the 15th. Weekly rainfall averaged 0.25 inches north, 0.65 inches central, and 0.75 inches south. The heaviest 24 hour total reported was 1.53 inches at Glassboro on the 12th to 13th. Estimated soil moisture, in percent of field capacity, this past week averaged 74 percent north, 69 percent central and 71 percent south. Four inch soil temperatures averaged 67 degrees north, 68 degrees central and 69 degrees south.

Weather Summary for the Week Ending 8 am Monday 6/18/ 7

WEATHER STATIONS	RAINFALL		TEMPERATURE			GDD BASE50		MON			
	WEEK	TOTAL	DEP	MX	MN	AVG	DEP	TOT	DEP	%FC	
CANOE BROOK	missing										
CHARLOTTEBURG	.08	16.79	1.89	82	49	65.	-1	782	325	63	
FLEMINGTON	.39	20.88	6.73	88	50	68.	-1	849	221	74	
NEWTON	.28	12.66	-.72	86	51	67.	0	752	231	70	
FREEHOLD	.63	16.93	2.97	87	53	68.	-2	1016	305	73	
LONG BRANCH	.39	16.53	2.40	89	56	68.	-1	804	156	56	
NEW BRUNSWICK	1.71	22.74	9.07	88	55	69.	-2	918	164	95	
TOMS RIVER	.17	14.64	.75	89	56	67.	-2	863	219	46	
TRENTON	.36	17.89	5.22	89	55	69.	-3	958	157	49	
CAPE MAY COURT HOUSE	.55	10.14	-2.15	86	53	67.	-3	854	137	59	
DOWNSTOWN	.50	14.99	2.43	87	55	68.	-3	967	145	58	
GLASSBORO	1.59	16.49	2.96	89	57	71.	0	1098	296	70	
HAMMONTON	1.01	14.63	1.46	89	56	69.	-2	999	206	68	
POMONA	.76	14.99	2.92	88	55	69.	-1	949	226	60	
SEABROOK	.12	15.22	3.32	88	56	71.	0	1108	280	45	
SOUTH HARRISON	.38	16.41	2.15	89	56	69	NA	1051	NA	NA	
WES KLINE -- GDD BASE 40 PINEY HOLLOW	LAST WEEK 215 (Ending 6/11/07) THIS WEEK 199 (Ending 6/18/07)										

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

RUTGERS

FIRST CLASS
POSTAGE PAID
PERMIT #576
MILLTOWN, NJ 08850

PLANT & PEST ADVISORY VEGETABLE CROPS EDITION CONTRIBUTORS

Rutgers Cooperative Extension (RCE) Specialists

Gerald M. Ghidui, Ph.D., Vegetable Entomology
George Hamilton, Ph.D., Pest Management
Joseph R. Heckman, Ph.D., Soil Fertility
Bradley A. Majek, Ph.D., Weed Science
Andy Wyenandt, Ph.D., Vegetable Pathology

RCRE County Agricultural Agents

Atlantic, Richard W. VanVranken (609-625-0056)
Burlington, Raymond J. Samulis (609-265-5050)
Cape May, Jenny Carleo (609-465-5115)
Cumberland, Wesley Kline, Ph.D. (856-451-2800)
Gloucester, Michelle Infante-Casella (856-307-6450)
Hunterdon, Winfred P. Cowgill, Jr. (908-788-1338)
Middlesex, William T. Hlubik (732-398-5260)
Monmouth, Bill Sciarappa, Ph.D. (732-431-7260)
Morris, Peter J. Nitzsche (973-285-8300)
Passaic, Elaine F. Barbour, Agric. Assistant (973-305-5740)
Salem (856-769-0090)
Warren, William H. Tietjen (908-475-6505)

Vegetable IPM Program (732-932-9802)

Joseph Ingerson-Mahar, Vegetable IPM Coordinator
Kristian E. Holmstrom, Research Project Coordinator II

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.