

PLANT & PEST ADVISORY

VEGETABLE CROPS EDITION \$1.50

SEPTEMBER 26, 2007



Hawaiian beet webworm moth. Source: University of Mississippi

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Pest Notes

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

✓ **Cabbage crops:** Very few "worm" problems have been reported in cabbage crops this fall. A few **cabbage loopers** and **imported cabbageworms** may be found, but numbers are still lower than in previous years. Monitor crops closely for any late worm activity, especially with the warm weather, which is favorable to the development of these pests. New York reports high populations of **aphids** in these crops, possibly as a result of the warm weather and the overuse of pyrethroid insecticides for other pests. If aphids are on the increase, switch to a non-pyrethroid for worm control (if worms are above the threshold), such as SpinTor, Proclaim, Assail, Bt's, etc. For the aphids, consider Assail, Fulfill, MSR, Orthene (check label), or Venom.

✓ **Cucurbits crop: Cucumber beetles** can be troublesome to last minute cucurbit crops (pumpkins, etc) during the current warm temperatures we now have. These pests, as well as **squash bugs**, may cause last minute damage to the vines and fruit, especially when the population reaches high levels. The pesticides listed in the *2007 Commercial Vegetable Production Recommendations for New Jersey* are all effective, but the days to harvest vary from 0 days (Baythroid, permethrin) to 7 days (Danitol). Most others have a 1 (Thionex) or 3 day PHI (Asana, bifenthrin, Sevin). Plan your material selection around the proper PHI ensure compliance with the label. Double check **all** REI's and PHI's on the label before the application is made.

✓ **Spinach:** Bob Moore (Helena) reports that growers along the Delaware River have had unusually high populations of the **Hawaiian beet webworm**. This pest does not overwinter in the northern states, and most likely arrives in New Jersey on wind currents or storm fronts that come up from either the Texas area or the Florida area. Both adults and larvae were present in several spinach fields monitored around the Salem area. Several materials are effective against this pest in Spinach and leafy greens, including the Bt's, Avaunt, Confirm, and Intrepid. These materials are not very effective against adults, and should be applied before the larvae mature for best results. Thorough coverage is important for effective control in these crops, and a spreader may help with coverage of the leaves. □

IPM Update

Kristian Holmstrom, Research Project Coordinator II, Vegetable IPM Program

Sweet Corn

European corn borer (ECB) adult numbers continue to decline. In all probability, the late flight is nearly over. Overall, numbers are low, especially in the northern counties (see ECB map). Larval feeding may still be found on some late sweet corn plantings. Most late plantings are in silk, and the silk spray schedule required for **corn earworm (CEW)** control should prevent damage from ECB at this time.

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

Elmer	2	Centerton	1	Mannington	1
Shirley	2	Clinton	1	New Egypt	1
Tabernacle	2	Downer	1	Seeley Lake	1
Califon	1	Indian Mills	1	Woodstown	1

Fall armyworm (FAW) feeding in all stages of growth is heavy at this time. FAW is capable of causing significant injury to sweet corn plants and will feed on all stages, including seedlings. For this reason it is necessary to check all pre-silking fields for signs of FAW feeding. Look for large, ragged holes and lots of caterpillar droppings in the whorl. Consider treating if 12% or more FAW injury is found alone, or in combination with ECB injury in a planting. For B.t. corn, silk sprays are still necessary to prevent ear damage by FAW. This pest is not as susceptible to the toxin as are ECB and CEW, and some level of infestation can occur. In general, a 3-day silk spray schedule as required for CEW control on non-B.t. corn should be lengthened to 7-days for FAW control in B.t. corn.

Corn earworm (CEW) catches also have declined further throughout the state (see CEW population map). This trend may reverse somewhat with warmer evenings projected for the next few days. CEW adults pose a significant threat to silking sweet corn. The cross-hatched area (green on the web, found at: www.pestmanagement.rutgers.edu/IPM/Vegetable/Pest%20Maps/maparchive.htm) corresponds to a 3-day silk spray schedule.

Silking Spray Schedules*:

North – 3 days

Central – 3 days

South – 3 days

* Note: These are general recommendations. Local trap catches may indicate some variation in the frequency of insecticide applications to silking corn.

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

Denville	7	New Egypt	4	Jones Island	3
Allamuchy	4	Clinton	3	Mannington	3
Georgetown	4	East Vineland	3	Princeton	3
Indian Mills	4	Hammonton	3	Elm	2

Cole Crops

Cabbage looper (CL), **imported cabbage worm (ICW)**, **diamondback moth larvae (DBM)**, and in some areas, **yellow-striped armyworm (YSAW)** are all being found on the cole crops at this time. In heading type cole crops like cabbage and broccoli, check 5 consecutive plants each in 10 random locations. Look on the undersides of leaves and on the youngest leaves at the center of the plant. Consider treating if 10% or more plants are infested while in the 0-9 true leaf stage. The threshold may increase to 20% from 9 true leaves to the early head stage. Once heads form, the threshold becomes a more conservative 5%, in order to protect the marketable portion of the plant. For leafy greens like collards, use a 10% threshold throughout the life of the crop to minimize injury to the leaves.

Alternaria and **downy mildew (DM)** are present on some plantings. *Alternaria* causes a target-shaped lesion on older foliage, while downy mildew results in a yellow spot on the leaf (typically on collards, kale and broccoli) with white-to-purplish fluffy growth on the lower surface. DM is favored by cooler temperatures and may become more common as the season progresses. See the *2007 Commercial Vegetable Production Recommendations* for useful control materials.

Tomatoes

Stinkbug injury is still occurring on some tomato plantings. Look for a diffuse, yellow blotch on red fruit or a white blotch on green fruit. The actual damage is beneath the skin. If this injury is detected during harvest or scouting and is increasing, consider an insecticide application to limit further damage.

Two-spotted spider mites (TSSM) are active in many late tomato plantings. Look for whitish “pin-spots” on the upper leaf surface as an early indication of infestation. As the population increases, webbing will be produced on the leaves. If left untreated, TSSM will cause foliage to turn brown and dry prematurely. Ideally, TSSM is treated at low levels, when spot applications may be effective.

Peppers

With a late **ECB** flight ongoing in the southern counties, it is important to check peppers weekly for the presence of ECB eggmasses, as well as **aphids** and **TSSM**. 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 bore into the fruit where the cap meets the shoulder of the pepper. Uncontrolled infestations will result in many fruit developing soft rot. 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. Additionally, a weekly spray schedule is warranted on fruiting plants when ECB adult

SEE IPM ON PAGE 3

numbers reach 1 or more per night in local blacklight traps. At present, adult ECB activity at this level exists in all southern and central counties. All shaded and cross-hatched areas on the ECB map (blue and green on the web version) correspond to a weekly spray schedule on fruiting peppers.

When scouting peppers, be sure to note the presence of aphids on the underside of leaves. These pests can build to high numbers on plants, especially with repeated use of synthetic pyrethroid insecticides for ECB management. As colonies increase in size, their droppings result in a sticky coating on the fruit below. Consider treating if aphids average 100 or more per 100 leaves sampled. This situation has occurred in several IPM scouted fields and both northern and southern NJ recently.

Severe foliar distortion and russetting of developing fruit may indicate the presence of a **cyclamen mite** infestation. This has occurred recently on one Hunterdon County pepper field. The mites are not visible without a microscope. Initial diagnosis is usually based on plant symptoms and confirmed later in the lab. Miticides labeled for TSSM are effective on cyclamen mite.

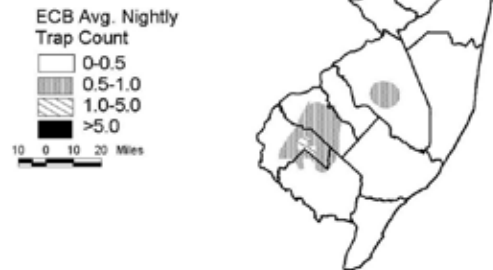
Beet armyworm (BAW) adult catches have increased somewhat in the pheromone network in the southern counties, although most of the increase remains in the Elm-Folsom-Hammonton area (see BAW map). Here, catches average over 20/night. Most peppers have been harvested in the area, but those that remain are potential targets for infestation where BAW is high. In most other areas, adult numbers are below those considered potentially damaging at this time. While checking for other insect pests, look for leaves exhibiting heavy feeding near the upper portion of the plant. Often, small BAW larvae will be found near the buds where this feeding occurs. Later, as they enlarge, BAW will begin feeding on fruit.

Pumpkins and Winter Squash

Melon aphids are still increasing in a number of northern NJ pumpkin fields, with new infestations occurring weekly. Melon aphids, like other types, deposit sticky droppings. Large populations result in a sticky coating on pumpkins beneath the foliage. If this occurs too close to harvest, the fruit may need to be washed prior to sale. It is very important to scout fields weekly, for the presence of pests including **aphids**. Check 10 mature leaves per site in 10 random sites throughout the field. Consider treating if leaves with an average of approximately 25 aphids are found in each of 10 sample sites. **Cucumber beetles** can increase in fields at this time, causing injury to the rinds of maturing fruit. While scouting, note the presence of striped or spotted cucumber beetles in samples. Consider treating if beetles are found in 2 or more sites, particularly if any feeding (scarring on the rind) is discovered.

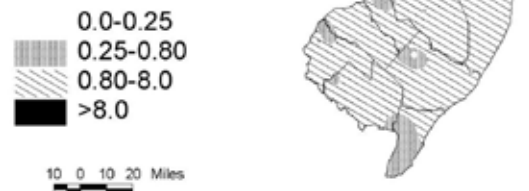
Powdery mildew (PM) infections are widespread as we enter the time of harvest. The need for further control is dictated by fruit maturity and time of harvest. If vines are still reasonably healthy with green fruit still present or the field will not be harvested quickly and foliar cover is needed, continue using a protectant fungicide. For recommended fungicide rotations for PM, consult the 2007 *Commercial Vegetable Production Recommendations*.

Distribution of Adult European Corn Borer for the Week Ending September 26, 2007



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 September 26, 2007



Data collected and processed by: Kris Holmstrom,
Rutgers Cooperative Extension Pest Management Office

Distribution of Adult Beet Armyworm for the Week Ending September 26, 2007



Data collected by Joe Maher and processed by Kris Holmstrom
Rutgers Cooperative Research and Extension

Food Safety Series: Good Agricultural Practices

Wesley Kline, Ph.D., Cumberland County Agricultural Agent

As the season starts to slow down, it is time to think about and plan for food safety and third party audits for 2008. Now is the time to assess your operation and make notes about the changes you need or want to address.

Growers are asking when the Food and Drug Administration (FDA) or USDA will require third party audits. It depends on:

- 1) How many food-borne illness outbreaks occur which result in pressure to implement regulations; and
- 2) How effective the present voluntary programs are in reducing outbreaks (e.g. California Leafy Greens Agreement).

If a grower sells items through the school lunch or other federal programs, a USDA third party audit is already required.

Florida has implemented the Tomato Good Agricultural Practices (T-GAPs) for field and greenhouse tomatoes and Tomato Best Management Practices (T-BMPs) for packinghouses programs. These were initially voluntary programs established in 2006 through a grower organization. During 2007, legislation was signed by the Florida Governor to cover all tomatoes in Florida and making it a mandatory program.

Thirty-one New Jersey agricultural operations have passed the USDA third party audit during the past year. Other operations have passed audits carried out by other auditing firms. What firm you use for the audit may depend on to whom you sell. Buyers sometimes select the auditing firm they will accept.

In September 2007, USDA made changes to the audit program. Please see "Notice to the Industry" at <http://www.ams.usda.gov/fv/fpbgapghp.htm>. The main changes are (1) they may require a minimum of one unannounced audit after the initial audit; and (2) the audit results will only be posted on the USDA website when all sections audited are passed.

To help growers keep abreast of changes in food safety and the third party audit program, Cooperative Extension will be providing two educational sessions at the annual vegetable meeting in Atlantic City.

The first session is "Food Safety from the Industry's Perspective" on Wednesday, January 16 from 9:30 to 11:30 am. The program includes:

- Spinach Farming in a New Age, One Eye on the Crop, One Eye on the News
Perry Bowen (River Farm, King George, Virginia)
- The New Jersey Food Council and their Perspective on Food Safety
Linda Doherty (President, NJFC)
- Florida's Tomato Food Safety and Third Party (T-GAPs and T-BMPs) programs
Keith Schneider (University of Florida)
- Safe Quality Food (SQF) Program and Shop Rite's Food Safety Plans
Michael Ambrosio (Wakefern Foods)

The second session is "How to Prepare for a Third Party Audit – Workshop" on Thursday, January 17 from 2:00 to 4:00 pm. The program includes:

- Problems Observed at Third Party Audits in New Jersey & How to Prepare for an Audit
Wes Kline (Agricultural Agent, Cooperative Extension)
- Review and Clarification of Audit Questions
Larry Hardwick (Bureau Chief, Commodity Inspection and Grading, NJDA)

“Growing Your Business: Competitors and Competition” on October 2

The Rutgers Food Innovation Center is offering an entrepreneurial workshop, “Growing Your Business: Competitors and Competition,” on October 2. The workshop is the second in a series of five workshops designed to inform farmer entrepreneurs about the opportunities, resource requirements and steps to expand into value-added food production and sales. The workshop will be held October 2 from 1:00 p.m. to 4 p.m. at the Rutgers EcoComplex in Bordentown. Keynote speaker Jim Prevor, “The Perishable Pundit,” will speak about Product Differentiation, Target Marketing, Market Segmentation, and other topics. Prevor is founder and editor-in-chief of *Produce Business* and *Deli Business* magazines. He is an internationally known expert in the produce industry and also authors a daily newsletter, widely-read by professionals in the produce industry, called the *Perishable Pundit*. These can be found on his web site, <http://perishablepundit.com>

This customized training seminar is an interagency initiative, supported by the Rutgers New Jersey Agricultural Experiment Station, New Jersey Department of Agriculture and the New Jersey Department of Labor and Workforce Development. This session will assist producers with assessing the market potential of new crops, new products, and new business models. This seminar will be led by experts from the food industry that will provide participants with valuable insights and an interactive discussion. The seminar also offers food entrepreneurs and farmers the opportunity for professional networking. Participants who complete the entire entrepreneurial training program will receive a Certificate of Farmer Entrepreneurship.

“The Rutgers New Jersey Agricultural Experiment Station, in conjunction with the New Jersey Departments of Agriculture and Labor, is responding to input from the agricultural community and is supporting entrepreneurs in this industry with the type of education and training that is most needed for success,” said Robert M. Goodman, executive dean of agriculture and natural resources at Rutgers, The State University of New Jersey.

“New Jersey has some of the most innovative and entrepreneurial farmers in the country,” said Goodman. “Our farmers continually deal with issues such as industry consolidation and competition; pressures from developers; higher labor, energy and regulatory costs; and of course the variability of weather. These constraints can be overcome by

innovation and entrepreneurship, and the development of value-added products to meet the needs of the tremendous consumer base we have here in the Northeast. Farmers who are well informed about potential markets and new ways of doing business are of utmost importance to increasing the competitiveness of New Jersey agriculture.”

New Jersey Secretary of Agriculture Charles M. Kuperus said the training fills a need identified in the state’s Agricultural Development Initiative, which was established to help New Jersey producers be more competitive. “From the start of our Agricultural Development Initiative two years ago, we identified training as a high priority, not only for farm workers and managers, but also at a level for farm owners and operators to advance their skills as entrepreneurs,” said Secretary Kuperus. “This series of seminars really fills that need. New Jersey farmers already are known as innovators, and this training series will further enhance that ability. We appreciate the Food Innovation Center taking the lead securing this kind of advanced education”.

The Food Innovation Center seminar series is funded in-part from a grant it received from the Northeast Center for Risk Management Education (NECRME). NECRME is one of four regional risk management education centers throughout the country, which is funded through the USDA Cooperative State Research, Education and Extension Service agency, with a mission to improve the risk management decision-making processes of agricultural producers in the Northeast Region through a comprehensive educational program.

The Food Innovation Center is an economic development program and business incubator of the Rutgers New Jersey Agricultural Experiment Station. The Rutgers Food Innovation Center focuses on the specific needs of the food industry entrepreneur, and provides a broad array of resources and programs to meet their needs. It recently received worldwide recognition, as the National Business Incubation Association (NBIA) named the Rutgers Food Innovation Center as the Incubator of the Year, in its Manufacturing and Services Category. The NBIA estimates that over 5,000 business incubators exist worldwide, with over 1,400 in North America.

For further information about this seminar series, or to learn about the Rutgers Food Innovation Center, call (856) 459-1125 or visit the Center’s website at www.foodinnovation.rutgers.edu. □

Weekly Weather Summary

Keith Arnesen, Ph.D., Agricultural Meteorologist

Temperatures averaged above normal central and south and much above normal north, averaging 63 degrees north 64 degrees central and 66 degrees south. Extremes were 86 degrees at Downstown, Hammonton and Canoe Brook on the 22nd, and 42 degrees at Flemington, Charlotteburg and Newton on the 18th. Weekly rainfall averaged 0.19 inches north, 0.09 inches central, and 0.12 inches south. The heaviest 24 hour total reported was 0.31 inches at Glassboro on the 22nd to 23rd. Estimated soil moisture, in percent of field capacity, this past week averaged 87 percent north, 78 percent central and 73 percent south. Four inch soil temperatures averaged 60 degrees north, 62 degrees central and 64 degrees south.

Weather Summary for the Week Ending 8 am Monday 9/24/ 7

WEATHER STATIONS	RAINFALL			TEMPERATURE				GDD BASE50		MON
	WEEK	TOTAL	DEP	MX	MN	AVG	DEP	TOT	DEP	%FC
CANOE BROOK	.30	43.74	14.69	86	45	65.	4	3101	539	90
CHARLOTTEBURG	.24	31.40	2.07	82	42	62.	4	2674	642	80
FLEMINGTON	.18	34.01	6.26	85	42	64.	3	2921	295	84
NEWTON	.05	27.97	.96	81	42	62.	4	2640	353	80
FREEHOLD	.18	33.04	6.08	85	46	64.	1	3176	385	75
LONG BRANCH	.00	31.90	4.61	81	52	65.	2	2941	206	64
NEW BRUNSWICK	.21	38.43	11.03	84	46	64.	2	3100	177	85
TOMS RIVER	.01	26.95	-95	81	45	63.	0	2998	257	63
TRENTON	.07	27.57	1.64	83	45	65.	1	3252	212	60
CAPE MAY COURT HOUSE	.03	18.26	-5.94	83	48	66.	0	3152	377	67
DOWNSTOWN	.00	20.26	-5.13	86	43	65.	0	3256	201	60
GLASSBORO	.31	24.57	-2.13	84	49	67.	3	3573	551	70
HAMMONTON	.00	20.51	-6.16	86	45	66.	2	3352	323	54
POMONA	.08	22.26	-1.94	83	45	65.	2	3290	415	68
SEABROOK	.27	21.88	-2.58	84	50	67.	2	3580	505	68
SOUTH HARRISON	.09	24.59	-1.45	84	46	66	NA	3457	NA	NA
WES KLINE -- GDD BASE 40 PINEY HOLLOW										
LAST WEEK 189 (Ending 9/17/07)										
THIS WEEK 176 (Ending 9/24/07)										

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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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