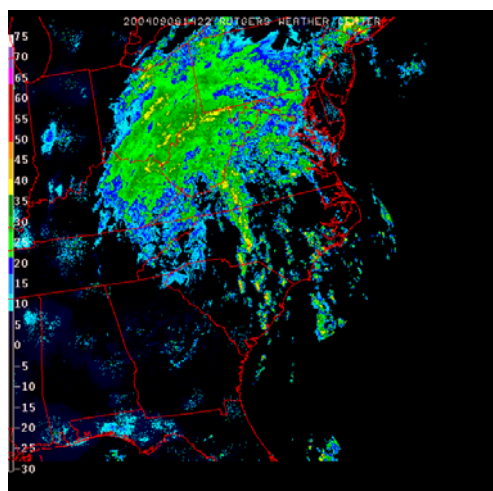


PLANT & PEST ADVISORY

VEGETABLE CROPS EDITION \$1.50

SEPTEMBER 8, 2004



Source: Rutgers Weather Center at <http://www.wx.rutgers.edu>

INSIDE

Pesticides and Storms	1
Vegetable Disease Update	2
Anthraxnose Fruit Rot of Bell Pepper	3
Pepper Weevil Found in Peppers at a S. Jersey Farm	4
Pest Notes	4
IPM Update	5
The Organic Way - How Nutrient Flow Affects Soil and Plant Health	7
Weekly Weather Summary	7

Pesticides and Storms

What to do About Your Pesticides Before a Storm

R.G. Bellinger, Extension Pesticide Coordinator, Dept. of Entomology, Soils, & Plant Sciences, Clemson University

Reprinted from Pesticide Information Program Information Sheet PIP-41, Sept 2004, Clemson University Cooperative Extension Service.

Hurricanes and similar storms, including flooding and tornadic winds, can wreak havoc with agricultural operations. In addition to the disastrous effects that spring to mind, such severe weather events can cause both dollar loss and environmental pollution with respect to agricultural chemicals. Fertilizers, pesticides, solvents, fuels, etc. can be contaminated, physically lost, or contaminate the surrounding environment and environments "downstream" of chemical storage and use areas.

If the time comes, you need to have a plan ready and know when to implement it. Here is some guidance that can be applied to any situations where pesticides and other chemicals are used and stored, e.g. farms, golf courses, mosquito control operations, nurseries, greenhouse operations, pest control firms, etc.

- **Be aware** of weather predictions on the morning, noon and evening news casts.
- **Do not delay** action. You need to take action EARLY to prepare for the potential of the hurricane now on the weather screen. And remember, others can follow.
- **Do an INVENTORY** of what pesticides and other chemicals you have on hand. Such an inventory will be useful for insurance purposes, or in the event of necessary pesticide or chemical clean ups. Include product and active ingredient names, and container sizes in your inventory. Receipts for the purchase of these materials are useful for this, or in some cases may suffice themselves.
- **Do the inventory NOW**, before you take other measures. Put the inventory in a safe location. In the case of large scale storms or flooding, it may be useful to make a copy of your inventory and mail or fax it to a friend or business associate who lives outside of the potentially affected area.
- **Do you know** where your INSURANCE policy is? Do you know exactly what kind of coverage you have? Does it cover your chemical inventory or the damage it could cause? Find out NOW. If you need to know later, your insurance agent may be very busy.

SEE PESTICIDES AND STORMS ON PAGE 2

- **Consider not using** or making applications of agricultural chemicals, or at least holding off, until the potential of impending severe weather is resolved.
- **Delay purchase** or delivery of additional chemicals to your operation until after any impending storm risk is past. If you have any such deliveries scheduled for the coming week you may want to cancel them.
- **Secure all** of your chemicals. This includes fertilizers, pesticides, solvents, fuels, etc. Close and secure container lids, move containers and application equipment to the most secure location. Raise chemicals from the floor or cover materials that could be damaged by water. Do what you can to protect product labels and labeling. Doors, windows and other points of access to storage locations should be secured and locked. If you are going to board up windows on your house, do the same for pesticide and other chemical storage areas. Don't leave chemicals in vehicles, or in application equipment.
- **As you prepare** for a storm, as you hurry to put lots of things into secure locations, be sure all of these items are compatible. Don't, for instance, put pesticides and fuels in the same building with animals, or animal feeds.
- **NOW is the time** to read the storage and spill containment sections of your MSDSs. Round up your pesticide and other chemical MSDSs and put these in a secure location. And if you have not done so, provide local emergency first responders with a copy of these, along with a copy of your chemical inventory.
- **Secure your personal** protective equipment. You may need it as part of your own cleanup operations after the storm.
- **Be sure** that your buildings will stay where they are as much as possible! Are the roofs tied into the building? Can you tie down small storage buildings and storage tanks?
- **If you leave** your location during a severe weather event, be sure that buildings that store pesticides and other chemicals are well signed.
- **Have on hand** all emergency phone numbers you need.
- **Consult your chemical** dealer and insurance agent for additional suggestions, but do it soon.
- **Sit down NOW** and think about what you need to do to prepare for a storm. Think about what kinds of things you will need and may need to do after a storm. Write it all down. Get family members and others in your operation to help with this. They may need to help later.
- **You may also** want to read the publication "Storm-Damaged Agrichemical Facilities" (University of Florida) available on the web at: http://edis.ifas.ufl.edu/scripts/htmlgen.exe?DOCUMENT_PI007. This fact sheet provides guidelines useful for persons or organizations needing to secure pesticides and other agricultural chemicals that have been subjected to severe storm conditions.

Submitted by Rick VanVranken, Atlantic County Agricultural Agent. □

Vegetable Disease Update

Andy Wyenandt, Ph.D., Post Doctoral Associate in Vegetable Pathology and Wes Kline, Ph.D., Cumberland County Agricultural Agent

✓ **Cucurbits – Choanephora fruit rot of pumpkin** – also known as **Choanephora wet rot** or **blossom end rot** is a disease which affects blossoms and young developing fruit. Infected female flowers may turn brown, 'mushy' and fall off prior to fruit set. Blossom infection can lead to fruit infection. Young fruit may turn a yellowish-brown *with masses of dense, white fungal growth with black 'pinpoint' spores developing on infected fruit*. Long periods of wet weather with excessive rainfall and high relative humidity favor the development and spread of Choanephora fruit rot. Unfortunately, control of Choanephora is difficult due to the constant development of new flowers and fruit, canopy production by the plant, and the ability of the fungus to survive saprophytically.

Bacterial leaf spot – Symptoms of Bacterial leaf spot are beginning to show up in pumpkin fields. On foliage, Bacterial leaf spot will produce small, circular water-soaked lesions (1 to 3 mm) on the lower leaf surface. With age, lesions can become dry and angular developing a translucent center accompanied by yellow 'halos'. Early control is extremely important because foliar infections can lead to fruit infections. On fruit, small-sunken circular spots with a scabby, dry appearance can develop, ruining aesthetic quality. Fixed coppers can be applied when Bacterial leaf spot is first detected on foliage and repeated every 7 to 10 days. For more information on control please see the *2004 New Jersey Commercial Vegetable Production Recommendations*.

Powdery mildew – Powdery mildew has now been identified in southern and northern New Jersey on a variety of winter squash and pumpkin. Powdery mildew typically occurs from mid-July until the end of the season. Powdery mildew can cause 100% defoliation very quickly if not controlled properly. The diagnostic characteristics of Powdery mildew are pure white 'fuzzy' growth on the upper and lower leaf surface, petioles and stems. 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. For more information on control of Powdery mildew and other important diseases of cucurbits please see the *2004 New Jersey Commercial Vegetable Production Recommendations Guide*.

✓ **Eggplant – Phomopsis blight** – can affect all above ground portions of the plant. Symptoms include well-

SEE DISEASES ON PAGE 3

DISEASES FROM PAGE 2

defined circular lesions on infected leaves *with diagnostic black fruiting bodies* developing within the lesion. If disease progresses infected leaves may turn yellow and die. Fruit lesions are similar to leaf infections, but lesions may become much larger causing fruit to become soft. Wet weather and high temperatures favor Phomopsis blight development. Control of Phomopsis blight begins with weekly preventative fungicide applications which may include Amistar or Quadris 80WDG at 2 to 5 oz/A, or Flint 50WDG at 2 to 4 oz/A, or Cabrio 20EG at 8 to 12 oz/A or maneb 80WP at 1.5 to 2 lb/A or OLF.

✓ **Peppers – The fruit rot phase of Phytophthora blight** continues in some pepper fields. Weather conditions have been favorable for the development and spread of the aerial phase of the disease. Protect the upper portion of the plant with fixed copper sprays or Ridomil Gold Copper sprays. Make 3 to 4 applications at a 10-14 day intervals. See page F70 of the *2004 Commercial Vegetable Production Recommendations* for more details.

✓ **Tomato – Anthracnose – or red fruit rot** is now showing up on mature tomato fruit. Symptoms of Anthracnose are easily diagnosed. Symptoms on ripe fruit appear as water-soaked circular lesions that often have a lighter colored tan center. Black fruiting bodies are often visible in the center of Anthracnose lesions. Control of Anthracnose begins with preventative fungicide applications. Fungicides labeled for other important foliar and fruit diseases of tomato will help control Anthracnose. If fruit-ripening agent has been used, additional fungicide applications may be necessary to help control Anthracnose. For more information on control please see the *2004 New Jersey Commercial Vegetable Production Recommendations*.

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 *2004 New Jersey Commercial Vegetable Production Recommendations*. □

Anthracnose Fruit Rot of Bell Pepper

Andy Wyenandt, Ph.D., Post Doctoral Associate in Vegetable Pathology

Anthrachnose is a soil-borne fungal pathogen that infects immature and mature pepper fruit. Fruit lesions typically develop during the later stages of ripening. Lesions may also develop on leaves and stems under ideal conditions. Symptoms of fruit infection include sunken, circular spots which develop blackish-tan to orange concentric rings as lesions develop. Lesions on stems and leaves appear as grayish-brown spots with dark margins and can easily be overlooked.

Leaf infections can serve as a source of inoculum for fruit infections. Anthracnose is favored by prolonged periods of leaf wetness and high relative humidity and can be spread plant to plant by splashing rain or overhead irrigation. The fungus overwinters on infected crop debris and weed hosts and may be brought into the field on infected seed or transplants. Control of Anthracnose begins with using clean-free seed and/or transplants. A three year crop rotation with non-solanaceous crops is recommended. Insect injury and unnecessary wounding of fruit may allow entry points for Anthracnose infections.

After the harvest season, pepper fields should be disced and plowed under thoroughly to bury crop debris. At flowering, Maneb 74DF at 1.5 to 3.0 lbs/A should be alternated every 7 to 10 days with azoxystrobin (Amistar, Quadris 80 WDG) at 2 to 5 oz/A, or Cabrio 20 EG at 8 to 12 oz/A, or Flint 50 WDG at 3 to 4 oz/A. For more information on control please see the *2004 New Jersey Commercial Vegetable Production Recommendations*. □

NUTRIENT FLOW FROM PAGE 7

farms because composts, manures and green manures have variable amounts of nutrients and release nutrients over a long period of time. Regular soil and compost testing provides a simple way to keep nutrient flow balanced.

References:

Magdoff, F. and van Es, H. 2000. *Building Soils for Better Crops 2nd Edition. Sustainable Agriculture Network Handbook Series Book 4.*

Howell, J. 2004. *Interpreting Soil Test Results and Estimating Nutrient Availability In: Organic Vegetable Production. NRAES – 165.*

Submitted by Rick VanVranken, Atlantic County Agricultural Agent. □

Pepper Weevil Found in Peppers at a South Jersey Farm

Joseph Ingerson-Mahar, Vegetable IPM Coordinator

This past week a severe infestation of pepper weevil was discovered in peppers in a southern New Jersey farm. Hardest hit were green bell varieties but damaged fruit were found in 7 varieties that were sampled. Percent of undamaged fruit ranged from 12 to 96. Upon dissection of the sampled fruit, nearly every fruit having an egg scar (often the fruit surface is dimpled with a small dark dot in the center) on the fruit surface had at least one weevil inside. A few fruit lacking evident scars were also infested.

Once the egg is laid in the outer rind of the pepper the pepper grows additional tissue inside corresponding to the site where the egg was laid. Upon hatching the larva, C-shaped, white with gray markings on its back feeds inside the pepper often without showing any external injury. The mature larva creates a cell usually in the area of the seeds and pupates there. The resulting adult weevil remains inside the pepper until either it bores a hole through the outer rind or the pepper rots, allowing its escape. The adult weevil is about 3/16 inch long with a long slender snout and is either dark brown or black.

The adults prefer to lay eggs in small fruit about the size of a quarter to golf ball size. Once the larvae begin feeding inside the fruit the plant aborts most of the infested fruit which fall to the ground. According to Texas A&M literature, once the small fruit drop is noticeable, significant yield loss has already occurred.

Pepper weevils do not overwinter here and usually are brought in on transplants from the southern states – Florida and Texas. Where this infestation came from is unknown. If you suspect that you may have an infestation contact your local county agent or the IPM staff. □

Pest Notes

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

✓ **Asparagus:** Several asparagus fields have plants with the leaves stripped from feeding damage caused by asparagus beetle larvae. These pests are the small, gray 'slugs' on the plants, causing the ferns to look whitish and dried out. Ambush, Lannate, Pounce, Sevin, or SpinTor (also called Entrust) are available for control of **asparagus beetle** larvae on post-harvest ferns. Spray the brush at this time to avoid large populations from successfully overwintering and laying eggs on emerging spears in the spring.

✓ **Corn (sweet):** Many **fall armyworm** and **corn earworm** moths are still active in NJ, and corn with silk or approaching harvest will need a tight spray schedule for effective protection of the ears. Populations vary depending on location, so follow local black light traps or information in the IPM newsletter to guide you on which pest is active in your area. Most effective materials for control of each pest is listed on pages F102-F103 of the *2004 Commercial Vegetable Production Recommendations for New Jersey*. As a general rule, corn earworm and fall armyworm population levels will likely remain high until cold weather arrives.

✓ **Pepper:** Atlantic County pepper growers have found **pepper weevil** (all stages) in their pepper fields, with the accompanying pepper fruit drop. Pepper weevils do not overwinter in NJ, and are found in this state about once every 10 years or so, usually entering NJ by hitching a ride as eggs or larvae on pepper transplants coming from the south. Once in the field, these pests can be very damaging if left untreated, causing fruit to drop from the plant prematurely. The weevils bore out of the fruit, and thus it is a pest easy to recognize because tremendous amounts of fruit drop from the plant, and the fruit nearly always has a small, round hole in the side. When the first fruit is found, it is not too early to get a spray on. Use any of the pyrethroids labeled for this pest, including Baythroid, Capture, Mustang Max, or permethrin (Ambush or Pounce). Assail and cryolite (both nonpyrethroids) are also labeled. Timing and coverage are important: apply an initial spray when first damaged fruit are found, and at least a second spray 5-7 days later to control any new adults. Obtain thorough coverage of the plant to ensure control of the weevil.

European corn borer infestations in bell pepper are decreasing, indicating moth activity is about over. However, **corn earworm** moths will still readily attack peppers, and any fruit on the plant should be protected if harvest is continued. Corn earworms are effectively controlled using Asana, Baythroid, Mustang Max, Proclaim, or Warrior. As the current storm fronts pass through, new populations of corn earworm and **beet armyworm** will likely be found throughout the state.

✓ **Spinach:** **Beet armyworms** are a problem on spinach in several southern NJ counties. These pests are especially damaging because they feed on the marketable leaves. Pyrethroids traditionally are not effective against beet armyworms, and other classes of insecticides should be used. The Bt's (biological insecticides) are effective, but make sure spray coverage is thorough to ensure protection of the leaves (Bt's **must** be ingested by the pest to be effective). Other materials include Confir, Intrepid (use the higher rate at this time of the year), Lannate, Larvin, Proclaim, or SpinTor. Days to harvest range from 1 to 14 days, so make sure a material is used that will allow the crop to be harvested in the proper time interval between last application and harvest (plan ahead!). □

IPM Update

Kristian Holmstrom, Program Associate in Vegetable IPM

Sweet Corn

European corn borer (ECB) activity declined somewhat throughout the state over the past week. Trap catches remain moderate to high in parts of southern New Jersey, however. The highest catches are still occurring in Salem and Cumberland Counties (see ECB map). Larvae resulting from this flight will present a threat to host crops for much of the remainder of the season.

Continue to check all plantings weekly for the presence of ECB and other pest injury both in the tassels and on the leaves. If feeding exceeds 12% in a 50 plant sample, consider treating. As plantings progress to full tassel, it is still wise to treat for ECB if larvae are present. The highest average nightly **ECB** blacklight trap catches are:

Woodstown	18	Mullica Hill	7	Tabernacle	5
Shirley	15	Seeley Lake	7	Centerton	4
Cohansey	12	Cedarville	6	Downer	4
East Vineland	11	Elmer	5	Folsom	4

Fall armyworm (FAW) continues to infest late season sweet corn plantings. In many cases, plantings are re-infested quickly after initial control is applied. Look for heavy "window-pane" type feeding on whorl and seedling corn. This feeding is caused by young FAW. As the larvae grow, the feeding becomes more ragged, with large holes and accumulations of droppings in the whorl or young tassels. When FAW is present, thorough spray coverage is critical. Be sure to use as much water with the spray material as possible, and increase pressure to permit the insecticide to penetrate the layer of caterpillar droppings. With high levels of adult FAW present, it is important to scout again within one week of an insecticide application to determine the effect of the treatment as well as whether new larvae have hatched.

Corn earworm (CEW) adult activity has moderated throughout the state. Recent lower catches may be due in part to cooler evening temperatures during the previous week as well as prevailing winds from the northeast. This trend could change as dominant weather from the south occurs late this week, with warmer evenings and high humidity. This population represents a great threat to silking sweet corn, and growers should respond with tight silking spray schedules. Highest catches are in parts of Burlington, Salem and Cumberland Counties (see CEW map). Tighter silk spray schedules are required in all parts of the state. All silking spray schedules should be tightened to 3 days at this time. In certain areas, a 2-day schedule may be warranted if economically feasible. The crosshatched area on the CEW map (green on the web) represents a population requiring a 3-4 day silk spray schedule and the black areas (red on the web) represent a 2-3 day silk spray schedule. The highest average nightly

CEW blacklight trap catches are:

Milltown	11	Cedarville	9	Tabernacle	6
Medford	10	Downer	8	Elm	5
Shirley	10	Crosswicks	6	Hackettstown	5
East Vineland	10	Jamesburg	6	Springdale	5

General Sweet Corn Spray Schedule

Silking Corn:	North	3 days
	Central	3 days
	South	3 days

Corn leaf rust continues to be found on sweet corn, particularly as it passes into the late whorl and pretassel stages. Some varieties are susceptible to this pathogen. While scouting for insects, be sure to look at lower leaves for pustules on the surface. As pustules mature, they will burst, releasing reddish colored spores. If this disease is first found in the seedling or whorl stage, consider a fungicide application to limit spread on plants. Rust infections, if allowed to progress on susceptible varieties, can stress plants and reduce ear size.

Tomatoes

Late blight is now present throughout northern New Jersey on fresh market tomatoes. Infections range from slight to severe, where they are occurring. It is critical that all tomatoes, regardless of how young, be on regular protectant fungicide programs now. If symptoms should appear in local fields including rapid defoliation of entire leaves (with or without obvious sporulation) or green fruit turning brown but remaining solid for some time, immediately include a fungicide that specifically targets the group of fungi to which late blight belongs. These materials are listed in the *2004 New Jersey Commercial Vegetable Recommendations Guide*. Contact Dr. Wyenandt at 856-455-3100 ext. 4144 or your county agent to report the occurrence of symptoms consistent with late blight.

Occasional **CEW** injury in tomatoes is showing up in some areas now. High CEW activity (approaching 20 per night in local traps) can result in significant fruit injury if protectant insecticide applications are not made. If catches are high, consider treating weekly to limit damage. Often CEW larvae may be found boring into fruit in the outer canopy of the plants. In Warren County this week, a grower discovered a low level infestation of **ECB** in tomatoes. This is a relatively rare occurrence, and was preceded by high adult activity (10/night) several weeks prior. While not a significant threat alone, high ECB flight activity in combination with high CEW catches may result in increased fruit infestation.

Peppers

With **ECB** adult numbers moderate to high in parts of the state, peppers need regular protectant insecticide treatments. On the ECB map, areas shaded in green (web version) or crosshatched (in the newsletter) indicate adult ECB populations that require weekly preventive sprays to minimize fruit injury. Monitor local ECB populations to

SEE IPM ON PAGE 6

determine when to begin regular preventive insecticide applications. Be aware that repeated use of synthetic pyrethroid materials are likely to result in increased aphid infestations. It is a good idea to rotate materials for ECB control to prevent this from happening.

Be aware that high CEW populations (greater than 10 moths per night consistently in local blacklight traps) can result in injury to peppers and tomatoes. If ECB adult catches decline to non-economic levels, it may still be necessary to treat peppers and tomatoes weekly to prevent CEW injury. Be sure to monitor local trap catches to see if CEW populations threaten these crops. Damaging populations would show up as black on the CEW map (red on the web version).

This week, **beet armyworm (BAW)** adult activity increased sharply in Cumberland County pheromone traps. Catches are up by a factor of ten over last week. BAW is capable of causing significant injury to peppers and should be watched closely. Look for ragged feeding on leaves near the growing terminals on pepper plants. Young larvae will often feed there prior to infesting fruit. If this type of feeding is seen, and a preventive spray schedule is not already in place for ECB, growers should treat before fruit injury occurs.

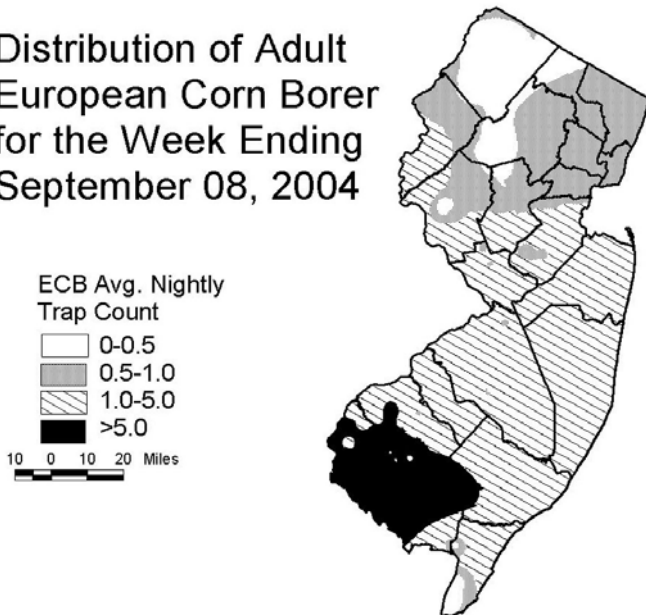
Pumpkins

Cucurbit downy mildew (DM) will be an ongoing problem on vine crops throughout the state for the duration of the season. Growers should be on their regular protectant fungicide programs to limit damage from this disease as well as **powdery mildew (PM)**. If wet weather makes it impossible to maintain a regular 7-day program, it may be advisable to switch to a material

that specifically targets the water molds with the next possible application. Materials like Ridomil Gold Bravo or Tanos fall into this category (See the *2004 New Jersey Commercial Vegetable Recommendations Guide* or the mid July edition of the University of Delaware Crop Update <http://www.rec.udel.edu/update04/Issue%2017%202004.htm> for further selections and suggested rotational materials). This disease can rapidly defoliate fields, and should be treated quickly. At the present time, fields of the smaller, sugar type pumpkins appear to be in worse condition than the larger jack 'o lantern types. This has much to do with the earlier maturity of those smaller varieties, in combination with heavy disease pressure. In many cases, the fruit are mature. The loss of foliage above mature fruit can result in sun scald and consideration should be given to removing fruit from the field to prevent this type of injury. On later maturing types, it is critical to maintain foliage to allow for full fruit development.

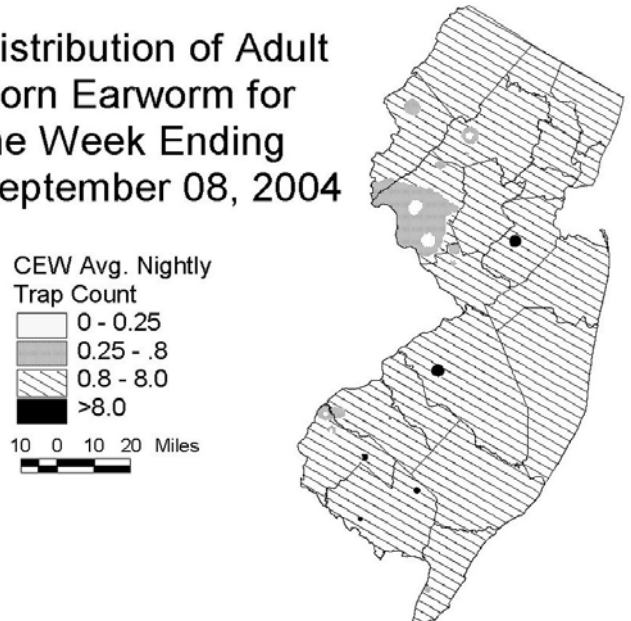
In a few fields in northern New Jersey, **striped cucumber beetles** have begun feeding on the skins of mature pumpkins. This injury results in scarring on the fruit surface, and may reduce the value of the fruit. Be sure to check fields at least weekly for the presence of cucumber beetles and the injury they cause. If either beetles or injury are found, consider treating at least the affected part of the field. If giant varieties such as 'Prize Winner' are in the field, be sure to check them often. These seem to be especially attractive to (and affected by) cucumber beetle. Also consider early removal of mature fruit from the field to minimize injury by beetles, animals, and loss to **phytophthora fruit rot**.

Distribution of Adult European Corn Borer for the Week Ending September 08, 2004



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 08, 2004



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

The Organic Way- How Nutrient Flow Affects Soil and Plant Health

Elsa Sánchez, Assistant Professor of Horticultural Systems Management, Penn State University

Reprinted from *The Vegetable and Small Fruit Gazette*, August 2004, Volume 8, No. 9, Pennsylvania State University Department of Horticulture.

Organic growers manage soils for long-term soil and plant health. It is often recommended that soils, compost and manures be regularly tested to determine nutrient availability, soil pH, cation exchange capacity, base saturation and/or percent organic matter. This is recommended so that management decisions for improving soil and plant health can be made taking these factors into account. Soil testing is an important tool for managing nutrient flow and long term soil and plant health.

Nutrient flow is the movement of nutrients from one place to another. In farming systems nutrients either move into or out of the system. For example, applying

compost to a field causes nutrients to flow into the system and harvesting crops cause nutrients to flow out of the system.

There are three basic scenarios for nutrient flow. In the first scenario more nutrients flow *out* of the system than *into* the system. Nutrients used by crops are not fully replaced by inputs like compost, manures and green manures. In the short term successful crop production can be accomplished with this type of nutrient flow, but over the long term nutrients will be less available and soil health, yields and quality will suffer.

In the second scenario more nutrients flow *into* the system than *out* of the system. This can be the case in systems where composts, manures and green manures are applied supplying nutrients beyond crop needs. Over time the system will contain an excess of nutrients or nutrient imbalances. Again, in the short-term successful crop production can be accomplished, but this also can lead to long-term problems including salt build-up, poor soil structure and low yields and quality.

In the final scenario the amount of nutrients flowing *out* of the system is about equal to the amount flowing *into* the system. This is the best scenario for long-term soil and plant health and the goal for organic farms.

Managing nutrient inputs can be challenging on organic

SEE NUTRIENT FLOW ON PAGE 3

Weekly Weather Summary

Keith Arnesen, Ph.D., Agricultural Meteorologist

Temperatures averaged above normal, averaging 70 degrees north, 71 degrees central and 71 degrees south. Extremes were 89 degrees at Canoe Brook on the 5th, and 52 degrees at Belvidere and Freehold on the 1st. Weekly rainfall averaged 0.22 inches north, 0.95 inches central, and 1.04 inches south. The heaviest 24 hour total reported was 2.20 inches at Freehold on the 30th to 31st. Estimated soil moisture, in percent of field capacity, this past week averaged 62 percent north, 65 percent central and 59 percent south. Four inch soil temperatures averaged 71 degrees north, 72 degrees central and 73 degrees south.

Weather Summary for the Week Ending 8 am Monday 9/ 6/ 4										
WEATHER STATIONS	RAINFALL			TEMPERATURE				GDD BASE50		MON %FC
	WEEK	TOTAL	DEP	MX	MN	AVG	DEP	TOT	DEP	
BELVIDERE BRIDGE	.38	26.55	1.34	88	52	71.	5	2588	300	57
CANOE BROOK	.01	28.95	2.52	89	54	72.	5	2653	344	58
CHARLOTTEBURG	.25	27.29	.59	86	53	70.	7	2440	605	52
FLEMINGTON	.20	32.28	6.88	86	54	69.	2	2638	269	63
LONG VALLEY	missing									
NEWTON	.25	26.02	1.37	86	54	68.	4	2436	351	58
FREEHOLD	2.20	25.70	.95	86	52	70.	2	2811	308	82
LONG BRANCH	2.10	26.36	1.26	85	59	72.	4	2630	185	66
NEW BRUNSWICK	.16	27.16	2.11	85	56	71.	1	2800	161	65
TOMS RIVER	.05	27.70	2.06	86	57	71.	1	2887	451	30
TRENTON	.26	24.89	1.15	84	58	71.	2	2869	134	40
CAPE MAY COURT HOUSE	.44	20.91	-1.27	82	60	71.	0	2761	328	28
DOWNSTOWN	1.48	22.64	-.77	83	57	71.	1	2955	213	70
GLASSBORO	missing									
HAMMONTON	1.09	24.82	.38	85	57	71.	1	3057	334	54
POMONA	.31	22.00	-.47	86	56	71.	3	2917	378	34
SEABROOK	1.89	27.64	5.23	87	58	73.	3	3246	489	67
SOUTH HARRISON	.41	27.65	3.59	84	60	72	NA	3084	NA	NA
WES KLINE — GDD BASE 40 PINEY HOLLOW	Last Week 228 (Ending 8/30/04) This Week 219 (Ending 9/6/04)									

FIRST CLASS
POSTAGE PAID
PERMIT #576
MILLTOWN, NJ 08850

Rutgers Cooperative Extension - NJAES
U.S. DEPARTMENT OF AGRICULTURE
Rutgers - The State University of New Jersey
Plant & Pest Advisory
18 College Farm Road
Cook College
New Brunswick, N.J. 08901-8551

PLANT & PEST ADVISORY

VEGETABLE CROPS EDITION CONTRIBUTORS

Rutgers Cooperative Extension 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

Rutgers Cooperative Extension County Agricultural Agents

Atlantic, Richard W. VanVranken (609-625-0056)

Burlington, Raymond J. Samulis (609-265-5050)

Cape May, Russell Blair (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)

Mercer, Daniel Kluchinski (609-989-6830)

Middlesex, William T. Hlubik (732-745-3443)

Monmouth, Bill Sciarappa, Ph.D. (732-431-7260)

Morris, Peter J. Nitzsche (973-285-8300)

Salem, Peter R. Probasco (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, IPM Program Associate

Newsletter Production

Jack Rabin, Associate Director for Farm Services, NJAES

Cindy Rovins, Crop Management Communications Editor

Rutgers Cooperative Extension (RCE) provides information and educational services to all people without regard to sex, race, color, national origin, disability, or age. RCE is an Equal Opportunity Employer.

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.