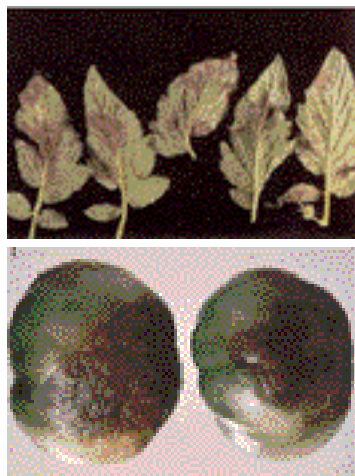


PLANT & PEST ADVISORY

VEGETABLE CROPS EDITION \$1.50

AUGUST 13, 2003



Late blight on tomatoes affecting leaves and fruit. Source: University of Illinois Extension IPM

Late Blight Found in Southern New Jersey

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

Late blight has been found in processing tomatoes. This disease can be very serious for all tomatoes and white potatoes. Late blight first appears as water-soaked areas that rapidly enlarge to form an oily appearing blotch. On the under side of the leaf, rings of grayish white fuzz (mycelium) form on the edge of the blotchy area. The entire leaf will die and the disease spreads quickly to other parts of the plant and field. Infected fruit turn brown, but remain firm unless some other organism infects the fruit.

Conditions have been perfect for late blight development and spread. When humidity is above 90% and the average temperature is in the range of 60 to 78°F infection occurs in about 10 hours. Under warm humid conditions, late blight will spread very rapidly within and between fields.

Control

Scout fields immediately to see if late blight is present! Once late blight is found or if there is late blight in the area, follow these general practices.

1. Do not enter another grower's field without checking with the grower first. This includes farm roads.
2. Do not enter any field with wet foliage.
3. If you do enter a field with late blight change your clothes and shoes after leaving the field and disinfect them or use disposable coveralls and plastic boots.

Following are the chemical control strategies:

Tomato

Either Gavel (1.5 to 2 lbs/A) or Acrobat (6.4 oz/A) should be applied at the next spray and continue on a seven day schedule until weather conditions improve. Add either chlorothalonil (Bravo, Echo, Equus) 1-3 pt 6F/A or OLF, or mancozeb (Dithane, Manex II, Manzate, Penncozeb) 3 lb 80WP or OLF to the Acrobat. See page F102 in the 2003 NJ Commercial Vegetable Recommendation Book. Return to the normal spray program when weather conditions no longer favor late blight.

Potato

Late plantings of potatoes that are still a few weeks from harvest should be sprayed with one of the following labeled late blight materials:

SEE LATE BLIGHT ON PAGE 2

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Vegetable Disease Update

Edited by Joe Ingerson-Mahar, Vegetable IPM Coordinator

Report from Wes Kline, Rutgers Cooperative Extension of Cumberland County

Late blight was found in processing tomatoes in Cumberland County last week. See the more detailed article on page 1 of this newsletter.

Report from Kris Holmstrom, Vegetable IPM Program Associate for Northern New Jersey

Bacterial leaf spot (*Xanthomonas*) in bell peppers and tomatoes was found Tuesday in Warren County. There was probably a small level of inoculum in the field and spread after some of the driving rains of the past week.

Light infections of leaf rust are occurring in sweet corn. Hot dry weather to come should curtail any problem with this.

Powdery mildew is increasing steadily in pumpkins, probably due to higher humidity and the inability of growers to spray with the soil saturated all the time.

Black rot (*Xanthomonas*) has appeared in crucifer crops in Morris County. *Alternaria* has set in after the black rot took hold.

I haven't seen any downy mildew of cucurbits anywhere nor are there any reports of it in the area. □

Correction:

In the August 6 Late Blight Alert mailed out by Cumberland County Cooperative Extension, under potatoes it says Acrobat (4 to 6.4 lb/A). It should be 4 to 6.4 oz/A. Note that the 2003 NJ Commercial Vegetable Recommendations contains this same error (under potatoes only, not tomatoes).

LATE BLIGHT FROM PAGE 1

Acrobat (4 to 6.4 oz/A) *use in combination with protectant fungicide

Curzate (3.33 oz/A)

Gavel (1.5 to 2 lb/A)

Omega (5.5 fl. oz/A)

Previcor Flex (1.2 pt/A) *use in combination with protectant fungicide

If fields are close to harvest, vines should be killed immediately to prevent tuber infection. Include a fungicide with the vine killer. **Be sure tops are entirely dead before digging.**

For specific fungicide recommendations, see pages F113 - F114 of *2003 New Jersey Commercial Vegetable Production Recommendations Manual*. □

Pest Notes

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

✓ **Bean:** Snap beans in the pin stage of crop development are highly susceptible to both the **European corn borer** and **corn earworm**, both of which are currently active during the evening throughout New Jersey. The Painter Research Station reports that Capture 2EC has been one of the best materials in trials for European corn borer and corn earworm control in snap beans. Other effective materials include Orthene, Asana, Lannate, and SpinTor.

✓ **Corn (sweet):** Moth flights of both the **European corn borer** and the **corn earworm** have increased during the past several weeks. Even though the weather has been consistently rainy during the evenings and nights, the moth activity has still increased because the temperatures have remained fairly high. The most effective materials that will control both of these pests include Asana, Baythroid, Capture, Fury, Mustang Max, Lannate, Larvin, Pounce, Ambush, or Warrior. Direct sprays at the ear zone for most consistent control.

✓ **Crucifers:** Early fall plantings of crucifer crops may have **flea beetles** on seedling crops. These beetles chew numerous small holes in the leaves, which can kill seedlings. Inspect seedlings for flea beetles or beetle damage. It is recommended to apply a "management option" when there is one beetle per plant. Options include any of the pyrethroids listed in the recommendation book such as Ammo, Asana, Capture, Danitol, Mustang or Mustang Max, or Warrior. Other effective materials include Provado, carbaryl (Sevin), or Thionex (= Thiodan). For most crucifers, it is usually best to add a spreader/sticker to the spray tank because of the waxy leaves on these crops.

Several fields in late whorl stage have had damage from the **fall armyworm** (and a little from whorl infestations of **corn earworm**). If more than 12% of the fields show damage, it is recommended to apply any of the following: **granular materials** of either diazinon or Avaunt; **liquid materials** of either Baythroid, Fury, Mustang, Lannate, Larvin, or Warrior. If a granular material is used, apply when whorls are dry, and aim the material directly into the whorl. If a liquid is used, apply when there is moisture on the plant, and direct the spray into the whorl. Use high-pressure, high volume for whorl sprays.

✓ **Pepper:** **European corn borer** moth activity has been increasing over the past several weeks. Although precipitation has occurred nearly every night, moths have still been actively flying at night. However, the downpours likely have reduced oviposition (egg laying), or have destroyed many newly-hatched larvae. After

SEE PEST NOTES ON PAGE 3

IPM Update

Kristian Holmstrom, Program Associate in Vegetable IPM

Sweet Corn

European corn borer (ECB) adult activity is moderate to high in many areas of New Jersey at this time. Trap catches in parts of Cumberland, Salem, and southern Burlington Counties are the highest now (see ECB map). These adults will lay eggs on whorl through silking stage corn. Feeding signs will increase in sweet corn plantings through late of August. Check fields weekly, and consider treating if greater than 12% of plants are infested with ECB alone or in combination with **fall armyworm (FAW)**. After the full tassel treatment, follow up with regular insecticide applications on silks as dictated by the local **corn earworm (CEW)** catches. The highest average nightly ECB blacklight trap catches are:

Cohansey	20	Centerton	6	Indian Mills	4
Elmer	13	Allentown	5	Shirley	4
Crosswicks	7	Little York	5	Springdale	4
Pole Tavern	7	Seeley Lake	5	Tabernacle	4

Corn earworm (CEW) adult activity has increased markedly throughout New Jersey. At this time, the highest CEW catches are in Atlantic and lower Burlington, Monmouth and Cape May Counties, with scattered high catches elsewhere (see CEW map). This is largely a migratory population resulting from moth emergence to our south during the recent period of strong southerly air flow. Wind shifts to the north or northwest may slow the influx of CEW, but activity will remain high as long as warm temperatures prevail. We will continue to monitor populations and weather conditions throughout the region to try to provide advance warning of CEW populations. Silk spray schedules are now critical to prevent significant losses to CEW. Black areas on the map (red on the web version) represent populations requiring a 2-3 day silk spray schedule. Cross-hatched areas on the map (green on the web) represent a population requiring a 3-4 day silk spray schedule. The highest average nightly CEW blacklight trap catches are:

Wall	21	Denville	11	Springdale	6
Elm	20	Fishing Creek	9	Medford	5
Indian Mills	16	New Egypt	7	Milltown	5
Hammonton	13	Crosswicks	6	Morristown	4

General Sweet Corn Spray Schedule

Silking Corn:	North	3-4 days
	Central	3 days
	South	3 days

Fall armyworm (FAW) infestations continue in whorl and seedling stage sweet corn plantings throughout New Jersey, and infestations as high as 36% have been reported in parts of Warren County. FAW will often feed on seedling and short whorl stage sweet corn. For this reason, it is critical to scout even the youngest plantings for the rest of the season. Look for feeding that initially looks like ECB damage, but rapidly progresses to ragged holes in the leaves with large amounts of droppings in the whorl. FAW can be tough to control because penetration by the insecticide through the layer of droppings is sometimes difficult. Scout fields weekly and consider treating when 12% or more plants are infested with FAW alone or in combination with ECB. Increased spray volume and pressure often assist in control of FAW.

SEE IPM ON PAGE 4

PEST NOTES FROM PAGE 2

cutting open several hundred pepper fruit on the RAREC research farm, less than 3% have shown damage caused by corn borer infestation. However, because moth activity is still at a high level, and fruit are on the plant, it is best to continue a spray program for a while. Effective management materials include Orthene 97 (a maximum of 2 lb AI/season is permitted), SpinTor 2SC, Intrepid 2F, and Avaunt 30WDG. As borer flights decrease later in the season, and **aphids** will not likely flare out of control, the pyrethroids are very effective.

Some pepper fields near the Cedarville area have had infestations of the **yellow striped armyworm** or the **southern armyworm**. Both of these pests migrate to New Jersey from more southern states, and are closely related to the **beet armyworm**. Usually dark in color, the larvae often have bright yellow or whitish lateral stripes. The mature yellow striped armyworm will have dark, triangular spots towards the posterior of the body on each segment. These pests feed on many crops, including peppers, and eat both leaves and fruit. For control of these armyworms, use any of the materials listed in the recommendation book as for the beet armyworm: either Avaunt, Confirm, Intrepid, Lannate or SpinTor. □

Corn leaf aphids are now very common in pretassel stage sweet corn. These blue-gray aphids can become a nuisance to consumers as they move down the plant and get between husk layers on the ears. Their populations may be enhanced by repeated use of pyrethroid insecticides in the silk spray program. It is wise to make at least one application of methomyl or other non-pyrethroid insecticide in the silk spray program to minimize ear infestations of corn leaf aphid.

Corn leaf rust has been observed in at low levels in northern counties recently, and wet weather is contributing to its survival. This disease is probably present in other areas as well. While scouting, look for pustules on the oldest leaves of plants. Pustules rupture, emitting reddish, powdery spores. There is a wide range of host resistance to this disease, but some varieties can be adversely affected. Check the seed source for resistance in your varieties. If the variety is susceptible to leaf rust, pustules will increase on the plant until moisture stress causes a reduction in ear size. The potential for loss is greatest if the infection begins when susceptible plants are in the whorl or seedling stages. Later infections may not reduce yield, but can cause pustules on the husks, which may make ears less marketable. Consider using chlorothalonil or mancozeb (7 day schedule), or Tilt (7-14 day schedule) if rust is found in the seedling or whorl stages.

Pumpkins

As vines run, check plantings for the presence of **powdery mildew (PM)**. Look for powdery lesions on either surface of older leaves. A fungicide schedule may be initiated after 1 or more lesion is found per 50 older leaves. The recommended fungicide program is for chlorothalonil +Nova to be alternated with a strobilurin type fungicide at 7-10 day intervals. It is important to remember that Quadris (a strobilurin type) is effective on PM, but is highly phytotoxic to some apple types. For this reason, Flint is a good substitute if apples are to be sprayed with the same apparatus used for spraying pumpkins and winter squash.

The most recent report (Aug. 1) from NC State University's Cucurbit **Downy Mildew (DM)** Forecast System <http://www.ces.ncsu.edu/depts/pp/cucurbit/> does not place New Jersey at risk for infection, but the website has not been updated regularly this season. Given the recent air flow pattern and accompanying rains, it would be wise to initiate a weekly protectant fungicide program if this is not already being done. Maintenance of a regular fungicide program is essential to minimize loss to PM as well as preventing a DM epidemic. Check fields weekly for the presence of diffuse yellow blotches on the upper surface of leaves with dark, felt-like sporulation on the lower surface. The sporulation frequently occurs along the leaf veins. If this disease is found in any field, immediately treat all cucurbit crops with fungicides on a

7-day protectant schedule, and report the occurrence to your county agricultural agent. Consult the *2003 Commercial Vegetable Production Recommendations* for spray materials.

Bacterial leaf spot has been noted in a few pumpkin fields. Foliar lesions are often water-soaked, and develop a yellow margin over time. Yellow or tan areas on and immediately surrounding veins may be seen on the underside of leaves. If these symptoms are noted in the field, consider adding copper to the regular fungicide program. Consult the *2003 Commercial Vegetable Production Recommendations* for proper formulations and rates.

Ozone injury is present in some plantings. Ozone causes small dry lesions on older foliage. As lesion dry, the centers fall out. No sporulation will be associated with this damage because it is an abiotic form of injury. Ozone injury is more common under conditions of high humidity and temperature, with high soil moisture.

Tomatoes

Maintain regular fungicide applications for **foliar diseases** on tomatoes. Wet weather has prevented some fungicide applications, and plantings are now showing greater levels of **alternaria**. Good disease management to preserve foliar cover for fruit is critical for good fruit quality.

Continue to monitor for **aphids**. Often, the first sign of significant aphid populations is cast skins on leaves below the colonies. If this condition exists in the field, and fruit are sizing up, consider treating. Aphid populations that are present prior to fruit enlargement are often controlled adequately by natural predators and parasites.

Be sure to check field edges for the presence of **two-spotted spider mites (TSSM)**. TSSM will enter tomato plantings from field edges as surrounding vegetation dries up or is disrupted. Look for the whitish pin-spots (stipple) on the upper surface of leaves. Mites are often found on the lower surface. Spot treat for TSSM if possible, to prevent a greater infestation in the field.

This is the time of the season when **stinkbug** injury generally begins to increase significantly in tomato plantings. Stinkbug pressure in tomatoes tends to be heavier during dry seasons, and with this wet season, stinkbug injury has been minimal in scouted fields. Still, some adults in the *Euschistus* genus (larger, brown stinkbugs) have been captured recently in pheromone traps and found in corn tassels throughout the state. The adults will move into tomato plantings when surrounding host vegetation is too dry or is mowed. Adults and emerging nymphs will feed on green and ripening fruit, causing the large, yellow "cloudy-spot" injury. If this feeding is found to be increasing in samples, consider protectant sprays for stinkbug. Consult the *2003 Commercial Vegetable Production Recommendations* for spray materials.

SEE TOMATOES ON PAGE 5

TOMATOES FROM PAGE 4

Bacterial canker has appeared in several northern New Jersey tomato plantings. This disease is characterized by marginal necrosis on infected leaves, followed by stem lesions and the “birds-eye spot” or white rimmed blister on the surface of affected fruit. Recent hail events over the past few days will dramatically increase the incidence of bacterial infections in affected fields. As with all bacterial infections, avoid working in fields when the plants are wet. Surface sterilize pruning and tying tools between rows, and always work in infected plantings last. Copper with mancozeb may help minimize impact, although copper sprays can cause spotting on fruit. Actigard at the lowest recommended rate may also help. Actigard should be used weekly for a total of 6 applications.

Snap beans

ECB is a significant threat to snap beans in parts of New Jersey. Areas shaded in black on the ECB map (red on the web) represent adult populations capable of considerable damage to developing pods. In those areas, beans should be treated in the bloom and pin stages. Weekly protectant sprays should continue on developing pods as long as local ECB adult catches remain above 5 per night. Continue to monitor for **potato leaf hopper (PLH)** in beans. This pest is capable of severely stunting beans, and reducing yield. As populations build up in fields, and PLH reproduces in the crop, chlorosis and deformation of leaves may become apparent. When these symptoms of infestation appear, damage to the crop has already occurred. Insecticide applications directed at ECB often control PLH as well. For this reason, it is important to check regularly for PLH. Consider treating if adults and nymphs exceed 100 per 20 sweeps prior to bloom, or 250 per 20 sweeps at bloom, or 250+ during pod development. If a sweep net is not available, consider treating if nymphs are found in random samples covering all areas of the field.

Cole crops

Imported cabbageworm (ICW), **diamondback moth larvae (DBM)**, and **cabbage looper (CL)** are all active now on cole crops. In addition, **flea beetle** continues to be a problem on young plantings. Check plantings at least once a week for the presence of the above pests. Consider treating if greater than 20% of plants are infested prior to head formation or if greater than 5% are infested when heads are present. For collards, kale, mustard and other leafy cole crops, consider treating when 10% or more plants are infested with any larvae. Flea beetle infestations should be treated when the pest is present on more than half the plants in the sample and damage is occurring.

Alternaria is a threat to maturing cole crops now, and will remain so for the rest of the season. Look for necrotic lesions on older tissue. The lesions often have

concentric rings within the borders. At the first sign of disease, begin a 7-10 day fungicide program. Consult the *2003 Commercial Vegetable Production Recommendations* for effective spray materials.

Peppers

In areas where **ECB** activity is increasing, consider a weekly protectant insecticide schedule to prevent fruit injury. On the ECB map, cross-hatched and dark portions (shaded green and red on the web version) represent areas where ECB activity is a threat to pepper fruit. As eggs hatch, larvae will tunnel into the fruit around the cap. As the larvae feed in the fruit, bacteria enter and can result in a high incidence of **soft rot**. When scouting, look at two leaves and fruit on five consecutive plants in ten random locations throughout the planting. Consider treating for ECB if more than one eggmass is found in the field. Consider preventive treatments if fruit are present and local trap catches are greater than one moth per night on average. Consult the *2003 Commercial Vegetable Production Recommendations* for spray materials.

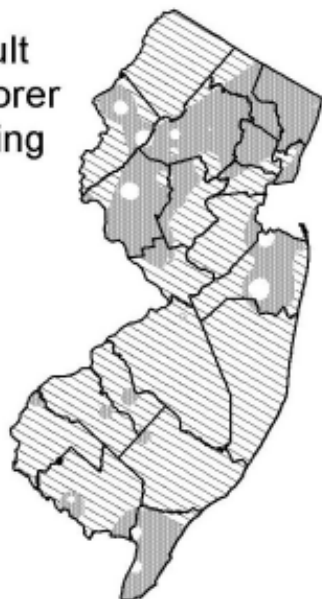
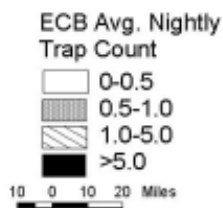
TSSM is a threat to pepper plantings at this time. Consider spot treating if TSSM appears in the planting. Early detection and spot treatments can help prevent a difficult infestation later.

High levels of **FAW** feeding in sweet corn are an indication the population is high enough to cause problems for peppers as well. When scouting, determine the type of caterpillars present in fruit (if any). FAW is generally brown in color, with an inverted “Y” on its head capsule. ECB is a pale caterpillar with a dark brown, flattened head. It is important to distinguish between the two, because Orthene is not as effective on FAW as it is on ECB. Consult the *2003 Commercial Vegetable Production Recommendations* for spray materials effective against both pests.

Bacterial leaf spot (BLS) has been found on bell peppers recently in the northern counties. This disease is characterized by necrotic spots and margins on leaves. When infected, plants often drop large numbers of leaves. Fixed copper combined with maneb at 7-10 day intervals may be useful in minimizing spread in the field. Consult the *2003 Commercial Vegetable Production Recommendations* for formulations and rates. High fertility levels (to increase foliar fruit cover) may help prevent scalding of fruit. Avoid working in wet fields.

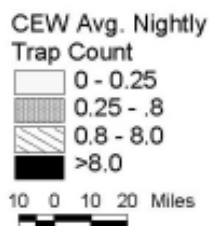
SEE ECB AND CEW DISTRIBUTION MAPS ON PAGE 6

Distribution of Adult European Corn Borer for the Week Ending August 13, 2003



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 August 13, 2003



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

Weekly Weather Summary

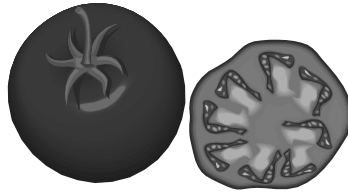
Keith Arnesen, Ph.D., Agricultural Meteorologist

Temperatures averaged above normal north and near normal central and south. Extremes were 89 degrees at Freehold on the 5th, and 60 degrees at Charlotteburg on the 6th and Long Valley on the 9th. Weekly rainfall averaged 4.01 inches north, 2.16 inches central, and 2.00 inches south. The heaviest 24 hour total reported was 2.40 inches at Long Valley on the 5th to 6th. Estimated soil moisture, in percent of field capacity, this past week averaged 97 percent north, 92 percent central and 77 percent south. Four inch soil temperatures averaged 76 degrees north, 77 degrees central and 76 degrees south.

Weather Summary for the Week Ending 8 am Monday 8/11/ 3

WEATHER STATIONS	RAINFALL			TEMPERATURE				GDD BASE50		MON
	WEEK	TOTAL	DEP	MX	MN	AVG	DEP	TOT	DEP	%FC
BELVIDERE BRIDGE	4.45	32.07	10.79	87	65	76.	4	1907	104	97
CANOE BROOK	missing									
CHARLOTTEBURG	3.46	32.53	9.94	84	60	72.	2	1521	100	100
FLEMINGTON	2.42	31.10	9.46	86	64	76.	3	1857	6	100
LONG VALLEY	4.74	28.76	5.49	80	60	73.	3	1434	-166	100
NEWTON	4.98	29.30	8.51	86	66	74.	4	1712	69	96
FREEHOLD	1.37	24.97	3.94	89	66	77.	3	2015	37	93
LONG BRANCH	1.69	28.04	6.97	83	68	74.	0	1835	-64	94
NEW BRUNSWICK	3.47	29.12	8.02	86	67	76.	3	1968	-94	100
TOMS RIVER	2.95	26.20	4.53	87	68	77.	5	1988	96	91
TRENTON	1.30	23.89	3.76	86	66	76.	1	1941	-213	89
CAPE MAY COURT HOUSE	2.61	22.19	3.51	84	62	73.	-2	1905	-123	79
DOWNSTOWN	1.39	23.28	3.53	87	66	76.	1	2039	-126	69
GLASSBORO	2.36	25.39	4.67	87	66	76.	1	2159	21	97
HAMMONTON	1.92	20.98	.22	88	67	77.	2	2129	-11	74
POMONA	.81	21.45	2.54	85	65	76.	3	1987	-10	59
SEABROOK	2.93	26.71	7.70	85	67	76.	1	2211	39	93
ATLANTIC CITY MARINA	missing									
SOUTH HARRISON	1.72	22.47	1.72	85	66	76	NA	2137	NA	NA
WES KLINE — GDD BASE 40 PINEY HOLLOW	Last Week	249	Ending 8/4/03)	This Week	257	(Ending 8/11/03)				

Vegetable and Specialty Crops Field Day & Heirloom Tomato Taste Testing



August 25, 2003
3:30 p.m. – 8:00 p.m.
Rutgers Agricultural Research and Extension Center
121 Northville Road
Bridgeton, NJ

Agenda

- 3:30 p.m. Regional chefs' heirloom and specialty tomato evaluations
- 4:30–6:00 p.m. Area growers and other interested participants visit with chefs and participate in taste testing of heirloom and specialty tomatoes
- 5:15 p.m. Walking tour of heirloom and round tomato varieties, heirloom tomato pruning study, pruning eggplant study, boron tomato study, high tunnel tomatoes, and mint
- 6:00 p.m. Wagon tours for the following research plots: phytophthora pepper research, IR-4 pesticide screening plots, tofu varieties/spacing and organic transitioning soybeans and grape varieties
- 7:00 p.m. Question and answer session
- New pesticides for insect management, Gerry Ghidui, Ph.D., Specialist in Entomology
High tunnels to extend the production season, A.J. Both, Ph.D., Specialist in Controlled-Environment Engineering
RutgersTomato.org what is can do for you, Russ Blair, Cape May County Agricultural Agent
Pesticide Safety on the farm, Michelle Infante-Casella, Gloucester County Agricultural Agent

Pesticide Recertification Credits – anticipated
For further information contact the Rutgers Agricultural Research and Extension Center at 856-455-3100.

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PLANT & PEST ADVISORY

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