

# PLANT & PEST ADVISORY

VEGETABLE CROPS EDITION \$1.50

AUGUST 2, 2006



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## Vegetable Disease Update

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

✓ **Cucurbits - Downy mildew** - Tank mix one of the following products from the list below with a protectant such as Bravo, Echo, Equus (chlorothalonil, M5) at 1.5-3 pt 6F/A (0 Day PHI) or Gavel (zoxamide + mancozeb, 22 + M3) at 1.5 to 2.0 lb 75DF/A (5 Day PHI)(some muskmelon may be sensitive, not for use on pumpkin). Ranman (cyazofamid, 21) at 2.1 to 2.75 fl. oz. 400SC/A (0 Day PHI), or Previcur Flex (propamocarb HCL, 28) at 1.2 pt 6F/A (3 Day PHI), or Curzate (cymoxanil, 27) at 3.2 oz 60DF/A (3 Day PHI), or Pristine (pyraclostrobin + boscalid, 11 + 7) at 12.5 to 18.5 oz 38WG/A (0 Day PHI), or Tanos (famoxodone + cymoxanil, 11 + 27) at 8 oz 50WDG/A (3 Day PHI), or Cabrio (pyraclostrobin, 11) at 8 to 12 oz 20WG/A (0 Day PHI)

Remember that materials with similar modes of action (i.e. same FRAC group) should be alternated and tank mixed with a protectant fungicide to reduce the chances for resistance development.

✓ **Cucurbits – Bacterial Wilt** – Symptoms of Bacterial wilt are beginning to show up in Cucurbit crops. Symptoms of Bacterial wilt will vary depending on crop. In general, plants may wilt during the day in hot weather and ‘recover’ during cooler parts of the evening and morning. Margins and interveinal areas of leaves become necrotic which cause leaves to appear ‘scorched’. Healthy green plants turn chlorotic with time and infected plants eventually collapse and die exposing fruit to sunscald injury. Cutting through stem tissue at the base of infected plants often reveals a coppery-tan color where the bacterium causes the vascular tissue to ‘plug up’. Control of Bacterial wilt begins with controlling striped **and spotted cucumber beetles** which vector the pathogen early in the growing season as plants emerge. Late-season beetle control will remain important as fruit begins to mature. Late-season beetle feeding may cause injury to stems ruining aesthetic quality. For more information on cucumber beetle and Bacterial wilt control please see the *2006 New Jersey Commercial Vegetable Production Recommendations Guide*.

✓ **Cucurbits – ‘White speck’ of Pumpkin** – also known as Microdochium or Plectosporium blight causes small, distinct lesions on

SEE DISEASE UPDATE ON PAGE 2

infected vines, petioles, leaves, handles and fruit (see VDOW). Symptoms include light tan to pure white 'spindle-shaped' lesions that have a dry, scabby appearance. These small 'white specks' often coalesce to form large, dry scabby whitish-tan areas on infected plant parts. Heavy vine infection can lead to complete defoliation and handle and fruit infection can ruin aesthetic fruit quality. Control of White speck begins with proper rotations with crops other than cucurbits. Maximum coverage with fungicide applications are necessary for control of White speck. For more information on control please see the *2006 New Jersey Commercial Vegetable Production Recommendations*.

✓ **Cucurbits – Powdery mildew** – Powdery mildew typically occurs from mid-July until the end of the season. Unlike Downy mildew, the diagnostic characteristics of Powdery mildew are pure white 'fuzzy' growth on both 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. 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 Bravo (M5) or Sulfur (M1) and rotated with fungicides of a different chemistry such as Bravo (chlorothalonil, M5) + Nova or Procure (Group 3). Group 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 *2006 New Jersey Commercial Vegetable Production Recommendations Guide*.

✓ **Pepper – Phytophthora blight** – Heavy rains these past few weeks have made conditions ideal for Phytophthora blight development in many areas throughout the state.

#### **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 at 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.

#### **For prevention of the stem and fruit rot phase of blight:**

Apply the following on a 7- to 10-day schedule:

Fixed copper at 2 lb 77WP/A or OLF, or

Ridomil Gold Copper (mefenoxam + copper, 4 + M1) at 2.5 lb 65WP/A. Make three to four applications at 10- to 14-day intervals. (Only apply Ridomil Gold 4E at planting and 30 days later. The third application of Ridomil Gold 4E cannot be made when Ridomil Gold Copper is applied.)

The following materials are labeled for Phytophthora on peppers, but there is little information on efficacy in the Mid-Atlantic region. For best results tank mix with a copper containing fungicide.

Forum (dimethomorph, 40) at 6.0 oz 4.18SC/A, or

Tanos (famoxodone + cymoxanil, 11 + 27) at 8-10 oz 50W/A

✓ **Pepper – Anthracnose** - 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. Control of Anthracnose begins with using clean-free seed and/or transplants. A three-year crop rotation with non-solanaceous crops is recommended. After the harvest season, pepper fields should be disced and plowed under thoroughly to bury crop debris. Beginning at flowering, alternate one of the following: azoxystrobin (FRAC group 11, Amistar 80WDG at 2 to 5 oz/A or Quadris at 6.2 to 15.4 fl oz 2.08F/A), or Flint (trifloxystrobin, 11) 50WDG at 2 to 4 oz/A, or Cabrio (pyraclostrobin, 11) 20EG at 8 to 12 oz/A with Maneb (M3) 75DF at 1.5 to 2 lb/A or OLF.

✓ **Peppers - 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. varieties. Loss from Bacterial spot can be reduced somewhat by maintaining high levels of fertility, which will stimulate new growth. For more information on control of Bacterial spot of pepper please see the *2006 New Jersey Commercial Vegetable Production Recommendations*.

✓ **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 *2006 New Jersey Commercial Vegetable Production Recommendations*. □

## Fungal Leaf Blights of Carrot

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

**A**lternaria and Cercospora are two soil-borne fungal pathogens that may cause early defoliation in carrots reducing yields and making harvest difficult. Both pathogens produce distinct symptoms on carrots. *Symptoms of Alternaria include irregular, dark brown to black spots which typically show up on older leaves first. Cercospora leaf spots are round, grayish-brown and are more prevalent on younger foliage.* Both leaf blights typically start at the margins of leaflets and as more spots develop leaflets begin to wither and die. Symptoms similar to leaf infections can develop on stems and petioles.

Control of both diseases begins with regular scouting and preventative fungicide applications on susceptible varieties. Apply Amistar 80WDG (azoxystrobin, 11) at 3 to 5 oz/A or Quadris (azoxystrobin, 11) at 9.2 to 15.4 fl. oz 2.08F/A, or Cabrio 20EG (pyraclostrobin, 11) at 8 to 12 oz/A, or Pristine (pyraclostrobin + boscalid, 11 +7) tank-mixed or alternated with Bravo, Echo, Equus (chlorothalonil, M4) at 1.5 to 2 pt/A or OLF, or Endura 70W at 4.5 oz/A. Apply Rovral 50WP (iprodione, 2) at 1 to 2 lb/A or Switch (cypridonil, 9) at 11 to 14 oz/A for Alternaria only. Do not make more than one sequential application of Amistar, Pristine or Cabrio (Group 11) before alternating with another fungicide chemistry. Several carrot varieties exhibit leaf blight tolerance and should be grown where adapted. For more information on tolerant varieties and control please see the *2006 New Jersey Commercial Vegetable Production Recommendations*. □

## Vegetable Disease of the Week

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



*Plectosporium blight (White speck) of Pumpkin.*

## Pest Notes

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

### Cucurbit Update

Growers have been finding numerous small, greenish or grayish-white insects on their pumpkins and other cucurbits. These are **squash bug nymphs**, often mistaken for young stink bugs because they look somewhat similar and also have an objectionable odor when crushed. These pests, like the adults, suck sap from the leaves, stems and vines of squash, pumpkin, gourds, melons, and other cucurbits. If the population of squash bugs is high, the leaves can quickly blacken and die. Also, during the feeding process, squash bugs inject into the plants a poisonous substance, known as Asana wilt of cucurbits that closely resembles cucurbit bacterial wilt.

Usually infestations are spotty and not widespread. Monitor fields closely for the shiny, dark brown football-shaped eggs, deposited in clusters on the leaf undersides. The recommendations state to begin treatments if greater than 1 egg mass per plant is observed. Apply the first treatment when the eggs are hatching or have recently hatched. It is much easier to manage these pests as newly hatched nymphs, rather than as late-instar nymphs or as adults because the labeled insecticides are not as effective against adults as they are against smaller nymphs.

Asana XL, bifenthrin, permethrin, carbaryl, and Thionex are labeled for squash bug control. Thorough coverage is essential to effective control of these pests because the eggs and nymphs are found on the leaf undersides. Use enough pressure and volume to get the spray material to the leaf undersides. □

## IPM Update

Kristian Holmstrom, Research Project Coordinator II, Vegetable IPM Program

### Sweet Corn

Catches of **European corn borer (ECB)** adults are generally low to moderate in most areas, (see ECB map). Adult ECB catches are likely to increase over the next several weeks and may be quite high in many areas, impacting sweet corn and other crops. The highest adult ECB activity is still occurring from Burlington County south. ECB larval feeding should be present on whorl stage corn at this time. Scouting should still be undertaken at least weekly. Check 5 consecutive plants in each of 10 random locations in the planting. Look for the “shot-hole” type feeding on the leaves that indicates larval ECB infestation, or discolored sections in emerging tassels. Consider treating when feeding signs are present on 12% or more of the plants. Where plantings are approaching full tassel/first silk, consider that an insecticide treatment at this stage is very useful in eliminating any ECB larvae that may be moving from the opening tassel down to the area where the ear and stalk meet. The highest nightly ECB catches for the previous week have occurred at:

Allamuchy	3	Elmer	3	Oldwick	2
Burlington	3	Shirley	3	Port Colden	2
Centerton	3	Hammonton	2	Tabernacle	2
East Vineland	3	Indian Mills	2	Woodstown	2

Adult **corn earworm (CEW)** catches have increased over the past week. Activity is at moderate levels in southern and central counties (see CEW map), and is low but increasing in the north. The first part of this week brought light catches through central Morris County. Activity is still spotty, but is likely to fill in over the next 7-10 days. Increased trap catches from North Carolina, Virginia, and Delaware show that large scale adult emergence is underway. Some of these adults will be headed our way very soon. The current New Jersey population is capable of causing significant injury to silking sweet corn. Silk spray schedules must be strictly observed to prevent CEW damage. On the CEW map, the shaded area (blue on the web version) represents a population that translates to a 4-5 day silk spray schedule, and the cross-hatched area (green on the web version) represents a 3-day spray schedule.

### Silking Spray Schedules\*:

- North – 5 days
- Central – 3-4 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 have occurred at:

East Vineland	3	Hammonton	2	Centerton	1
Elmer	3	Indian Mills	2	Farmingdale	1
Medford	3	Shirley	2	Folsom	1
Burlington	2	Woodstown	2	New Egypt	1

The occurrence of **fall armyworm (FAW)** larval feeding is increasing northward in whorl and pretassel stage sweet corn. This week, feeding

SEE IPM ON PAGE 5

has exceeded 20% in whorl stage corn in Morris and Warren Counties. In southern and coastal areas, this feeding may be quite heavy now. Seedling stage sweet corn is at risk of FAW infestation, especially in coastal areas. FAW often attack young plants, so these must be scouted at least weekly. Look for damage that is initially similar to heavy ECB injury. As the larvae grow, damage becomes more severe, with ragged holes appearing in the whorl and lots of visible caterpillar droppings. This pest can kill small plants if untreated. Consider treating when 12% or more plants are infested with FAW alone or in combination with ECB.

## Tomatoes

**Brown stinkbugs** are active in many areas now. Adults are regularly appearing in blacklight catches. This is the time of year when adults are present and moving around in search of food and egg laying sites, and stinkbugs have been observed in many tomato fields over the past week. Feeding has been very low in field tomatoes in northern and central counties, but much higher in high tunnels. Tomatoes are a favored host, especially if dry weather reduces the availability of native host plants. Now is the time to pay attention to fruit in the field for signs of feeding. Stinkbug feeding on tomatoes first appears as a diffuse whitish blotch on green fruit. The spot changes to bright yellow as the fruit matures. If this feeding is on the increase in the field or in harvested fruit, consider treating to suppress the population.

**Thrips** injury to tomato fruit is increasing slightly in some southern and central counties. These insects may often be detected by tapping fresh flower clusters over an index card. If fields are scouted regularly and an upsurge in thrips numbers occurs in flower clusters, consider treating to minimize subsequent fruit injury. Later in the life of the crop, observe fruit for the presence of gold colored flecks on ripening fruit. These flecks are from thrips feeding and often form trails or patches on the fruit surface. If this injury is increasing, consider treating for thrips. Foliar feeding may occur under heavy thrips pressure. This feeding appears as small necrotic patches on leaves with small black dots (droppings) in or near the patches. The tiny, yellow thrips should be easily observed on leaves if the population is this heavy.

Check fields for **aphids** and **two-spotted spider mites (TSSM)**. Look at 2 complete leaves each on 5 consecutive plants in 10 random locations. Note the presence of aphid colonies on the undersides of the leaves, as well as the presence of TSSM. Increasing aphid populations are often detected by the presence of their cast skins, which adhere to the sticky droppings they produce. If colonies are increasing over several scouting visits, especially if aphid droppings are accumulating on fruit, consider an insecticide to reduce the population. TSSM feeding results in a whitish pin spot, or stipple, on the upper surface of the leaflet. The mites will be on the underside of the leaf until colonies become large. At this point,

they will make webs and travel between leaves. Note the number and location of sites with TSSM. Consider spot treating to prevent further spread into the field.

When applying fungicides to limit foliar disease, remember to include a copper product in the rotation if a **bacterial infection** is suspected. Symptoms include necrotic spots or leaf margins (common to **bacterial speck, spot and canker**), as well as stem lesions (canker), dark fruit blisters (speck), dark scabby fruit lesions (spot), and fruit blisters with light halos (canker). Avoid fields when foliage is wet. Always work from the youngest planting to the oldest to avoid introducing bacterial pathogens to the younger plants.

## Pumpkins

In northern and central counties, most fields have reached the **powdery mildew (PM)** action threshold (2 leaves with lesions per 100 older leaves) over the past week. Early stage PM infections appear as small circular areas of white powdery material on older leaves. Often the first infected leaves are on the inner part of the canopy. PM lesions may appear on either leaf surface. Now is the time to begin the regular protectant fungicide program, if this has not already underway. As always, check Dr. Andy Wyenandt's reports in this publication for the status of cucurbit **downy mildew (DM)** in our region. The threat of this disease (DM) would pre-empt the action threshold for PM, and necessitate the addition of more specific fungicides.

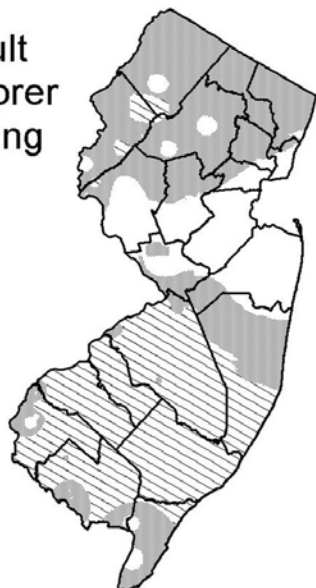
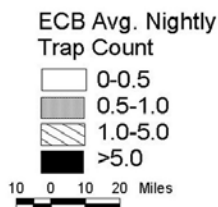
## Peppers

With the second **ECB** flight now active, it is important to monitor local moth catches to determine when to begin a protective program for ECB management. If local blacklight traps are regularly capturing at least 1 moth per night, consider a weekly insecticide application to limit fruit infestation by ECB larvae. On the ECB map, peppers in areas that are shaded or cross-hatched (blue or green on the web version) should be treated preventively for ECB. Fields should be scouted weekly. Check 5 consecutive plants each in 10 random locations. Look at the undersides of 2 leaves per plant for the presence of **aphids, spider mites** and ECB egg masses. Consider treating if aphids exceed approximately 120 per 100 leaves, and if spider mites are found on 10 leaves, and if 2 or more ECB egg masses are found in the sample. Observe 2 fruit per plant for the presence of larval infestation or soft rot. Dramatically increasing soft rot is an indication of a possible ECB larval infestation.

**Beet armyworm (BAW)** pheromone traps have been deployed from Cape May northward through Burlington County. BAW adult catches have remained stable over the past week, and as yet their numbers are quite low. This low level will not register on the maps, and is not likely to be a threat to peppers or other crops. As BAW numbers increase, maps will be published along with information relevant to monitoring and control.

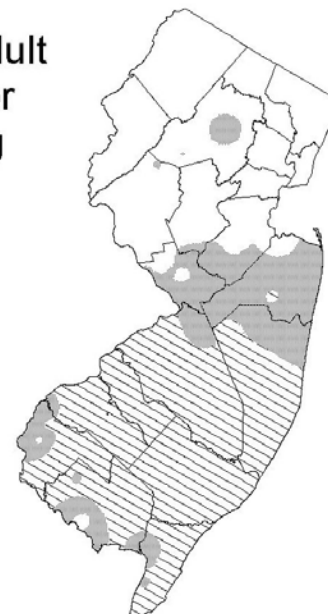
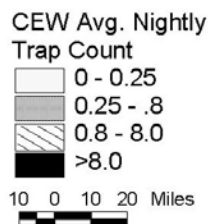
SEE DISTRIBUTION MAPS ON PAGE 6

### Distribution of Adult European Corn Borer for the Week Ending August 02, 2006



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 02, 2006



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 much above normal, averaging 76 degrees north, 79 degrees central and 80 degrees south. Extremes were 94 degrees at Pomona and Toms River on the 29th, and 55 degrees at Newton on the 25th. Weekly rainfall averaged 0.66 inches north, 0.48 inches central, and 0.49 inches south. The heaviest 24 hour total reported was 3.98 inches at South Harrison on the 27th to 28th. Estimated soil moisture, in percent of field capacity, this past week averaged 86 percent north, 74 percent central and 74 percent south. Four inch soil temperatures averaged 74 degrees north, 77 degrees central and 79 degrees south.

#### Weather Summary for the Week Ending 8 am Monday 7/31/06

WEATHER STATIONS	RAINFALL			TEMPERATURE				GDD BASE50		MON %FC
	WEEK	TOTAL	DEP	MX	MN	AVG	DEP	TOT	DEP	
CANOE BROOK	MISSING									
CHARLOTTEBURG	.90	20.56	-.25	87	60	76.	3	1698	508	80
FLEMINGTON	.32	25.91	5.90	90	62	78.	4	1926	333	81
NEWTON *	.77	20.74	1.65	88	55	75.	1	1473	70	81
FREEHOLD	.48	18.88	-.51	92	65	79.	4	1963	254	74
LONG BRANCH	.21	19.07	-.19	92	68	79.	4	1872	241	50
NEW BRUNSWICK	.59	19.94	.58	92	65	79.	4	2056	259	84
TOMS RIVER	.46	16.41	-3.49	94	60	79.	4	1968	331	53
TRENTON	.64	20.91	2.36	92	62	79.	2	2096	226	68
CAPE MAY COURT HOUSE	.07	12.69	-4.44	93	62	79.	3	1988	244	53
DOWNSTOWN *	.51	16.88	-1.22	92	60	79.	2	1857	-25	68
GLASSBORO	.54	17.56	-1.52	91	66	80.	4	2239	382	58
HAMMONTON	1.01	16.11	-3.04	93	62	80.	3	2160	304	79
POMONA	.19	17.70	.46	94	63	79.	4	2039	309	56
SEABROOK	.59	23.60	6.08	94	68	81.	4	2305	416	66
SOUTH HARRISON	4.34	21.68	2.36	91	65	79.	NA	2209	NA	NA
WES KLINE — GDD BASE 40 PINEY HOLLOW										
LAST WEEK	277 (Ending 7/24/06)									
THIS WEEK	272 (Ending 7/31/06)									
* SOME CUMULATIVE VALUES ESTIMATED DUE TO EARLIER MISSING DATA										

# Vegetable and Specialty Crops Field Day & 3<sup>rd</sup> Annual Heirloom and Round Tomato Taste Testing

Tuesday - August 22, 2006

5:00 p.m. – 9:00 p.m.

Rutgers Agricultural Research and Extension Center (RAREC)  
121 Northville Road, Bridgeton, NJ

This event is open to all and is a great opportunity for the general public as well as commercial growers to see first hand what is going on at the Research Farm in Bridgeton.

## Meeting Agenda:

5:00 - 6:15 p.m. Tomato tasting of heirloom and round tomatoes  
White potato variety display

6:15 - 7:30 p.m. Wagon Tour

*Ethnic vegetable plots* – Rick VanVranken

*Pepper fertility trial* – Wes Kline

*Pepper Phytophthora tolerance variety trial* – Andy Wyenandt

*Chemical Phytophthora control in peppers* – Andy Wyenandt

*Zucchini and summer squash downy/powdery mildew and virus tolerance variety trial* – Michelle Infante Casella

*Fungicide resistance management for powdery mildew and downy mildew in pumpkins* – Andy Wyenandt

7:30 p.m. Late season insect control – Gerry Ghidui \*

8:00 p.m. Fall weed control – Brad Majek\*

8:30 p.m. High tunnel disease control – Andy Wyenandt\*

\*Bring insect, weed or disease samples for identification by specialists.

Pesticide Recertification Credits: 4 credits each for the following categories: 1A, PP2 and 10. Please make sure you bring your pesticide license number with you. Pesticide forms must have your license number and signature. If either is missing, the DEP will not count these credits for your license.

For further information, contact Richard VanVranken at RCE of Atlantic County at 609-625-0056, Michelle Infante-Casella at RCE of Gloucester County at 856-307-6450, ext. 1 or Wesley L. Kline, Ph.D. at RCE of Cumberland County at 856-451-2800. □



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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 RCRE in your County.

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