

# PLANT & PEST ADVISORY

VEGETABLE CROPS EDITION \$1.50

JULY 9, 2008



Summer squash with Watermelon mosaic virus strain  
Source: Oregon State University Extension

## Viruses Already a Problem in Squash

Michelle Casella, Agricultural Agent, Gloucester County and Andy Wyenandt, Ph.D., Specialist in Vegetable Pathology

In New Jersey, we traditionally do not see virus symptoms on cucurbit crops until late July or early August. This year virus symptoms were first detected in the second week of June on farms in Woolwich Township, Gloucester County in zucchini and yellow summer squash fields. Symptoms first show up in new growth as narrow, smaller, twisted and whip-like leaves that also show light green or yellow leaf areas. Later symptoms show up on fruit as discoloration in irregular patterns and as raised bumps on fruit. In yellow summer squash, green spotting and bumps make fruit unmarketable.

Samples from the farms were sent to the Rutgers NJAES Plant Diagnostic Laboratory for ELISA testing to determine the exact virus infecting the squash. Results last week showed that all samples sent tested positive for Watermelon Mosaic Virus 2 (WMV-2). WMV overwinters mostly in wild legumes and can be spread by more than 20 aphid species. Aphids acquire the virus after a few seconds of probing infected plants and then retain the virus in their mouthparts for a few hours, thus spreading the virus from plant to plant. In our last statewide evaluation in 2006, the predominant cucurbit viruses found in tests were Zucchini Yellow Mosaic Virus (ZYMV) and to a lesser extent Cucumber Mosaic Virus (CMV). CMV is transmitted by more than 60 aphid species and has an extensive host range that includes many weeds and other cultivated crops as reservoirs for this virus. Additionally, CMV has been found in pepper crops already this season. In 2007, the predominant virus for cucurbits found in Southern New Jersey was ZYMV.

For later plantings this production season the recommendation is to plant zucchini and yellow summer squash varieties that have intermediate resistance or resistance packages to multiple viruses. See the 2008 *Commercial Vegetable Production Recommendations Guide* on page F104 for a full listing of recommended varieties. Varieties with intermediate resistance to WMV-2, ZYMV, and CMV include the zucchini varieties 'Revenue', 'Justice III', 'Judgement III', and 'Dividend'. The yellow summer squash varieties recommended for late plantings with intermediate resistance to at least these 3 viruses include 'XPHT 1832 III', 'Conqueror III' and 'Lioness'. Note that 'Conqueror III' and 'Lioness' are green stemmed varieties. Other yellow summer squash varieties with the precocious yellowing gene (listed with PY in the recommendations guide), will mask the greening of fruit caused by WMV-2 and CMV, but

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# Vegetable Disease Briefs

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

## Cucurbit Downy mildew confirmed in Central and Western New York State

Cucurbit downy mildew (CDM) was confirmed on cucumber in central and western New York State. Please be diligent and scout fields on a regular basis. Importantly, once early-season cucurbit fields are finished, those fields should be sprayed immediately with gramoxone to reduce potential infection sources. This is especially important if you have later plantings! For more information on CDM control please see the *2008 New Jersey Commercial Vegetable Production Recommendations Guide*. To track the progress of CDM please visit NCSU cucurbit downy mildew forecasting webpage at:

<http://www.ces.ncsu.edu/depts/pp/cucurbit/>

## Watermelon Mosaic Virus (WMV) detected in cucurbit samples

Cucurbit samples sent to the Rutgers Plant Diagnostic Lab indicate that WMV is appearing in many fields. The best method to reduce chances for virus infection in cucurbit crops is to choose varieties with resistance packages to multiple viruses. Please visit the varieties list in front of each crop section in the 2008 commercial production guide for more information. See additional article in this issue for more information.

## Mosaic virus starting to appear in pepper fruit

Unlike other hosts, symptoms of mosaic virus in pepper may go completely unnoticed on leaves. Depending on when the infection occurs symptoms may never appear. In young plants, severe stunting will occur with leaves developing small, deformed leaves with mosaic symptoms. In older, mature fields, plants may express what is called mature plant resistance to CMV, and as a result, may not show symptoms. Necrotic lines and ringspots may appear on fruit of some pepper types (see VDOW). CMV may originate from aphids which vector the virus from plant to plant from infected weed hosts. Control begins with eliminating potential weed hosts from the field and surrounding areas which may act as a reservoir for the virus. Control of aphids is difficult and unwarranted in most cases. □

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may become bumpy and/or distorted when infected with either ZYMV or Papaya Ring Spot Virus (PRSV).

Besides variety selection, preventative measures are important. First scout squash fields near hedge rows, along woods lines, and around nearby crops that are drying down (grain crops) or where production is ending and fields have been let go (where fields have not been sprayed for long periods of time). These areas are sites where aphid populations may build up and will then enter the newly planted squash crop closest to those areas. See the recommendations guide for insecticide applications for aphid control. Also, the use of reflective mulches has proven effective to confuse aphids from flying into an area. Utilizing more than one tool to prevent viruses is more effective than just choosing one control option. □

# Vegetable Disease Update

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

✓ **Cucurbits – Angular leaf spot** - Symptoms are distinct and easily diagnosed. Small water-soaked **lesions** develop on leaves and expand until they are **delimited by larger secondary veins** in leaves resulting in angular lesions. After time these lesions turn brown and infected tissue drops-off resulting in ‘shotholes’. Angular leaf spot can be spread by splashing rain, insects, on the hands of workers and on farm machinery. Working in the field when the foliage is wet favors the spread of the disease. The disease can also be spread by blowing wind and in irrigation water. Best management of Angular leaf spot begins with clean-seed and planting in fields that has been out of cucurbit production for at least 2 years. Cultivating when foliage and soil are wet and irrigating with pond water should be avoided. There are cucurbit varieties with resistance. Add label rate of fixed copper + mancozeb to fungicide maintenance program and repeat applications every 7 days.

✓ **Cucurbits – Bacterial Wilt** – Symptoms of Bacterial wilt will vary depending on cucurbit 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’. Look for beetle feeding scars on cotyledons and stems of young plants. Healthy green plants will turn chlorotic (yellow) with time and infected plants will 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 *2008 New Jersey Commercial Vegetable Production Recommendations Guide*.

✓ **Cucurbits – Powdery mildew has been found on zucchini!** In a typical year, powdery mildew occurs from mid-July until the end of the season. Symptoms typically begin on older, lower leaves and can spread rapidly under dry, humid conditions. **Control of Powdery mildew begins with regular scouting for symptoms and weekly fungicide applications.** Begin a fungicide program when PM has been found in region and/or when 1 lesion is found on the underside of 45 leaves. Fungicide resistance management of the fungus which causes Powdery mildew is critical in the mid-Atlantic region! Fungicides

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with a high risk for resistance development, such as the strobilurin (Pristine, FRAC code 11) and Nova or Procure (FRAC code 3), should be tank mixed with a protectant fungicide such as chlorothalonil (M5) and rotated with fungicides of a different chemistry.

**For control of cucurbit Powdery mildew in:  
Pumpkin and winter squash fields:**

Alternate:

Nova or Rally (myclobutanil, 3) at 5 oz 40WP/A plus chlorothalonil--2-3 pt 6F/A, or Procure (triflumizole, 3) at 4-8 oz 50WS/A plus chlorothalonil--2-3 pt 6F/A

With:

Micronized Wettable Sulfur (M2) at 4 lb 80W/A, sulfur may injure plants especially at high temperatures. Certain varieties can be more sensitive. Consult label for precautions, or

With a tank mix containing:

chlorothalonil plus Pristine (pyraclostrobin + boscalid, 11 + 7) at 12.5-18.5 oz 38WG/A

If Powdery mildew has become well established in the mid- to late part of the season, only apply protectant fungicides such as chlorothalonil or sulfur.

Summer squash and cucumber fields:

Alternate:

Nova or Rally (myclobutanil, 3) at 5 oz 40WP/A plus chlorothalonil at 2-3 pt 6F/A, or Procure (triflumizole, 3) at 4-8 oz 50WS/A plus chlorothalonil at 2-3 pt 6F/A

With a tank mix containing:

chlorothalonil plus Pristine (pyraclostrobin + boscalid, 11 + 7) at 12.5-18.5 oz 38WG/A

**In Muskmelon and Watermelon fields:**

Alternate:

Nova or Rally (myclobutanil, 3) at 5 oz 40WP/A plus chlorothalonil at 2-3 pt 6F/A, or Procure (triflumizole, 3) at 4-8 oz 50WS/A plus chlorothalonil at 2-3 pt 6F/A

With a tank mix containing:

Quintec (quinoxifen, 13) at 6 oz 2.08F/A plus chlorothalonil at 2-3 pt 6F/A

chlorothalonil plus Pristine (pyraclostrobin + boscalid, 11 + 7) at 12.5-18.5 oz 38WG/A

For more information on control of Powdery mildew of cucurbits please see the *2008 New Jersey Commercial Vegetable Production Recommendations Guide*.

✓ **Eggplant – Phomopsis blight** – can affect all above ground portions of the plant. Symptoms include well-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 scouting and weekly preventative fungicide applications. 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.

✓ **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 and as small fruit begin to set, alternate maneb (M3) at 1.5 to 3 lb/A 75DF with one of the following FRAC code 11 fungicides: azoxystrobin (Quadris at 6.2 to 15.4 fl oz 2.08F/A), or Flint (trifloxystrobin) 50WDG at 2 to 4 oz/A, or Cabrio (pyraclostrobin) 20EG at 8 to 12 oz/A or Tanos (famoxadone + cymoxanil, 11 + 27) at 8 to 20 50WDG/A.

✓ **Pepper - Bacterial leaf spot – Bacterial leaf spot has been found.** Symptoms of Bacterial spot on pepper leaves include small, brown water-soaked lesions that turn brown and necrotic in the centers. Spots may coalesce and form large blighted areas on leaves and premature defoliation can occur. On fruit, brown lesions can form which have a roughened, cracked wart-like appearance. High temperatures, high relative humidity and rainfall favor Bacterial spot development. Loss from Bacterial spot can be reduced somewhat by maintaining high levels of fertility, which will stimulate new growth. Applying a fixed copper (M1) at labeled rates plus maneb (M3) at 1.5 lbs 75DF/A or 8 to 10 oz Tanos (famoxadone + cymoxanil, 11 + 27) may help suppress spread. For more information on control of Bacterial leaf spot of pepper please see the *2008 New Jersey Commercial Vegetable Production Recommendations*.

✓ **Pepper – Phytophthora blight is beginning to show up in fields around south Jersey!**

For control of the crown rot phase of blight:

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

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

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### 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 Revus (mandipropamid, 40) at 8 oz 2.08F/A *plus* fixed copper, 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

✓ **Potato – Black Leg** – Black leg is caused by *Erwinia* spp. which also cause 'soft rots'. The bacteria which lead to the aerial phase of Blackleg are soil-borne (originate from old crop debris) and spread by rainfall, overhead irrigation and wind. The aerial phase of Blackleg does not originate from decaying seed pieces. The bacterium can enter the plant through wounds created by cultivation or through stems damaged by blowing wind, sand or hail. Dense canopies, warm weather and prolonged periods of leaf wetness favor the spread of aerial Blackleg. Fortunately, the disease rarely extends below ground and only causes dieback of stems over time. Symptoms of the aerial phase of Blackleg first appear as an irregular, water-soaked 'green' decay on stems that turns light-brown to black over time. Hot, dry weather will cause infected areas to dry out and become brittle. To help suppress aerial Blackleg, avoid excessive overhead irrigation if possible. Do any cultivating when plants are dry, cultivating in the presence of dew or wet plants may help to spread the bacterium around.

✓ **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 *2008 New Jersey Commercial Vegetable Production Recommendations*.

✓ **Tomato - Stem Rot/Pith Necrosis** – Symptoms begin to develop as green fruit begins to mature. Bacteria are most likely ubiquitous to tomato fields and develop when weather conditions and cultural practices lead to favorable conditions for disease development. Symptoms include the development of irregular brown lesions on main stems and branches. Late pruning (suckering) can provide entry points for both bacterial diseases, especially during wet conditions. Internally, stems will

## Vegetable Disease of the Week

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



*Symptoms of Cucumber Mosaic Virus (CMV) on Hungarian wax pepper fruit.*



*Mosaic virus causing uneven ripening (green islands) on developing pumpkin fruit.*

become brown and mushy. High humidity is necessary for disease development in both cases. High nitrogen and low night temperatures are associated with Pith Necrosis development. Control of both begins with cultural practices such as avoiding working in fields with wet foliage, avoiding late pruning and watching the amount of N applied to plantings.

✓ **Tomato – Bacterial spot and speck** – Symptoms of spot and speck look very similar on infected leaves. Lesions are small, circular, blackish-brown and with time develop a halo, or yellowing of tissue surrounding the lesion. As lesions develop they can coalesce (join together) and can cause premature death. After transplanting, apply Actigard at 0.33 oz 50 WG/A, or fixed copper (M1) at 1 lb a.i./A *plus* a mancozeb (Dithane, Manex II, Manzate, Penncozeb, M3) at 1.5 lb 75DF or OLF, or ManKocide (M1 + M3) at 2.5 to 5.0 lb 61WP/A, or Cuprofix MZ (M1 + M3) at 1.75 to 7.25 lb 52.5DF/A on a 7 day schedule. □

# IPM Update

Kristian Holmstrom, Research Project Coordinator II, Vegetable IPM Program

## Sweet Corn

The first **European corn borer (ECB)** flight is over, with only occasional scattered catches occurring (see ECB map). Most feeding in sweet corn is in the pre-tassel or older stages, with most whorl stage corn free of ECB damage. ECB moths should return, beginning in south-western areas within the next two weeks. A recurrence of feeding injury will follow shortly afterward. For whorl stage sweet corn, consider treating for ECB when 12% or more plants show signs of the "shot-hole" type feeding on newer leaves. Remember to treat plantings as the tassels open and begin a silking stage spray program from that time forward. ECB adults will continue to lay eggs on these plants through the silking stage, and constitute a threat to the ears. A silk spray program as dictated by local corn earworm (CEW) counts will help prevent ear infestations from ECB. Consult the 2008 *Commercial Vegetable Production Recommendations* for materials and rates.

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

Hammonton	2	Cinnaminson	1	Indian Mills	1
Medford	2	Downer	1	Shirley	1
Beemerville	1	Elm	1	Springdale	1
Centerton	1	Folsom	1	Tabernacle	1

Adult **corn earworm (CEW)** catches are increasing in southern counties (see CEW map). Overall, this population is a threat to early season silking sweet corn. Growers should access information on CEW populations from this publication or from population maps posted on the RCE Vegetable IPM Program website: <http://www.pestmanagement.rutgers.edu/IPM/Vegetable/Pest%20Maps/maparchive.htm>

Shaded areas on the map (blue on the web) indicate a 4-5 day silking spray schedule, while cross-hatched areas (green on the web) represent a 3-day silking spray schedule.

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

Tabernacle	3	Woodstown	2	Jones Island	1
Beckett	2	Denville	1	Medford	1
RAREC	2	Elm	1	Pedricktown	1
Shirley	2	Folsom	1	Shiloh	1

This week in Cape May County, scouts discovered **fall armyworm (FAW)** feeding in whorl stage sweet corn. FAW feeding initially is found on small groups of plants in the field. 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.

Scouts are reporting **corn leaf aphid** populations in pretassel stage corn. These blue-gray aphids will build up in the tassel prior to the silk stage. If uncontrolled, they will migrate to the ear and get in between husk layers, making ears less desirable at the market. In general, repeated use of synthetic pyrethroid insecticides in the silk spray schedule can result in aphid problems. Consider rotating to different chemistry, particularly early in the silking spray schedule. Methomyl, a carbamate insecticide, will provide adequate control of these aphids as well as caterpillar pests.

## Silking Spray Schedules\*:

North – 6-7 days

Central – 4-5 days

South – 3-4 days

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

## Pumpkins and winter squash

Many pumpkin and winter squash plantings are entering vine-run stage now. As this occurs, **squash bugs** may appear on plants. These large, dusty-gray insects resemble elongated stinkbugs and will feed on plant stems and leaves. They deposit masses of copper colored eggs on the underside of leaves. When plants are running, control of these insects is typically not required, as their feeding is not significant enough to injure the plant. Exceptions include very small plants (0-4 true leaf stage) or severely drought stressed plants. Under these conditions, treatment may be warranted if adult bugs or hatched egg-masses average one per plant. Be sure to check the base of stems on small plants as squash bugs will often feed there.

## Snap Beans

**Potato leafhopper (PLH)** adults are active everywhere at this time. This pest is a particular problem on beans because it often goes unnoticed until foliar distortion and burn occurs. Once this damage appears, yields have already been compromised. It is critical that beans be monitored regularly for the presence of PLH. If a sweep net is available, consider treating if more than 100 nymphs and adults are present in 20 sweeps of pre-bloom stage plants. This threshold increases to 250 during bloom and to 500 per 20 sweeps during pod development. If no sweep net is available, check plants in 10 random field locations and consider treating if adults and nymphs are found throughout. Adults are pale green, and will fly out from foliage when disturbed and immediately fly back into the plant canopy. Nymphs are wingless and bright green and may be found on the underside of leaves.

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## Tomatoes

When bacterial infections are from a field source (from infected debris, weed hosts, etc.), symptoms on tomatoes often appear as fruit are maturing. All infections are characterized by very dark, often wet looking lesions on leaves of any age. In the case of bacterial canker, lesions often start at leaf margins but may also be found on petioles. Bacterial speck results in a dark blister-like lesion on infected fruit, while bacterial spot causes a more severe dark fruit lesion. Bacterial canker causes a whitish blister referred to as “bird’s-eye spot” on fruit. If these symptoms appear in a planting, consider regular applications of copper if this is not already part of the program. Avoid fields when wet. Always work in younger plantings first if activity is planned in multiple plantings. This will prevent the distribution of bacteria from older infected plants to younger ones. The younger the plants are when they are infected, the more likely economic injury is to occur. Consider placing buckets with a 5-10% bleach solution in water at the end of rows when tying or pruning. This will enable workers to dip wands or pruning tools in the solution between rows to limit spread among plants.

**Brown stinkbugs** are active in many areas now. This is the time of year when adults are present and moving around in search of food and egg laying sites. Tomatoes are a favored host, especially if dry weather reduces the availability of native host plants. Recent wet weather may help keep stinkbugs on non-crop hosts, but 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.

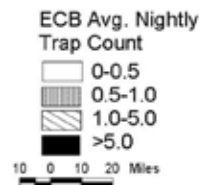
As always, be aware that **thrips** thrive under warm conditions. Thrips are capable of causing the “gold fleck” symptom on ripening fruit, as well as significant foliar injury should the population get very large. When sampling for other pests, tap a fresh flower cluster over an index card or other small piece of paper. Look for very small, yellow thrips to be shaken out onto the paper. Low to moderate populations are often best found using this method. If the population gets very high, thrips will be seen moving about on the leaflets and will cause clear patches to develop as they feed on foliage. While it is not necessary to treat if thrips are found in one or two flower clusters, consider treating for this pest if they are increasing in sampled flower clusters and fruit are present. Treatment is also warranted if thrips are numerous enough to be present on foliage. It is a good idea to inspect transplants prior to planting to insure that they do not get placed in the field with a thrips infestation. Check the *2008 Commercial Vegetable Production Recommendations* for labeled insecticides.

## Peppers

Staff from McConnell Agronomics have reported **beet armyworm (BAW)** on peppers in the Hammonton area. 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. The BAW trap network is currently being deployed. Maps of adult BAW populations will follow in this publication as catches occur.

*Note: Activities of the Vegetable IPM Program in northern New Jersey are supported and funded in part by the New Jersey Highlands Council.*

### Distribution of Adult European Corn Borer for the Week Ending July 09, 2008



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 July 09, 2008



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

## Pest Notes

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

✓ **Aphids:** Growers and scouts report high aphid populations in many different vegetable crops, including tomatoes, peppers, cucumbers, squash, etc. Aphids (many species) transmit several plant diseases, and several growers already reported the appearance of **cucumber mosaic virus** in peppers, showing up in the foliage and in the fruit. It is not possible to stop the spread of aphid-borne diseases, but the spread can be slowed by managing the aphid population and keeping it at a low level. Several excellent aphicides are available for the fruiting vegetables (pepper, tomato, eggplant) and the cucurbit vegetable group (squash, pumpkin, cucumber, etc). Beleaf and Fulfill are aphid-specific, and have relatively long residual on the plant. The neonicotinoid group of insecticides that are effective in controlling aphids and a few other pests, and labeled on many vegetable crops include Actara, Assail, imidacloprid, and Venom. Some of these can be applied either at-plant or after plant emergence as a foliar spray, increasing their versatility. Several older-chemistry products are still available and labeled on vegetable crops, including Lannate, Orthene (peppers only), Metasystox-R, and Thionex (old name – Thiodan). If an older product is used, re-scout the field 3-4 days after application to determine effectiveness of spray. These are quick-acting materials, and if aphids still persist, it would be wise to select an alternative chemistry material and re-treat. If a newer product is used, re-scout no sooner than 5 days after application (aphids cease probing and feeding immediately, but may remain on the plant for 5 days or so before falling off).

✓ **Potato leafhoppers:** **Potato leafhopper** populations continue to appear in fields at high levels, indicating that control from at-plant applications of Admire or Platinum is declining, and some varieties still need protection. Leafhopper populations are most easily managed if control tactics are used before the population reaches a high level. Because leafhoppers affect plant growth (“hopper burn”), it doesn’t take a very large population to inflict serious damage. Many materials are available and effective, and no reports of insecticide failure or resistance have been received along the Atlantic coast so far. Different materials are labeled on different crops, so consult label for all directions, rates, restrictions and crops before using any insecticide on a crop.

✓ **New Labels:** The federal EPA has approved the registration of spirotetramat, brand name of Movento (Bayer Crop Science), a new chemistry insecticide effective against **aphids** and **whiteflies**. It has just been registered for use in the fruiting vegetables (eggplant, tomato, pepper), leafy vegetables (arugula, cardoon, celery, dandelion, endive, fennel, lettuces, parsley, radicchio, spinach, Swiss chard and others), Brassica leafy vegetables (broccoli, Brussels, cabbages, cauliflower, kohlrabi, etc), and tuberous crops (sweet potato, etc). The mode-of-action of this material is new, category 23, and is classified as a lipid biosynthesis inhibitor. It has active leaf uptake, and is strongly suggested that it be used with a spray adjuvant/additive with spreading/penetrating properties to maximize this leaf systemic activity. As with the other new-chemistry aphicides, it is best to use this material before a damaging population becomes established. □

## Food Safety Series

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

### **Salmonella and Tomatoes**

There is no clear answer to what caused the *Salmonella* outbreak. The Food and Drug Administration reported on their website July 8 the following: “At this time, FDA recommends consuming raw red plum, raw red Roma, or raw red round tomatoes only if grown and harvested from the following areas that **HAVE NOT BEEN ASSOCIATED WITH THE OUTBREAK:**” New Jersey is on the “have not been associated with the outbreak” list. This is the same message that was reported at the beginning of the outbreak.

FDA is now investigating other items that may have been mixed with tomatoes such as hot peppers and cilantro. When is this going to end? No one knows! They may never find the source of the outbreak. In fact, the source may not have been at the farm level. It could have been at a processing location.

The Center for Disease Control and Prevention reports that the strain of *Salmonella* (*Saintpaul*), that infected 991 individuals since April 2008, is rare in the United States. Only six cases were reported from April to June in 2007. Forty-one states, the District of Columbia and Canada have reported cases in this outbreak.

What does a grower do when asked about the outbreak? Be straight with your consumer. Tell them about the FDA list and stress the tomatoes were grown in New Jersey and are on the “not associated” list. The Jersey tomato has a good reputation; build on that! I have heard consumers at farmers markets ask if the tomatoes were Jersey’s. When the answer was yes, the consumer said, “they must be safe, they are from Jersey.” No one can guarantee something is safe, but the point is there is a confidence in the Jersey product. Consumers are requesting locally grown product. Growers should cash in on the Jersey tomato reputation and consumer demand.

Will this be the last foodborne illness? No, we will continue to have small and large outbreaks in the future. The goal is to reduce the number and severity. Prevention is still the best tool. Once a product is contaminated and mixed with other products the

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contamination can spread. You cannot control what someone does with your product once it leaves your operation, but you can make sure it was the best product when it was shipped.

Think about what steps you are taking to protect your product. Did you have the water tested? Have you trained your workers in proper hygiene practices? Do you use a sanitation product to disinfect your produce? Do you maintain the cold chain from the point the product is picked until it is delivered? These are just a few questions you should be asking yourself and correcting if you are deficient in any of these areas. Remember, you are not just a grower, you are also a food handler! ☐

## Extreme Heat and Worker Health

*Michael J. Fargione, Extension Educator, Cornell Cooperative Extension Hudson Valley Regional Fruit Program*

Some days could be brutal for outside work with temperatures reaching the mid 90's and plenty of humidity. Be sure workers have access to ample water and take regular breaks in the shade to avoid heat stress. It is possible to lose > 5 liters of sweat per day in extremely hot and humid conditions, when doing strenuous work, and/or when wearing protective clothing.

### Other hot-weather tips:

1. anticipate conditions that will increase the need for water.
2. "prehydrate" by drinking 8-16 fluid ounces of water before work begins.
3. drink 4-8 ounces every 15-20 minutes during work.
4. continue to drink water after work, but don't over-hydrate.
5. keep water within easy reach.
6. drink cool water - your body will absorb it more quickly.
7. don't let yourself get thirsty - thirst indicates a state of existing dehydration.
8. avoid alcohol and caffeinated beverages which dehydrate your body.

*Submitted by Win Cowgill, Agricultural Agent. ☐*

## Weekly Weather Summary

*Keith Arnesen, Ph.D., Agricultural Meteorologist*

Temperatures averaged above normal, averaging 73 degrees north, 75 degrees central and 76 degrees south. Extremes were 93 degrees at Pomona on the 4th, and 57 degrees at Charlotteburg on the 4th. Weekly rainfall averaged 0.70 inches north, 0.42 inches central, and 0.97 inches south. The heaviest 24 hour total reported was 0.96 inches at Trenton on the 5th to 6th. Estimated soil moisture, in percent of field capacity, this past week averaged 73 percent north, 67 percent central and 63 percent south. Four inch soil temperatures averaged 73 degrees north, 76 degrees central and 77 degrees south.

**Weather Summary for the Week Ending 8 am Monday 7/ 7/ 8**

WEATHER STATIONS	RAINFALL			TEMPERATURE				GDD BASE50		MON
	WEEK	TOTAL	DEP	MX	MN	AVG	DEP	TOT	DEP	%FC
BELVIDERE BRIDGE	.82	16.09	-.14	90	60	74.	3	1232	237	71
CANOE BROOK	.33	17.03	-.31	92	59	74.	2	1225	236	68
CHARLOTTEBURG	.84	16.90	-.64	86	57	71.	2	1049	264	74
FLEMINGTON	.47	16.39	-.24	92	59	74.	2	1219	197	72
NEWTON	1.02	15.90	.02	89	60	73.	3	1247	374	75
FREEHOLD	.15	12.61	-3.65	91	60	74.	1	1256	136	62
LONG BRANCH	.20	15.62	-.64	91	65	74.	1	1190	143	47
NEW BRUNSWICK	.37	17.52	1.56	91	63	76.	2	1288	96	85
TOMS RIVER	.28	14.16	-2.14	91	62	75.	1	1274	222	50
TRENTON	1.10	15.71	.72	92	65	76.	1	1374	132	77
CAPE MAY COURT HOUSE	1.31	12.45	-1.91	90	65	76.	2	1342	211	76
DOWNSTOWN	1.64	15.75	.97	91	64	75.	1	1391	133	100
GLASSBORO	.20	14.25	-1.65	91	67	77.	3	1513	276	45
HAMMONTON	1.05	12.51	-3.09	92	65	76.	2	1459	229	73
POMONA	.70	14.79	.68	93	66	78.	5	1422	289	56
SEABROOK	.94	14.97	.72	92	65	76.	2	1501	236	84
SOUTH HARRISON	.11	13.78	-2.18	91	66	77	NA	1487	NA	NA
WES KLINE -- GDD BASE 40 PINEY HOLLOW	LAST WEEK	256 (Ending 6/30/08)	THIS WEEK	250 (Ending 7/7/08)						

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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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