

PLANT & PEST ADVISORY

VEGETABLE CROPS EDITION \$1.50

JULY 23, 2008



Spider Mite Management on NJ Vegetables

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

Two-spotted spider mites are likely to be a problem in the hot, dry weather we have seen for the past several weeks. Mites pierce the plant tissue with their mouth parts and remove the cell contents and fluids, typically causing a downward curling of the leaves and a yellowing or bronzing appearance. Under heavy populations, leaves can dry completely and fall off the plant. Under very warm temperatures, a complete mite life cycle from egg to adult may be as short as 5 days. Since female spider mites each can deposit over 100 eggs, mite populations literally explode overnight during hot weather.

Miticides labeled for control of mites in vegetable crops vary in terms of where they can be used (crop) and how they should be used (stage of mite development). The following is a listing of labeled vegetable miticides and some details of how these materials should be used for maximum effectiveness. Mites can rapidly develop resistance to any product, thus it is strongly advised to use a sound miticide-resistance management program. If more than one application is needed for control of mites, rotate with products that have different modes of action, or Group Numbers (see the Insecticide Resistance Action Committee information at www.irac-online.org for more on Group Numbers and insecticide resistance). The group numbers are listed below, are listed in Table E-7 of the *2008 Commercial Vegetable Production Recommendations* and are also found on the cover page of each product label.

Acramite 50WS, Florimite 50WS (bifenazate) – a miticide developed from a new class of chemistry, the carboxylic acid esters. Effective against the motile stages of both two-spotted mites and **European red mites** (but not **broad** and **cyclamen mites**), it also has limited activity against the egg stage (ovicidal activity). This material is a contact miticide with quick knockdown and long residual activity (up to 30 days), safe to beneficials with low impact on non-target organisms. It is recommended for early use, when mite populations are light, and thorough coverage is essential for best results. Labeled for eggplant, melons, okra, peppers, strawberries, and tomatoes. (Group # 25).

Agri-Mek 0.15EC, Abba 0.15EC, Temprano 0.15 (abamectin) - an older insecticide/miticide (1980) containing macrocyclic lactone glycoside that is a product of fermentation. The active ingredient is derived from the soil microorganism *Streptomyces avermitilis*, a naturally-occur-

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ring organism. Because abamectin is a contact material that controls **spider mites**, **broad mites** and **cyclamen mites**, a spreader/sticker or NIS (non-ionic surfactant) would enhance activity. Abamectin has little to no activity against the egg stage, and affects only the motile stages of mites. It is slow-acting, but rapidly immobilizes mites after contact. It is toxic to fish and bees but has minimum impact on other beneficials. Good rain-fastness and residual activity (up to 30 days). Labeled for celery, eggplant, endive, lettuce, melons, parsley, peas, peppers, potatoes, rhubarb, spinach, strawberries, and tomatoes. (Group# 6).

Aza-Direct (azadirachtin) - Azadirachtin is a limonoid insect and mite growth regulator derived from the neem tree, *Azadirachta indica*. It has contact and ingestion activity and blocks insect molting by interfering with biosynthesis and/or metabolism of ecdysone, with some repellency/anti-feeding effects as well. Should not be applied when temperatures exceed 90 degrees F, and should not be used with adjuvants. Although slower acting, insects become inactive and stop feeding after ingestion. Best if sprayed early in the morning or late in the afternoon. Activity against mites may not be as strong as other miticides. Labeled for mites on asparagus, bulb vegetables, cucurbits, fruiting vegetables (pepper, eggplant, tomato), herbs and spices, peas, leafy brassicas, potatoes and strawberries. (Group# 8B).

Cygon (old name), dimethoate (dimethoate) - Dimethoate is an older (1956) organic phosphate insecticide/miticide that has contact and systemic activity. It is toxic to many insect larvae and adults, beneficials, wildlife, and is especially toxic to bees. Moves readily throughout the plant with up to 60 days residual activity. Cannot be mixed with pesticides that are alkaline in reaction. Activity against mites may not be as strong as other miticides. Labeled for asparagus, cole crops, beans, lettuce, celery, lentils, melons, peas, peppers, potatoes, other crops. (Group# 1B).

Dibrom 8 (naled) - Dibrom is an older (1960) organic-phosphate insecticide/miticide that has both contact and stomach poison activity with very short residual effects. Quick acting knock-down activity, it is toxic to many insects including bees. Not compatible with highly alkaline materials, will corrode iron (which means clean equipment thoroughly after each use), and is phytotoxic to some crop varieties. Should not be applied when the temperature is over 90 degrees F. Activity against mites is not as strong as other miticides. Labeled for spider mites on beans, eggplant, pepper, strawberries, and summer squash. (Group# 1B).

Di-Syston (disulfoton) - Disulfoton is an older (1956) organic-phosphate miticide available for vegetables. It is a systemic that is absorbed through the roots but has contact activity as well. Although toxic to **spider mites** (not **russet**, **broad** or **cyclamen mites**), it is also toxic to bees, other insects and beneficials. Control

may last for up to 6 weeks or more. Read entire label before use for all toxicity and phytotoxicity warnings and restrictions. Activity against mites is not as strong as other miticides. Labeled for beans, cole crops and lettuce. (Group# 1B).

Kelthane (dicofol) - Dicofof is one of the older (1957) chlorinated-hydrocarbon miticides, killing mites by contact only. It is non-systemic and does not harm beneficials or other insects. Because it is a contact material, thorough coverage of leaf undersides is necessary for effective control. It is fast acting, gives good initial kill of mites, and has long residual activity against mites, although there have been reports of reduced efficacy against **spider mites** (due to resistance). Dicofof is difficult to find as it is no longer being manufactured, although existing stocks can be used up. Labeled for beans, melons, peppers, strawberries, and tomatoes. (Group# UnC - unknown mode of action).

Metasystox-R, MSR, (oxydemeton-methyl) - An older (1960) selective organic-phosphate insecticide/miticide that has both systemic and contact activity. Applied to the soil as a drench or to the foliage as a spray, it translocates into the plant sap stream, resulting in extended residual effectiveness. Toxic to fish, bees and wildlife, and has restrictions on use near bodies of water. Current efficacy against mites is unknown, but likely is not as strong as other miticides. Labeled for control of mites on beans, cucurbits, eggplant, head lettuce, and sweet corn. (Group# 1B)

M-Pede EC (Insecticidal Soap, Potassium salt of fatty acids) - An organic compound (made from biodegradable fatty acids) used as a contact insecticide that disrupts the insect cuticle and cell membranes. M-Pede is listed by OMRI for use in organic production. Efficacy is best when used on low to moderate infestations of motile stages of spider mites, broad mites, red and russet mites. Enhanced control may be obtained if tank-mixed with another labeled product (see mixing instructions on label for more detail). For best results, wet thoroughly all infested plant surfaces. Not compatible with adjuvants, penetrants, foliar fertilizers, and others. Most effective in soft water, thus a chelating agent may be needed for hard water. Labeled for asparagus, cole crops, bulb crops, cucurbits, fruiting crops, leafy greens, legumes, root and tuber crops, herbs and spices, and fruits and nuts. (Group# unlisted).

Oberon 2SC (spiromesifen) - Derived from a new class of chemistries called tetronic acids, having a new mode of action classified as a lipid biosynthesis inhibitor. Oberon is most effective against mite eggs and the immature stages of **russet mites**, **broad mites**, and **two-spotted mites**, with limited activity against adult mites. It is a contact material, relatively rain-fast after application, and has residual activity up to 30 days or more. Oberon is also effective against whiteflies. Labeled for cole crops, cucurbits, eggplant, leafy greens, pepper, potato, and tomato. (Group# 23).

Omite (propargite) - An older organic miticide (1965), propargite is a contact material effective only against the motile stages of mite development. It is non-systemic, but has long residual activity. It has no insecticidal activity, and is safe to **honey bees** and **predaceous mites**. Thorough coverage of the foliage is essential for effective control, and results are best if this material is applied when temperatures are above 70 degree F. Labeled for sweet corn, potatoes and strawberries. (Group# 12C).

Pylon (chlorfenapyr) – Pylon is a new-chemistry class of miticides known as Pyrroles, and is effective against the motile (larvae, nymphs, adults) stages of **spider mites, cyclamen mites, and rust mites**. It has no effect on mite eggs, and should be used in combination with an ovicidal miticide when a moderate to high population of eggs is present at time of application. It has strong contact and stomach activity with good translaminar movement through the plant (moves rapidly from the top to the underside of a leaf), but has no soil systemic activity. It has residual activity of up to 30 days. Labeled for greenhouse-grown fruiting vegetables (eggplant, peppers, pepinos and tomatoes). (Group# 13).

Savey 50DF (hexythiazok) – Savey is a carboxamide compound used as a contact and stomach-poison miticide. It is effective primarily against **two-spotted spider mite** eggs and immature mite stages but has no effect against adults. However, treated female adults will deposit nonviable eggs. Savey is non-systemic and safe to insects, beneficial mites, and wildlife. Has a slower mode of action, so best results are obtained if used early in the mite infestation. Control lasts for 50-60 days. Labeled for strawberries. (Group# 10A).

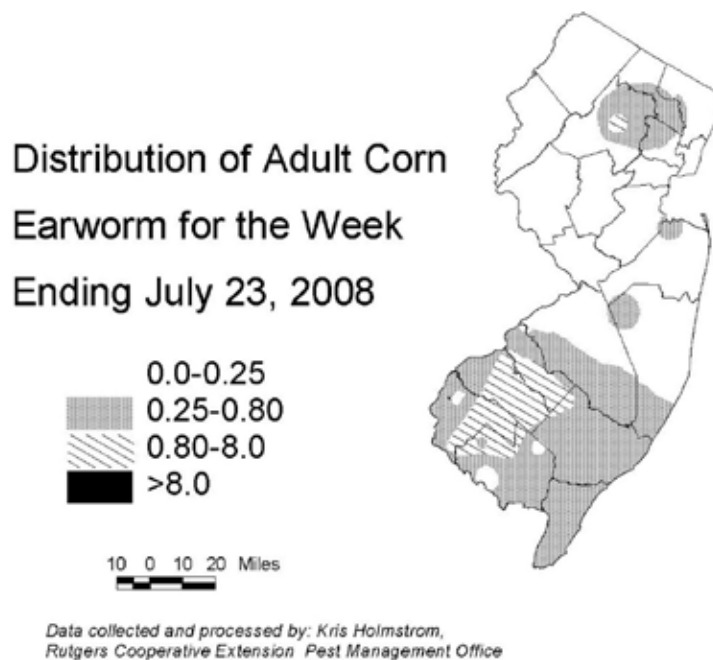
Vendex (fenbutatin-oxide; hexakis) – One of the older miticides (1974), Vendex is an organic-tin compound used as a contact miticide effective against motile stages of primarily two-spotted mites. It has no ovicidal activity and is slow acting, usually quickly paralyzing mites but taking 5-6 days to kill the mites. Agitation is required during application, and thorough coverage is important. It has residual activity of up to 30 days, but is a warm weather material, working best when air temperatures are above 70 degrees F. Can be mixed with other pesticides, but do NOT add oil to the spray solution. Labeled for eggplant and strawberries. (Group# 12B).

Vydate L (oxamyl) – One of the older insecticide/miticides (1972), Vydate is a carbamate compound used as a contact and systemic material. It is a soil systemic, and translocates downward when applied to the plant as a foliar application. Vydate is a contact miticide (foliar spray) for use against motile stages of **two-spotted spider mites**. Toxic to bees, birds, fish, wildlife, and beneficials, it is not compatible with alkaline materials. Activity against mites is not as strong as other miticides. Although labeled for use on many vegetable crops (carrots, celery, cucurbits, garlic, onions, and potatoes) for various insect pests, only the eggplant label lists mites under 'pests controlled'. (Group# 1A).

Zeal (extoxazole) – Derived from a new class of chemistries, diphenyloxazoline, Zeal has a unique mode of action which is classified as unknown or non-specific target site, thus is placed in the mode-of-action Group # 10b. It is an excellent mite growth inhibitor, and stops development of eggs, larvae and nymphs on contact. Thus it is a highly effective ovicide but also has molt inhibiting activity against immature mite stages, disrupting the mite life cycle. Also, adult female mites that have contacted Zeal will deposit non-viable eggs. Zeal is a contact miticide with good translaminar activity, but is slow acting and is best used earlier in the season before mite populations build up to harsh levels. Labeled for **two-spotted spider mites** on cantaloupe, Citron melon, muskmelon, watermelon, and strawberries. (Group# 10B).

Pyrethroids (various) – Several pyrethroids are labeled for mites on vegetables, including **Brigade (bifenthrin), Danitol (fenpropathrin), Hero (zeta-cypermethrin + cypermethrin), and Warrior (lambda-cyhalothrin)**. Pyrethroids are similar in chemistry and have both contact and stomach-poison activity, are non-systemic and broad spectrum, controlling many other insect pests as well as **spider mites**. Pyrethroids are toxic to bees and beneficials, and are used best when applied before widespread mite dispersal throughout the canopy (these materials will NOT 'rescue' a heavy mite population). Most effective at lower temperatures, pyrethroids have a residual activity of about 7-10 days. Use of pyrethroids may be limited when bodies of water are nearby (thoroughly read label before use). Labeled for spider mite and various insect pest control on many vegetable crops and strawberries. (Group# 3). □

CEW MAP FROM PAGE 5



IPM Update

Kristian Holmstrom, Research Project Coordinator II, Vegetable IPM Program

Note: There are no catches this week for Atlantic, southern Burlington and Camden counties. See paragraphs on individual pests for interpretations of this weeks' maps.

Sweet Corn

The second **European corn borer (ECB)** flight is now underway in New Jersey. As yet, consistent catches are only occurring in the southern counties, with sporadic catches to the north (see ECB map). It is likely that catches from Atlantic, Burlington and Camden counties are lower than those from Cumberland and Salem, as the latter region often has the first increases in ECB adults. At this time, most sweet corn is free of ECB feeding, but egg laying will begin in the southwestern areas and progress northward from this point on. Feeding injury will follow. 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:

Centerton	8	RAREC	2	East Vineland	1
Shiloh	6	Woodstown	2	Jones Island	1
Seeley Lake	5	Cedarville	1	Mannington	1
Hillsborough	2	Denville	1	Sergeantsville	1

Adult **corn earworm (CEW)** catches are increasing in number throughout the state, with consistent catches in the south and light catches now occurring as far north as Morris County (see CEW map). Missing data from Atlantic, Burlington and Camden counties is likely to be as high, or slightly higher than those from the Cumberland and Salem county area. On the map, the cross-hatched area should also encompass Atlantic, Burlington and Camden counties. We are most likely in a situation where CEW adults will increase gradually for the next 2-3 weeks. After this, the adult population may suddenly increase depending on weather patterns. Catches from North Carolina through Delaware are higher than ours in New Jersey, but are not exceptional, indicating that a large-scale influx of migratory CEW adults is not imminent. Overall, this population is a threat to 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:

Centerton	5	Allentown	1	Milford	1
Denville	2	Dayton	1	Pedricktown	1
RAREC	2	Mannington	1	Seeley Lake	1
Shirley	2	Matawan	1	Shiloh	1

As of this week, **fall armyworm (FAW)** have been detected feeding as far north as Morris County. At present, larval populations are spotty. Feeding tends to be on groups of plants in individual fields with neighboring plantings often unaffected. Feeding will become more uniform in fields as FAW adults increase. 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.

Silking Spray Schedules*:

North – 6-7 days

Central – 4-5 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.

Pumpkins and winter squash

Many fields are now in the vine-run (or bush) stage at this time, and are less affected by **cucumber beetle** feeding. Often, **western corn rootworm (WCR)** beetles will be found feeding on blossoms. These are similar in appearance to striped cucumber beetle, but do not pose a threat to the plants. WCR range from mostly black to mostly green-yellow, rather than having distinct stripes like the cucumber beetle. Additionally, a WCR beetles' abdomen protrudes past the end of the shell, unlike the cucumber beetle. It is very important to scout fields weekly, for the presence of pests including aphids and **TSSM**. Check 10 mature leaves per site in 10 random sites throughout the field. Consider treating if leaves with an average of approximately 25 **aphids** are found in each of 10 sample sites. Populations this high can result in deposition of droppings onto the surface of maturing fruit, as well as overall stress to the plants. **Melon aphids** have been found on some northern pumpkin plantings this week. TSSM occasionally becomes an economic pest on smaller plantings under hot, dry conditions. If TSSM is found in more than one site in the field, and the overall trend is increasing, consider treating.

Powdery mildew (PM) has been found on one early pumpkin planting in Warren County this week. As fruit

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set occurs and fruit begin to gain size, (PM) infections will develop. This fungal pathogen first appears as a dime-sized lesion that looks like white powder. They can develop on either leaf surface as well as the petioles. While scouting, look on mature leaves, particularly those within the canopy for PM lesions. When the threshold of 1 lesion per 50 older leaves is reached, begin the regular, weekly protectant fungicide program.

Be alert for the possibility of **downy mildew (DM) infections**. As of July 18, DM has been detected in southern Delaware. Check the Cucurbit Downy Mildew Forecast website (<http://www.ces.ncsu.edu/depts/pp/cucurbit/forecasts/c080714.php>) for details on the latest forecast and spore trajectories. DM first appears as sharp yellow lesions on the upper surface of leaves. Veins are yellow and constricted on the lower leaf surface. Shortly after this, dark sporulation occurs along veins on the lower surface beneath the lesion. This sporulation will be present when conditions are wet or very humid. In a matter of several days, significant defoliation can occur. Fungicides specific to DM and related fungi are required for good control of this pathogen. For recommended fungicide rotations for DM and PM, consult the *2008 Commercial Vegetable Production Recommendations*.

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.

Peppers

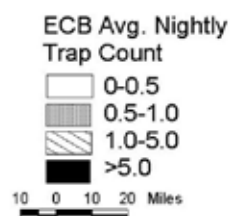
Beet armyworm (BAW) pheromone traps are now in place throughout southern New Jersey. As yet, catches are extremely low, and would not register an image on the map template. As catches increase BAW maps will appear in this publication.

As **ECB** adult catches increase, consider preventive applications to limit larval infestations in peppers. When local blacklight catches average one or more ECB per night (shaded or cross-hatched areas on the map), it is time to commence weekly insecticide applications. Choice of materials is important. Repeated use of synthetic pyrethroid materials will result in **aphid** and possible **two-spotted spider mite (TSSM)** outbreaks. Spinosad based materials or insect growth regulators (IGR) will not have this effect. For choice of materials, check the *2008 Commercial Vegetable Production Recommendations*.

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

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Distribution of Adult European Corn Borer for the Week Ending July 23, 2008



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

Powder Mildew Scouting Helps Reduce Fungicide Applications

Kristian Holmstrom, Research Project Coordinator II, Vegetable IPM Program

As part of the Rutgers NJAES Cooperative Extension Vegetable IPM Program, field technicians monitor plantings of pumpkins and winter squash for insects and diseases. A major part of the program is scouting for the first occurrences of **powdery mildew** (PM). PM is a common, annual foliar disease of all cucurbit crops that can cause vines to decline prematurely and, if untreated, results in poor yield and poor quality fruit. The standard recommendation for control of PM is to begin a weekly fungicide schedule with vine run.

Dr. Margaret McGrath of Cornell University has demonstrated over the past 10 years that it is possible to scout for the first occurrence of PM and begin the fungicide schedule at that point, with no loss of yield or crop quality. Because PM typically begins to appear from 2-4 weeks after vine run, savings in fungicide and fuel costs may be significant if the schedule is based on scouting rather than crop stage. In 2007, participating growers in the Rutgers NJAES-CE Vegetable IPM Program were able to eliminate approximately four fungicide applications (36%) per pumpkin and winter squash field. If a typical combination of fungicides (Bravo and Nova) is used as an example, the savings per acre/application would be approximately \$30. Factoring in the number of sprays eliminated through scouting, this results in \$120 per acre. This does not include the cost of diesel fuel expended in the applications. □

Vegetable Disease Update

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

✓ **Cucurbit crops - Cucurbit downy mildew** - Downy mildew has been detected in the region, basic fungicide maintenance programs for cucurbit crops should be adjusted to include fungicides for downy mildew control.

Tank mix one of the products listed below with a protectant fungicide such as chlorothalonil (M5), or maneb (M3), or mancozeb (M3) (see label for rates and specific crop uses):

Ranman (cyazofamid, 21) at 2.1 to 2.75 fl. oz. 400SC/A, or

Previcur Flex (propamocarb HCL, 28) at 1.2 pt 6F/A, or

Gavel (zoxamide + mancozeb, 22 + M3) at 1.5 to 2.0 lb 75DF/A (some muskmelon may be sensitive)

Curzate (cymoxanil, 27) at 3.2 oz 60DF/A, or

Tanos (famoxodone + cymoxanil, 11 + 27) at 8 oz 50WDG/A

Remember that downy mildew materials should always be tank mixed with a protectant fungicide and rotated weekly with fungicides from a different FRAC code to reduce the chances for fungicide resistance development. 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>

If you suspect downy mildew on your farm, please contact your county agent or Andy Wyenandt (856) 455-3100 ext 4144 so we can confirm its presence in New Jersey.

✓ **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 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

SEE DISEASE UPDATE ON PAGE 7

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*.

✓ **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.

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

✓ **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.. □

Food Safety Series

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

Questions continue to come in on a variety of topics on food safety and third party audits. Following are the most recent questions and my responses. If you have a question go to the website at: <http://njveg.rutgers.edu/2-r-5foodsafety.html> or email me at wkline@njaes.rutgers.edu.

Q - Why should I invest time and money on a traceback program?

A – There is a good short answer: it may save you money. We have instances in the last two years where growers started labeling (with their own code) boxes. These growers had produce rejected by the buyer after shipping. In one case, the grower was able to prove through their coding that the produce was not theirs. In the second case, the buyer said the product they received had been shipped three days before and it was breaking down. When the grower looked at his code on the boxes, the product had been shipped 10 days

before. This means the buyer held the product and was not able to use it or resell it. In both cases, coding the boxes saved the growers money. Even if they did not get reimbursement, the buyers now know the growers can trace their produce.

Q - Do I need a hairnet or jewelry policy for a third party audit?

A – No! All you need to do is make a statement that the farm does not have restrictions on wearing jewelry or no hairnets are required in the packinghouse. If you do establish a policy, everyone must follow it.

Q - If my water test comes back positive for E. coli, what should I do?

A – If the source was a well there are standard methods to treat the well before using. However, if the sample came from surface water it is more difficult. The source should be retested in either case to confirm the initial results. Surface water can be treated though the irrigation system, but you must have the right equipment to inject the disinfectant. ☐

Weekly Weather Summary

Keith Arnesen, Ph.D., Agricultural Meteorologist

Temperatures averaged much above normal, averaging 77 degrees north, 79 degrees central and 79 degrees south. Extremes were 97 degrees at several locations on the 19th 20th and 21st, and 57 degrees at Flemington on the 16th. Weekly rainfall averaged 0.50 inches north, 0.20 inches central, and 0.11 inches south. The heaviest 24 hour total reported was 0.78 inches at Andover on the 15th. Estimated soil moisture, in percent of field capacity, this past week averaged 75 percent north, 52 percent central and 46 percent south. Four inch soil temperatures averaged 75 degrees north, 76 degrees central and 76 degrees south.

Weather Summary for the Week Ending 8 am Monday 7/21/ 8

WEATHER STATIONS	RAINFALL			TEMPERATURE				GDD BASE50		MON
	WEEK	TOTAL	DEP	MX	MN	AVG	DEP	TOT	DEP	%FC
BELVIDERE BRIDGE	.54	17.35	-.83	94	61	79.	6	1622	316	69
CANOE BROOK	.34	18.41	-.86	97	59	77.	3	1603	293	76
CHARLOTTEBURG	.39	17.29	-2.16	92	58	76.	5	1404	340	58
FLEMINGTON	.38	17.68	-.92	96	57	78.	4	1602	250	75
NEWTON	.87	16.78	-.97	92	60	77.	5	1619	451	68
LONG BRANCH	.03	15.65	-2.36	94	64	79.	4	1572	192	28
NEW BRUNSWICK	.16	18.31	.37	97	60	80.	4	1696	157	67
TOMS RIVER	.12	14.63	-3.77	96	60	78.	4	1642	254	33
TRENTON	.49	16.46	-.61	96	62	79.	3	1772	171	45
CAPE MAY COURT HOUSE	.00	12.49	-3.49	93	62	78.	2	1716	235	30
DOWNSTOWN	.25	16.25	-.47	94	59	78.	2	1779	165	40
GLASSBORO	.05	16.09	-1.66	96	65	79.	3	1917	324	43
HAMMONTON	.29	12.86	-4.81	96	59	79.	3	1858	270	32
POMONA	.00	14.89	-1.04	97	58	79.	4	1819	344	26
SEABROOK	.06	15.18	-.98	94	63	80.	4	1908	287	34
SOUTH HARRISON	.09	14.05	-3.87	94	63	81.	NA	1896	NA	NA
WES KLINE -- GDD BASE 40 PINEY HOLLOW LAST WEEK 257 (Ending 7/14/08) THIS WEEK 165 (Ending 721/08)										

RUTGERS

New Jersey Agricultural
Experiment Station

Plant & Pest Advisory
Rutgers School of Environmental
and Biological Sciences
ASB II, 57 US Hwy. 1
New Brunswick, N.J. 08901

FIRST CLASS
POSTAGE PAID
PERMIT #576
MILLTOWN, NJ 08850

PLANT & PEST ADVISORY VEGETABLE CROPS EDITION CONTRIBUTORS

Rutgers NJAES 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 NJAES-CE County Agricultural Agents

Atlantic, Richard W. VanVranken (609-625-0056)
Burlington, Raymond J. Samulis (609-265-5050)
Cape May, Jenny Carleo (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)
Middlesex, William T. Hlubik (732-398-5260)
Monmouth, Bill Sciarappa, Ph.D. (732-431-7260)
Morris, Peter J. Nitzsche (973-285-8300)
Passaic, Elaine F. Barbour, Agric. Assistant (973-305-5740)
Salem (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, Research Project Coordinator II

Newsletter Production

Jack Rabin, Associate Director for Farm Services, NJAES
Cindy Rovins, Agricultural Communications Editor

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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