

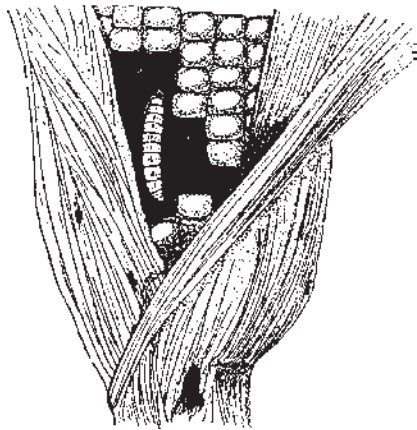
PLANT & PEST ADVISORY

VEGETABLE CROPS EDITION \$1.50

JUNE 23, 2004

IPM Update

Kristian Holmstrom, Program Associate in Vegetable IPM



Sweet Corn

Blacklight trap catches of **European corn borer (ECB)** moths have decreased throughout the state over the past week. A few higher catches continue in parts of Mercer, Middlesex, Monmouth and lower Hunterdon Counties (see ECB map), but in general, the first flight is ending in New Jersey. Feeding in sweet corn plantings can still increase sharply in some areas, so be sure to check all plantings weekly for the presence of ECB injury both in the tassels and on the leaves. Over the past week, feeding in pre-tassel stage sweet corn as high as 70% has been found in parts of Warren and Burlington counties. Infestation rates of 50% or greater are not uncommon. If feeding exceeds 12% in a 50 plant sample, consider treating. As plantings progress to full tassel, it is critical to treat for ECB if larvae are still present. As long as ECB adults are being caught in local light traps, consider treating silking plantings weekly unless silking spray schedules need to be tightened should **corn earworm (CEW)** catches increase. The highest average nightly ECB blacklight trap catches are:

Farmingdale	5	Blairstown	1	Hackettstown	1
Sergeantsville	3	Chapel Heights	1	Little York	1
Matawan	2	Cinnaminson	1	Phillipsburg	1
Belvidere	1	Denville	1	Wall	1

We continue to catch only a few scattered CEW moths throughout the state. These catches do not indicate a significant threat from this pest at this time. Due to low numbers, no CEW map will appear in today's newsletter. CEW maps will commence as soon as catches increase. Despite the absence of CEW, consider treating silking plantings once a week to prevent late flight ECB from infesting ears directly, and to minimize **sap beetle** injury.

A very minor infestation of **corn leaf rust** was found this week in an older whorl stage planting in Hunterdon County. This particular occurrence did not represent a threat to the planting, but is a reminder that it is time to start checking for this pathogen. While scouting for insects, check the lower leaves of seedling and whorl stage sweet corn for the presence of pustules that have ruptured, releasing reddish powdery spores. Consider treating with a labeled fungicide if pustules are present on plantings in the seedling or early whorl stage. Check the seed source for varietal resistance. Many varieties have some level of resistance to leaf rust, but a few are highly susceptible.

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Tomatoes

More bacterial infections are being found in tomatoes now, as many early plantings have been pruned, tied, and have enlarging fruit. **Bacterial speck** and **spot** are characterized by very dark lesions on older and younger leaves. These lesions may be found on the leaf margins, but are often near the mid-rib where water may accumulate after dew or rain. Speck causes a superficial dark blister-like lesion on the fruit, but spot creates a scabby fruit lesion that penetrates past the skin. Both render fruit unmarketable. The third common bacterial infection is **canker**. This disease is often first identified by necrotic leaf margins. Again, the lesions are dark, with a sharp upward curl to affected leaves. Canker can become systemic and may begin to cause entire branches to die. The fruit lesion is a superficial whitish blister referred to as a "birds-eye" spot. If any of these symptoms are present on tomatoes, consider treating with copper plus a mancozeb product at 7 day intervals, or use the lowest labeled rate of Actigard. Avoid working in fields when foliage is wet. Always work in younger plantings before older ones so as not to spread the infection to younger plants.

With warm weather and enlarging fruit on many plants, it is a good idea to check at least weekly for the presence of **flower thrips**. These small insects can cause what we have come to call "gold fleck" on the surface of ripening fruit if they are not controlled by the time fruit are enlarging. The easiest way to detect thrips when populations are reasonably low is to tap flower clusters. Use an index card or other small light colored surface. Place the card beneath an upper canopy flower cluster and tap the cluster with your finger. If the small, yellow colored flower thrips shake out onto the card at more than half of the sites inspected, or thrips populations have been increasing, consider treating to minimize cosmetic injury to ripening fruit.

Peppers

With **ECB** adult numbers in decline, the threat to peppers is reduced. Do not stop preventive treatments on peppers, however, until local blacklight trap catches of ECB drop below an average of 1 per night. Cross-hatched areas on the map (green on the Pest Management Office web version found at:

www.pestmanagement.rutgers.edu/IPM/Vegetable/Pest%20Maps/maparchive.htm) represent populations that warrant weekly preventive sprays if fruit are present.

Aphids are on the increase in some fields at this time. Prior to fruit set, aphid infestations are often controlled by predators and parasites. If they become heavy while fruit are enlarging, however, their sticky droppings can render fruit unmarketable. Scout weekly, and if aphid colonies are on the increase and fruit is present, or if droppings are being deposited on fruit, consider treating.

Root and stem rots have been reported in some southern and central New Jersey fields this week. The typical disease on peppers is **phytophthora crown rot**. This is characterized by consecutive plants wilting down following periods of high soil moisture and warm temperatures. A dark lesion will be present at and just above the soil line. Anything that can be done to eliminate conditions of high soil moisture will help in limiting this disease. Cultural practices include high raised beds with dome-shaped tops, filling in the holes around transplants with soil to prevent water accumulation, and improving drainage to eliminate areas of standing water. The variety 'Paladin' is resistant to the crown rot phase of phytophthora.

Pumpkins

Newly emerged pumpkin plantings must be scouted at least once a week for the presence of **cucumber beetles**. If an imidacloprid formulation or Furadan was used at planting, cucumber beetle should not be evident for the first few weeks. If not, there is a risk that cucumber beetles may transmit **bacterial wilt** to plants between emergence and 4- true leaves. Check 5 consecutive plants each in 10 random locations. If cucumber beetles are present at 5 or more sites, consider treating to minimize disease transmission.

Cole Crops

Very high infestations of **imported cabbageworm** (ICW) and **diamondback moth** (DBM) larvae are now common in cole crop plantings throughout the state. When scouting, be sure to also check the youngest leaves on plants as this is where ICW often feeds. For broccoli, cabbage and cauliflower, consider treating when greater than 20% are infested prior to heading or 5% are infested when heads are present. For collards, kale and mustard, consider treating if greater than 10% of the plants are infested at any time. On new transplants or newly emerged seedlings, do not let **flea beetles** infest more than 50% of the plants without treating to suppress them. They will cause significant injury to young plants if allowed to build up to high numbers.

SEE ECB DISTRIBUTION MAP ON PAGE 3

Pest Notes

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

✓ **General:** Because of the excessive rainfall and moisture this year, many vegetable crops have **slugs** present near or on them, including potatoes. Slugs will eat just about any crop, including young corn, and can cause significant damage crop if the slug population is high. Some crops such as young sweet corn and tomatoes are more susceptible to slug damage. Metaldehyde and Sevin Bait are labeled for slugs, and metaldehyde is likely the more effective of the two. Foliar sprays are generally ineffective. However, high heat units and heavy rainfalls break these materials down, and reapplication may be necessary.

✓ **Eggplant:** **Colorado potato beetle** populations are beginning to build up on eggplant, especially plantings that were pretreated with either Admire or Platinum. This is normal as the material should be ineffective at this point to avoid forcing resistance in the second generation (adults are already emerged and depositing eggs for the next generation that will overwinter). Avoid the use of neonicotinoid class of pesticides (Actara, Assail, Provado) for the remainder of the year. Use a Bt such as Novodor, Raven, or cryolite (Kryocide, Prokill Cryolite), SpinTor, Thionex (Thiodan), or Vydate L. (Thiodan also controls **stink bugs**, **white flies**, and **aphids**).

Also, **spider mites** were starting to increase in both eggplant and tomatoes, but recent heavy rains may have reduced the population considerably. Monitor these crops for spider mites, and prevent the leaves from becoming webbed and yellowed by their damage. Use Metasystox-R, Vendex or Vydate for mite control. Use of the pyrethroid Capture also helps keep the mite population low.

✓ **Cole crops:** Joe Mahar reports increasing populations of **diamondback moth** larvae in several areas throughout New Jersey, especially on arugula. Note that this pest now has its own recommendation section on page F15 of the *2004 Commercial Production Recommendations for Vegetables in New Jersey* because many materials are no longer effective against it. Do *not* let these pests develop into a heavy population, as it is much more difficult to control once they are well established. Most effective materials include acephate (limited crop use – read the label first), Avaunt, Proclaim, SpinTor, and several Bt's (check the label to make sure diamondback moth larvae is on the label).

✓ **Potato:** **Colorado potato beetle** populations are increasing in potato, especially now that nearly all pre-planting or at-planting treatments are probably no longer effective. Avoid the use of neonicotinoid class of insecticides for the remainder of the season (Actara, Assail, Provado) to reduce the potential of insecticide

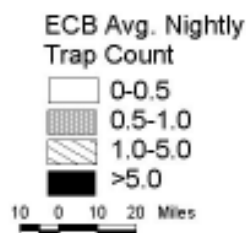
resistance development. Rotate other classes of insecticides for maximum effectiveness, including the insecticides Agri-Mek, Avaunt (with PBO), neem-based insecticides, Bt's (Novodor, Raven), cryolite, Imidian, SpinTor, Thionex (Thiodan), Vydate L, and the new insecticide Rimon EC.

The untreated potatoes in test plots in several areas of southern New Jersey have very high populations of **leafhoppers**, and the leaves are yellowing and curling to a high degree. Yield losses will be inevitable from this point on if nothing is done. Watch for leafhopper damage, and treat if 1 adult per sweep or 1 nymph per 10 leaves is found (if leafhopper curling of the leaves is evident, the population will be higher than this threshold). Many materials are listed on page F131 of the 2004 Recommendation book, and many will control both leafhoppers and potato beetles (such as Thiodan, Vydate, Imidan).

✓ **Tomato:** **Colorado potato beetle** numbers are increasing in many tomato plantings and for more information on beetle control in tomatoes refer to last week newsletter and the eggplant section above. Southern states report an increase in **stink bug** activity, and Rutgers IPM notes the beginning of stink bug activity in New Jersey. Use Actara, Baythroid, Fury, Mustang Max, Monitor (New Jersey only), Thionex, or Warrior for stinkbug control. Thorough coverage is important with this pest.

Also, Rutgers IPM is finding **thrips** on tomatoes in several areas. Use Guthion, Monitor, Provado or SpinTor for thrips control when they are first noticed. □

Distribution of Adult European Corn Borer for the Week Ending June 23, 2004



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

Timber Rot of Tomatoes

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

This past week **Timber rot** (*Sclerotinia sclerotiorum*) of tomato has shown up in many areas. Timber rot is a soil-borne fungal disease that causes a stem rot in fresh market and processing tomatoes as plants begin to mature. Prolonged cool, wet conditions favor the development of Timber rot and it has a wide host range which includes peas and beans, cabbage and lettuce, known as **drop**; and pumpkins and squash, known as **White mold**. Symptoms of Timber rot on tomato include brownish-tan lesions that develop at the base of the main stem or near branching points. Lesions become dry and brittle with time and infected plants will begin to wilt as lesions begin to girdle the plant. A white, fluffy growth will accompany infected areas and black fruiting bodies, called sclerotia, will develop on the surface of the lesion or in the stem or branch of the plant. Sclerotia are a key diagnostic feature of Timber rot. When scouting for Timber rot growers should scout their fields and look for wilting plants with these brownish, to perfectly tan lesions at the base and at branch points of tomato plants. If these lesions are dry and brittle, look for white fluffy growth on the surface or in the stem. Breaking these lesions apart will often reveal black sclerotia. Sclerotia can survive in the field for many years and a long, proper crop rotation is the best method of control. □

Vegetable Disease Update

Andy Wyenandt, Ph.D., Post Doctoral Associate in Vegetable Pathology, Wes Klein, Ph.D., Cumberland County Agricultural Agent and Michelle Infante-Casella, Gloucester County Agricultural Agent

✓ **Parsley – Septoria Blight/Bacterial (blight) leaf spot** – Septoria blight of parsley showed up heavily this past week. Leaf spots caused by Septoria blight are easily distinguished by small, angular to round leaf spots with grayish-brown centers with a definitive dark brown margin. Numerous black fruiting bodies develop and are visible in the center of lesions. Spread of Septoria blight is by wind-driven rain, heavy dews and overhead irrigation. Workers and equipment may also spread the disease during wet conditions. Best management practices include i) proper crop rotations of at least 2 years and by using clean or treated seed, ii) *scout fields early* for symptom development, iii) keeping workers and equipment out of fields with wet foliage, iv) plowing under residue of harvested crop and v) avoid planting in fields adjacent or near previously infected fields. Applications of asoxystrobin (Amistar or Quadris) and fixed copper can be alternated every 7 days for control. Bacterial leaf spot (*Pseudomonas syringae*) of parsley showed up at the same time as Septoria blight. Leaf spots caused by Bacterial blight appear as small brown to black spots on the leaves. It does not have the grayish brown centers or brown margins like Septoria. The pathogen can be soil or seed borne and develops during cool, moist weather. The disease spreads during cool rainy periods or under sprinkler irrigation; and a high plant density. The same control measures listed for Septoria will assist in preventing spread of Bacterial leaf spot as long as the fixed copper is included with the azoxystrobin. If Oxidate is used, follow the label carefully. See the June 16 issue of the Vegetable Crops edition for more information on copper and Oxidate applications.

✓ **Collard/Turnip – Peppery leaf spot**, a bacterial disease of crucifers has caused problems for some growers. Symptoms of Peppery leaf spot include water-soaked spots that turn purplish-brown surrounded by yellow 'halos'. These lesions can be up to 1/8 inch and can join together, turning leaves yellow and causing them to drop off. The pathogen can survive in the soil and on debris from previous crops. During cool, wet periods the disease can become severe and be spread by splashing rain. Best management practices for control include i) start with clean seed, ii) plant in clean beds and iii) use proper crop rotation of one year or more. If Peppery leaf spot has been a problem in the past, beds should be sterilized prior to planting.

✓ **Eggplant – Phytophthora crown rot** has begun to develop in some areas. Symptoms on eggplant are very similar to that of pepper and tomato. Infected plants will become wilted, blackened stems will develop, like tomato, and plants will begin to die. Best management of Phytophthora crown rot begins *with proper crop rotation*. To minimize, rotate away from other susceptible crops which include cucurbits, peppers and tomatoes. Plant on raised dome shaped beds; keep the end of rows open for better water drainage; remove infected plants; and disk area if bare ground culture or cut plastic two feet into the healthy area for plasticulture. Applications of mefanoxam at planting and at two 30-day intervals are recommended.

✓ **Tomato** – Symptoms of **Early blight** have begun to show up in

SEE DISEASES ON PAGE 5

DISEASES FROM PAGE 4

greenhouse production in some locations. Early blight produces distinct brown/black concentric lesions on foliage and can also infect fruit. Growers should continue to scout for Early blight and Septoria leaf spot symptoms and preventative fungicide maintenance programs should continue. Formulations of chlorothalonil or strobilurones, can be used to control Early blight and Septoria leaf spot. See last week's Plant & Pest Advisory for more information on important fungal diseases of tomato. **Stem Rot/Pith Necrosis** – Both bacterial diseases have shown up in isolated areas over the past week. Symptoms begin to develop as green fruit begins to mature. Both 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 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.

✓ **Cucumber/Pickles – 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.

✓ **Zucchini/Summer Squash– Powdery mildew** has been seen in low levels in fields that have not yet received fungicide applications. Weather conditions over the past few weeks have favored the development of this disease. Generally, powdery mildew is seen in late July and early August in our area. However, like many things this year it is early.

For control of powdery mildew in squash, cucumbers, pickles, pumpkins, and melons alternate chlorothalonil (Bravo, Echo, Equus) plus Nova or chlorothalonil plus Procure with azoxystrobin (Amistar or Quadris) or Cabrio or Flint.

Please refer to the 2004 New Jersey Commercial Recommendations for more information on products and rates. □

Weekly Weather Summary

Keith Arnesen, Ph.D., Agricultural Meteorologist

Temperatures averaged much above normal, averaging 72 degrees north, 75 degrees central and 76 degrees south. Extremes were 91 degrees at several locations on the 19th, and 45 degrees at Charlotteburg on the 21st. Weekly rainfall averaged 0.28 inches north, 0.22 inches central, and 1.09 inches south. The heaviest 24 hour total reported was 2.62 inches at Glassboro on the 16th to 17th. Estimated soil moisture, in percent of field capacity, this past week averaged 66 percent north, 55 percent central and 63 percent south. Four inch soil temperatures averaged 70 degrees north, 72 degrees central and 73 degrees south.

Weather Summary for the Week Ending 8 am Monday 6/21/04											
WEATHER STATIONS	RAINFALL			TEMPERATURE				GDD BASE50		MON %FC	
	WEEK	TOTAL	DEP	MX	MN	AVG	DEP	TOT	DEP		
BELVIDERE BRIDGE	.17	13.03	-1.06	88	45	70.	1	965	271	65	
CANOE BROOK	.25	15.24	.01	91	53	75.	6	1039	379	60	
CHARLOTTEBURG	.60	15.04	-.28	87	45	71.	5	889	384	63	
FLEMINGTON	.16	15.49	.97	88	47	73.	3	988	302	65	
LONG VALLEY	.28	12.82	-2.75	84	47	71.	4	855	295	60	
NEWTON	.21	13.66	-.11	86	47	71.	4	880	307	56	
FREEHOLD	.11	15.58	1.27	90	49	74.	4	1075	304	61	
LONG BRANCH	.12	13.48	-.96	90	51	75.	5	903	196	32	
NEW BRUNSWICK	.10	14.12	.13	89	49	74.	3	1027	210	67	
TOMS RIVER	.36	15.46	1.23	91	54	76.	7	1104	403	37	
TRENTON	.42	12.61	-.38	89	50	74.	2	1071	204	47	
CAPE MAY COURT HOUSE	.17	13.15	.54	88	54	74.	4	1016	239	26	
DOWNSTOWN	.61	14.14	1.27	88	55	75.	3	1174	286	60	
GLASSBORO	3.49	19.84	5.95	89	56	76.	4	1237	370	75	
HAMMONTON	1.12	14.78	1.26	91	54	76.	4	1211	352	49	
POMONA	.12	12.63	.29	89	53	75.	5	1118	335	44	
SEABROOK	1.06	16.39	4.14	89	56	77.	5	1313	419	64	
SOUTH HARRISON	1.93	18.66	4.83	89	57	76.	NA	1243	NA	NA	
WES KLINE — GDD BASE 40 PINEY HOLLOW Last Week 197 (Ending 6/14/04) This Week 267 (Ending 6/21/04)											

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