RUTGERS COOPERATIVE RESEARCH & EXTENSION AT THE NEW JERSEY AGRICULTURAL EXPERIMENT STATION

PLANT & PEST ADVISORY

VEGETABLE CROPS EDITION $1.50 JUNE 28, 2006

INSIDE

Vegetable Disease Update

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

✔ **Chinese Cabbage** - **Downy Mildew** – Symptoms on the *upper leaf surface* include purple, yellow or brown lesions that may have an angular appearance. 'Fluffy' or 'Downy' white fungal growth will appear on the *undersides* of lesions during cool, wet weather. Heavy fogs, prolonged dews and cool days and night temperatures favor the development of Downy mildew. Downy mildew may predispose plants to bacterial soft rot infections. Control of Downy mildew begins with allowing good aeration in planting beds, avoiding the use of overhead irrigation, and fungicide applications every 7 to 10 days at first sign of disease or when favorable weather conditions persist. There are a number of fungicides labeled for the control of Downy mildew. Please see the *2006 New Jersey Commercial Vegetable Production Recommendations* for specifics on different cole crops.

✔ **Cucumber/Pickles – Angular leaf spot has been detected in fields over the past few weeks**. 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 – Choanephora -** also known as **Choanephora wet rot** or **blossom end rot** is a disease which affects blossoms and young developing fruit. Infected female flowers may turn brown, 'mushy' and fall off prior to fruit set. Blossom infection can lead to fruit infection. Young fruit may turn a yellowish-brown with *masses of dense, white fungal growth with black 'pinpoint' spores developing on infected fruit.* Long periods of wet weather with excessive rainfall and high relative

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humidity favor the development and spread of Choanephora fruit rot. Unfortunately, control of Choanephora is difficult due to the constant development of new flowers and fruit, canopy production by the plant, and the ability of the fungus to survive saprophytically.

✔ **Powdery mildew – Cucurbits – The first reports of Powdery mildew on cucurbits have come in this past week.** Powdery mildew typically occurs from mid-July until the end of the season. Unlike Downy mildew, the diagnostic characteristics of Powdery mildew are *pure white 'fuzzy' growth on both the upper and lower leaf surface, petioles and stems*. Symptoms typically begin on older, lower leaves and can develop and spread rapidly under dry, humid conditions. Control of Powdery mildew begins with regular scouting for symptoms and weekly fungicide applications. Fungicide resistance management of the fungus which causes Powdery mildew is critical. Fungicides with a high risk for resistance development such as the strobilurin (Pristine, Group 11) should be tank mixed with a protectant fungicide such as Bravo (M4) or Sulfur (M1) and rotated with fungicides of a different chemistry such as Bravo (chlorothalonil, M4 + Nova or Procure (Group 3). Group 3 fungicides are also high-risk and should never be applied alone. Growers need to read and follow restrictions on labels carefully. For more information on control of Powdery mildew and other important diseases of cucurbits please see the *2006 New Jersey Commercial Vegetable Production Recommendations Guide*.

✔ **Pepper – Phytophthora blight –** Heavy rains these past few days have made conditions ideal for Phytophthora development.

For control of the crown rot phase of blight:

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

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

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

Apply the following on a 7- to 10-day schedule:
Fixed copper at 2 lb 77WP/A or OLF, or
Ridomil Gold Copper (mefenoxam + copper, 4 + M1) at 2.5 lb 65WP/A. Make three to four applications at 10- to 14-day intervals. (Only apply Ridomil Gold 4E at planting and 30 days later. The third application of Ridomil Gold 4E cannot be made when Ridomil Gold Copper is applied.)

The following materials are labeled for Phytophthora on peppers, but there is little information on efficacy in the Mid-Atlantic region. For best results tank mix with a copper containing fungicide.
Forum (dimethomorph, 40) at 6.0 oz 4.18SC/A, or
Tanos (famoxodone + cymoxanil, 11 + 27) at 8-10 oz 50W/A

✔ **Potato – Black Leg –** The aerial phase of Black leg, also known as aerial stem rot, has shown up over the past week. 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.

✔ **Potato - Leak (*Pythium*) and Pink Rot (*Phytophthora*) -** Leak is a disease that usually enters the tubers through bruises occurring in conjunction with the harvesting of immature tubers during hot weather. Pink rot generally occurs in poorly drained areas. Apply one of the following fungicides with as much gallonage as possible. Make three applications of one of the following fungicides. The first application should be made at nickel size tubers. The second and third applications should occur 14 and 28 days later. Be sure to get some coverage of the soil surrounding plants for root uptake to occur.
Ridomil Gold Bravo, Fluoronil (mefenoxam + chlorothalonil, 4 + M4) at 2 lb 76WP/A, or
Ridomil Gold/Copper (mefenoxam + copper, 4 + M1) at 2 lb 70WP/A, or
Ridomil Gold MZ (mefenoxam + mancozeb, 4 + M2) at 2.5 lb 68WP/A

An alternative application technique is to apply one of the following in a 6- to 8-inch band directly over the seed-piece prior to row closure.
Platinum Ridomil Gold (mefenoxam, 4) at 2.2 fl oz 1.6E/1000 feet of row, or
Ridomil Gold (mefenoxam, 4) at 0.42 fl oz 4E/1,000 feet of row, or

See Potato on page 3

Pest Notes

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

✔ **Carrot Weevils** – numbers of adult **carrot weevils** caught in weevil traps has remained relatively high, with all traps catching at least 1 per day and several traps catching 5-6 adults. Small carrots already have eggs and small larvae developing within the roots. Both carrots and parsley are attacked by this pest, and losses can be high, especially if weevil problems have occurred in the past. For parsley, a 24-C NJ Special Local Needs label for the use of Guthion remains in effect, with up to 3 applications of Guthion WP (**note**: a copy of this label must be in the hands of the applicator at time of application). However, in carrots, only Asana, Baythroid and Vydate are labeled. Asana and Baythroid should be targeting the adult weevils, and Vydate should be targeted towards the oviposition/egg hatch stage.

✔ **Thrips** – Cumberland County Agricultural Agent Wes Kline reports that peppers in Cedarville and other areas have high numbers of **thrips** in the flowers and on the plants. Thrips can cause direct damage to the fruit, both by oviposition scars and direct feeding. Many materials are labeled and are effective, but the key is to use high volume/high pressure to ensure that the spray reaches into the flowers and between tight spaces within the canopy. Without thorough coverage, thrips will survive and continue feeding. Thrips may infest peppers and tomatoes directly from the greenhouse, or migrate into these fields from other nearby crops, especially field crops that are drying down (such as wheat, etc). Once these crops start to dry, the thrips populations seek out green crops to continue feeding. Use any of the pyrethroids, such as Baythroid, bifenthrin, Proaxis, or Warrior, or other material such as Agri-Mek, Spintor/Entrust, or Vydate.

✔ **Oriental Beetles** – Joe Mahar reports that **beetles** are actively being caught in the traps, and the population should peak within the next week or so. These beetles are part of the complex that deposits eggs near the roots from which grubs hatch and feed on all stages of the root.

✔ **Corn Earworm** – high numbers of **corn earworm** moths are being caught in pheromone traps along the bay areas of New Jersey. These pests will attack many different vegetable crops, including sweet corn (whorls and ears), tomatoes, peppers, beans, leafy greens, and lettuce. Because adults have been caught in traps for the past several weeks, it is best to monitor for small earworms in these crops. Pyrethroid insecticides (Asana, Baythroid, bifenthrin, Mustang MAX, permethrin, Proaxis, Warrior) are still effective against this pest. Some of the non-pyrethroid materials that are effective include Lannate, Larvin, SpinTor, and Proclaim. Consult label to determine all usage, rates, and restrictions for each crop. ❑

Potato from page 2

Ultra Flourish (mefenoxam, 4) at 0.84 fl oz 2E/1,000 feet of row.

✔ **Tomato – Bacterial spot, speck and canker –** Bacterial diseases can cause serious problems in the field if infections are allowed to spread. Apply Actigard (P) 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.

✔ **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. ❑

Sustainable Ag Videos

The following videos are available from the Center for Sustainable Agriculture at the University of Vermont:

'Farmers and their Weed Control Machines' – VHS
'Farmers and their Weed Control Machines' – DVD
'Farmers and their Ecological Sweet Corn Production Practices' – VHS
'Farmers and their Diversified Horticultural Marketing Strategies' – VHS
'Farmers and their Innovative Cover Cropping Techniques' – VHS
'Farmers and their Innovative Cover Cropping Techniques' - DVD

Prices per video or DVD are $15 mailed within the continental US. An order form is available on the web at: http://www.uvm.edu/vtvegandberry/Videos/videoorderform.html
To order, please send with payment to:
Center for Sustainable Agriculture
University of Vermont
63 Carrigan Drive
Burlington, VT 05405-0004
Phone: (802) 656-5459
E-mail: sustainable.agriculture@uvm.edu

Farmer to Farmer from page 5

Past volunteers have found the experience to be challenging and rewarding. Many develop relationships with their counterparts in the Caribbean making multiple trips to work on different aspects of a project. Through the *Farmer to Farmer* program, individuals make a meaningful contribution to development in Jamaican communities.

For more information on Partners of the Americas and the *Farmer to Farmer* Program, please visit www.partners.net. For specific questions or to find out about how to volunteer, you can also contact: Peggy Carlson, Director, *Farmer to Farmer* Program, Partners of the Americas, 1424 K Street, NW, Washington, DC 20005, pcarlson@partners.net, 2026376230.

Submitted by Rick VanVranken, Atlantic County Agricultural Agent. ❑

IPM Update

Joe Ingerson-Mahar, Vegetable IPM Coordinator

Blacklight trapping

European corn borer: Corn borer counts have begun dropping off across the state. The highest counts are at selected sites in Warren County and northern Hunterdon County – specifically Belvidere, Phillipsburg, Little York, and Croton. Even here though, the counts are 1 to 2 moths per night.

Corn earworm: Counts are low across the state with less than 1 moth being trapped per night except for East Vineland, which continues to have 1 to 2 moths per night. Despite these low counts growers with sweet corn and early tomatoes are urged to check their crops for infestation and damage. Tasseling and silking corn should be sprayed on a 5 to 6 day schedule.

Field scouting

Heavy rains across the state have made field scouting difficult in some cases and so we may not have a complete picture of what is present in the fields. The advantage to the heavy rains is that **spider mite** and **thrips** populations are not favored. Both prefer drier and hotter conditions. **Corn borer** egg masses and other insects eggs may be washed off of the plants on which they were laid, as well as smaller caterpillars, helping to reduce the numbers of the these pests.

The disadvantage of course is that crops can't be sprayed on schedule and with all the moisture and high humidity plant diseases will become more of a concern. **Bacterial diseases** are more easily spread with wet foliage and splashing rain. **Fungal diseases** including **root rots** and **white mold** (**timber rot**) will become more prevalent in susceptible crops.

Sweet corn: European corn borer damage appears to be lessening. Our threshold for spraying is 12% of the plants with fresh damage. Especially in the south the corn borer will be reaching the later instars now and damage will appear in the mid-veins and tassel and in the ears. **Corn earworm** larvae, though capable of feeding on whorl corn will be more of a problem on the ears.

Tomatoes: Colorado potato beetles are common in some fields. A reminder that the beetles and the larvae can feed on both the foliage and fruit. Reducing alternate hosts (solanaecous weeds such as nightshade and horsenettle) in and around the fields will help reduce reinfesting populations. In South Jersey one farm had significant **corn earworm** (**tomato fruitworm**) damage. These were largely older caterpillars that were feeding on fruit under the cap causing the fruit to drop off of the plant. **Bacterial diseases** vary in severity with some fields already heavily infected with **bacterial speck** and other fields with little or no bacterial disease. Some **stinkbug** injury has also been found in tomatoes in fields in the south.

Peppers: No significant pest problem has been observed in peppers so far. **European corn borer** will find any fruit one inch in diameter and larger attractive.

Cabbage: In North Jersey, caterpillars are being found on plants, most likely to be **imported cabbage worm**. Eggs for the imported cabbage worm can be scouted for and helps provide an accurate estimation of the pending numbers of caterpillars. The eggs are white, single and sit upright. They stand out against the background color of the leaves. ❑

Farmer to Farmer in Jamaica

Partners of the Americas' *Farmer to Farmer* program is a USAID funded project that provides technical assistance to local agricultural producers, producer organizations and agribusinesses in Jamaica, Haiti and Guyana. Through the program, US agricultural volunteers spend two to three weeks working with their counterparts in the Caribbean on a specific technical assignment to address local needs. Partners' Jamaica program focuses on vegetables, hot peppers, eggs and swine.

In Jamaica, *Farmer to Farmer* is working with Ebony Park Academy, an education institute offering training in agriculture and related skills. Students and faculty from Ebony Park Academy are working closely with *Farmer to Farmer* volunteers to learn more about exotic fruits and vegetables, spices, eggs and other high value, nontraditional crops.

Farmer to Farmer volunteers will help to address several key issue areas:

Food processing specialists will work with Ebony Park Academy to improve the quality and the yield of jams, jellies, canned fruits and vegetables and sauces produced in the Ago Processing training facility at Ebony Park Academy.

Marketing volunteers will work with Ebony Park Academy to improve the marketing of processed foods through labeling, packaging, product line expansion and quality standards.

Agronomy volunteers will assess current soil management practices; provide training in soil fertility management; and recommend fertilizers and demonstrate proper application.

Plant pathology volunteers will: assess current methods of disease control and treatment; train farmers to identify common diseases; and identify low cost methods of treatment.

See Farmer to Farmer on page 4

Weekly Weather Summary

Keith Arnesen, Ph.D., Agricultural Meteorologist

Temperatures averaged much above normal, averaging 74 degrees north, 76 degrees central and 77 degrees south. Extremes were 93 degrees at Hammonton on the 22nd, and 57 degrees at Charlotteburg on the 21st. Weekly rainfall averaged 1.84 inches north, 1.78 inches central, and 2.28 inches south. The heaviest 24 hour total reported was 2.28 inches at Downstown on the 24th to 25th. Estimated soil moisture, in percent of field capacity, this past week averaged 80 percent north, 70 percent central and 61 percent south. Four inch soil temperatures averaged 69 degrees north, 74 degrees central and 75 degrees south.

Weather Summary for the Week Ending 8 am Monday 6/26/06

	RAINFALL			TEMPERATURE				GDD BASE50		MON
WEATHER STATIONS	WEEK	TOTAL	DEP	MX	MN	AVG	DEP	TOT	DEP	%FC
CANOE BROOK	2.10	13.04	-2.82	90	62	75.	5	1064	306	94
CHARLOTTEBURG	.98	13.29	-2.73	86	57	72.	5	851	263	77
FLEMINGTON	3.34	16.51	1.36	89	59	74.	4	1019	233	100
NEWTON*	1.41	8.99	-5.44	86	58	73.	5	626	-37	84
FREEHOLD	1.76	14.48	-.41	89	62	76.	5	1028	152	92
LONG BRANCH	2.14	15.45	.49	88	65	75.	4	946	138	94
NEW BRUNSWICK	1.34	14.03	-.51	90	62	76.	3	1090	161	85
TOMS RIVER	2.25	12.08	-2.72	91	61	76.	5	1016	213	100
TRENTON	1.40	13.13	-.40	90	63	77.	4	1122	142	90
CAPE MAY COURT HOUSE	2.40	8.99	-4.14	91	66	76.	5	1039	157	100
DOWNSTOWN	2.93	10.65	-2.75	91	64	77.	4	1092	93	100
GLASSBORO	.46	9.79	-4.70	90	65	78.	5	1248	270	51
HAMMONTON	2.35	10.78	-3.32	93	66	78.	5	1165	194	100
POMONA	3.24	12.15	-.66	92	66	77.	6	1064	176	100
SEABROOK	missing									
SOUTH HARRISON 0.80	9.41	-5.06	89	65	77.	NA	1232	NA	NA	

*some past data is missing and therefore cumulative values and departures will be off.

WES KLINE — GDD BASE 40 PINEY HOLLOW

LAST WEEK 202 (Ending 6/19/06)

THIS WEEK 258 (Ending 6/26/06)

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Pesticide User Responsibility: Use pesticides safely and follow instructions on labels. The pesticide user is reponsible for proper use, storage and disposal, residues on crops, and damage caused by drift. For specific labels, special local-needs label 24(c) registration, or section 18 exemption, contact RCRE in your County.

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