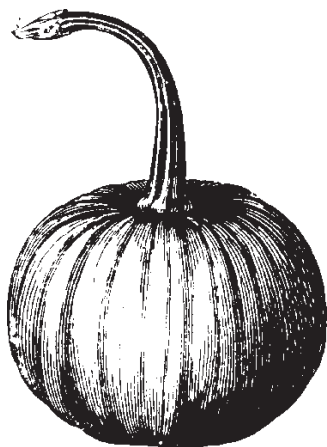


PLANT & PEST ADVISORY

VEGETABLE CROPS EDITION \$1.50

OCTOBER 4, 2006



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Vegetable Disease Update

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

✓ **Cole Crops – Downy mildew** can be a problem in fall cole crops (cabbage, collards, broccoli, cauliflower and kale). Infection begins as irregular yellow spots on leaves which later turn brown. A white fluffy growth develops on the underside of leaves during cool moist weather. When the disease first appears apply a fungicide every 7 to 10 days. Bravo, Maneb, Ridomil Gold Bravo and Aliette are labeled. For more information on control please see the *2006 New Jersey Commercial Vegetable Production Recommendations*.

✓ **Cucurbits – Phytophthora blight** – For protection against the fruit rot phase of the disease apply one of the following:

- Forum (dimethomorph, 40) at 6.0 fl. oz 4.18SC/A (must be tank mixed with another fungicide active against Phytophthora blight), or
- Ranman (cyazofamid, 21) at 2.75 fl oz 400SC/A *plus* as organosilicone surfactant (do not tank mix with copper)
- Tanos (famoxodone + cymoxanil, 11 + 27) at 8.0 to 10.0 oz 50WDG/A (for suppression only), or
- Gavel (zoxamide + mancozeb, 22 + M3) at 1.5 to 2.0 lb 75DF/A (not for use on pumpkin, some muskmelon varieties are sensitive to Gavel, see label)

✓ **Cucurbits - Downy mildew** - Tank mix one of the following products from the list below with a protectant such as Bravo, Echo, Equus (chlorothalonil, M5) at 1.5-3 pt 6F/A (0 Day PHI) or Gavel (zoxamide + mancozeb, 22 + M3) at 1.5 to 2.0 lb 75DF/A (5 Day PHI)(some muskmelon may be sensitive, not for use on pumpkin).

- Ranman (cyazofamid, 21) at 2.1 to 2.75 fl. oz. 400SC/A (0 Day PHI), or
- Previcur Flex (propamocarb HCL, 28) at 1.2 pt 6F/A (3 Day PHI), or
- Curzate (cymoxanil, 27) at 3.2 oz 60DF/A (3 Day PHI), or
- Pristine (pyraclostrobin + boscalid, 11 + 7) at 12.5 to 18.5 oz 38WG/A (0 Day PHI), or
- Tanos (famoxodone + cymoxanil, 11 + 27) at 8 oz 50WDG/A (3 Day PHI), or
- Cabrio (pyraclostrobin, 11) at 8 to 12 oz 20WG/A (0 Day PHI)

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

SEE DISEASE UPDATE ON PAGE 2

Late Blight Reported on Tomato in South Jersey

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

An isolated case of **Late blight** was found in tomato near Cedarville (Cumberland County) late last week. This is the first report of Late blight on tomato in this year. Tomato growers should continue to scout for symptoms and, if necessary apply the appropriate fungicide(s), depending on how long they continue to harvest. For more information on Late blight control please see the *2006 New Jersey Commercial Vegetable Production Recommendations*. □

Editor's Note: This is the last issue of the Vegetable Crops edition of the Plant & Pest Advisory for the 2006 season. Thank you for subscribing.

DISEASE UPDATE FROM PAGE 1

✓ **Cucurbits – Powdery mildew** – Powdery mildew typically occurs from mid-July until the end of the season. Unlike Downy mildew, the diagnostic characteristics of Powdery mildew are *pure white 'fuzzy' growth on both the upper and lower leaf surface, petioles and stems*. Symptoms typically begin on older, lower leaves and can develop and spread rapidly under dry, humid conditions. Control of Powdery mildew begins with regular scouting for symptoms and weekly fungicide applications. Fungicide resistance management of the fungus which causes Powdery mildew is critical. Fungicides with a high risk for resistance development such as the strobilurin (Pristine, Group 11) should be tank mixed with a protectant fungicide such as Bravo (M5) or Sulfur (M1) and rotated with fungicides of a different chemistry such as Bravo (chlorothalonil, M5) + Nova or Procure (Group 3). Group 3 fungicides are also high-risk and should never be applied alone. Growers need to read and follow restrictions on labels carefully. For more information on control of Powdery mildew and other important diseases of cucurbits please see the *2006 New Jersey Commercial Vegetable Production Recommendations Guide*.

✓ **Leeks – Purple Blotch** – Symptoms of Purple blotch include tannish-brown, elongated, concentric, circular lesions with chlorotic margins. Lesions run parallel with the leaf veins. Development of Purple blotch is favored by warm night temperatures. Fungicide applications should begin in the fall as soon as transplants are set out on 10-day intervals as long as night temperatures remain warm. There are a number of fungicides labeled for the control on Purple blotch. For more information on control please see the *2006 New Jersey Commercial Vegetable Production Recommendations*.

✓ **Lettuce – Bottom Rot/Drop** – For Bottom Rot, Endura 70W (boscalid, 7) at 8 to 11 oz/A, or Rovral 50WP (iprodione, 2) at 1.5 to 2 lb/A or OLF should be applied one week after transplanting or thinning and 10 and 20 days later. For Drop, the biological Contans 5.3WG at 2 to 4 lbs/A pre-plant can be incorporated at a depth of 1 to 2 inches, or Rovral 50WP (iprodione, 2) at 1.5 to 2 lb/A beginning one week after transplanting or thinning and again at 10 and 20 days later. For more information on control of Bottom Rot and Drop and other important diseases of lettuce please see the *2006 New Jersey Commercial Vegetable Production Recommendations Guide*.

✓ **Pepper – Phytophthora blight**

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 8.0 to 10.0 oz 50WDG/A

✓ **Pepper – Anthracnose** - Symptoms of fruit infection include sunken, circular spots which develop blackish-tan to orange concentric

SEE PEPPER ON PAGE 3

rings as lesions develop. Lesions on stems and leaves appear as grayish-brown spots with dark margins and can easily be overlooked. Control of Anthracnose begins with using clean-free seed and/or transplants. A three-year crop rotation with non-solanaceous crops is recommended. After the harvest season, pepper fields should be disced and plowed under thoroughly to bury crop debris. Beginning at flowering, alternate one of the following: azoxystrobin (FRAC group 11, Amistar 80WDG at 2 to 5 oz/A or Quadris at 6.2 to 15.4 fl oz 2.08F/A), or Flint (trifloxystrobin, 11) 50WDG at 2 to 4 oz/A, or Cabrio (pyraclostrobin, 11) 20EG at 8 to 12 oz/A with Maneb (M3) 75DF at 1.5 to 2 lb/A or OLF.

✓ **Spinach – White Rust** – Symptoms of White rust include *irregular, chlorotic areas on the upper leaf surface with white, blister-like pustules developing on lower leaf surface*. Development of White rust is favored by cool nights and mild day temperatures with *prolonged periods of dew or fog which favor wet leaf surfaces*. Control of White rust begins with crop rotations of 2 or more years. Some varieties have partial resistance and should be used if possible. A preventative fungicide schedule should begin 2 to 3 weeks after planting, and/or *if weather conditions favor disease development*. There are a number of fungicides labeled for the control of White rust on spinach. For more information on the control of White rust on spinach please see the *2006 New Jersey Commercial Vegetable Production Recommendations*.

✓ **Pumpkin - White mold or Sclerotinia rot** - White mold may cause problems when pumpkins are planted in the same field each year and in fields where other susceptible crops such as bean have been grown. Development of white mold is favored by prolonged, cold wet weather. Symptoms often begin to show up as a soft, mushy area around the stem as the fruit reaches maturity. Infected fruit often collapse inward near the stem. Large, black fruiting bodies (sclerotia) may be produced around infected areas. Sclerotia serve as overwintering and long-term survival structures. A long crop rotation is necessary to help control white mold. Infected fruit should be removed from the field immediately.

✓ **Pumpkin - Sunscald injury** - Sunscald injury occurs when developing pumpkin fruit are suddenly exposed to heavy sunlight during the latter stages of fruit ripening during the fall. Sunscald injury often occurs when pumpkin plants become prematurely defoliated in the early fall by Powdery mildew or Downy mildew or when vines collapse due to Phytophthora blight or bacterial wilt. Symptoms of sunscald injury include the collapsing of rind tissue on the side of the fruit which is in direct contact with the afternoon sun. Sunscald injury often develops as a pinkish-red color on exposed fruit which becomes flat in appearance. Over time fruit tissue may become tan to brown and secondary pathogens often invade the sunscald injured areas of the fruit. To help reduce the potential for sunscald injury maintain foliage for as long as necessary, especially if fruit are going to be left in the field for long periods. □

Pest Notes

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

✓ **Cole crops** (cabbage, etc): The recent warm days and nights have been favorable to the ‘worm’ pests that attack cabbage and other cole crops. Damage by **cabbage loopers** and **diamondback moth larvae** has been reported in several south NJ fields of cabbage. These pests are more easily controlled before the population reaches a high level, so treat when 5% of the plants are infested at this time of the year. Of all the worm pests that attack cabbage, the toughest to control is diamondback moth larvae, especially once the population starts to become evident and the damage is easily observed. The most effective materials for diamondback moth larvae are Avaunt, Entrust/SpinTor, the Bt’s (biological insecticides) or Proclaim. Note that the pyrethroids are *not* effective against diamondback moth larvae. Obtain adequate spray coverage to ensure effective control of these pests, especially to the leaf undersides and the growing point of the cabbage plant. A spreader-sticker may aid in control because of the waxy leaf surfaces of plants in this family.

For cabbage looper, other spray options are available that are also very effective. Several pyrethroids are labeled, including Asana, Baythroid, bifenthrin, Danitol, Mustang MAX, Proaxis, and Warrior. In addition, several of the older broad spectrum materials are still labeled, including Lannate, Larvin, and Orthene. Newer, highly effective materials for cabbage looper control include Avaunt, Confirm, Intrepid, Proclaim, and Entrust/SpinTor. Like diamondback moth larvae control, a spreader-sticker and thorough spray coverage are likely to increase spray effectiveness.

Several reports of **aphids** on broccoli have been reported. This is a common pest in late summer on broccoli, where they easily hide in the bracts and growing points of the plant. Effective materials for aphid control include Assail, Fulfill, Metasystox-R, Orthene, and Provado. Use high pressure, high volume to force the spray material into all the cracks and crevices of the broccoli plant where aphids may be hiding (bracts, developing heads, etc.). A spreader-stick will be of aid in obtaining thorough coverage of the plant. □

IPM Update

Kristian Holmstrom, Research Project Coordinator II, Vegetable IPM Program

Sweet Corn

Over the past week, only a few individual **European corn borer (ECB)** adults were captured throughout the state. As a result, there is no ECB map in this issue of the newsletter. ECB injury may still be found on sweet corn, but will be largely overshadowed by **fall armyworm (FAW)**. The highest nightly ECB catches for the previous week have occurred at:

Burlington	1	Folsom	1
Centerton	1	Shirley	1
Elm	1	Tabernacle	1

Adult **corn earworm (CEW)** adult catches have remained stable over the past week (see CEW map). The present population is moderate, and activity will fluctuate with increases and decreases in night temperatures. In practical terms, this population will cause considerable damage to corn if not managed appropriately. Silk spray schedules must be strictly observed to prevent CEW damage. On the CEW map, the crosshatched area (green on the web version) represents a 3-day spray schedule.

Silking Spray Schedules*:

North – 3-5 days

Central – 3 days

South – 3 days

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

The highest nightly CEW catches for the previous week have occurred at:

Jones Island	7	Indian Mills	4	Phillipsburg	3
Eldora	5	Mannington	4	Shirley	3
East Vineland	4	Seeley Lake	4	Hackettstown	2
Folsom	4	Elm	3	Woodstown	2

The occurrence of **fall armyworm (FAW)** larval feeding is still high in sweet corn. All counties have damaging populations. For those growing B.t. modified sweet corn varieties, remember that FAW is less affected by this toxin than are ECB and CEW. Some FAW injury will occur on these varieties. Evidence of prior FAW presence in sweet corn ears is often a round exit hole somewhere on the side of the ear. If a planting is not yet silking, consider treating when 12% or more plants are infested with FAW alone or in combination with ECB.

Tomatoes

Late season **two-spotted spider mites (TSSM)** infestations persist in many areas. Look at 2 complete leaves each on 5 consecutive plants in 10 random locations. Note the presence of whitish pin-spots or yellowing on the upper surface of the leaf. Look for TSSM on the underside of leaves with these symptoms. Note the number and location of sites with TSSM. Consider spot treating to prevent further spread into the field. Check also for the presence of **aphids**. Increasing aphid populations are often detected by the presence of their cast skins, which adhere to the sticky droppings

they produce. If colonies are increasing over several scouting visits, especially if aphid droppings are accumulating on fruit, consider an insecticide to reduce the population

In northern counties, scattered injury by the **tomato fruitworm** (larval CEW) is present in some plantings. As sweet corn acreage declines, CEW will look for alternate hosts like tomatoes. If local catches approach 10 moths per night, consider weekly insecticide applications to limit damage. Remember that synthetic pyrethroid insecticides may increase aphid populations over time. Check the *2006 Commercial Vegetable Production Recommendations Guide* for effective materials.

Over the past several weeks, many northern tomato plantings have declined rapidly due to what appears to be an **alternaria** infection. Unlike our typical early blight infections, this condition is not responding well to fungicide applications. As the season concludes, remember that alternaria will reside on infected debris. It is always a good idea to completely incorporate all crop residue to insure complete decomposition. Alternaria will not overwinter as successfully in soil alone.

Peppers

Dominant pests in peppers now include **aphids** and **two-spotted spider mites**. Fields should be scouted weekly. Check 5 consecutive plants each in 10 random locations. Look at the undersides of 2 leaves per plant for the presence of aphids, spider mites and egg masses of **ECB** and **FAW**. Consider treating if aphids exceed approximately 120 per 100 leaves, and if spider mites are found on 10 leaves, and if 2 or more moth egg masses are found in the sample. Observe 2 fruit per plant for the presence of larval infestation or soft rot. Dramatically increasing soft rot is an indication of a possible ECB larval infestation.

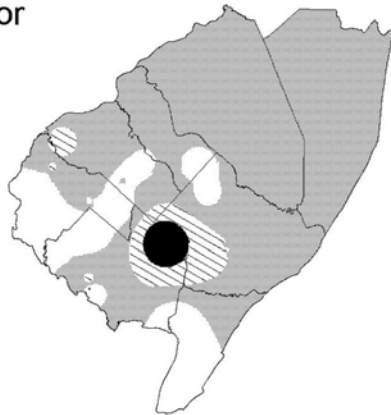
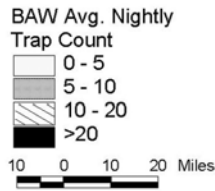
Beet armyworm (BAW) pheromone traps have been deployed from Cape May northward through Burlington County. BAW adult catches have stabilized over the past week, with highest activity in the Vineland area. It is advisable to scout fields regularly for BAW at this time. First signs of infestation will include foliar damage and droppings near terminal growth. As larvae enlarge, they will attack fruit. Larvae are greenish, with a prominent dark spot on each side behind the head capsule.

Cole Crops

Be sure to check all fields at least weekly for the presence of **imported cabbageworm (ICW)**, **diamondback moth larvae (DBM)**, and **cabbage looper (CL)**, and BAW. All these larvae are capable of causing significant injury on all stages of late cole crops at this time. Be sure to look at the youngest leaves of plants, as this is the preferred feeding area of ICW. Consider treating if 20% of heading type crops are infested prior to head formation and if greater than 5% are infested while heads are present. For leafy greens, consider treating if 10% or more are infested at any stage. While scouting, note also the presence of target shaped lesions caused by **Alternaria**. This is especially important on cabbage that is to be stored. Consider protectant fungicide applications to limit this injury. Consult the *2006 Commercial Vegetable Production Recommendations Guide* for effective materials.

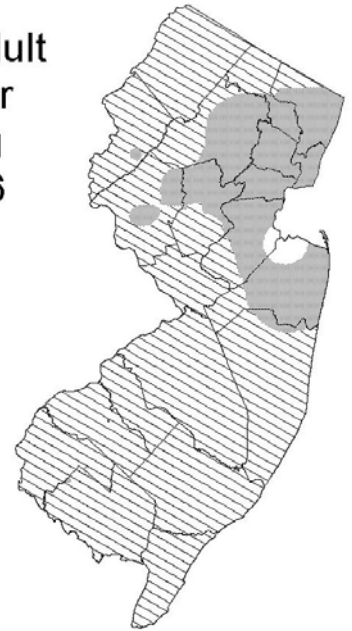
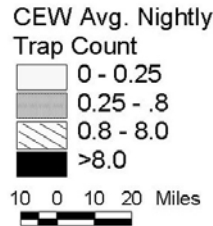
SEE BAW AND CEW MAPS ON PAGE 5

Distribution of Adult Beet Armyworm for the Week Ending October 04, 2006



Data collected by Joe Mahar and processed by Kris Holmstrom
Rutgers Cooperative Research and Extension

Distribution of Adult Corn Earworm for the Week Ending October 04, 2006



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

Weekly Weather Summary

Keith Arnesen, Ph.D., Agricultural Meteorologist

Temperatures averaged near normal, averaging 57 degrees north, 60 degrees central and 61 degrees south. Extremes were 77 degrees at several locations on the 29th, and 39 degrees at numerous locations on the 30th. Weekly rainfall averaged 0.99 inches north, 0.40 inches central, and 0.55 inches south. The heaviest 24 hour total reported was 0.60 inches at Newton on the 28th to 29th. Estimated soil moisture, in percent of field capacity, this past week averaged 89 percent north, 74 percent central and 75 percent south. Four inch soil temperatures averaged 59 degrees north, 62 degrees central and 62 degrees south.

Weather Summary for the Week Ending 8 am Monday 10/ 2/ 6

WEATHER STATIONS	RAINFALL			TEMPERATURE				GDD BASE50		MON %FC
	WEEK	TOTAL	DEP	MX	MN	AVG	DEP	TOT	DEP	
CANOE BROOK	1.37	29.59	-.57	76	41	59.	1	3224	587	100
CHARLOTTEBURG	.75	33.16	2.68	71	39	57.	2	2731	647	90
FLEMINGTON	.60	34.70	5.94	77	39	57.	-1	3057	354	94
NEWTON *	1.26	39.10	11.09	72	39	56.	1	2479	139	100
FREEHOLD	.38	31.08	3.16	76	44	61.	1	3188	303	79
LONG BRANCH	.44	30.49	2.24	76	44	60.	-1	3132	302	76
NEW BRUNSWICK	.49	28.37	-.03	76	40	60.	-1	3312	297	91
TOMS RIVER	.25	25.51	-3.40	76	40	60.	0	3236	406	61
TRENTON	.45	27.53	.67	76	41	60.	-1	3387	247	71
CAPE MAY COURT HOUSE	.38	18.91	-6.17	75	43	61.	-3	3333	439	79
DOWNSTOWN	.69	25.15	-1.10	77	39	60.	-2	3153	-8	85
GLASSBORO	.83	28.34	.67	75	43	60.	-1	3593	471	92
HAMMONTON	.47	26.99	-.63	77	40	61.	0	3525	397	81
POMONA	.40	27.89	3.02	76	41	61.	1	3400	495	67
SEABROOK	MISSING									
SOUTH HARRISON	.75	30.72	3.65	76	44	62	NA	3436	NA	NA
WES KLINE — GDD BASE 40	PINEY HOLLOW LAST WEEK 182 (Ending 9/25/06) THIS WEEK 141 (Ending 10/2/06)									
* SOME CUMULATIVE VALUES ESTIMATED DUE TO EARLIER MISSING DATA										

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

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