

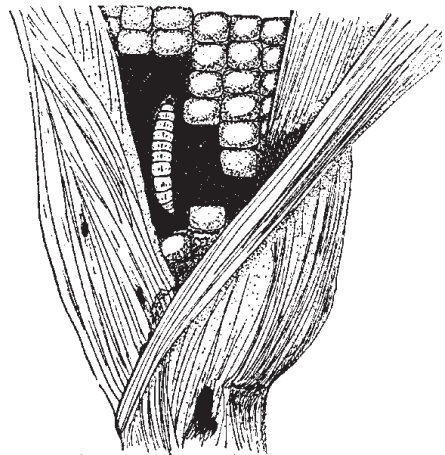
# PLANT & PEST ADVISORY

VEGETABLE CROPS EDITION \$1.50

AUGUST 10, 2005

## IPM Update

*Kristian Holmstrom, Research Project Coordinator II, Vegetable IPM Program*



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### Sweet Corn

Adult **European corn borer (ECB)** activity is increasing significantly in many parts of the state, with some northern areas experiencing very high moth catches (see ECB map). Larval injury in whorl and pretassel stage sweet corn plantings is also increasing at this time. Be sure to check all whorl and pretassel stage sweet corn plantings for signs of ECB damage. Check 5 consecutive plants each in 10 random locations. Look for the "shot-hole" type injury on leaves and discolored sections in the emerging tassels. Consider treating when 12% or more of samples plants show fresh feeding signs. Additionally, be sure to treat these early sweet corn plantings as they go to full tassel and first silk. This application will help eliminate remaining ECB larvae before they can re-enter the plant near the developing ear. If local light traps continue to catch ECB adults and silking stage corn is present, consider treating weekly to prevent infestations by larvae that have been deposited on or near the ears themselves. **These silk stage sprays should be applied even if there are no corn earworm (CEW) being caught to generate a schedule.**

The highest average nightly ECB blacklight catches are:

Little York	29	Chester	8	Sergeantsville	7
Allamuchy	16	Clinton	8	Shirley	7
Phillipsburg	13	Port Colden	8	Belvidere	6
Hackettstown	10	Califon	7	Newton	6

CEW adults are being caught consistently throughout the southern counties although there has been a slight decrease in numbers overall. More sites in the northern counties are now registering catches (see CEW map). Delaware is reporting low to moderate CEW catches, while significant increases in CEW activity have occurred within the past week in North Carolina. In New Jersey, large CEW increases usually occur around the second week of August, so we could see more moth activity within the next week. On the map, shaded areas (blue on the web version) indicate a 5-6 day silking spray schedule, while crosshatched areas (green on the web version) warrant a 3-4 day silk spray schedule. The highest average nightly CEW blacklight catches are:

Mannington	4	Fishing Creek	3	Chapel Heights	1
Cedarville	3	Phillipsburg	2	Little York	1
Eldora	3	Shirley	2	Newton	1
Elm	3	Beckett	1	Tabernacle	1

SEE IPM ON PAGE 2

**Fall Armyworm (FAW)** is active throughout the state, although many infestations remain spotty within the field. This pest will lay eggs on all stages of sweet corn, including large seedlings. As a result, it now becomes critical to include seedling stage corn in scouting activities. Initial injury to sweet corn appears as “window-pane” type feeding on leaves, with damaged areas progressing down toward the whorl. As the larvae increase in size, they begin to chew large, ragged holes in the leaves, and their brown droppings are quite obvious. Initial FAW injury is often confused with the feeding caused by the **western corn rootworm beetle**. These small yellow and black beetles are numerous in many sweet corn plantings now, and although their feeding is largely cosmetic, it makes treatment decisions difficult. Rootworm beetles do not produce the heavy droppings associated with FAW, and their feeding often is not concentrated strictly in the inner whorl. Consider treating when 12% or more plants are infested with FAW alone, or in combination with ECB.

### General Silking Spray Schedules\*:

North – 4-5 days

Central - 3-5 days

South - 3-4 days

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

### Pumpkins

**Cucurbit downy mildew (DM)** should be considered present on vine crops in all areas of the state. DM symptoms often begin as sharp yellow spots on the upper surface of leaves. Observation of the lower leaf surface will typically show that the lesion is associated with veins. As the infection progresses, dark spores will be apparent on the lower leaf surface during periods of high humidity. Under warm, wet conditions, rapid defoliation of leaves can occur if regular control is not undertaken. Most pumpkin and winter squash fields have reached the action threshold of 1 **powdery mildew (PM)** lesion per 50 older leaves. Regarding PM, look for small, powdery spots on either surface of older leaves. Be sure to check leaves within the canopy as well. In order to protect fields against both pathogens, it is necessary to be on a weekly fungicide program that includes both protectant materials and a product that targets fungi similar to DM. For labeled fungicides, consult the *2005 Commercial Vegetable Production Recommendations*. Any field that has not been scouted recently should be checked for PM and DM.

### Tomatoes

The period from late June through the first half of July is typically the time when adult **brown stinkbugs** (*Euschistus spp.*) are active and laying eggs on host crops like tomatoes. Increasingly, brown stinkbugs have been

observed feeding in sweet corn tassels, so they are active in the fields. These insects will feed directly on tomato fruit, causing a pale, diffuse blotch on green fruit that turns bright yellow as the fruit matures. More damaging is the injury caused by the nymphs as they begin to hatch and slowly disperse in the planting. In general, damage is worse during dry periods, because stinkbugs seek more succulent irrigated hosts as non-crop hosts dry up. Adult stinkbugs are difficult to detect in tomatoes because they hide or drop to the ground when approached. The nymphs may be easier to spot, as they remain in a group for some time after egg hatch. Check 5 consecutive plants each in 10 random locations in the planting. Look at two complete leaves and two fruit per plant. If adult stinkbugs or nymphs are found in more than one sample, or if fruit injury is increasing in field samples or in picked baskets, consider applying a labeled insecticide.

Bacterial infections are present, and increasing after recent powerful storms. **Bacterial speck and spot** often first appear as small, very dark spots on the interior of leaves of any age growth. As the infection progresses, fruit lesions may develop. These are dark scabby pits in the case of spot, and dark blister like lesions in the case of speck. Another infection is **bacterial canker**. This often begins as dark margins on older leaves. The lesion progresses inward, and under proper conditions (following pruning, tying, hail or hard rain events) can infect whole stems, causing death in the affected part of the plant. Fruit lesions are whitish blisters known as “bird’s eye spot”. When working in multiple fields, be sure to work in order from youngest to oldest. This will minimize the chance of transmitting an infection to younger, more vulnerable plants. Avoid fields then foliage is wet. Consult the *2005 Commercial Vegetable Production Recommendations* for materials that may be helpful in limiting the spread of bacterial infections.

### Peppers

**Aphids, TSSM, and thrips** are all potential pests of peppers at this time. Monitor fields weekly for the presence of these organisms. Check 2 leaves and 2 fruit per plant on 5 consecutive plants in 10 random locations in the field. Observe the under sides of leaves for aphids and mites. Consider treating if aphid numbers exceed 100 per 100 leaf sample or there are fruit on the plants that are being disfigured by the sticky droppings of the aphids. Consider treating for TSSM if more than 10% of sampled leaves are infested. (Spot treatments may be useful if the infestation is localized). Observe fruit and leaves for the light or silver-colored streaks caused by thrips feeding. Consider treating if thrips are found on 10% or more fruit, or 10% or more plants or fruit are showing signs of fresh feeding.

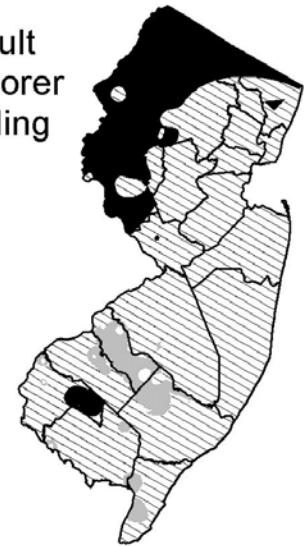
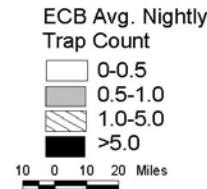
With recent increases in **ECB** activity throughout the state, it is important for all pepper plantings to be protected against fruit infestation by this pest. Larval ECB

SEE PEPPERS ON PAGE 3

will penetrate fruit just under the cap, resulting in increased incidence of soft rot. Plantings should be treated weekly to minimize injury. Consult the *2005 Commercial Vegetable Production Recommendations* for labeled materials. On the ECB map, peppers in any black, shaded or cross-hatched area are at risk for infestation.

RCR&E Vegetable IPM personnel have deployed **beet armyworm (BAW)** pheromone traps in the southern counties where this pest causes injury to peppers in some years. Many times, low levels of BAW adults are captured without economically significant infestations ever occurring. However, higher adult activity (greater than 20 per night on average) is considered to be a potential threat to peppers. On the BAW map, the shaded area indicates a light population that is not likely to be injurious at present levels. The crosshatched area represents a moderate population, and scouting of peppers for injury should be undertaken in that area. The black region on the map indicates a potentially damaging population. Fields in this area should be scouted frequently for the first signs of BAW feeding. BAW catches have decreased in some of the traps, and increased in the "hot-spots" in lower Cumberland county over the past week. Initial BAW feeding occurs on leaves near the growing terminals. Foliage has numerous ragged holes, and the small green larvae may be found curled up near the buds. As the larvae enlarge, they begin to damage fruit, and become much harder to control. Scouting is critical to optimizing control of BAW.

### Distribution of Adult European Corn Borer for the Week Ending August 10, 2005



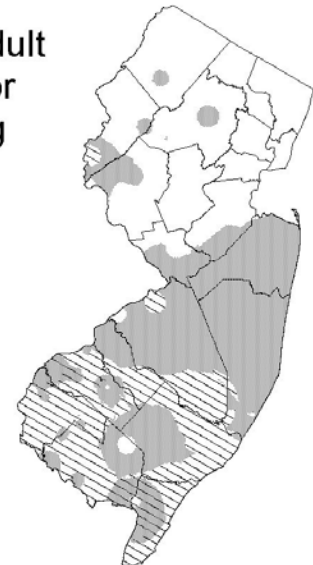
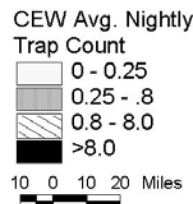
Data collected and processed by: Kris Holmstrom, Marilyn Hughes  
Rutgers Cooperative Extension & Center for Remote Sensing

### Distribution of Adult Beet Armyworm for the Week Ending August 10, 2005



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

### Distribution of Adult Corn Earworm for the Week Ending August 10, 2005



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

## Pest Notes

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

✓ **Sweet Corn:** Both **European corn borer** and **corn earworm** moth flights have increased, based on pheromone and blacklight traps operated by the Rutgers IPM Center. High levels of activity of these pests have recently been reported in more southern states, such as Maryland, Virginia and Delaware, so nature is right on schedule.

For European corn borer, consider Asana XL, Avaunt, Baythroid, bifenthrin, Mustang MAX, Lannate, Larvin, PennCap-M, permethrin, SpinTor, or Warrior. All of these materials are effective against corn borers, and will protect the plant very well. Remember, several of these products are toxic to bees, and care should be taken if plants are shedding pollen (which attract bees).

For corn earworm, consider Lannate, Larvin, SpinTor, or any of the pyrethroids listed for sweet corn (including Asana, Baythroid, bifenthrin, Mustang, permethrin, and Warrior). These materials *must* be applied to the silk before the earworm eggs hatch and the larvae work their way down the silk tubes into the ear tip. Timing is critical – if moths are active, and sweet corn ears are silking, the ear tips are vulnerable to earworm.

✓ **Pepper:** **European corn borer** moth activity has picked up throughout the state, with average nightly catches ranging from 5 – 33. This flight activity is significant, and will cause infestation problems in peppers if they are not protected. Coverage of the spray is important, especially with the cap of the pepper where borers usually enter. Make sure that the spray pattern penetrates the plant canopy and that the spray reaches the calyx. Recommended materials for corn borers in peppers include Asana, Avaunt, Baythroid, bifenthrin, Confirm, Intrepid, Lannate, Orthene (beware of restrictions on use of Orthene), Mustang MAX, permethrin, SpinTor, or Warrior. To reduce the potential of **aphid** buildup, remember to rotate the pyrethroids with Other-Than-Pyrethroid insecticides (the pyrethroids in the above listing include Asana, Baythroid, bifenthrin, Mustang MAX, permethrin, and Warrior).

Furthermore, if **beet armyworm** larvae are found on the foliage, the pyrethroids will be *ineffective* against **fall armyworms**. You will likely not see corn borer larvae, but you will be able to find armyworm larvae. Be aware of which pest is infesting your pepper field before you take corrective action.

In our trials at Rutgers Agricultural Research and Extension Center, we have found a few (very few) peppers with **stink bug** damage (less than 1 damaged fruit in 400 peppers). This number is too low to justify spray applications. It is possible, however, now that field crops are drying down, that stink bugs will migrate into pepper fields, so closely monitor fields for either an increase in stink bug populations, or an increase in actual damage to the fruit.

✓ **Tomato:** **Corn earworm** moth flights have been constantly increasing throughout the state. This is in agreement with corn earworm activity in MD, DE and VA as well, which indicates that the population is here to stay. In tomatoes, if worms or their damage are found, and damage is increasing, various materials are available to control this pest. Recommended materials include Asana, Avaunt, any of the Bt's, Baythroid, cryolite, Danitol, Lannate, Monitor, Mustang MAX, Proclaim, SpinTor, or Warrior. Several of these materials (cryolite, SpinTor) will also effectively control **Colorado potato beetle** larvae. If **potato beetle** larvae are causing damage, remember do *not* use the neonicotinoid class of insecticides (Assail, Actara, Provado) because this will most likely increase the beetles resistance to these products, which would carry over to the at-plant insecticides Admire and Platinum.

**Stink bugs** are definitely a problem to tomato growers in the southern states (VA, MD), and will likely be a problem in New Jersey tomatoes soon. The Rutgers IPM specialists report increasing numbers of bugs in the fields, and as forage and grain crops dry down, the bugs in those fields will easily migrate to tomato fields. Monitor for these pests, and if the number of stink bugs increases, or the damage caused by these pests increases, apply a spray of either Baythroid, Danitol, Monitor, Mustang MAX, Thionex, or Warrior. Apply early in the morning, or towards late afternoon when bug activity decreases, for best results. Obtain thorough coverage (use a higher gallonage, higher pressure to penetrate the plant canopy). □

# Vegetable Disease Update

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

✓ **Cucurbits – Bacterial Wilt** – Symptoms of Bacterial wilt are beginning to show up in Cucurbit crops. Symptoms of Bacterial wilt will vary depending on crop. In general, plants may wilt during the day in hot weather and ‘recover’ during cooler parts of the evening and morning. Margins and inter-veinal areas of leaves become necrotic which cause leaves to appear ‘scorched’. Healthy green plants turn chlorotic with time and infected plants eventually collapse and die exposing fruit to sunscald injury. Cutting through stem tissue at the base of infected plants often reveals a coppery-tan color where the bacterium causes the vascular tissue to ‘plug up’. Control of Bacterial wilt begins with controlling striped and spotted cucumber beetles which vector the pathogen early in the growing season as plants emerge. Late-season beetle control will remain important as fruit begins to mature. Late-season beetle feeding may cause injury to stems ruining aesthetic quality. For more information on cucumber beetle and Bacterial wilt control please see the *2005 New Jersey Commercial Vegetable Production Recommendations Guide*.

✓ **Cucurbits – Powdery mildew** – Powdery mildew starting in on cucurbits in south Jersey. 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 strobilurins (Cabrio, Pristine, Flint, Amistar, Tanos, 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 *2005 New Jersey Commercial Vegetable Production Recommendations Guide*.

✓ **Cucurbits – ‘White speck’ of Pumpkin** – also known as Microdochium or Plectosporium blight causes small, distinct lesions on infected vines, petioles, leaves, handles and fruit (see VDOW). Symptoms include light tan to pure white ‘spindle-shaped’ lesions that have a

dry, scabby appearance. These small ‘white specks’ often coalesce to form large, dry scabby whitish-tan areas on infected plant parts. Heavy vine infection can lead to complete defoliation and handle and fruit infection can ruin aesthetic fruit quality. Control of White speck begins with proper rotations with crops other than cucurbits. Maximum coverage with fungicide applications are necessary for control of White speck. For more information on control please see the *2005 New Jersey Commercial Vegetable Production Recommendations*.

✓ **Cucurbits – Downy Mildew** – Downy mildew continues in all cucurbit plantings. In some fields Downy mildew has caused 100% loss. Growers should take great precautions to keep Downy mildew under control. If Downy mildew has been a problem in fields, growers should scout and continue on a weekly fungicide maintenance program. There are a number of fungicides labeled for control of Downy mildew and many will help control other important diseases in cucurbits. For information on control of Downy mildew and other important diseases of cucurbits please see the *2005 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. At flowering, Maneb 74DF at 1.5 to 3.0 lbs/A should be alternated every 7 to 10 days with Amistar (azoxystrobin, 11) 80 WDG at 2 to 5 oz/A, or Cabrio (pyraclostrobin, 11) 20 EG at 8 to 12 oz/A, or Flint (trifloxystrobin, 11) 50 WDG at 3 to 4 oz/A. For more information on control please see the *2005 New Jersey Commercial Vegetable Production Recommendations*.

✓ **Peppers - Bacterial Spot** – 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. varieties. Loss from Bacterial spot can be reduced somewhat by maintaining high levels of fertility, which will stimulate new growth. For more information on control of Bacterial spot of pepper please see the *2005 New Jersey Commercial Vegetable Production Recommendations*.

✓ **Tomato – Anthracnose** – Symptoms of Anthracnose are easily diagnosed. Symptoms on ripe fruit appear as water-soaked circular lesions that often have a

SEE DISEASES ON PAGE 6

## Strawberry Update

Peter Probasco, Agricultural Agent

Time to get ready for propagating strawberry tips for the next season. Canadian tips are being started now by some growers. Be sure not to drench the plugs with Captan this year since we found out this can stunt root development. The mix needs to have good drainage so if it is mostly peat moss, add vermiculite or perlite until it is about 50% peat. The screen house coverings worked well to provide some shade and cooler temperatures during propagation. Plugs should be set out after Labor Day on plastic mulch. Planting at the end of September will reduce your yields. Chandler and Ovation are the best varieties for New Jersey on plastic. □

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### DISEASES FROM PAGE 5

lighter colored tan center. Black fruiting bodies are often visible in the center of Anthracnose lesions. Control of Anthracnose begins with preventative fungicide applications. Fungicides labeled for other important foliar and fruit diseases of tomato will help control Anthracnose. If fruit-ripening agent has been used, additional fungicide applications may be necessary to help control Anthracnose. For more information on control please see the *2005 New Jersey Commercial Vegetable Production Recommendations*.

✓ **Tomato – Buckeye Rot** – Wet weather and wet soils favor the development of Buckeye rot. Symptoms of Buckeye Rot on green fruit include brownish-tan lesions that have a *definitive concentric appearance*. As lesions form the fruit will begin to soften up, this is quite different than Late blight which will cause a dark brownish/black lesion with the fruit remaining somewhat firm. Unlike Late blight, Buckeye rot won't attack the foliage. For more information on control please see the *2005 New Jersey Commercial Vegetable Production Recommendations*. □

## 15<sup>th</sup> Annual Great Tomato Tasting!

August 31, 2005

3:00 – 8:00 PM (rain or shine)

The Melda C. Snyder Teaching Garden  
Rutgers University Snyder Research and Extension Farm  
140 Locust Grove Road  
Pittstown, NJ (Hunterdon County)

Calling all 'Jersey Tomato' lovers!

Join us in our Teaching Garden and sample the more than 70 varieties of delicious vine-ripened 'Jersey Tomatoes' that we are growing this season. It's your once a year chance to taste our annual selections of hybrid and heirloom tomatoes. It's a perfect opportunity to decide which varieties you want to grow in your garden next year, or to find out which tomatoes to look for at your local Farm Stand. Visitors will also be able to taste-test apples and peaches and vote for their favorite.

We will be at the peak of our growing season and we invite you to celebrate the bounty of the Garden State here in the heart of beautiful Hunterdon County.

- ◆ Take a Hayride Tour of the Farm
- ◆ Rutgers University Cooperative Extension faculty, staff and Master Gardeners will be on hand to answer your gardening questions
- ◆ Tour the bed of Deer Resistant landscape plants
- ◆ Visit our hybrid and heirloom flower beds
- ◆ There will be drawings for door prizes throughout the event
- ◆ Admission is free (a \$3.00 donation is suggested to help cover program expenses)

For directions to the Farm and to RSVP please call **(908) 713-8980**

Snyder Research and Extension Farm is Located 1.5 miles south of Pittstown, NJ at the intersection of Locust Grove Road and Rt. 615 (Pittstown Road).

# Vegetable Disease of the Week

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



Symptoms of Bacterial wilt on pumpkin leaf.



Discolored vascular tissue of pumpkin stem with Bacterial wilt.

## Weekly Weather Summary

Keith Arnesen, Ph.D., Agricultural Meteorologist

Temperatures averaged much above normal, averaging 78 degrees north, 80 degrees central and 81 degrees south. Extremes were 100 degrees at Canoe Brook on the 5th, and 59 degrees at Newton and Charlotteburg on the 7th. Weekly rainfall averaged 0.05 inches north, 0.02 inches central, and 0.32 inches south. The heaviest 24 hour total reported was 0.55 inches at Cape May Courthouse on the 5th to 6th. Estimated soil moisture, in percent of field capacity, this past week averaged 58 percent north, 46 percent central and 50 percent south. Four inch soil temperatures averaged 76 degrees north, 77 degrees central and 78 degrees south.

### Weather Summary for the Week Ending 8 am Monday 8/ 8/ 5

WEATHER STATIONS	RAINFALL			TEMPERATURE				GDD BASE50		MON %FC
	WEEK	TOTAL	DEP	MX	MN	AVG	DEP	TOT	DEP	
BELVIDERE BRIDGE	missing									
CANOE BROOK	.04	17.98	-3.94	100	63	81.	8	2186	450	53
CHARLOTTEBURG	.17	20.47	-1.63	94	59	76.	6	1801	440	48
FLEMINGTON	.00	22.72	1.52	96	64	79.	6	2059	277	55
NEWTON	.00	17.29	-3.03	93	59	77.	6	1930	349	51
FREEHOLD	.00	22.46	1.88	96	61	79.	5	2065	159	47
LONG BRANCH*	.05	21.61	1.03	95	65	79.	5	2025	198	31
NEW BRUNSWICK	.00	22.50	1.88	97	66	80.	6	2157	166	58
TOMS RIVER	.03	22.66	1.47	96	63	78.	5	1998	172	30
TRENTON	.00	20.62	.92	96	67	81.	5	2199	120	24
CAPE MAY COURT HOUSE	.58	21.28	3.02	93	67	79.	3	1816	-136	68
DOWNSTOWN	.15	17.36	-1.94	95	66	80.	5	2076	-14	34
GLASSBORO	.00	18.05	-2.22	95	70	82.	7	2327	264	23
HAMMONTON	.53	19.88	-.44	98	65	80.	4	2136	72	38
POMONA	.37	19.87	1.41	96	65	80.	6	2041	115	58
SEABROOK	.27	18.82	.21	98	70	83.	8	2356	259	38
SOUTH HARRISON	.00	22.77	2.41	95	68	81	NA	2213	NA	NA

\*SOME CUMULATIVE VALUES ESTIMATED DUE TO MISSING PAST DATA  
WES KLINE — GDD BASE 40 PINEY HOLLOW Last Week\* 265 (Ending 8/1/05) This Week 282 (Ending 8/8/05)  
\* February total base 40 equals 32 units

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