RUTGERS COOPERATIVE EXTENSION AT THE NEW JERSEY AGRICULTURAL EXPERIMENT STATION

PLANT & PEST ADVISORY

VEGETABLE CROPS EDITION $1.50 AUGUST 18, 2004

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Vegetable Disease Update

Andy Wyenandt, Ph.D., Post Doctoral Associate in Vegetable Pathology and Wes Kline, Ph.D., Cumberland County Agricultural Agent

✔ **Lettuce – Bottom Rot/Drop –** Transplanting of fall lettuce is beginning and growers should take precautions to control Bottom rot and Drop which were both present in some spring plantings. For Bottom Rot, Endura 70W at 8 to 11 oz/A, or Rovral 50WP 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 Ronilan 50DF at 1 to 2 lbs/A or OLF, or Rovral 50WP 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 *2004 New Jersey Commercial Vegetable Production Recommendations Guide*.

✔ **Peppers –** The fruit rot phase of **Phytophthora blight** continues to be a problem in some pepper fields. Weather conditions the past few weeks have been favorable for the development and spread of the aerial phase of the disease. Protect the upper portion of the plant with fixed copper sprays or Ridomil Gold Copper sprays. Make 3 to 4 applications at 10-14 day intervals. See page F70 of *the 2004 Commercial Vegetable Production Recommendations* for more details.

✔ **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. 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 *2004 New Jersey Commercial Vegetable Production Recommendations*.

✔ **Tomato – Anthracnose –** or red fruit rot is now showing up on mature tomato fruit. Symptoms of Anthracnose are easily diagnosed. Symptoms on ripe fruit appear as water-soaked circular lesions that often have a 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 impor-

SEE DISEASES ON PAGE 2

'Workamper' Labor on Our Farm

Leslie and Ron Blair, Blair's Berry Farm, Rochester, Vermont

Reprinted from Vermont Vegetable and Berry News, August 15, 2004, University of Vermont Extension www.uvm.edu/vtvegandberry

During the summer of 2002 we had a couple of customers come to our berry farm who were volunteering for the Forest Service as 'workampers'. They gave us a copy of Workamper News, a bi-monthly magazine that matches up businesses and workers who travel in their RVs, working as volunteers in exchange for a camp site and the necessary hookups (power, water, septic, telephone). They recommended the program very highly. We advertised in the winter issue of the magazine and received about a half dozen inquiries and resumes. After speaking to the applicants on the phone, we asked two couples to come work with us in the summer of 2003. It went so well that we put in a third camp site, anticipating more business with the growth of the farm. We have three couples with us this summer (one of these was also with us last year).

Workampers are generally retired, and the ages of our workers have ranged from 55 to 70 years old. Each couple works as a unit. Their priority job is taking care of customers (you-pick as well as those buying pre-picked berries from our shop), and when they're not busy with customers they do some picking, sorting, weeding, and other crop tending as well as keeping the shop clean. Some workampers want extra hours for hourly pay and some don't. That's one of the things that helps both parties decide whether or not it's a good match. In our case, we offer the site from May to October in exchange for 8 weeks of work, approximately 5 hours per day, 5 days a week per person. We have offered only a small amount of additional per-hour work. Two of our sites are gravel and one is a grassy pad. The cost of putting in the sites can be considerable and depends upon what you need to do to get power, water, and septic set up for each of them. And of course there are various state regulations to be dealt with.

We highly recommend the program. We've been enjoying all of our workampers and find them to be very congenial and hard working. All of the information you need is available on line at www.workamper.com or call (501)362-2637. ❑

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tant 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 *2004 New Jersey Commercial Vegetable Production Recommendations*.

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 *2004 New Jersey Commercial Vegetable Production Recommendations*.

✔ **Cucurbits – Bacterial leaf spot –** Symptoms of Bacterial leaf spot are beginning to show up in pumpkin fields. On foliage, Bacterial leaf spot will produce small, circular water-soaked lesions (1 to 3 mm) on the lower leaf surface. With age, lesions can become dry and angular developing a translucent center accompanied by yellow 'halos'. Early control is extremely important because foliar infections can lead to fruit infections. On fruit, small, sunken circular spots with a scabby, dry appearance can develop, ruining aesthetic quality. Fixed coppers can be applied when Bacterial leaf spot is first detected on foliage and repeated every 7 to 10 days. For more information on control please see the *2004 New Jersey Commercial Vegetable Production Recommendations.*

Powdery mildew – Powdery mildew has now been identified in southern and northern New Jersey on a variety of winter squash and pumpkin. Powdery mildew typically occurs from mid-July until the end of the season. Powdery mildew can cause 100% defoliation very quickly if not controlled properly. The diagnostic characteristics of Powdery mildew are pure white 'fuzzy' growth on 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. For more information on control of Powdery mildew and other important diseases of cucurbits please see the 2004 New Jersey Commercial Vegetable Production Recommendations Guide.

Downy Mildew – Downy mildew continues in 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 *2004 New Jersey Commercial Vegetable Production Recommendations Guide*. ❑

Pest Notes

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

✔ **What to expect from Hurricanes Bonnie and Charlie, 2004:** These two hurricanes came directly up the Atlantic coast from Florida through New Jersey. It is a sure bet that they brought several species of insect pests with them, including the **diamondback moth**, **beet armyworm** moths, **fall armyworm** moths, and possibly **corn earworm** moths. These moths hitch a ride, so to speak, on the wind currents and can travel hundreds of miles in such a manner in a very short period of time.

✔ **Cole crops:** Normally, heavy rainfalls keep most pests at a low level on cole crops, by drowning them or washing them off the plants. However, for the remainder of the season, cole crops, including collards, can expect high populations of **stink bugs** (especially the **harlequin bugs**, a black, white and orange shield bug that prefers collards, cole crops, and horseradish), **cabbage loopers** and **diamondback moth** larvae. It is important to monitor the crops starting now and continue to monitor at least twice per week to detect any rapid buildup. It is much easier to manage these pests before the population gets large and difficult to control. Look for the characteristic "bleaching" effect of the leaves caused by the stink bugs, or the shothole damage caused by diamondback moth larvae.

For cabbage and broccoli, if 20% of the plants have at least one worm of any species before heading or 5% of the plants during heading, a treatment should be applied. For leafy cole crops, collards, etc., use a lower threshold (<5%) because the leaf is the edible portion of the plant and can suffer almost no damage. If stink bugs are present, use a pyrethroid (many are registered), Provado, or Monitor. For cabbage loopers, use a biological insecticide (Bt), or pyrethroid, Avaunt, Confirm, Intrepid, Lannate, Larvin, Proclaim, or SpinTor. The choices are fewer for diamondback moth larvae, and most effective materials include either a biological (Bt) product (many are registered), or Avaunt, Proclaim, or SpinTor. Consider a spreader/sticker when applying a spray to a waxy-leaf surface such as the cabbages, and obtain thorough coverage of both upper and lower leaf surfaces for maximum effectiveness.

✔ **Pepper:** Monitor crop closely and frequently at this time for small **beet armyworms**. When small or newly hatched, these pests will be found in large numbers, usually near the top of the pepper plant (on the upper 1/3 of the foliage). Their feeding will look similar to a **leaf miner**, or **leaf roller**, early in their development (frequently on the very small leaves at the very top of the plant). After feeding for a while and becoming larger, they migrate to other areas of the plant, leaving large gaping holes in the leaves, and then enter the fruit. They migrate from fruit to fruit, and each worm can cause significant damage. Southern states (Virginia, Maryland) have already been catching high numbers of beet armyworm moths in their pest management traps, so it is most likely that moths are already in this area. Monitor crop at least twice per week to find hatching egg masses of beet armyworms, as control is much, much easier when the larvae are still small. Southern states, where beet armyworm populations are always high, report that Avaunt is one of the most effective beet armyworm materials available for peppers, closely followed by Intrepid, Confirm, Proclaim, Lannate and SpinTor.

✔ **Sweet Corn:** Whorls of corn plants in tests at RAREC have from 20% - 60% infestation of **fall armyworm** and **European corn borer**. These pests are thus already in the area, and will readily attack corn whorls and corn ears. Combined with **corn earworms** that attack the ear silks, we can expect heavy pest populations on sweet corn for the remainder of the season. The **European corn borer** is the easier of these pests to control, and many materials are labeled and effective. However, fall armyworms and corn earworms are more difficult to control, and fewer materials are effective against these pests. Follow the trap catches in your area to determine which pests are present, then select the proper insecticide for control, and use the Rutgers IPM spray schedule guidelines, based on moth activity, for your application schedule. For a more thorough discussion of when to treat and what to use, refer to pages F102-F104 of the *2004 Commercial Vegetable Production Recommendations for New Jersey*, and follow guidelines in the Rutgers IPM Newsletter. It is important to know that these pests are present, and you need to follow their activity in your own area to develop an effective management plan.

✔ **Tomato:** High levels of several species of **stink bugs** are found in tomatoes and peppers throughout southern New Jersey. Although less of a pest on pepper, stink bugs can wreak havoc on tomatoes, leaving bright yellow blotches on the fruit. If you easily see adult or nymph stink bugs in the field, or fruit damage is increasing, apply a treatment of Actara, Baythroid, Fury, Mustang Max, Monitor, Thionex (ex-Thiodan), or Warrior. All of these materials are effective in controlling the different species of stink bugs. Thorough coverage is important, and the bugs tend to hide deep within the foliage. Use high pressure, high volume to penetrate the canopy. ❑

IPM Update

Kristian Holmstrom, Program Associate in Vegetable IPM

Sweet Corn

European corn borer (ECB) activity is still moderate to high in parts of northern New Jersey, and although it is generally low in the southern counties, there has been a recent increase in adult activity in parts of Cumberland and Salem Counties. The highest catches are still occurring along the Hunterdon/Warren County border (see ECB map). There is no catch information from parts of central and northern counties this week, so available data have been stretched to cover those areas on the maps. As the second ECB flight declines throughout the state, feeding will increase in all areas. Continue to check all plantings weekly for the presence of ECB and other pest injury both in the tassels and on the leaves. If feeding exceeds 12% in a 50 plant sample, consider treating. As plantings progress to full tassel, it is still wise to treat for ECB if larvae are present. The highest average nightly **ECB** blacklight trap catches are:

Little York	19	Sergeantsville	3	Pedricktown	2
Phillipsburg	9	Bayside	2	Pittstown	2
Centerton	4	Elmer	2	Shirley	2
Milford	4	Hackettstown	2	Seeley Lake	1

Fall armyworm (FAW) continues to infest whorl stage sweet corn plantings in all counties. In the northern counties, feeding is not excessive, but threshold levels are reached periodically. Typically, FAW infestations are heaviest in coastal areas, and infestations of over 70% in pretassel stage sweet corn have been reported by Garden State Pest Management in eastern Monmouth County. Look for heavy "window-pane" type feeding on whorl and seedling corn. This feeding is caused by young FAW. As the larvae grow, the feeding becomes more ragged, with large holes and accumulations of droppings in the whorl. When FAW is present, thorough spray coverage is critical. Be sure to use as much water with the spray material as possible, and increase pressure to permit the insecticide to penetrate the layer of caterpillar droppings.

Corn earworm (CEW) adult populations have increased dramatically over the past week throughout New Jersey. This increase is probably a combination of local emergence and moths coming into our area on southerly breezes. High catches are to be found in all regions of New Jersey, but notable hot spots are in parts of Mercer, Burlington and Atlantic Counties (see CEW map). Tighter silk spray schedules are required in all parts of the state. All silking spray schedules should be tightened to 3 days at this time. In certain areas, a 2-day schedule may be warranted if economically feasible. The crosshatched area on the CEW map (green on the web) represents a population requiring a 3-4 day silk spray schedule and the black areas (red on the web) represent a 2-3 day silk spray schedule. The highest average nightly **CEW** blacklight trap catches are:

Hopewell	33	E. Vineland	15	Elm	11
Hammonton	17	Eldora	14	Fishing Creek	11
Lawrenceville	17	Centerton	12	Phillipsburg	11
Tabernacle	16	Woodstown	12	Milford	10

General Sweet Corn Spray Schedule

Silking Corn:	North	3 days
	Central	2-3 days
	South	2-3 days

Corn leaf rust continues to be found on sweet corn, particularly as it passes into the late whorl and pretassel stages. Some varieties are susceptible to this pathogen. While scouting for insects, be sure to look at lower leaves for pustules on the surface. As pustules mature, they will burst, releasing reddish colored spores. If this disease is first found in the seedling or whorl stage, consider a fungicide application to limit spread on plants. Rust infections, if allowed to progress on susceptible varieties, can stress plants and reduce ear size.

Tomatoes

Late blight has now been found in Hunterdon and Sussex Counties on fresh market tomatoes. With the previous infection reported by Dr. Wyenandt from Cumberland County, we now have the organism confirmed in several parts of the state. It is critical that all tomatoes be on regular protectant fungicide programs now. If symptoms should appear in local fields including rapid defoliation of entire leaves (with or without obvious sporulation) or green fruit turning brown but remaining solid for some time, immediately include a fungicide that specifically targets the group of fungi to which late blight belongs. These materials are in the *2004 New Jersey Commercial Vegetable Recommendations Guide*. Contact Dr. Wyenandt or your county agent to report the occurrence of symptoms consistent with late blight.

Peppers

With **ECB** adult numbers moderate to high in parts of the state, peppers need regular protectant insecticide treatments. On the ECB map, areas shaded in green (web version) or crosshatched (in the newsletter) indicate adult ECB populations that require weekly preventive sprays to minimize fruit injury. Monitor local ECB populations to determine when to begin regular preventive insecticide applications. Be aware that repeated use of synthetic pyrethroid materials are likely to result in increased aphid infestations. It is a good idea to rotate materials for ECB control to prevent this from happening.

Be aware that high **CEW** populations (greater than 10 moths per night consistently in local blacklight traps) can result in injury to peppers and tomatoes. If ECB adult catches decline to non-economic levels, it may still be necessary to treat peppers and tomatoes weekly to

See IPM on page 5

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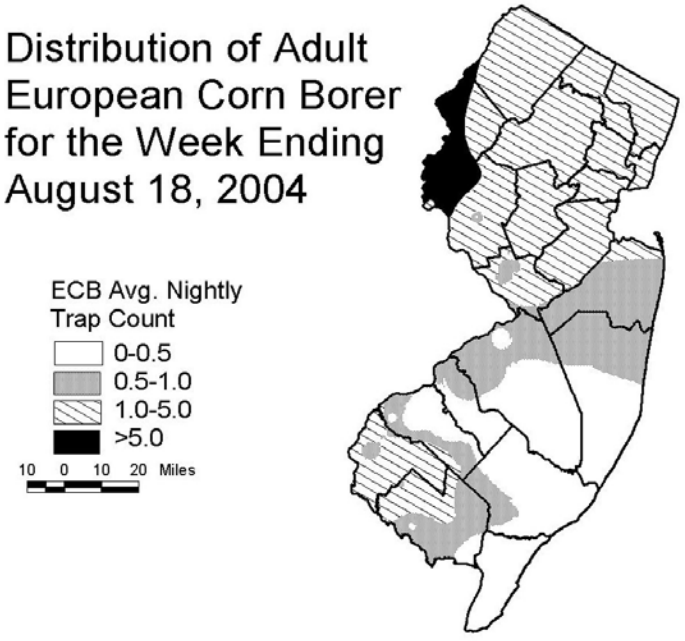
prevent CEW injury. Be sure to monitor local trap catches to see if CEW populations threaten these crops. Damaging populations would show up as black on the CEW map (red on the web version).

Pumpkins

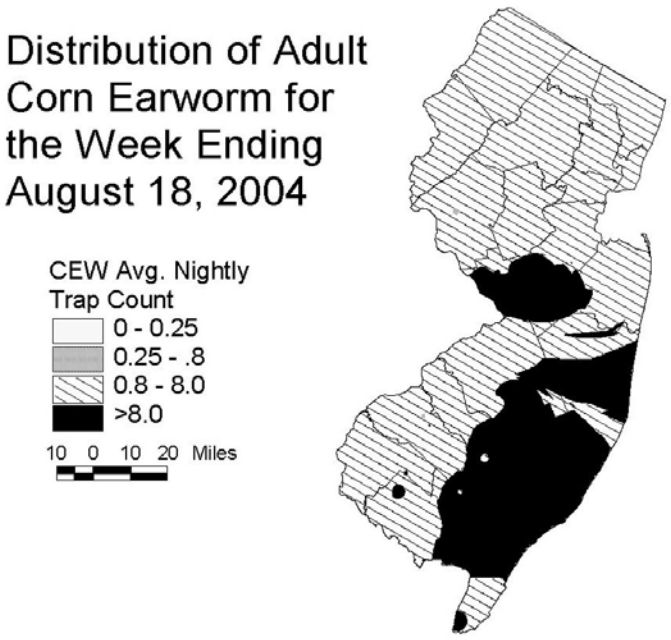
Cucurbit downy mildew (DM) will be an ongoing problem on vine crops throughout the state for the duration of the season. Growers should be on their regular protectant fungicide programs to limit damage from this disease as well as **powdery mildew (PM)**. If wet weather makes it impossible to maintain a regular 7-day program, it may be advisable to switch to a material that specifically targets the water molds with the next possible application. Materials like Ridomil Gold Bravo or Tanos fall into this category (See the *2004 New Jersey Commercial Vegetable Recommendations Guide* or the mid July edition of the University of Delaware Crop Update http://www.rec.udel.edu/update04/Issue%2017%202004.htm for further selections and suggested rotational materials). It is critical to check fields at least weekly for the presence of sharp yellow spots on the upper leaf surface. The veins will be yellow on the underside of the leaf. Shortly after these symptoms appear, dark colored spores will be produced along the sides of veins in infected tissue. This disease can rapidly defoliate fields, and should be treated quickly.

Black Cutworm Activity

Pitfall traps in carrots have trapped **black cutworm** larvae in the past two weeks. These larvae are mid-to full size caterpillars. Cutworm damage in white potatoes and sweet potatoes is very dramatic with large excavated areas of the potato evident. Overall the damage tends to be minor though in some years damage may be more extensive. Mid-season control of cutworms has always been difficult because we didn't know when the caterpillars were active in the field. Based upon the pitfall catches it would suggest that cutworm damage to potato crops and carrots is occurring in the early half of August. Growers with these crops may want to examine the soil around the hills and look for the gray-black caterpillars. During daylight hours they normally reside in the soil at the juncture of dry and moist soil and will curl up when disturbed. There are no recommended thresholds for treatment.



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



Data collected and processed by: Kris Holmstrom, Marilyn Hughes
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Bonus Awarded to Early EQIP Applicants

New conservation practices eligible for 2005 funding

Tony Kramer, State Conservationist for USDA, Natural Resources Conservation Service (NRCS) announced that applications for 2005 funding through the Environmental Quality Incentives Program (EQIP) will be awarded an additional 10% to their final ranking score if they are submitted to NRCS by close of business Tuesday, August 31, 2004. New applicants are welcome, and farmers who have existing contracts may be eligible for funding for two new conservation practices.

EQIP in New Jersey has been expanded to include two new practices which provide a higher level of management for nutrient management and pest management. Agricultural producers who want to enhance existing nutrient management and/or pest management of their operations can apply for EQIP cost share funding for implementation of these new practices.

Mr. Kramer stressed that the available funding outlook for EQIP and other conservation program is very positive. Landowners are encouraged to sign up so New Jersey can be in a position to acquire these funds.

EQIP is a voluntary conservation program administered by USDA-NRCS. Through EQIP, farmers whose applications are approved may receive financial and technical help with structural and management conservation practices on agricultural land. Additional program information is available at http://www.nj.nrcs.usda.gov, the NJ NRCS website.

To sign up for EQIP, contact any USDA Service Center. USDA Service Centers and office locations are listed in the telephone book under the US Dept. of Agriculture and can also be found on the NRCS-NJ website.

- Hackettstown - serving Sussex, Morris and Warren: (908) 852-2576 ext. 3
- Frenchtown - serving Hunterdon, Somerset, and Union: (908) 782-4614 ext. 3
- Freehold - serving Mercer, Middlesex and Monmouth: (732) 462-1079 ext. 3
- Hainesport - serving Burlington, Camden, and Ocean: (609) 267-0811 ext. 3
- Woodstown - serving Gloucester and Salem: (856) 769-1126 ext. 3
- Vineland - serving Atlantic, Cape May, and Cumberland: (856) 205-1225 ext. 3

Weekly Weather Summary

Keith Arnesen, Ph.D., Agricultural Meteorologist

Temperatures averaged slightly above normal, averaging 71 degrees north, 74 degrees central and 75 degrees south. Extremes were 88 degrees at Freehold on the 12th, and 55 degrees at Newton on the 10th. Weekly rainfall averaged 1.37 inches north, 1.67 inches central, and 1.43 inches south. The heaviest 24 hour total reported was 1.52 inches at Pomona on the 14th to 15th. Estimated soil moisture, in percent of field capacity, this past week averaged 76 percent north, 72 percent central and 56 percent south. Four inch soil temperatures averaged 69 degrees north, 72 degrees central and 72 degrees south.

Weather Summary for the Week Ending 8 am Monday 8/16/ 4

	RAINFALL			TEMPERATURE				GDD BASE50		MON
WEATHER STATIONS WEEK	TOTAL	DEP	MX	MN	AVG	DEP	TOT	DEP	%FC	
BELVIDERE BRIDGE	1.60	22.76	.70	83	56	72.	1	2131	223	88
CANOE BROOK	missing									
CHARLOTTEBURG	1.72	25.31	1.91	83	57	71.	3	2003	498	85
FLEMINGTON	1.06	30.99	8.61	86	57	73.	1	2191	229	74
LONG VALLEY	1.70	24.24	.13	80	58	70.	1	1902	205	92
NEWTON	.78	21.79	.23	85	55	71.	2	2021	280	69
FREEHOLD	1.12	23.11	1.33	88	57	75.	2	2360	267	80
LONG BRANCH	1.90	22.81	.91	81	64	73.	0	2161	147	99
NEW BRUNSWICK	2.06	26.51	4.62	88	60	74.	1	2328	151	95
TOMS RIVER	2.03	25.63	3.16	86	58	74.	2	2418	416	100
TRENTON	1.26	24.12	3.27	84	60	74.	0	2398	120	85
CAPE MAY COURT HOUSE	1.91	19.71	.32	83	62	73.	-2	2302	149	100
DOWNSTOWN	1.15	20.64	.14	87	60	74.	1	2478	192	70
GLASSBORO	.65	35.07	13.61	86	61	75.	1	2621	360	70
HAMMONTON	1.54	22.43	.93	88	63	75.	1	2568	304	83
POMONA	2.32	21.18	1.51	85	61	74.	1	2449	337	99
SEABROOK	1.02	25.17	5.48	87	66	76.	2	2723	427	73
SOUTH HARRISON	.43	26.47	5.06	85	62	74	NA	2594	NA	NA

WES KLINE — GDD BASE 40 PINEY HOLLOW Last Week 217 (Ending 8/09/04) This Week 241 (Ending 8/16/04)

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