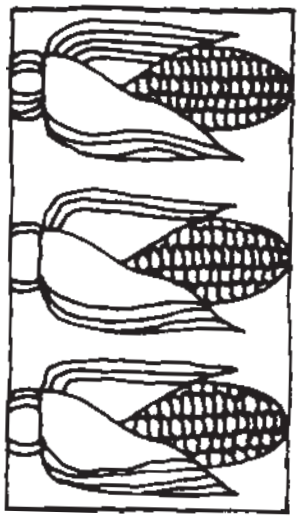
RUTGERS COOPERATIVE EXTENSION AT THE NEW JERSEY AGRICULTURAL EXPERIMENT STATION

# PLANT & PEST ADVISORY

VEGETABLE CROPS EDITION $1.50 SEPTEMBER 1, 2004



## INSIDE



## Pest Notes

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

✔ **Cole crops:** In general, heavy on-and-off rains have kept most pest insects at low levels in cabbage and other cole crops. Spotty infestations of **cabbage loopers**, **diamondback moth** larvae and **imported cabbageworms** have been reported. Southern states report that several fields of cabbage have had **beet armyworm** and **fall armyworm** infestations, but none have yet been reported in New Jersey. Many materials are now available that are effective against all of these pests, especially materials such as Avaunt, Intrepid, Proclaim and SpinTor. And there are many brands of biological insecticides (Bt's) that also work well.

✔ **Corn (sweet):** Sweet corn ready for harvest in research plots at RAREC that have *not* been protected with an insecticide have nearly 100% infestation (mostly **corn earworm**, some **European corn borer**). These moths normally attack corn at this time, but the population is very high, possibly as a result of the recent storm fronts and weather that is favorable to population development. Corn in silking should be protected with a material that will control corn earworm, such as Ambush, Asana, Baythroid, Mustang Max, Lannate, Larvin, Pounce, SpinTor or Warrior.

✔ **Pepper:** Pepper fruit in research plots at RAREC have 10-20% infestation by a combination of **European corn borer** and **corn earworm** (and a very few **beet armyworm**). The adults of these worms are moths, and weather has been favorable to their evening activities (mating, oviposition). For control of these pests in peppers, use Avaunt, Intrepid, Mustang Max, Orthene (see restrictions on use of Orthene), SpinTor or Warrior. Weekly sprays are most likely needed this late in the season.

**Tomato:** Most pest species have remained at low levels thus far, including **hornworms**, **aphids**, and **stinkbugs**. Weather has not been favorable for most of these pests. **Corn earworm** and **beet armyworm** levels, however, have been high in most crops, including pepper and sweet corn. Although many materials are labeled and effective against corn earworm (tomato fruitworm), only a few of these will effectively control beet armyworm. Monitor fields for both of these pests, and if beet armyworm is detected, use either Avaunt, Confirm, Intrepid, Proclaim, or SpinTor for best results against both pests. ❑

# Vegetable Disease Update

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

✔ **Cucurbits – Choanephora fruit rot of pumpkin –** 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 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.

**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*.

✔ **Eggplant – Phomopsis blight –** can affect all above ground portions of the plant. Symptoms include well-defined circular lesions on infected leaves with diagnostic black fruiting bodies developing within the lesion. If the disease progresses infected leaves may turn yellow and die. Fruit lesions are similar to leaf infections, but lesions may become much larger causing fruit to become soft. Wet weather and high temperatures favor Phomopsis blight development. Control of Phomopsis blight begins with weekly preventative fungicide applications which may include Amistar or Quadris 80WDG at 2 to 5 oz/A, or Flint 50WDG at 2 to 4 oz/A, or Cabrio 20EG at 8 to 12 oz/A or maneb 80WP at 1.5 to 2 lb/A or OLF.

✔ **Peppers – The fruit rot phase of Phytophthora blight** continues in some pepper fields. Weather conditions 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 a 10-14 day intervals. See page F70 of *the 2004 Commercial Vegetable Production Recommendations* for more details.

✔ **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 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 *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*. ❑

# Downy Mildew will Continue in Cucurbit Crops this Fall

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

**Downy mildew** continues to cause problems in many cucurbit plantings. Downy mildew has caused 100% loss in some fields this summer. Periods of cool, wet weather has spurred the development of Downy mildew this summer and *the potential for Downy mildew problems heading into the fall are extremely high.* Even if Downy mildew has been under adequate control, growers should take great precautions and continue to scout and continue on a weekly fungicide maintenance program.

Symptoms of Downy mildew in early stages of infection include small, slightly chlorotic to bright yellow lesions on upper leaf surfaces. Symptoms typically show up first on older leaves and progress to newer growth. As lesions expand, they may become more yellow and/or brown and necrotic. The margins of lesions are irregular and angular and are bound typically by leaf veins. In conditions when leaf wetness is favored by rainfall and high relative humidity, the fungus will produce *dark-grayish fuzzy spore (sporangia) masses on the lower leaf surface.* These dark grayish-green spore masses are a diagnostic characteristic of Downy mildew. Downy mildew can spread easily with air currents and by splashing rain and water. 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*. ❑

# Pressure and Water Volume Key to Successful Pumpkin Crop

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

The first signs of fall are beginning to show up with the rapid sizing of pumpkin fruit in the field. With fruit developing underneath dense canopies, appropriate pressure and water volume will be keys to a successful pumpkin crop. Adequate and thorough spray coverage is vital for protecting the foliage from threatening diseases such as **Downy and Powdery mildew**. Protecting the foliage from early defoliation will allow fruit to size properly and help prevent sunscald injury heading into the fall. *Ways to insure adequate and thorough spray coverage is to increase spray pressure (40 to 50 psi) and water volume (40 to 50 gallons/A).*

Growers need to remember that Powdery mildew will not only develop and sporulate on the upper leaf surface, but also on the lower leaf surface, vines and handles of pumpkin fruit. Although symptoms of Downy mildew can be seen on the upper leaf surface of the pumpkin leaf, *the fungus sporulates only on the lower leaf surface*. Adequate and thorough spray coverage will allow fungicides to get where they are needed the most and help prevent common disease problems in pumpkin crops. ❑

# IPM Update

*Kristian Holmstrom, Program Associate in Vegetable IPM*

## Sweet Corn

**European corn borer (ECB)** activity is now moderate to very high in parts of southern New Jersey, and low to moderate in the northern counties. Increased activity in all areas represents another flight. The highest catches are occurring in Salem and Cumberland Counties, as well as near the Mercer-Burlington County border (see ECB map). Larvae resulting from this flight will present a threat to host crops for much of the remainder of the season. 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:

| | | | | | |
|---|---|---|---|---|---|
| Mannington | 26 | Cohansey | 18 | Crosswicks | 9 |
| Shirley | 26 | Seeley Lake | 18 | Lawrenceville | 9 |
| Woodstown | 26 | Cedarville | 10 | Allentown | 8 |
| Elmer | 6 | Little York | 10 | Centerton | 8 |

**Fall armyworm (FAW)** continues to infest sweet corn plantings in all counties. In many cases, plantings are re-infested quickly after initial control is applied. 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 or young tassels. 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. With high levels of adult FAW present, it is important to scout again within one week of an insecticide application to determine the effect of the treatment as well as whether new larvae have hatched.

**Corn earworm (CEW)** adult activity is at moderate to high levels throughout the state. This population represents a great threat to silking sweet corn, and growers should respond with tight silking spray schedules. High catches are to be found in all regions of New Jersey, but notable hot spots are in parts of Burlington, Camden and Monmouth 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:

| | | | | | |
|---|---|---|---|---|---|
| Elm | 22 | Farmingdale | 10 | Woodstown | 9 |
| Springdale | 18 | New Egypt | 10 | Wall | 8 |
| Denville | 12 | Tabernacle | 10 | Cohansey | 7 |
| Medford | 12 | Cedarville | 9 | Princeton | 7 |

## 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** is now present throughout northern New Jersey on fresh market tomatoes. Infections range from slight to severe, where they are occurring. 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 listed in the *2004 New Jersey Commercial Vegetable Recommendations Guide*. Contact Dr. Wyenandt at 856-455-3100 ext. 4144 or your county agent to report the occurrence of symptoms consistent with late blight.

Occasional **CEW** injury in tomatoes is showing up in some areas now. High CEW activity (approaching 20 per night in local traps) can result in significant fruit injury if protectant insecticide applications are not made. If catches are high, consider treating weekly to limit damage. Often CEW larvae may be found boring into fruit in the outer canopy of the plants.

## 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

*See IPM on page 5*

*IPM FROM PAGE 4*

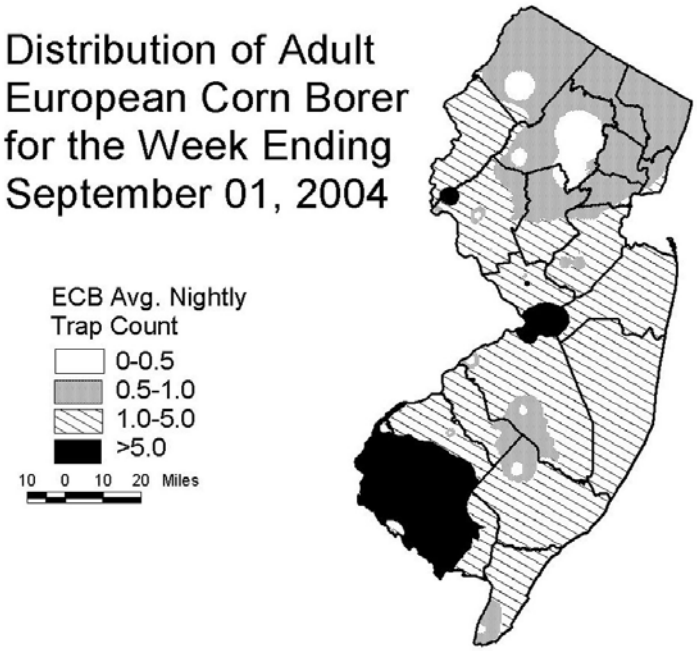
result in injury to peppers and tomatoes. If ECB adult catches decline to non-economic levels, it may still be necessary to treat peppers and tomatoes weekly to prevent CEW injury. Be sure to monitor local trap catches to see if CEW populations threaten these crops. Damaging populations would show up as black on the CEW map (red on the web version).

## Pumpkins

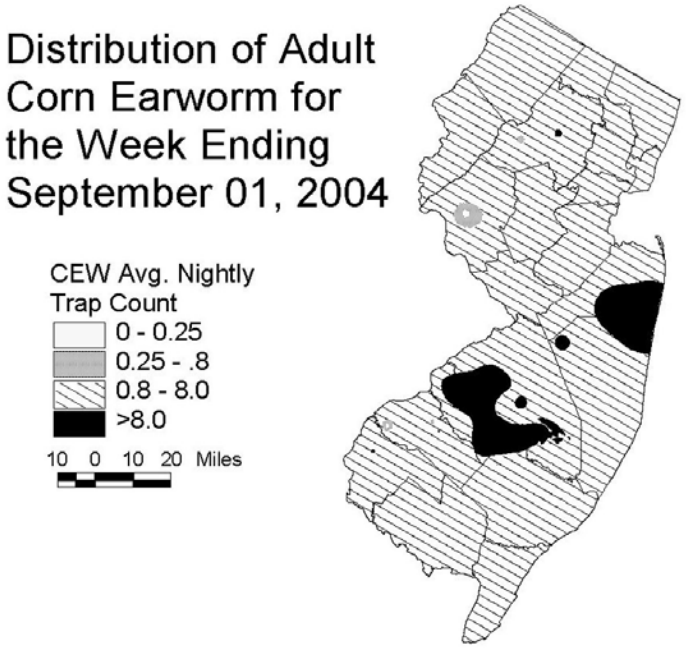
**Cucurbit downy mildew (DM)** will be an ongoing problem on vine crops throughout the state for the duration of the season. Growers should be on their regular protectant fungicide programs to limit damage from this disease as well as **powdery mildew (PM)**. If wet weather makes it impossible to maintain 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. At the present time, fields of the smaller, sugar type pumpkins appear to be in worse condition than the larger jack 'o lantern types. This has much to do with the earlier maturity of those smaller varieties, in combination with heavy disease pressure. In many cases, the fruit are mature. The loss of foliage above mature fruit can result in sun scald and consideration should be given to removing fruit from the field to prevent this type of injury. On later maturing types, it is critical to maintain foliage to allow for full fruit development.

## Snap and Lima Beans

With high **CEW** activity, growers should consider treating fields weekly when local trap catches approach 20 moths per night. If sampling is to be conducted, consider treating when numbers exceed 1 larva per 6 feet of row and 50% or more of the larvae in samples are greater than one half inch in length.




*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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# 3rd Annual Farm Safety/ Health Twilight Program

**September 15, 2004 from 6 to 9 p.m.**
**Hunter Family Farm**
**Union Landing Road**
**Cinnaminson, NJ**

National Farm Safety Week is September 19 -25. This event is one of Rutgers Cooperative Extension's annual gems to kick off Farm Safety Week is not to be missed! Great lineup of new health and safety topics... free admission, dinner, and give-aways!

- ❖ Child Safety on the Farm – Ron Jester, Farm Safety Specialist, University of Delaware
- ❖ Understanding Pesticide Safety on the Farm – Dr. George Hamilton, Rutgers Cooperative Extension
- ❖ Hazards of Dusts and Other Allergens on the Farm – Dr. Joseph Ponessa, Rutgers Cooperative Extension
- ❖ What to Do in a Forest Wildfire – Tom Gerber, New Jersey Forest Fire Warden
- ❖ Special Farm Safety Training for Children – Burlington County Farm Bureau Women's Committee
- ❖ Proper Use of Farm Safety Equipment – Raymond Samulis, Rutgers Cooperative Extension
- ❖ Electrical Safety on the Farm and in Greenhouses – Dr. A.J. Both, Rutgers Cooperative Extension Specialist – Presented by Raymond Samulis
- ❖ Fire Prevention/Safety on the Farm – Patrick Bigoss, Burlington County Fire School
- ❖ West Nile Virus/Bio-Security – Dr. Hamner, NJ Department of Agriculture
- ❖ Protecting Your Farm and Family with Smoke Detectors – Brian Richardson, Assistant Fire Marshal for Burlington County

This program is free of charge and open to all. Dinner and Dessert will be provided for all who attend. Demonstration materials (fire extinguishers and smoke detectors) will be available to take home for your personal use. Call Donna at RCE of Burlington County at 609-265-5050 to register by Wednesday, September 8, 2004. ❑

# New Jersey's 2005 Deer Fence Program Eligibility Criteria

The fence is anticipated to be high tensile-woven wire 6 1/2 feet in height with two strands of high tensile wire to be placed above the mesh at one-foot intervals. Under this program, up to 30% of the line posts will also be provided. The life expectancy of the fencing is 20 years.

Fence will be bid between galvanized mesh, high tensile tight-lock mesh and high tensile hinge block.

Each eligible applicant shall receive *up to* 5,000 linear feet of fencing and *up to* 30% of the corresponding line posts.

## Eligibility Criteria

To be eligible to receive deer fencing and posts under this collaborative effort, an applicant must satisfy the following criteria:

- The applicant must be a New Jersey farmer having documented proof of a minimum of $40,000 in sales of agricultural commodities produced by the applicant on a New Jersey farm OR a New Jersey certified organic farmer having documented proof of a minimum of $20,000 in sales of agricultural commodities produced by the applicant on a New Jersey farm.
- The applicant must be the owner of the land upon which the fencing will be erected or the applicant must rent preserved farmland or farmland that is enrolled in an Eight-Year Farmland Preservation Program.
- The applicant must have a federal identification number.
- The applicant must attend at least one seminar sponsored by Rutgers Cooperative Extension on the proper installation procedures for deer fencing. Proof of attendance must be provided to the Department.
- The fencing installation procedures used must adhere to standards that ensure the fencing provides effective exclusion of deer incursions. Fact sheets such as Rutgers Cooperative Extension fact sheet #FS889 "High Tensile Woven Wire Fences for Reducing Wildlife Damage" as well as manufacturers specifications for installation provide information regarding proper installation procedures.
- Fencing must be installed within one year from the date of issue or returned to the NJDA for redistribution. Any fencing that is returned will be assessed for damage. Failure to install the deer fence within the one-year agreed time frame or failure to install the deer fence according to installation standards that ensure the fencing provides effective exclusion of deer incursions shall prohibit the applicant from receiving deer fencing under any future NJDA or NJDEP programs. In addition, the applicant will be required to reimburse the NJDA for any fencing that cannot be redistributed to other farmers.
- If additional fencing is required, the farmer will be added to the NJDA list for future consideration if additional funding is secured.

*See Deer Fencing on page 7*

# Weekly Weather Summary

*Keith Arnesen, Ph.D., Agricultural Meteorologist*

Temperatures averaged above normal, averaging 72 degrees north, 73 degrees central and 73 degrees south. Extremes were 91 degrees at Freehold and Toms River on the 29th, and 52 degrees at Pomona on the 24th. Weekly rainfall averaged 0.00 inches north, 0.00 inches central, and 0.01 inches south. The heaviest 24 hour total reported was 0.05 inches at Downstown on the 26th to 27th. Estimated soil moisture, in percent of field capacity, this past week averaged 82 percent north, 67 percent central and 47 percent south. Four inch soil temperatures averaged 71 degrees north, 71 degrees central and 72 degrees south.

**Weather Summary for the Week Ending 8 am Monday 8/30/ 4**

| | RAINFALL | | | TEMPERATURE | | | | GDD BASE50 | | MON |
|---|---|---|---|---|---|---|---|---|---|---|
| WEATHER STATIONS | WEEK | TOTAL | DEP | MX | MN | AVG | DEP | TOT | DEP | %FC |
| BELVIDERE BRIDGE | .00 | 26.17 | 1.93 | 90 | 54 | 73. | 6 | 2439 | 267 | 68 |
| CANOE BROOK | missing | | | | | | | | | |
| CHARLOTTEBURG | .00 | 27.04 | 1.38 | 90 | 53 | 73. | 8 | 2300 | 564 | 72 |
| FLEMINGTON | .00 | 32.08 | 7.62 | 90 | 54 | 73. | 4 | 2502 | 257 | 71 |
| LONG VALLEY | missing | | | | | | | | | |
| NEWTON | .00 | 25.77 | 2.05 | 90 | 53 | 71. | 5 | 2306 | 323 | 77 |
| FREEHOLD | .00 | 23.50 | -.37 | 91 | 56 | 73. | 3 | 2670 | 281 | 57 |
| LONG BRANCH | .00 | 24.26 | .05 | 88 | 58 | 72. | 2 | 2477 | 165 | 57 |
| NEW BRUNSWICK | .00 | 27.00 | 2.90 | 90 | 57 | 73. | 1 | 2651 | 160 | 68 |
| TOMS RIVER | .00 | 27.65 | 2.93 | 91 | 54 | 72. | 2 | 2736 | 440 | 57 |
| TRENTON | .00 | 24.63 | 1.76 | 89 | 54 | 73. | 2 | 2721 | 127 | 42 |
| CAPE MAY COURT HOUSE | .00 | 20.47 | -.89 | 86 | 56 | 71. | -1 | 2613 | 331 | 30 |
| DOWNSTOWN | .05 | 21.16 | -1.44 | 89 | 53 | 72. | 1 | 2806 | 207 | 35 |
| GLASSBORO | .00 | 36.55 | 13.00 | 89 | 61 | 75. | 4 | 2973 | 396 | 53 |
| HAMMONTON | .01 | 23.73 | .18 | 89 | 53 | 72. | 1 | 2905 | 324 | 41 |
| POMONA | .00 | 21.69 | -.11 | 89 | 52 | 72. | 2 | 2770 | 363 | 30 |
| SEABROOK | .00 | 25.75 | 4.16 | 88 | 62 | 76. | 5 | 3082 | 468 | 35 |
| SOUTH HARRISION | .00 | 27.24 | 4.01 | 88 | 54 | 73 | na | 2927 | na | na |

WES KLINE — GDD BASE 40 PINEY HOLLOW
Last Week 240 (Ending 8/23/04)
This Week 228 (Ending 8/30/04)

*DEER FENCING FROM PAGE 6*

## Ineligible Applicants/Projects

- Nonprofit organizations
- Fencing erected to contain equine, livestock, poultry or other animals

## Distribution of Fence

Fence distribution will take place at the Rutgers Snyder Research & Extension Farm (Hunterdon County) and at the Rutgers Agricultural Research & Extension Center (Cumberland County). Forklifts will be available onsite to load the fencing material. Distribution dates will be determined.

## Application Deadline

Applications must be postmarked by NOVEMBER 30, 2004 and returned to:

New Jersey Department of Agriculture
Division of Agricultural & Natural Resources
PO Box 330
Trenton, New Jersey 08625-0330
or by facsimile at (609) 633-7229

## Additional Information

Contact the New Jersey Department of Agriculture at (609) 292-5532. ❑

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