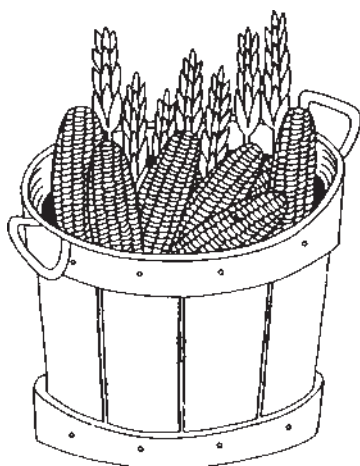


PLANT & PEST ADVISORY

VEGETABLE CROPS EDITION \$1.50

SEPTEMBER 3, 2003



IPM Update

Kristian Holmstrom, Program Associate in Vegetable IPM

Sweet Corn

European corn borer (ECB) adult activity is still moderate to high in many areas of New Jersey, with highest catches near the Salem and Cumberland County border, and the Hunterdon and Warren County border (see ECB map). The end of the second flight is not typically as abrupt as with the first flight. Often there is a partial third flight in the southern counties as well, so ECB will remain a threat to crops for some time. These adults will lay eggs on whorl through silking stage corn. Check fields weekly and consider treating if greater than 12% of plants are infested with ECB alone or in combination with fall armyworm (FAW). After the full tassel treatment, follow up with regular insecticide applications on silks as dictated by the local corn earworm (CEW) catches. The highest average nightly ECB blacklight trap catches are:

| | | | | | |
|--------------|----|--------------|---|---------------|---|
| Jones Island | 20 | Phillipsburg | 4 | Seeley Lake | 3 |
| Little York | 8 | Blairstown | 3 | Fishing Creek | 2 |
| Shirley | 7 | Hackettstown | 3 | Flanders | 2 |
| Elmer | 6 | Pole Tavern | 3 | Milford | 2 |

Corn earworm (CEW) adult activity has increased somewhat over the past week. Particularly high catches have occurred since the weekend along the Delaware Bay shore (see CEW map). Southerly winds over the weekend may have contributed to this increase. The current pattern of northeast winds could cause catches to decline again. We will continue to monitor populations and weather conditions throughout the region to try to provide advance warning of CEW populations. Silk spray schedules are critical to prevent significant losses to CEW. Black areas on the map (red on the web) represent populations requiring a 2-3 day silk spray schedule. Cross-hatched areas on the map (green on the web) represent a population requiring a 3-4 day silk spray schedule, and dotted areas on the map (blue on the web version) represent a 5-6 day spray schedule. The highest average nightly CEW blacklight trap catches are:

| | | | | | |
|---------------|----|---------------|----|-------------|---|
| Fishing Creek | 37 | Cohansey | 11 | Elmer | 7 |
| Bayside | 20 | East Vineland | 11 | Hammonton | 7 |
| Cedarville | 20 | Seeley Lake | 11 | Mannington | 7 |
| Jones Island | 17 | Eldora | 10 | Pole Tavern | 7 |

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General Sweet Corn Spray Schedule

| | | |
|---------------|---------|--------|
| Silking Corn: | North | 4 days |
| | Central | 3 days |
| | South | 3 days |

Fall armyworm (FAW) infestations continue in whorl and pre-tassel stage sweet corn plantings throughout New Jersey, with re-infestations common following successful treatments. Look for feeding that initially looks like ECB damage, but rapidly progresses to ragged holes in the leaves with large amounts of droppings in the whorl. FAW can be tough to control because penetration by the insecticide through the layer of droppings is sometimes difficult. Scout fields weekly and consider treating when 12% or more plants are infested with FAW alone or in combination with ECB. Increased spray volume and pressure often assist in control of FAW.

Corn leaf aphids are still common in pre-tassel stage sweet corn. These blue-gray aphids can become a nuisance to consumers as they move down the plant and get between husk layers on the ears. Their populations may be enhanced by repeated use of pyrethroid insecticides in the silk spray program. It is wise to make at least one application of methomyl or other non-pyrethroid insecticide in the silk spray program to minimize ear infestations of corn leaf aphid.

Corn leaf rust continues to be a threat as rain, cooler temperatures and heavier dew events all favor the development of this disease. While scouting, look for pustules on the oldest leaves of plants. Pustules rupture, emitting reddish, powdery spores. There is a wide range of host resistance to this disease, but some varieties can be adversely affected. Check the seed source for resistance in your varieties. If the variety is susceptible to leaf rust, pustules will increase on the plant until moisture stress causes a reduction in ear size. The potential for loss is greatest if the infection begins when susceptible plants are in the whorl or seedling stages. Later infections may not reduce yield, but can cause pustules on the husks, which may make ears less marketable. Consider using chlorothalonil or mancozeb (7 day schedule), or Tilt (7-14 day schedule) if rust is found in the seedling or whorl stages.

Pumpkins

Powdery mildew control requires a regular fungicide program at this time. Failure to control this disease can result in smaller fruit size, pale fruit color, and weak handles. The recommended fungicide program is for chlorothalonil +Nova to be alternated with a strobilurin type fungicide at 7-10 day intervals. It is important to remember that Quadris (a strobilurin type) is effective on PM, but is highly phytotoxic to some apple types. For this reason, Flint is a good substitute if apples are to be sprayed with the same apparatus used for spraying pumpkins and winter squash.

Downy mildew (DM) is widespread in the northern counties, and most likely is present throughout the state. This disease, favored by moist conditions, infects all cucurbit crops. Recent rains will increase sporulation in this disease. Heavy sporulation when leaves are wet leads to rapidly spreading infections. Protectant fungicides are necessary to stop spore penetration on uninfected foliage. Fungicides with eradicant properties like Ridomil or Acrobat can help combat existing infections. Check fields weekly for the presence of yellow blotches becoming necrotic on the upper surface of leaves with dark, felt-like sporulation on the lower surface. The sporulation frequently occurs along the leaf veins. If this disease is found in any field, immediately treat all cucurbit crops with fungicides on a 7-day protectant schedule. Consult the *2003 Commercial Vegetable Production Recommendations* for spray materials.

Tomatoes

Maintain regular fungicide applications for **alternaria**, **anthracnose**, and **septoria** control on tomatoes. Good disease management to preserve foliar cover for fruit is critical for good fruit quality.

Continue to monitor for **aphids**. Often, the first sign of significant aphid populations is cast skins on leaves below the colonies. If this condition exists in the field, and fruit are sizing up, consider treating. Aphid populations that are present prior to fruit enlargement are often controlled adequately by natural predators and parasites.

Be sure to check field edges for the presence of **two-spotted spider mites (TSSM)**. TSSM will enter tomato plantings from field edges as surrounding vegetation dries up or is disrupted. Look for the whitish pin-spots (stipple) on the upper surface of leaves. Mites are often found on the lower surface. Spot treat for TSSM if possible, to prevent a greater infestation in the field.

Tomato fruitworm (corn earworm) adult activity is very heavy now along the Delaware Bay shore. Tomato plantings in this area are at risk for infestation by fruitworm. Consider weekly treatments to prevent fruit injury until the population subsides. Fruitworm larvae often bore into the shoulders of tomatoes near the outer canopy of the plants, and are less likely to feed on foliage first. **Yellow striped armyworm** has been active in tomato fields around the state. This caterpillar is dark green when small, and darkens to black with prominent yellow stripes on each side as it grows. Small larvae feed on foliage before infesting fruit. Fruit injury is similar to that caused by fruitworm. Look for signs of foliar feeding and holes in the fruit near the calyx. Often fruit nearest the outer canopy are affected first. If fruit feeding begins to increase, consider treating for this pest. Recommendations for armyworm control may be found in the *2003 Commercial Vegetable Production Recommendations*.

SEE TOMATOES ON PAGE 3

TOMATOES FROM PAGE 2

This is the time of the season when **stinkbug** injury generally begins to increase significantly in tomato plantings. Stinkbug pressure in tomatoes tends to be heavier during dry seasons, and with this wet season, stinkbug injury has been minimal in scouted fields. Still, some adults in the *Euschistus* genus (larger, brown stinkbugs) have been captured recently in pheromone traps and found in corn tassels throughout the state. The adults will move into tomato plantings when surrounding host vegetation is too dry or is mowed. Adults and emerging nymphs will feed on green and ripening fruit, causing the large, yellow “cloudy-spot” injury. If this feeding is found to be increasing in samples, consider protectant sprays for stinkbug. The **marmorated stinkbug** has recently become active in eastern Pennsylvania, where they were observed feeding on beans, tomatoes and peaches as well as non-food crops (see today’s article by Drs. Hamilton and Shearer). This stinkbug is similar in appearance to our brown stinkbugs, but is somewhat larger. Adults were active in northwestern New Jersey last season from late August into October. Damage and control should be similar to that for the brown stinkbugs. Consult the *2003 Commercial Vegetable Production Recommendations* for spray materials.

Bacterial infections have worsened in several northern New Jersey tomato plantings following numerous heavy rains. These diseases are characterized by marginal necrosis, or small very dark spots on infected leaves. If the disease is **bacterial canker**, there may be stem lesions and the “birds-eye spot” or a white rimmed blister on the surface of affected fruit. **Bacterial spot and speck** cause dark lesions on the surface of infected fruit. As with all bacterial infections, avoid working in fields when the plants are wet. Surface sterilize pruning and tying tools between rows, and always work in infected plantings last. Copper with mancozeb may help minimize impact, although copper sprays can cause spotting on fruit. Actigard at the lowest recommended rate may also help. Actigard should be used weekly for a total of 6 applications.

Snap beans

ECB is a significant threat to snap beans in parts of New Jersey. Areas shaded in black on the ECB map (red on the web) represent adult populations capable of considerable damage to developing pods. In those areas, beans should be treated in the bloom and pin stages. Weekly protectant sprays should continue on developing pods as long as local ECB adult catches remain above 5 per night. Continue to monitor for **potato leaf hopper (PLH)** in beans. This pest is capable of severely stunting beans, and reducing yield. As populations build up in fields, and PLH reproduces in the crop, chlorosis and deformation of leaves may become apparent. When these symptoms of infestation appear, damage to the crop has already occurred. Insecticide applications directed at ECB often control PLH as well. For this reason, it is important to check regularly for PLH. Consider treating if

adults and nymphs exceed 100 per 20 sweeps prior to bloom, or 250 per 20 sweeps at bloom, or 250+ during pod development. If a sweep net is not available, consider treating if nymphs are found in random samples covering all areas of the field.

Cole crops

Imported cabbageworm (ICW), **diamondback moth larvae (DBM)**, and **cabbage looper (CL)** are all active now on cole crops. In addition, **flea beetle** continues to be a problem on young plantings. Check plantings at least once a week for the presence of the above pests. Consider treating if greater than 20% of plants are infested prior to head formation or if greater than 5% are infested when heads are present. For collards, kale, mustard and other leafy cole crops, consider treating when 10% or more plants are infested with any larvae. Flea beetle infestations should be treated when the pest is present on more than half the plants in the sample and damage is occurring.

Alternaria is a threat to maturing cole crops now, and will remain so for the rest of the season. Look for necrotic lesions on older tissue. The lesions often have concentric rings within the borders. At the first sign of disease, begin a 7-10 day fungicide program. Consult the *2003 Commercial Vegetable Production Recommendations* for effective spray materials.

Peppers

In areas where **ECB** activity is increasing, consider a weekly protectant insecticide schedule to prevent fruit injury. On the ECB map, cross-hatched and dark portions (shaded green and red on the web version) represent areas where ECB activity is a threat to pepper fruit. As eggs hatch, larvae will tunnel into the fruit around the cap. As the larvae feed in the fruit, bacteria enter and can result in a high incidence of **soft rot**. When scouting, look at two leaves and fruit on five consecutive plants in ten random locations throughout the planting. Consider treating for ECB if more than one eggmass is found in the field. Consider preventive treatments if fruit are present and local trap catches are greater than one moth per night on average. Consult the *2003 Commercial Vegetable Production Recommendations* for spray materials.

TSSM is a threat to pepper plantings at this time. Consider spot treating if TSSM appears in the planting. Early detection and spot treatments can help prevent a difficult infestation later.

High levels of **FAW** feeding in sweet corn are an indication the population is high enough to cause problems for peppers as well. When scouting, determine the type of caterpillars present in fruit (if any). FAW is generally brown in color, with an inverted “Y” on its head capsule. ECB is a pale caterpillar with a dark brown, flattened head. It is important to distinguish between the two, because Orthene is not as effective on FAW as it is on ECB. Consult the *2003 Commercial*

SEE PEPPERS ON PAGE 4

Vegetable Disease Update

Edited by Joe Ingerson-Mahar, Vegetable IPM Coordinator

Report from Pete Probasco, Salem County Agricultural Agent

I am seeing **stem end rot** of potatoes this year particularly with the russet potatoes. This disease is caused by *Fusarium solani*. The stem end of the tuber is affected due to the high soil moisture this year. There are no available control measures now.

Report from Bill Tietjen, Warren County Agricultural Agent

Research plots of tomatoes at the Snyder Research and Extension Farm have **bacterial speck** on both foliage and fruit despite a timely spray schedule to date. A trace of **powdery mildew** has been found on older leaves.

Bacterial canker continues to infect tomatoes in northern New Jersey.

Phytophthora blight of peppers has affected fields with low spots in northern New Jersey.

Report from Kris Holmstrom, Northern New Jersey IPM Program Associate

Downy mildew infections in Northern New Jersey pumpkins are on the increase with recent wet weather. Protectant fungicides protect foliage from further infection but are not preventing sporulation. Expect significant sporulation with prolonged wetness periods. Consider adding a fungicide with specific activity against the fungus, i.e. Acrobat or a Ridomil product. Either of these should be added to the regular protectant material. □

SEE PEPPERS FROM PAGE 3

Vegetable Production Recommendations for spray materials effective against both pests.

Bacterial leaf spot (BLS) is present in some areas. This disease is characterized by necrotic spots and margins on leaves. When infected, plants often drop large numbers of leaves. Fixed copper combined with maneb at 7-10 day intervals may be useful in minimizing spread in the field. Consult the *2003 Commercial Vegetable Production Recommendations* for formulations and rates. High fertility levels (to increase foliar fruit cover) may help prevent scalding of fruit. Avoid working in wet fields.

SEE ECB AND CEW MAPS ON PAGE 6.

Pest Notes

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

✓ **General:** A new label has been approved for Guthion. In the continued phase-out of guthion (azinphos methyl), the federal EPA has approved a new label for this product effective immediately. The new label has deleted the uses on beans, most cole crops (broccoli, cabbage, cauliflower), celery, cucurbits (cukes, melons), eggplant, onions, peppers, spinach, and tomatoes. Guthion still remains on the label for Brussels sprouts, parsley and potatoes. Growers with this new label can use Guthion on only those crops listed on this label. Older stocks of Guthion, in original packaging, can be used according to the label until stocks are depleted.

✓ **Corn, sweet:** **Corn earworm** adult activity continues to decrease, and will almost cease during the current cool, wet weather (especially during the evening hours when moths are normally active). Virginia reports that activity has decreased, but several areas in Virginia report "escapes" of corn earworm after pyrethroid sprays were applied. These reported "escapes" could be indications of either spray failure (poor application, wash-off, degradation) or insect resistance to pyrethroids. Several assays were conducted on moths captured in 10 different shore locations, but no resistance was detected. That's good news for New Jersey growers, because those moths eventually make their way north to our area, and would bring the resistance with them.

For late sweet corn near harvest, closely monitor corn earworm activity in local blacklight or pheromone traps to determine moth activity for specific areas. Consult the IPM Update in the Plant & Pest Advisory for recommendations on the most effective management tactics for this pest.

✓ **Pepper:** **European corn borer** moth activity was still moderate last week, but the current cool, wet conditions (especially during the evening hours) are not favorable to corn borer moth activity. Normally, the population level of the moths is decreasing at this time of the year, and the cool weather will certainly enhance the decline of moth activity. Weather predictions are for this weather to last until the weekend, thus there is a good probability that European corn borer activity will essentially end for this year. It is still wise to keep track of moth activity using the IPM Update posted in the Plant & Pest Advisory for specific localities.

✓ **Tomato:** The current cool, wet weather conditions will likely keep insect pest activity, and thus damage to fruit, to a low level. **Corn earworm (tomato fruitworm)** adult activity is low, as well as **spider mite** and **stinkbug** activity. If the current weather conditions hold thru the weekend, it is likely that spider mites will not rebound to become a problem for the remainder of the year. Brown stinkbugs have recently been caught in stinkbug traps, and nymphs have been found in low numbers on tomatoes. As the fields dry, and warm weather returns this weekend, monitor for stinkbug activity and damage, especially tomato plantings near or surrounded by field crops. Stinkbug activity may possibly last through early October if weather conditions are favorable. □

Damaging Exotic Stinkbug Enters New Jersey

George Hamilton, Ph.D., Specialist in Pest Management and
Peter Shearer, Ph.D., Specialist in Tree Fruit Entomology

The brown marmorated stinkbug, *Halyomorpha halys* (Stål) was first detected in Allentown, PA in 1996. Since that time it has spread throughout Lehigh, Northampton, Monroe and Pike Counties in Pennsylvania and occurs in large numbers wherever it is found. It was first detected here in New Jersey from a blacklight trap located in Milford (Hunderton County) in 1999. In 2002 it was again collected from a blacklight trap, in Little York and Phillipsburg and from plants in Stewartsville (Warren County). In addition, a homeowner from south-eastern Morris County brought an unknown stinkbug into the Morris County Cooperative Extension Office for identification. It was later confirmed as *Halyomorpha halys*. These reports are evidence that the insect is firmly entrenched in New Jersey and spreading.

This stinkbug has a large host range that includes peaches, plums, pears, raspberries and many ornamental plants including maple trees. This insect could become a serious agricultural pest. *Halyomorpha halys* is also a nuisance pest. It exhibits behavior similar to the **Asian ladybird beetle** and **boxelder bug**. Every fall, adults leave their host plants looking for hibernation sites. Unfortunately our homes provide a perfect place to spend the winter. This behavior can result in hundreds of adults aggregating on the sides of houses in late September and early October.

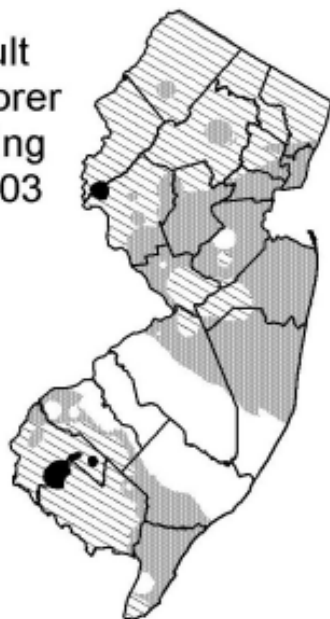
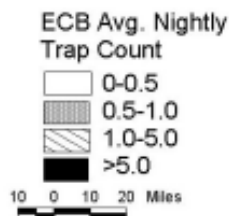
Halyomorpha halys adults can be distinguished from other stinkbugs by their large size (17 mm) and brown coloration (see photo). Adults also have characteristic whitish antennal segments, dark bands on the overlapping part of the rear wings and patches of coppery or bluish metallic-colored punctures on the head and pronotum (shield just behind the head). Juvenile *H. halys* are similar to adults but have very pronounced light and dark banding on the legs and antennae and reddish eyes (see photo).

Should you come across this insect or similar looking stinkbug please contact your local county cooperative extension office or the Rutgers Cooperatives Extension pest management office by phone (732-932-9801) or email (Hamilton@aesop.rutgers.edu). □

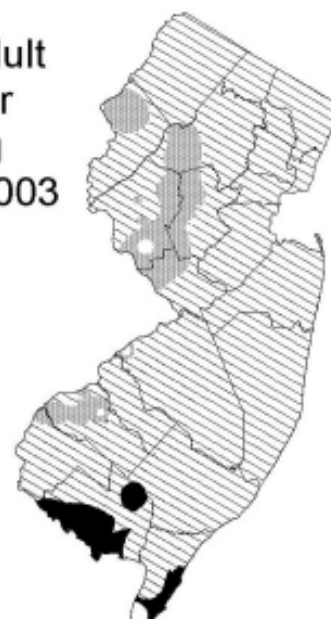
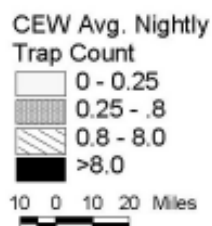


Brown marmorated stinkbug

Distribution of Adult European Corn Borer for the Week Ending September 03, 2003



Distribution of Adult Corn Earworm for the Week Ending September 03, 2003



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
Rutgers Cooperative Extension & Center for Remote Sensing

Weekly Weather Summary

Keith Arnesen, Ph.D., Agricultural Meteorologist

Temperatures averaged much above normal. Extremes were 94 degrees at Pomona on the 1st, and 45 degrees at Charlotteburg on the 31st. Weekly rainfall averaged 0.46 inches north, 0.70 inches central, and 0.86 inches south. The heaviest 24 hour total reported was 1.66 inches at Cape May Courthouse on the 30th to 31st. Estimated soil moisture, in percent of field capacity, this past week averaged 61 percent north, 55 percent central and 41 percent south. Four inch soil temperatures averaged 70 degrees north, 73 degrees central and 74 degrees south.

Weather Summary for the Week Ending 8 am Monday 9/ 1/ 3

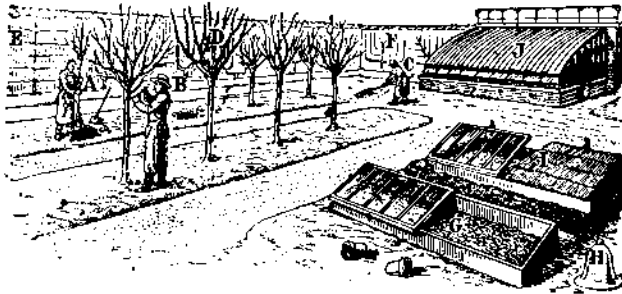
| WEATHER STATIONS | RAINFALL | | | TEMPERATURE | | | | GDD BASE50 | | MON %FC |
|--------------------------------------|-----------|-------|------------------|-------------|-----|-----------------|-----|------------|------|---------|
| | WEEK | TOTAL | DEP | MX | MN | AVG | DEP | TOT | DEP | |
| BELVIDERE BRIDGE | .65 | 35.68 | 11.14 | 88 | 53 | 71. | 4 | 2402 | 196 | 65 |
| CANOE BROOK | .30 | 32.59 | 6.88 | 88 | 57 | 73. | 5 | 2499 | 275 | 63 |
| CHARLOTTEBURG | .32 | 34.44 | 8.47 | 84 | 45 | 67. | 2 | 1950 | 184 | 59 |
| FLEMINGTON | .18 | 31.47 | 6.73 | 85 | 54 | 71. | 3 | 2351 | 70 | 61 |
| LONG VALLEY | .56 | 29.92 | 3.14 | 80 | 56 | 69. | 4 | 1873 | -95 | 66 |
| NEWTON | .74 | 31.69 | 7.69 | 85 | 51 | 69. | 4 | 2176 | 163 | 68 |
| FREEHOLD | .64 | 26.63 | 2.49 | 90 | 53 | 73. | 4 | 2539 | 111 | 68 |
| LONG BRANCH | .50 | 28.64 | 4.15 | 88 | 62 | 74. | 5 | 2361 | 10 | 46 |
| NEW BRUNSWICK | .17 | 29.71 | 5.32 | 89 | 58 | 73. | 1 | 2503 | -32 | 63 |
| TOMS RIVER | 1.56 | 28.81 | 3.80 | 89 | 57 | 74. | 4 | 2518 | 182 | 94 |
| TRENTON | .61 | 24.59 | 1.46 | 87 | 57 | 73. | 2 | 2476 | -160 | 53 |
| CAPE MAY COURT HOUSE | 1.90 | 24.38 | 2.77 | 90 | 55 | 75. | 3 | 2422 | 96 | 90 |
| DOWNSTOWN | .98 | 25.66 | 2.80 | 92 | 57 | 75. | 4 | 2578 | -63 | 64 |
| GLASSBORO | 1.09 | 26.72 | 2.90 | 90 | 63 | 76. | 5 | 2725 | 106 | 68 |
| HAMMONTON | .73 | 22.62 | -1.20 | 93 | 59 | 76. | 5 | 2692 | 69 | 47 |
| POMONA | .36 | 22.31 | .32 | 94 | 55 | 75. | 6 | 2543 | 98 | 37 |
| SEABROOK | .11 | 27.64 | 5.80 | 91 | 64 | 77. | 6 | 2782 | 126 | 39 |
| ATLANTIC CITY MARINA | missing | | | | | | | | | |
| SOUTH HARRISON | .71 | 24.03 | .55 | 90 | 63 | 76 | NA | 2700 | NA | NA |
| WES KLINE — GDD BASE 40 PINEY HOLLOW | Last Week | 237 | (Ending 8/25/03) | This Week | 248 | (Ending 9/1/03) | | | | |

Sustainable Horticulture Research Twilight Meeting

September 10, 2003

6:00-9:00 pm rain or shine

Rutgers Snyder Research and Extension Farm
140 Locust Grove Road, Pittstown, NJ



**Sponsored by Rutgers Cooperative Extension
In cooperation with the Northeast Organic
Farming Association of NJ**

Participate in informal tours and discussions of the following research projects led by Rutgers Cooperative Extension/NJAES Agricultural Agents and Specialists:

Vegetable ♦ Specialty & Heirloom tomato cultivar showcase ♦ Organic insect control trial for sweet corn ♦ Ornamental kale and cabbage cultivar trial ♦ Kaolin Clay Formulation Research on Vegetables and Grapes for insect control ♦ Broccoli cultivar trial ♦ Organic methods and cultivar trials for edamame & tofu soybeans, popcorn ♦ Organic insect control for white potatoes ♦ Calabaza (tropical pumpkin) variety & disease resistance trial

Fruit ♦ **Fruit Variety Showcase:** over 60 selections of apple and peach grown at the Rutgers Snyder Farm will be on display. Apple cultivars from the NE183 cultivar trial harvested to date will be on hand. Peach cultivars from Dr. Joe Goffreda, NJAES/Rutgers program will be observed including some of his new Pentu (donut peach) selections. Also selections from the Fruit Acres and Jim Friday Programs in Michigan. ♦ **Super Slender Spindle:** also featured will be a tour of a High Density Apple Planting trial. Over 15 cultivars/rootstock combinations were established last spring at a spacing of 2' x 10'. Many of these selections have high quality fruit on them to observe.

Precision Agricultural Instrumentation

Core Training ♦ Personnel Protective Equipment for Pesticide Application and NJ Pesticide ♦ Certification Update

NJ pesticide recertification credits will be awarded.

For more info contact: Win Cowgill at Rutgers Cooperative Extension of Hunterdon County at (908) 788-1339 or cowgill@aesop.rutgers.edu. □

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