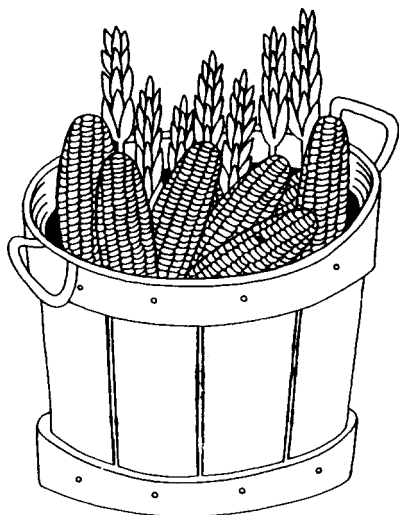


PLANT & PEST ADVISORY

VEGETABLE CROPS EDITION \$1.50

JULY 26, 2000



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Maintaining Sweet Corn Quality

Raymond J. Samulis, Burlington County Agricultural Agent

By scanning a supermarket produce section it is obvious that people's food buying habits are changing rapidly. Reports tell us that in 1985 displays contained 67 items, while in 1995, that number increased to 312. It is probably a safe assumption that that number is even higher today. What does all this mean? Consumers now have more choices than ever to spend their food dollars on. Since consumers are spending the same or less than before for food, convincing consumers to buy our crops is more important than ever.

A few years ago, I did a survey with 2,000 plus consumers regarding their reasons for buying or not buying sweet corn. To the dismay of many, price was only the 5th most important factor in choosing to buy sweet corn. Consumers overwhelmingly told me that sweetness and freshness were the two things they looked for most. All these factors still lead to the same conclusion. Our sweet corn must have freshness, quality, and sweetness.

Consumers are looking for a milky juice when they test kernels. Standard sugary (Su) sweet corn contains 70-75% water, while Sh₂ contains 77-78% water. This makes judging maturity by kernel texture a little more difficult. Most growers still use the days after silking to determine maturity. In some cases, heat units are used to determine maturity, particularly in processing crops. Many growers are concerned about making kernels full all the way out the tip. In some cases this can result in slightly over-mature sweet corn. The corn may be past its peak sweetness if they are Su types. Sh₂, which are held longer, usually get sweeter, however, this is at the expense of tenderness.

We have known for a long time that many sweet corn varieties have a rapid conversion of sugar to starch if they are not handled properly after harvest. While new sweet corn types like Se and Sh₂ tend to diminish the problem, the basic principals for cooling remain. Sweet corn is cooled for 1) maintaining sugar content, 2) reducing enzyme activity, and 3) to control decay.

Sweet corn gives off a lot of heat through respiration. The chart below from the University of California at Davis shows how to calculate refrigeration requirements for sweet corn.

SEE SWEET CORN ON PAGE 2

Rate of Respiration	
°F	ml CO ₂ /kg. per hr.
32	30 – 51
41	48 – 83
50	104 – 120
59	151 – 175
68	268 – 311
77	282 – 435

To figure your refrigeration needs, multiply the corresponding ml CO₂/kg. per hr. rate that corresponds with the temperature of your corn and multiply by 440. For example, if your corn is already at 41° use 48 x 440 = 18,040 BTU/ton/day. It's easy to see that at warmer ear temperatures, the refrigerating needs go up greatly. Another way to calculate hydro-cooler needs is to consider the fact that the half time cooling period is 28 minutes - what this means is that it takes 28 minutes to lower the temperature of corn ears halfway between 32° and whatever temperature the ears are.

The time of day sweet corn is picked also determines holding quality. One study shows that sweet corn picked at 7a.m., then hydro-cooled, would reach a temperature of 37° in 18 hours. By contrast, sweet corn picked at 2 p.m., then hydro-cooled, would reach a temperature of 93° in 18 hours.

It is a challenge to persuade consumer interests on the merits of sugary sweet corn. Proper hydro cooling, storage, and harvesting can all go a long way in making customers want more fresh, sweet Jersey corn. □

Scouting Tips: Using Pheromone Traps for Monitoring BAW and FAW Populations in Vegetables

Sally Walker and Kristian Holmstrom, Program Associates in Vegetable IPM

Now is the time to place pheromone traps out in your fields to track the population levels of two of our important migratory insect pests, the beet armyworm (BAW) and the fall armyworm (FAW). Both of these pests develop on crops in the southern states and travel into our state beginning in July. At times, heavy influxes of these pests arrive on storm systems of southern origin late in the summer. Pheromone traps are used to monitor the adult stage (moths) of these two pests. The traps provide an early warning as to when adult moths are active so that field monitoring for the larvae and/or damage can be intensified or preventative measures to protect the crop can be initiated. The traps provide information about the changes in the adult activity levels, and are especially useful for detecting when large influxes of the migratory moths move into an area.

Unlike blacklight traps, which use light to attract night-flying insects to it, pheromone traps use a pest-specific chemical as the means of attraction. For BAW and FAW, the synthesized chemical mimics the sex pheromone, the substance that females emit to attract males for mating. The chemical is impregnated on a rubber or plastic cap (the 'lure') that is placed in the trap. Traps baited with a particular insect sex pheromone should attract only the males of that species. The BAW lures only attract male BAW moths, so pest identification skills are not needed. Due to similar pheromone chemistry the FAW lure does attract another species that looks very similar, so pest identification knowledge is necessary to get an accurate FAW count from these traps.

The lures should be stored in the refrigerator or freezer until ready to use, and should be kept fairly cool until placed in the trap (avoid leaving lures in a hot vehicle). The BAW and FAW traps should have fresh lures every 3 to 4 weeks during the trapping period. Remove the old lure and throw it out away from the field so as to not interfere with the trap catch. It is important to keep the lures from the two species separate, and to use the same trap for the same insect from year to year, to prevent cross-contamination that may interfere with trap captures.

There are different types of pheromone trap designs available that are effective for different pests. The trap that we recommend for BAW and FAW is the green Universal Trap (unitrap). The unitrap is a convenient, inexpensive, and reusable plastic bucket trap. The lure is placed in the basket at the top of the trap. An insecticidal strip is placed in the bucket of the trap so that the trapped moths will be ready to be easily counted. The trap is attached to a stake and placed within or next to the crop with the lure at canopy level. One trap per field per 10 acres should be adequate for monitoring purposes. If both BAW and FAW are being monitored in the same field, the traps should be placed at least 50 feet apart. Traps should be checked at least once a week when populations are low and more

SEE TRAPS ON PAGE 3

frequently (at least twice a week) as populations increase. Convert the total number of moths trapped to a number per night so that you can easily compare the changes in moth captures. Traps and lures may be purchased from companies that sell pest management supplies, such as Gempler's and Great Lakes IPM, etc.

Crop-Specific Recommendations

While some threshold guidelines exist, the best way to utilize these traps is to start monitoring the levels of moth activity in susceptible crops on your farm and compare them to the levels of larval activity or crop damage in the field. Since population levels fluctuate from year to year, the experience of multiple years of trapping is helpful so that you can identify when particularly high or low populations are occurring. These traps do not replace a good scouting program but are a great supplement. Here are some crop-specific guidelines to follow when using BAW and FAW pheromone traps in the crops listed below.

Peppers, Tomatoes

Place both BAW and FAW traps in the field at canopy level, and at least 50 feet apart. If BAW moth counts increase to levels above approximately 10 per night, intensify scouting for live larvae and evidence of plant feeding in the field and treat if an infestation is occurring. If trap counts remain above 10-20 per night, continue to check fields at least twice a week to determine if new infestations are occurring. Since FAW infestations cannot be detected until the fruit are infested or rotting, use the traps to indicate when FAW levels are high (greater than 20 per night) and make sure that fruit cover sprays have materials that will control also FAW.

Fall Spinach, Lettuce, Beets, Greens

Place BAW traps at the ground or canopy level in the field or along field edge. If BAW moth counts in the traps exceed 10 per night intensify scouting in the field to determine if larval infestations are occurring. If BAW pheromone trap counts remain high (greater than 20 per night), monitor fields more frequently (at least twice a week) to determine if new infestations are occurring.

Sweet Corn

Place FAW traps at canopy level in the planting, making sure to adjust the traps as the crop height changes. For plantings prior to silk, FAW infestations can be determined in the field by checking 50 plants and treating if the number of infested plants exceeds 12%. For silking plantings, pheromone traps should be placed at the height of the silks. While FAW in silking corn is usually controlled by the corn earworm spray schedule, the FAW pheromone traps can indicate when particularly high populations (greater than 20 per night) are present so that appropriate materials for this pest can be used.

Summary

Pheromone traps can be a useful tool in your pest management program, especially for the migratory pests such as BAW and FAW. These inexpensive bucket traps can be placed directly in the crop or next to it and are fairly easy to check and maintain. Since year to year fluctuations occur, pheromone traps are helpful in identifying when the first flights are occurring and when to intensify scouting or consider preventative applications to control these two pests. A well-managed trapping program should keep you on top of potential pest problems on your farm and ultimately save you money and provide peace of mind. □

Vegetable Twilight Meeting

August 21, 2000

Rutgers Agricultural Research
and Extension Center

121 Northville Rd.

Bridgeton, NJ

Plots open for viewing at 4:00 p.m.

Meeting to begin at 5:30 p.m.

See Field Trials

- ❖ Eggplant Variety Trials
- ❖ Pepper Variety Trials
- ❖ Processing Tomato Trials
- ❖ Central Asian Melon, Tomato and Pepper Variety Trials
- ❖ Sweet Corn Variety Trials

Get the Latest Information

- ❖ Disease Updates
- ❖ Insect Updates
- ❖ Weed Control Updates
- ❖ Other Timely Issues

Bring your plant insect samples to be identified. Bring your questions for agents and specialists. We look forward to seeing you at the meeting!

For additional information contact Stephen A. Garrison, Specialist in Vegetable Crops at Rutgers Agricultural Research and Extension Center at (856) 455-3100.

Vegetable IPM Update

Kristian E. Holmstrom and Sally Walker, Program Associates in Vegetable IPM

Sweet Corn

European corn borer (ECB) adult activity continues to increase slowly in parts of central and southern New Jersey. The highest catches are still in Cumberland and Burlington County blacklight traps. Some scattered feeding from this generation has been found on whorl stage sweet corn in areas where moth activity is increasing. This situation will intensify over the next several weeks.

The highest average nightly ECB blacklight trap catches are:

Allentown	5	Cohansey	4	Folsom	2
Centerton	5	Manville	4	Seeley Lake	2
Georgetown	5	Indian Mills	3	Sergeantsville	2
Shirley	5	Burlington	2	Upper Pittsgrove	2

The trend toward gradually increasing corn earworm (CEW) adult activity continues throughout southern and central counties. CEW moth catches are approaching moderate numbers (3-4 per night) in many southern traps. As yet, we have not experienced the large influxes of CEW associated with southern storm systems. The weather pattern of this week may result in a more rapidly increasing population, as the track of the front is generally northward. Trap catches from the coming weekend will indicate whether or not such an increase has occurred. Silking sweet corn in southern and central counties is at significant risk of infestation from CEW, and should be on a regular protective spray program. In the northern counties, CEW is a threat, but to a lesser level. A reduced spray program is warranted in these counties.

The highest average nightly CEW blacklight trap catches are:

Indian Mills	8	Millstone	4	Laurel Hills	3
Elm	7	Shirley	4	Sewell	3
Allentown	6	Fishing Creek	3	Springdale	3
Folsom	6	Hammonton	3	Tabernacle	3

Fall armyworm (FAW) pheromone trap catches still are increasing in southern and central sites. Garden State Pest Management has reported feeding on young whorl stage sweet corn in Ocean County as high as 18%. It is important to scout seedling and whorl stage plantings weekly for FAW, particularly with the passing of the current weather system.

General Sweet Corn Spray Schedule

- Silking corn: North 5 - 6 days
- Central 3 - 4 days
- South 3 days

* These are general spray recommendations for large areas of the state. Growers can increase or

decrease the intervals based on their own local situations.

Peppers

ECB adults are active at threshold levels in southern and central counties. In areas where blacklight or pheromone trap levels of 1-2 ECB per night or greater exist, (see ECB map) maintain a 7-10 day spray schedule on fields with half-inch or greater size fruit. Two spotted spider mites are being found in some fields, though generally in low numbers. Mites thrive in hot dry weather, so the current weather has not been favorable for outbreaks. Check the undersides of the leaves for the presence of stippling injury, webbing, and pinhead size mites between the leaf veins. If the population is localized, a spot treatment may be effective. Beet armyworm (BAW) moths were detected at low levels in pheromone traps this past week in Salem and Cumberland Counties, but field infestations have not yet been observed. Check fields for signs of BAW damage to the leaves, which appear as ragged holes, and live larvae present curled in leaves or on the undersides of leaves in the upper canopy and leaf terminals.

Snap Beans

European corn borer (ECB) adults are active in southern and central counties now (see ECB map). Target the bloom and pin stages for ECB control. Continue to monitor fields for the presence of potato leafhopper (PLH) adults and nymphs. Consider treating fields if levels exceed 5 adults or nymphs per sweep or if nymphs are easily found on the leaves.

Tomatoes

Tomato fruitworm (CEW) levels are variable around the state, with locally high populations occurring (see CEW map). Monitor 4 fruit on 5 plants in 10 locations in the field for the presence of CEW feeding and consider treating fields if levels exceed 5 infested fruit per 200 fruit examined. BAW moths were detected at low levels in pheromone traps in Cumberland and Salem Counties this past week. In areas where BAW activity has occurred in the past (primarily the southern coastal areas) begin monitoring plantings for the presence of BAW larvae and damage.

SEE ECB AND CEW DISTRIBUTION MAPS PAGE 5

Pest Notes

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

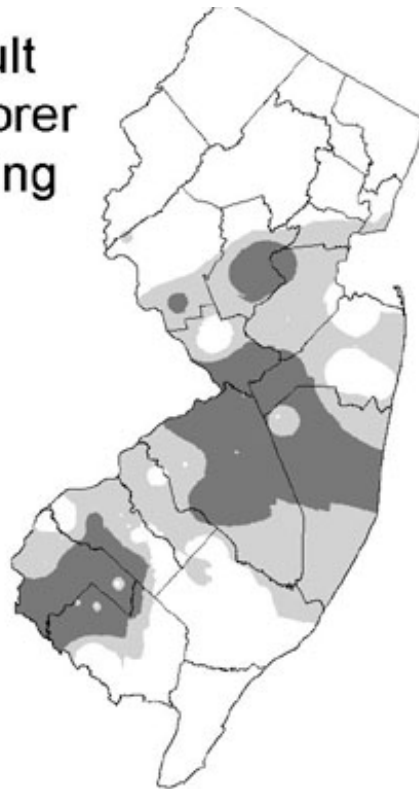
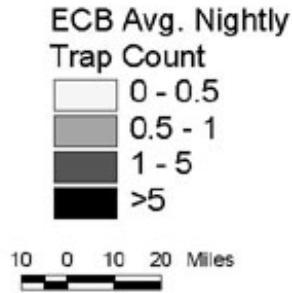
✓ **General:** Spider mites have been building up in several crops including melons, tomatoes, and eggplants. Populations of these pests explode in mid- to late July, especially if pyrethroids or carbaryl (Sevin) were used on the crop. Growers should monitor for this pest twice a week commencing around the first week of July. It is definitely easier to manage this pest, or even to prevent sudden population outbreaks, if control materials are used at the proper time. Each crop section discusses some of the tactics available that will help manage spider mite populations before they become a problem. Effective materials include Kelthane, Vendex, AgriMek, and dimethoate. Consult label to determine which crops are registered for the different miticides, as well as for all rates and restrictions.

✓ **Eggplant:** Colorado potato beetle populations have been increasing in eggplant. If Admire 2F was applied at or before planting, the potato beetles should no longer be affected by that application. Monitor the population, and if treatments are necessary, use a material *other* than Provado 1.6F, such as cryolite, Guthion, SpinTor, Thiodan, Vydate, or the *B.t.* product Raven or Novodor. It is possible that the beetle is becoming less sensitive to this material. It is still recommended that Admire only be used at planting or in the transplant flats and that Provado be avoided as a management material later in the season.

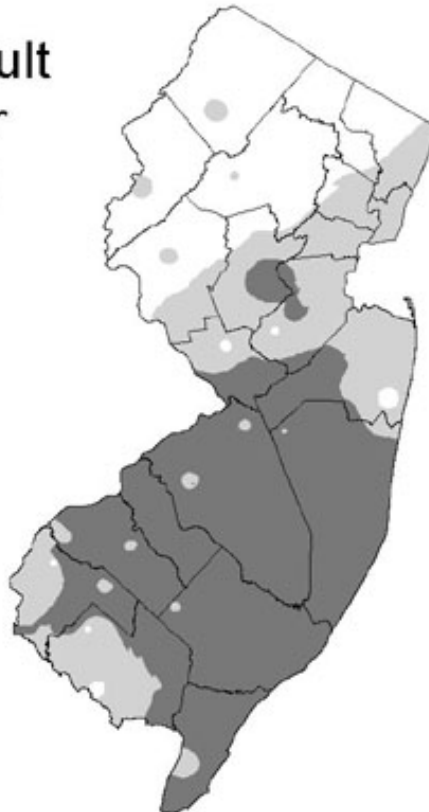
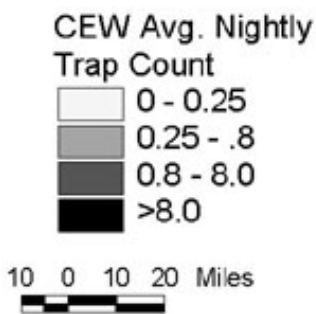
Also, leafminers have been causing damage to eggplant leaves in several areas. This pest usually goes unnoticed until the leaves turn brown and begin to fall off the plant. If leafminers are present, and leaves begin to dry because of this damage, control leafminers with Guthion, SpinTor, or Vydate L. Reassess the damage within 5-6 days after treatment to determine if new mines are appearing, or if larvae are still alive within the mines, and treat accordingly.

SEE PEST NOTES ON PAGE 6

Distribution of Adult European Corn Borer for the Week Ending July 26, 2000



Distribution of Adult Corn Earworm for the Week Ending July 26, 2000



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

✓ **Pepper:** Some pepper fruit are beginning to show evidence of entry and damage caused by the European corn borer. The adult moths are active, and corn borer egg masses are starting to be deposited on pepper plants. If moths are active and being caught in nearby blacklight or pheromone traps, begin a protective spray program. Materials labeled for European corn borer management include Asana, Baythroid, Lannate, Orthene (limited to two and two-thirds product of 75S per acre per season), Pounce, Ambush, or SpinTor. Apply spray in the early evening hours, and obtain thorough plant coverage using high volume, high-pressure if possible. Refer to pages 120-121 of the *2000 Commercial Vegetable Production Recommendations for New Jersey* for more information on selection of material and spray schedule.

✓ **Potato:** Some recently harvested potatoes have sporadic, but minor, wireworm damage. This damage appears as small, black holes in the tubers, much like a soft-lead pencil was jammed into the potato. Although nothing can be done about wireworms at this time, make notes of where the damage is appearing so that plans can be made for next spring. Wireworm management tactics include deep plowing with crop rotation, or broadcast treatments in the spring. Also, harvest the potatoes as soon as possible to prevent continued wireworm damage, which can occur up until frost. □

Vegetable Crops Diseases

Stephen A. Johnston, Ph.D., Plant Pathology

✓ **Bean (snap & lima):** Frequent rains this season have provided favorable conditions for the development of white mold (*Sclerotinia*). Fungicide applications are warranted for control if the soil has been wet for 6-10 days before bloom. The application should be made when 70-80% of the plants has one or more open blossoms. A second application should be made 5-6 days later. Add a surfactant to the fungicide to extend the activity. For lima beans, there is a 28 day preharvest interval that must be followed when using Benlate or Topsin M. Rovral can be applied up to the day of harvest, and has activity against *Rhizoctonia* pod rot.

✓ **Beet:** Maintain applications of a copper fungicide every 7-10 days for control of leaf spots.

✓ **Carrot:** Maintain applications of Bravo every 10 days for the control of leaf blights. Dodder is present in fields at this time. Dodder is a yellow, thin, parasitic plant that twines tightly around carrot tops. Manually remove dodder from the field to prevent it from going to seed.

✓ **Cole crops:** Maintain applications of maneb every 7-10 days for control of *Alternaria* leaf spot & downy mildew.

✓ **Corn (sweet):** For fields in the whorl stage or younger, apply a fungicide for control of rust. Rust present in older fields will not benefit from fungicide applications.

✓ **Cucumber:** Belly rot (*Rhizoctonia*) is present in fields produced on bare ground culture at this time. Brown sunken, irregularly shaped lesions are present on the fruit where contact with the ground has been made. Control involves making an application of Bravo just prior to the vines falling over to provide a fungicide barrier between the soil and the fruit that will lay on the soil surface. Plastic mulch culture also greatly reduces the incidence of the disease. Cottony leak (*Pythium*) is present in fields at this time also. Infected fruit turn gray, water-soaked and are covered with fluffy, white mycelium. An application of mefenoxam (Ridomil Gold, Ultra Flourish) over the row after seeding will assist in control.

✓ **Eggplant:** *Verticillium* wilt is prevalent this season. Infected plants have one or more leaves that are a dull shade of green, or in some cases, bright yellow areas are present on the leaf. Symptoms appear on one half of a leaf, one half of a branch or one half of the plant. The disease is a vascular wilt, which means that part of the plants vascular system (water conducting system) is blocked following infection. Therefore, only a part of the plant exhibits symptoms initially. Eventually, the entire vascular system is plugged, and the plant completely wilts. Preplant soil fumigation is the control in future years.

✓ **Greens (Mustard, Turnip):** Apply Ridomil Gold 4E as a soil surface application after planting for control of damping-off & early season control of downy mildew.

✓ **Leeks:** Shortly after transplanting, apply Bravo as a foliar spray for control of purple blotch, and repeat every 10 days.

✓ **Muskmelon:** Plants are wilting during the day and recovering during the night. This is the result of a poorly developed root system, and is not a disease. Maintain applications of Bravo + Nova alternated with Quadris for foliar disease control.

SEE DISEASES ON PAGE 7

✓ **Pepper:** Maintain applications of a copper fungicide + maneb + a spreader sticker for control of the foliar and fruit rot phase of Phytophthora blight.

✓ **Potato (white):** Weather conditions continue to be favorable for the development of late blight. For later maturing varieties, maintain a 7-day schedule with mancozeb for prevention.

✓ **Pumpkin & winter squash:** Maintain applications of Bravo + Nova alternated with Quadris for control of foliar & fruit diseases.

✓ **Squash (summer):** Plants are exhibiting irregularly shaped blotches on older leaves. This is the result of a poorly developed root system in which the plant wilts during the day and recovers at night. It is not a disease. Maintain applications of Ridomil Gold Bravo or Flouronil as a foliar spray every 14 days for control of Phytophthora blight.

✓ **Tomato:** Tomato spotted wilt virus (TSWV) is present in some fields at this time. Leaves of infected plants have large areas of black tissue present. The virus is spread by thrips. Maintain an insecticide program for thrips control to prevent spread. For foliar & fruit disease control maintain applications of Bravo alternated with Quadris every 7 days.

✓ **Watermelon:** Some plants are completely wilting during the day, but recovering overnight. This is the result of a poorly developed root system, and is not a disease. Avoid irrigation unless absolutely necessary to encourage the development of a larger root system. For foliar disease control maintain applications of Bravo + Benlate or Topsin M alternated with Quadris every 7-10 days. □

Weekly Weather Summary

Keith Arnesen, Agricultural Meteorologist

Temperatures averaged much below normal. Extremes were 91 at Pemberton on the 19th and 46 degrees at Charlotteburg on the 21st. Weekly rainfall averaged 0.31 inches north, 0.42 inches central, and 0.69 inches south. The heaviest 24 hour total was 0.73 inches at Seabrook on the 19th to the 20th. Estimated soil moisture, in percent of field capacity, this past week averaged 81 percent north, 75 percent central and 73 percent south. Four inch soil temperatures averaged 67 degrees north, 71 degrees central and 72 degrees south.

Weather Summary for the Week Ending 8 am Monday 7/24/00										
WEATHER STATIONS	RAINFALL			TEMPERATURE				GDD BASE50		MON
	WEEK	TOTAL	DEP	MX	MN	AVG	DEP	TOT	DEP	%FC
BELVIDERE BRIDGE	.19	24.30	5.71	86	53	67.	-7	1414	28	77
CANOE BROOK	MISSING									
CHARLOTTEBURG	.04	19.44	-.41	85	46	65.	-7	1136	6	74
FLEMINGTON	.77	17.81	-1.22	87	53	69.	-5	1594	170	79
LONG VALLEY	.22	18.96	-1.40	82	52	65.	-7	1253	45	70
FREEHOLD	.29	12.97	-5.51	89	55	72.	-3	1726	194	68
LONG BRANCH	.66	17.58	-.80	88	59	70.	-5	1490	35	74
NEW BRUNSWICK	.26	16.19	-2.18	89	55	71.	-5	1655	38	71
PEMBERTON	.65	15.34	-3.05	91	54	71.	-4	2115	545	58
TOMS RIVER	.32	18.00	-.85	89	55	70.	-5	1629	167	62
TRENTON	.35	15.58	-1.94	88	57	70.	-7	1724	43	70
CAPE MAY COURT HOUSE	.91	17.10	.78	88	60	72.	-4	1691	132	68
DOWNSTOWN	.64	18.64	1.51	87	58	72.	-5	1787	94	78
GLASSBORO	.47	18.83	.68	88	61	72.	-4	1909	238	71
HAMMONTON	.82	16.79	-1.33	90	56	72.	-5	1727	60	50
POMONA	.90	18.48	2.16	89	59	71.	-4	1665	115	82
SEABROOK	.84	19.56	3.00	88	60	72.	-5	1885	185	66
ATLANTIC CITY MARINA	.22	16.62	.99	85	64	72.	-3	1692	225	55
SOUTH HARRISON	1.01	22.13	3.79	87	59	71	NA	1881	NA	NA

Maximum thermometer at Pemberton has been replaced. Temperatures have been averaging much too high and therefore Growing degree days units are too high.

WES KLINE — GDD BASE 40 PINEY HOLLOW
 Last Week 232 (Ending 7/17/00) This Week 226 (Ending 7/24/00)

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PLANT & PEST ADVISORY

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