

PLANT & PEST ADVISORY

VEGETABLE CROPS EDITION \$1.50

JUNE 25, 2003



INSIDE

The NJ Sweet Corn Situation	1
Wet Spring Weather and Concern with Loss of N	2
IPM Update	2
New Pumpkin Production Guide	4
Pest Notes	4
Vegetable of the Week: Eggplant	5
Calendar of Events	5
Weekly Weather Summary	6

The NJ Sweet Corn Situation

Raymond J. Samulis, Burlington County Agricultural Agent

Throughout New Jersey the drenching rains have taken their toll on various plantings of sweet corn. Cold soil temperatures and less than ideal planting conditions have made for uneven stands, poor plant color, and many dead areas scattered throughout the field. Even field corn is showing considerable dead areas from drowning. Also, whenever soils are worked too wet, soil compaction issues arise, which can result in the destruction of soil pore space and inhibit root development.

Many fields appear as though they were not fertilized at all, and are exhibiting various stages of nitrogen deficiency and other weather-related necrotic spots. With sandy soil types, it's true that much of the nitrogen has been lost through leaching. At Rutgers, we recommend between 140 to 150 pounds of nitrogen per acre for fresh market sweet corn. The rates for processing sweet corn will be 25 pounds higher in most cases. Some growers use more than that; however, research has shown that this amount is sufficient to get high yields under average rainfall conditions. How much additional is needed because of the leaching remains to be seen and depends heavily upon how much of the nitrogen was applied early in the season versus how much would be applied as side dress applications later in the season. It is probably safe to assume that much of the banded and early side dressed fertilizers were lost because the root systems were small, had few feeder roots, and did not take up significant nitrogen under cold, water saturated conditions. Possibly as much as 40 to 50 pounds of nitrogen may have been lost if plow down fertilizer or disced in fertilizer was used.

Many years of observation have shown that sweet corn has an uncanny ability to mature at nearly the same rate (days to harvest) from year to year, regardless of the growth problems encountered during the season. Under conditions like we have had this year, slow growth may result in shorter plants that set ears lower, and may have more smaller cull ears that do not make it to maturity for machine harvest. This is why we as growers strive to keep the corn plants growing evenly without disruption of their growth pattern. Small-scale production of transplanted sweet corn is possible in the northern states where the seasons are short; however, my trials on transplanted sweet corn have shown that cold conditions stopped the plants from growing. Interestingly enough, the corn still tasseled and formed ears at relatively the same time from planting, which resulted in 4 to 5 inch ears on 20-inch plants, which could not be sold.

SEE SWEET CORN STATUS ON PAGE 2

Wet Spring Weather and Concern with Loss of Nitrogen

Joseph R. Heckman, Ph.D., Specialist in Soil Fertility

Extremely wet weather this spring has likely caused significant losses of soil nitrogen (N) and N from applied fertilizers. The degree of N loss depends on a combination of soil type, rainfall amount, and management practices. Pathways of N loss include soil erosion, leaching, and denitrification. Nitrogen is most vulnerable to leaching in highly permeable sandy soils. Denitrification occurs when nitrate N is converted by soil microorganisms to gaseous forms of N which are lost to the atmosphere. Losses of N via denitrification can be very large when soils remain saturated with water for long periods.

Early plantings of vegetable and field crops that were fertilized with N before the recent heavy rains may become N deficient due to losses of applied N. Another factor that limits soil N availability to crops this spring is that cold wet soils are slower to release N that normally becomes available from decomposition of organic matter. For soil organic matter to release and supply significant amounts of N to crops the soil needs to be warm and moist and have good aeration.

For annual crops such as sweet corn and other vegetable crops, the pre-sidedress soil nitrate test can be used to determine if sufficient N remains available in the soil to grow the crop. For information on how to use this soil test, refer to Rutgers Cooperative Extension Bulletin E285 "Soil Nitrate Testing as a Guide to Nitrogen Management for Vegetable Crops". It is available on the RCE website at <http://www.rce.rutgers.edu/pubs/pdfs/e285.pdf>

If additional sidedressing or topdressing of N is planned, it is advisable to apply this N as soon as possible to prevent the development of crop N deficiency. Smaller and more frequent applications of N fertilizer are better than applying a large single application. □

SWEET CORN STATUS FROM PAGE 1

One benefit of the cold conditions that we have experienced in the fields has been the delayed arrival of many of the common sweet corn insects. While it is always best to participate in an Integrated Pest Management program so you know exactly what insects are on your particular farm, generally speaking, very few earworms are currently being caught. Likewise throughout the state, relatively low amounts of corn borers are being trapped in our blacklight traps. The adverse conditions are causing various types of brown tissue, dead spots, and nonpathogenic lesions on many sweet corn plants. Fortunately, these are not disease-related, need no control measures and, as soon as the weather breaks, I would expect most corn plants to take off and grow normally. □

IPM Update

Kristian Holmstrom, Program Associate in Vegetable IPM

Sweet Corn

European corn borer (ECB) adult activity is spreading further north, especially in the western edges of Mercer, Hunterdon, Warren and Sussex Counties (see ECB map). Despite the spread, the intensity of the activity is much lower than normal. In a typical year, we would expect to see adult ECB activity falling in the southern counties as moth emergence intensifies further north. Instead, we see steady to somewhat reduced activity in southwestern New Jersey as low level activity begins in the north. This level of moth activity can result in damage to sweet corn, although probably less than usual. Feeding in whorl and pre-tassel stage plantings has increased recently in all areas. Within the week, infestations as high as 24% have been found in Mercer County whorl stage corn. Infestations further north range as high as 10%. Look for the "shot-hole" type feeding on younger plant leaves and for discolored portions of the tassel indication that small larvae are present within the pollen-bearing structures. Consider treating for ECB when greater than 12% of plants are infested. However, infestation rates may be allowed to get higher than this as long as plants are still in the whorl stage. It is usually advisable to make one application prior to pre-tassel to limit the number of ECB in emerging tassels. It is also prudent to treat plantings as they get to the full tassel/first silk stage. This application will eliminate many of the larvae that leave the tassel at that time for lower portions of the plant, thus limiting ear damage. The highest average nightly ECB blacklight trap catches are:

Cohansey	5	Blairstown	2	Hammonton	2
Elmer	3	Cedarville	2	Hopewell	2
Shirley	3	Crosswicks	2	Mullica Hill	2
Belvidere	2	Eldora	2	Newton	2

Corn earworm (CEW) moth activity has not increased over the past week. The area where moths are being captured has expanded somewhat (see CEW map), but overall, CEW adult numbers are steady to slightly lower than last week. Even low moth numbers can result in economic damage to silking sweet corn. For this reason, it may be necessary to maintain a preventive silk spray schedule in areas where CEW is active. The shaded area on the CEW map represents a population that may warrant a 5-6 day spray schedule on silking plantings. The highest average nightly CEW blacklight trap catches are:

Crosswicks	1	New Egypt	1
Georgetown	1	Sykesville	1
Hammonton	1		
Millstone	1		

SEE IPM ON PAGE 3

General Sweet Corn Spray Schedule

Silking Corn: Central 5-6 days
South 5-6 days

Pumpkins

As plants emerge, be sure to look at least weekly for the presence of **cucumber beetles**. These insects are capable of transmitting **bacterial wilt**, especially when the plants are in the 0-4 true leaf stage. Look at 5 consecutive plants in 10 random locations. Consider treating if 2 or more beetles are found at more than one half of the sites. Often a systemic insecticide applied at planting is the most effective way to prevent damage by cucumber beetles.

Cole Crops

Recent warm weather has encouraged **imported cabbage butterfly (ICW)** activity. This white butterfly is commonly seen as it moves from plant to plant, laying eggs in broccoli, cabbage, etc. **Diamondback moth larvae (DBM)** and small **cabbage loopers (CL)** have appeared in the northern counties within the past week as well. These pests are likely to be found in all counties at this time. All larvae are green, but the ICW is the only one that has a velvety appearance. CL "loops" like an inchworm and DBM only grow to about one half inch in length and wriggle violently when disturbed.

Check 5 consecutive plants in 10 random locations for the presence of any caterpillars in the crop. 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.

Peppers

Small pepper plants as well as those with fruit greater than one half inch in diameter are at risk for infestation by ECB. Cross hatched areas on the ECB map represent populations capable of causing economic damage. On young plants in those areas, scout fields weekly, looking at 2 leaves on 5 consecutive plants in 10 locations for ECB egg masses. These flat, waxy looking masses are found on the underside of leaves. If two or more egg masses are found in the sample, consider treating for ECB. **Aphids** generally do not cause problems prior to fruit set. However, if fruit are present and aphid populations are building to greater than 100 in the sample, consider treating to prevent aphid droppings and the resulting sooty mold from affecting fruit.

Warmer temperatures and wet soils may cause **phytophthora** to appear in some pepper fields. Look for sections of row where plants are wilting. Phytophthora is usually characterized by a moist, very dark lesion that girdles the stem at the soil line. Should this occur, there may be some value in removing sections of plastic mulch from the bed to facilitate drying of the soil. Be sure to

undertake the appropriate preventive fungicide program. For recommended materials consult the 2003 *NJ Commercial Vegetable Production Recommendations*.

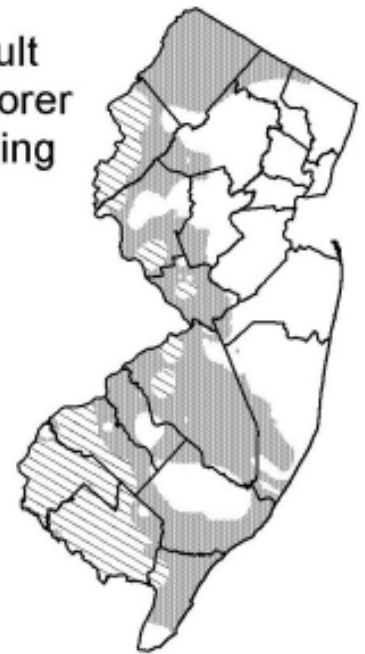
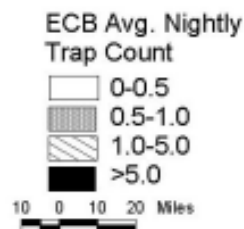
Snap Beans

Plantings now in bloom are at some risk of infestation by ECB. Cross hatched areas on the ECB map represent the low end of populations capable of causing injury to snap beans. Consider treating at bloom and again at the pin stage in these areas to prevent ECB damage to developing pods.

Tomatoes

Aphid, mite, and thrips pressure in scouted fields has been light so far. **Timber rot (sclerotinia)** has appeared recently, however. This fungal infection is characterized by cottony growth at the stem infection. As the stem dries out, the dark resting structures of the fungus (sclerotia) may be found on and in the stem. Sclerotinia is resident in the soil, and should be rotated away from if it is increasing in successive tomato, bean or lettuce crops. For recommended fungicides, consult the 2003 *NJ Commercial Vegetable Production Recommendations*.

Distribution of Adult European Corn Borer for the Week Ending June 25, 2003



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

SEE CEW DISTRIBUTION MAP ON PAGE 6

New Pumpkin Production Guide

The Pumpkin Production Guide by the Natural Resource, Agricultural and Engineering Service (NRAES) is a must-have for both new and experienced pumpkin growers, serious gardeners, and agricultural advisors. The 152-page guide covers the basics of pumpkin production and cutting-edge research.

Twelve chapters offer practical information for preparing the field, evaluating varieties, and choosing the best cultural practices; groundbreaking insight into fruit set and pollination to help growers maximize yields; descriptions for identifying and controlling weeds, insects, diseases, and wildlife pests; ways to maintain postharvest quality; and sample budgets and marketing ideas. Over 115 color photos supplement the text.

The Pumpkin Production Guide, NRAES-123, is available from NRAES for \$39.00 plus \$6.00 S&H (within the continental U.S.) Make checks payable to NRAES; all major credit cards accepted. Contact NRAES for other S&H rates and possible discounts:

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*Submitted by Rick VanVranken,
Atlantic County Agricultural Agent. □*

Pest Notes

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

✓ **General:** The wet weather has been ideal for the development of **slugs**. Several species of slugs can be a problem in vegetables, but the most common is the **grey garden slug**. The pest has caused damage on cole crops, corn, ornamentals, and was found eating potato leaves in a potato field in Salem County! Slug damage appears as small to large irregular holes, often leaving only the leaf veins when the slug population is high. To confirm slugs, look for the slime trail left behind by slug activity, which is easily seen in daylight on the leaves, soil, rocks, etc. Or, use a flashlight with a piece of red cellophane taped over the lens and go out to the damaged area after dark to look for the slugs (they feed at night). They will be easily observed if they are present. Most pesticide applications are not effective against slugs, but a metaldehyde bait is available that works very well, or a carbaryl (Sevin) bait is available that also is effective. Consult label before using any slug bait for all directions/restrictions. In general, apply when weather is dry, as heavy rainfalls will reduce the effectiveness of slug baits.

✓ **Cole crops:** **Green peach aphids** are found in low numbers on cole crops. These pests are more easily controlled if treated before the population reaches a high level. Many materials are available for control of aphids in cole crops, including acephate, Assail, dimethoate, Fulfill, MSR, Provado, and Actara. Refer to label for all rates, restrictions and crop use (labels vary for different cole crops).

✓ **Cucurbits:** Monitor cucurbit crops closely for a buildup of **cucumber beetles**, even if plants were treated at planting. If an at-plant material was applied, there is a good probability that the treatment will not be very effective at this time because of the heavy amounts of rainfall we have experienced. If beetle numbers are high, or are increasing and if vines have not started to run (or just started to run), use Asana, Capture, Guthion, Lannate, methoxychlor, permethrin, Sevin or Thionex for control of beetles. Thorough spray coverage is essential for maximum effectiveness.

✓ **Potatoes:** Monitor fields closely for buildup of either **Colorado potato beetle** larvae or **potato leafhopper**. Both pests are common in the field at this time, and the expected hot, humid weather later in the week will be very favorable to the development of both of these pests. You can expect soil applications of in-furrow materials or seed treatment materials at planting to break down and provide very little protection at this time. These pests are much more manageable if treated before the numbers reach high levels. Consult the white potato section of the *2003 Commercial Vegetable Production Recommendations for New Jersey* for more information concerning management of both potato beetles and potato leafhoppers.

✓ **Spinach:** Growers in other nearby states have reported **maggots** causing damage to the crowns of spinach and leaf lettuce plants. This problem was reported in New Jersey last year, with **seed corn maggot** larvae eating the emerging leaves in the crowns of spinach. The problem was minor and caused only minor damage. As soon as the temperatures warmed up, and the wet weather ended, the maggot problem disappeared. Maggots are easily distinguished from **caterpillars** as the **maggots** have no legs at all, and caterpillars have legs in front and back. However, maggots often are grayish in color and may resemble **slugs**. Maggots are completely cylindrical, and slugs have a "foot" they use for locomotion. Also, slugs leave a silvery trail, and maggots do not. □

Vegetable of the Week: Eggplant

Michelle Infante-Casella, Gloucester County Agricultural Agent

Eggplant (*Solanum melongena*) is native to southeast Asia, and probably in the regions near India. Original types were most likely very spiny with small, bitter fruit. Over time, selection for improved palatability and varieties with less spines resulted in the varieties we have today. The name "eggplant" is thought to be derived from the descriptions of early types that had small, white fruit that resembled eggs. Also found in history were the terms *mala insana* and the Italian name *melazana*, both of which translate to "mad apple". Some early beliefs warned that eggplants if eaten would cause Leprosy, cancer, piles, headaches, stinking breath, liver and spleen ailments, and change of complexion to a foul black and yellow color, unless they were boiled in vinegar. In the early 1800's eggplants were only used ornamentally in America until the 1900's when they were found safe to eat.

Total U.S. production is only around 6,000 acres annually. Leading eggplant producing states include Florida, California, Georgia, and New Jersey, in that order. Eggplants are typically shipped in 33 lb. or 1 1/9 bushel cartons with some being packed in 25-28 lb. cartons. Some specialty types are packed in 17 lb. cartons that are 1/2 and 5/9 bushel lugs. Temperature is important for post harvest handling. Storage temperatures should range from 46-54°F, with an optimum storage temperature of 50°F. Eggplant is extremely sensitive to chilling injury. Relative humidity should be kept at 90-95%. Typical shelf life for fresh eggplant is 10-14 days under good conditions. This crop is ethylene sensitive and should not be kept in storage with ethylene producing crops such as apples.

Sales of eggplant, especially ethnic or heritage types are expected to increase as population diversity increases. Most sought-after ethnic types include Asian and European types. Additionally, eggplants have been found to have health benefits. Eggplants are listed among the top ten vegetables when ranked in terms of their oxygen radical absorbance quality. Research conducted by John Stommel and Bruce Whitaker at the USDA-ARS Vegetable Laboratory in Beltsville, Maryland tested eggplants for their fruit phytonutrient content. Phytonutrients found in eggplant may help to prevent diseases such as atherosclerosis and cancer. Phenolic acids and anthocyanins are the principal dietary phenolics found in eggplant that contribute to human health. Research also found that these compounds are found in greatest concentrations at the blossom end of the fruit. Perhaps this information can be used as a marketing tool in the future for eggplants.

Resources used for this article include: Vegetables; Characteristics, Production, and Marketing. L.C. Pierce; The Packer; Produce Availability and Merchandising Guide; HortScience, Vol 36(3), June 2001, p. 495. □

Calendar of Events

July 30 - August 1, 2003 - InfoAg 2003, Adam's Mark Indianapolis Airport, Indianapolis, Indiana. The 6th in a series of conferences on site-specific crop and soil management systems, and Internet technology for agriculture, InfoAg 2003 will provide updates on the technology, guidance on interpretation of GIS data sets, and a preview of what is coming. A pre-conference tour on July 29, of precision farming sites in Indiana will be targeted to farmers and their advisers who want to see some of the technology in action. The bus tour through eastern Indiana will feature a modern fertilizer/ag chemical precision farming center and Purdue University's precision farming and remote sensing research center. For online registration, visit: <http://www.ppi-far.org/infoag>.

August 20 - August 22, 2003 - North American Strawberry Growers Association Summer Tour, Park Inn & Suites, Brandywine Valley, PA and tours S. Jersey and S. PA. Contact: NASGA Business Office at: 526 Brittany Drive, State Colle, PA 16803, phone: 814-238-3364, fax: 814-238-7051 or e-mail: info@NASGA.org, or www.NASGA.org.

Distribution of Adult Corn Earworm for the Week Ending June 25, 2003



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, much below normal. Extremes were 79 degrees at several locations on the 20th, and 42 degrees at Charlotteburg on the 17th. Weekly rainfall averaged 3.35 inches north, 2.38 inches central, and 2.07 inches south. The heaviest 24 hour total reported was 2.96 inches at Newton on the 21st to 22nd. Estimated soil moisture, in percent of field capacity, this past week averaged 97 percent north, 97 percent central and 88 percent south. Four inch soil temperatures averaged 64 degrees north, 65 degrees central and 67 degrees south.

Weather Summary for the Week Ending 8 am Monday 6/23/ 3

WEATHER STATIONS	RAINFALL			TEMPERATURE				GDD BASE50		MON %FC
	WEEK	TOTAL	DEP	MX	MN	AVG	DEP	TOT	DEP	
BELVIDERE BRIDGE	4.68	22.12	7.77	79	49	63.	-6	669	-63	100
CANOE BROOK	2.32	22.74	7.25	77	49	63.	-6	689	-9	98
CHARLOTTEBURG	2.84	23.69	8.09	76	42	61.	-5	436	-101	98
FLEMINGTON	3.23	20.70	5.93	79	46	63.	-7	653	-73	98
LONG VALLEY	2.44	18.58	2.75	70	48	59.	-8	415	-179	98
NEWTON	4.60	19.69	5.66	76	47	61.	-7	567	-42	100
FREEHOLD	2.17	18.89	4.35	73	49	63.	-8	727	-86	98
LONG BRANCH	2.16	20.34	5.69	69	54	61.	-9	594	-153	96
NEW BRUNSWICK	2.58	20.83	6.62	76	48	63.	-9	680	-181	99
TOMS RIVER	2.42	18.72	4.27	73	48	62.	-8	693	-48	97
TRENTON	2.55	18.42	5.21	76	49	63.	-9	674	-237	95
CAPE MAY COURT HOUSE	1.69	15.33	2.51	74	55	64.	-7	657	-162	73
DOWNSTOWN	2.56	18.11	5.03	76	46	64.	-8	752	-180	95
GLASSBORO	2.25	19.13	5.00	79	52	66.	-6	832	-79	94
HAMMONTON	2.06	15.65	1.90	76	48	64.	-8	792	-111	94
POMONA	1.78	16.50	3.97	72	47	63.	-8	680	-145	91
SEABROOK	2.64	17.71	5.23	78	50	66.	-6	865	-73	91
ATLANTIC CITY MARINA	missing									
SOUTH HARRISON	2.40	18.92	5.79	77	50	65	NA	825	NA	NA

WES KLINE — GDD BASE 40 PINEY HOLLOW Last Week 233 (Ending 6/16/03) This Week 166 (Ending 6/23/03)

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