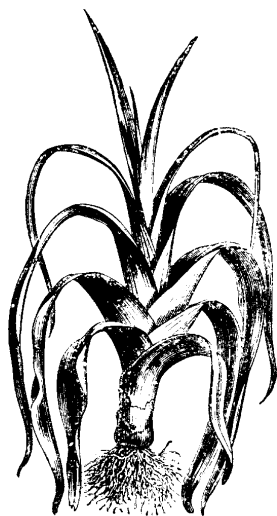


PLANT & PEST ADVISORY

VEGETABLE CROPS EDITION \$1.50

SEPTEMBER 15, 1999



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Vegetable Crops Diseases

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

✓ **General:** **FUNGICIDE APPLICATION SHOULD BE DONE IMMEDIATELY. FUNGICIDES SHOULD BE APPLIED PRIOR TO THE ARRIVAL OF THE HURRICANE ANTICIPATED THURSDAY NIGHT IN NEW JERSEY!** In order for fungicides to be effective, they must be applied prior to infection. Waiting until the rains associated with the hurricane subside will be too late. Make fungicide application, and allow fungicide to dry prior to rainfall. As long as the fungicide has dried on the plant surface in advance of rain, the material will be effective.

✓ **Asparagus:** Maintain applications of mancozeb for protection against **purple spot & rust**.

✓ **Bean (snap, lima):** For those fields with flowers present, apply Benlate, Topsin M, Ronilan or Rovral for control of **white mold (Sclerotinia)**.

✓ **Cole crops:** Maintain applications of Bravo or maneb for control of **Alternaria leaf spot & downy mildew**. **Yellows (Fusarium wilt)** is present on cauliflower at this time. Infected plants are chlorotic, and the vascular tissue is discolored. No control measures available at this time.

✓ **Carrot:** Maintain applications of Bravo or Benlate every 10 days for the control of **Alternaria & Cercospora leaf blights**.

✓ **Cucurbit (general):** The EPA has granted the NJ DEP a Section 18 Emergency Exemption for the use of Nova 40W on all cucurbit vegetables to control **powdery mildew**. See "New Fungicide Granted Section 18 Registration for Powdery Mildew Control in Cucurbits" article in this issue of P&PA for details.

✓ **Cucumber:** Apply Bravo + Nova for control of foliar diseases. Alternate with Quadris every 7 days for season long control. **Downy mildew** is present in New Jersey at this time. Bravo and Quadris will control **downy mildew**.

✓ **Eggplant:** Maintain applications of a copper fungicide + maneb with a spreader sticker for control of **Phomopsis & Phytophthora fruit rots**.

✓ **Greens:** Maintain applications of Aliette for control of **downy mildew**.

✓ **Leeks:** Maintain applications of Bravo for control of **purple blotch**.

SEE DISEASES ON PAGE 2

✓ **Lettuce:** Shortly after thinning, 10 and 20 days later, apply Ronilan or Rovral as a directed spray to the base of the plants and surrounding soil for control of **drop**. Rovral will also provide control of **bottom rot**.

✓ **Muskmelon:** Apply Bravo + Nova for control of foliar diseases. Alternate with Quadris every 7 days for season-long control. **Downy mildew** is present in New Jersey at this time. Bravo and Quadris will control **downy mildew**.

✓ **Okra: Verticillium wilt** is present in some fields at this time. Infected plants are stunted and chlorotic. No control measure is available at this time. Preplant soil fumigation is needed prior to planting okra for control.

✓ **Pepper: Phytophthora blight** is prevalent following the warm rains in recent weeks. The resistant variety, 'Paladin' is surviving well in most fields. Remove infected plants or disced into the field to prevent spread of the aerial phase of the disease. Also, apply a copper fungicide + maneb with a spreader sticker for protection against the aerial phase of the disease. In research plots at the Rutgers Agricultural Research & Extension Center, Ridomil Gold 4E applied via drip irrigation according to labeled directions followed by aerial applications of Champ 2 Flowable Fungicide with a spreader sticker are providing control of Phytophthora blight.

✓ **Pumpkin & Winter squash:** Apply Bravo + Nova for control of foliar diseases. Alternate with Quadris every 7 days for season-long control. **Downy mildew** is present in New Jersey at this time. Bravo and Quadris will control **downy mildew**.

✓ **Spinach:** Once plants reach half-dollar size, scout fields for the presence of **white rust**. Once observed, apply a copper fungicide for control.

✓ **Squash (summer): Phytophthora blight** is severe in many fields at this time. Maintain applications of Ridomil Gold MZ or Ridomil Gold/Bravo plus Nova, and alternate every 7 days with Quadris for control of this disease, as well as other foliar diseases.

✓ **Tomato:** Maintain applications of Bravo alternated with Quadris every 7 days for control of foliar & fruit diseases. □

New Fungicide Granted Section 18 Registration for Powdery Mildew Control in Cucurbits

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

The US EPA granted a specific exemption under the provisions of the Federal Insecticide, Fungicide and Rodenticide Act to the New Jersey Department of Environmental Protection for the use of Nova 40W on cucurbit vegetables (all types, including cucumbers, muskmelons, pumpkins & winter squash, summer squash and watermelons) to control **powdery mildew**. The specific exemption is subject to the following conditions and restrictions:

1. Nova 40W may be applied using ground or aerial equipment as a foliar spray at a rate of 2.5 ounces of product per acre.
2. A maximum of 6 applications may be made at 7 to 10 day intervals.
3. A maximum of 15 ounces of product may be applied per acre per year.
4. A 48-hour pre-harvest interval is required.
5. Users are advised to be careful in mixing and handling this chemical to avoid spills. This product must not be mixed/loaded, or used within 50 feet of sinkholes or wells, including abandoned wells and drainage wells. Avoid direct application to bare soil. Do not over-irrigate. Avoid use during periods of heavy rain.
6. Nova 40W treated fields can be rotated at any time to crops that are included on a Nova 40W label. Leafy vegetables and small grain crops may be rotated after 120 days following application of Nova 40W. All other crops may be planted after 210 days following applications of Nova 40W.

Nova 40W is an excellent fungicide for the control of **powdery mildew** on cucurbit; however, it does not control several other important diseases present on cucurbits in New Jersey, such as **downy mildew**. In order to delay the development of resistant strains of **powdery mildew** from developing to Nova and Quadris, a resistant management spray program is recommended for cucurbits in New Jersey.

Nova 40W is to be combined with Bravo on all cucurbits as a foliar spray. One week later Quadris should be applied alone. Repeat this pattern for season long control. □

Pest Notes

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

✓ **General:** Recent hurricane activity, including Hurricane Floyd, will most likely bring a large number of immigrant insect pests into our area, including **beet armyworms, fall armyworms, cabbage loopers, diamondback moths,** and **corn earworms.** After Hurricane Floyd passes through, monitor your fields closely for the larvae of these pests in nearly every fall crop.

✓ **Cabbage:** High numbers of **cabbage loopers** are reported in cabbage fields throughout several southern counties. These pests are more easily controlled while still small (smaller instar larvae are more susceptible to control materials than larger larvae), regardless of the material selected (pyrethroid, biological insecticide, new chemistry materials, etc.). SpinTor 2SC, Confirm 2F, and many Bt's (biological insecticides) are labeled and effective against the worm pests of cabbage, including **cabbage loopers** and **diamondback moth** larvae.

✓ **Horseradish:** Ray Samulis, County Agricultural Agent for Burlington County, reports heavy **harlequin bug** populations on horseradish. Carbaryl (Sevin) is labeled for use in horseradish to control this pest. Carbaryl is effective and inexpensive. Thorough coverage is important, as these pests may hide in the interior of the plants.

✓ **Pepper:** Foliage and fruit damage caused by **beet armyworm** feeding has been reported from many areas throughout southern New Jersey. These pests are foliage feeders while still small, and eat large gaping holes in the leaves of the pepper plant. As the larvae become larger in size, they either continue feeding on the foliage or enter the fruit. SpinTor 2SC and Confirm 2F are both new chemistry materials that are labeled for use in pepper and are highly effective against the **beet armyworm.**

Growers producing red peppers may find high populations of **corn earworm** larvae damaging the fruit. **Earworm** moths are still active, and numbers caught in the blacklight trap are still high (8-10 per night). For late peppers and **corn earworm** management, Asana XL, Baythroid 2SC, and carbaryl (Sevin) are recommended as a protective treatment. □

National Farm Safety & Health Week

Wei Zhao, Ph.D., Program Director, Farm Safety Program

September 19-25 is the 1999 National Farm Safety and Health Week. Protecting Agriculture into the Next Century is the goal and theme of this year's National Farm Safety and Health Week campaign. Indeed, with grain prices at an historic low and severe draught conditions in our region, farmers are facing a greater challenge, both financially and emotionally. The intent of National Safety and Health Week is to encourage Americans to understand the significance that agriculture plays in our lives and the importance of safety equipment and systems, proper maintenance, and preventing injuries and illness on our farms.

Agriculture has long been one of the most dangerous industries in the United States. The National Safety Council's data indicates that, during 1998, an estimated 780 farmers and farm workers lost their lives, and another 140,000 suffered disabling injuries as a result of work-related accidents. The farm elderly and children as well as young farm workers are at increased risk for incidents involving farm equipment, livestock and agricultural chemicals. In addition, farmers and farm workers are afflicted with many occupational illnesses and health problems such as hearing loss, skin disorders, back pains, and lung diseases. Health problems are due to exposure to noise, pesticides and other agricultural chemicals, toxic gases, field and organic dust, extremes of heat or cold, intense sun, insects, vibration, animal-transmitted diseases and body stress from long hours of hard physical work. Studies also found that farmers have a high death rate due to stress-related conditions.

Much can be done to reduce the risks. Some precautionary measures include installation of Rollover Protective Structures (ROPS) on tractors and use of seat belts, replacement of missing or damaged shields and guards on farm equipment and machinery, and proper use of personal protective equipment, etc. Information that covers some important safety and health topics is available through my office at (732) 932-9754 or e-mail at zhao@aesop.rutgers.edu:

- Young Worker are at Risk when Working in Agricultural Production Activities
- Farm Workers 55 and Older are at Risk to Fatal Injuries
- Operating Farm Tractors without Rollover Protective Structure is Dangerous
- Carrying Riders on Farm Tractors is Dangerous

SEE SAFETY & HEALTH ON PAGE 6

IPM Update

Kristian Holmstrom and Sarah Walker, Program Associates in Vegetable IPM

Corn Earworm Alert

The adult **corn earworm (CEW)** population increased to extremely high levels at the end of last week. Early this week the numbers declined to moderately high levels due to cooler nights and the passing of "Dennis". However, it is likely that "Floyd" will bring in another batch of adults by the end of this week. The vegetable crops at risk include sweet corn, lettuce, peppers, tomatoes, and beans. See the statewide population distribution map and the sweet corn section for the locations with the highest nightly blacklight trap catches. Consult the *1999 Commercial Vegetable Production Recommendations* manual or your county agent for appropriate control measures.

Cole Crops

Diamondback moth (DBM), **imported cabbageworm (ICW)**, and **cabbage looper (CL)** are all active in cole crops at this time. **CL** may be locally heavy, particularly in southern and central counties. Weekly scouting of plantings is necessary to ensure that damage to leaves or heads does not occur. Where cole crops are planted in succession, it is important to incorporate crop residue from older plantings into the soil as soon as possible after harvest. This will reduce the spread of **alternaria** to the younger plantings.

Lettuce

Monitor all stages of lettuce crops for the presence of **CEW** larvae. Multiple applications may be needed to control this pest due to the very high **CEW** population present statewide. Look for larvae on the undersides of leaves and in the heart leaves. For head lettuce, the critical stage for controlling **earworms** is prior to when the center leaves form a head. **CEW** larval color ranges from whitish-yellow to orange-brown and fine hairs or spines are present on the body.

Beet armyworm (BAW) and **CL** pheromone trap catches have also increased dramatically this week in the southern counties. **BAW** larvae are green and have a dark spot on the side of the second segment behind the head. **CL** larvae are green and move with a looping motion like an inchworm. Sample 5 plants in 6 locations for the presence of larvae and consider treatment if 1 larvae is found per 30 plants.

Peppers

Pepper fruit continue to be at risk for infestation from a variety of worm pests including **European corn borers (ECB)**, **CEW**, **BAW**, and **fall armyworms (FAW)**. **CEW** is the main pest statewide, as eggs (single

cream colored eggs about the size of a pinhead) were easily found on the undersides of leaves, and small and large larvae were found in fruit in fields as far north as Morris County. The **ECB** adult population has declined this week in the south, but egg hatch should be occurring in areas where trap counts were high last week. The **BAW** pheromone traps catches in the southern counties have increased dramatically this week, and larvae have been found in fruit in Atlantic County. Also monitor pepper plantings for the presence of **aphids** on the undersides of leaves, especially if multiple applications of pyrethroids are being used for worm control.

Pumpkins

Downy mildew has been found at several locations in the state within the last week. Southern storms increase the chance of infection by this disease. Strict adherence to the recommended fungicide schedule for prevention of **powdery mildew** should also control downy mildew. For details on schedules and materials, see the *1999 Commercial Vegetable Production Recommendations* manual.

Tomatoes

Both fresh-market and processing tomatoes are at risk from **CEW** infestation due to the continued high adult populations. **CEW** larvae continue to be found feeding on fruit, and **CEW** eggs were easily found on the undersides of leaves in plantings in Morris County. Monitor fields for fruit damage and larvae in order to evaluate control effectiveness. In addition, monitor fields for increasing **aphid** population levels; especially if multiple applications of pyrethroids are being used for worm control.

Spinach

Regularly scout fields for the presence of **BAW**, **webworms**, and **CL**. All three pests have been found in fields in Salem and Burlington Counties, although the primary pest is **webworm**. Look for **webworm** larvae wrapped in webbing material at the base of the plants. Check 10 plants in 10 locations and consider a treatment if 5% of the plants are infested with small larvae. Also check plantings for increasing levels of **leafminer** damage. **Leafminer** larvae feed underneath the leaf surface, causing serpentine or circular mines that look like white blotches on the tops of the leaves.

Sweet Corn

CEW continues to be moderate to high throughout the entire state. With the passing of the remnants of tropical storm Floyd, we can expect **CEW** adult populations to at least remain steady, if not increase. Silking spray schedules should be strictly adhered to at this time. Silking spray schedules should begin at full-tassel to first silk, and continue as long as fresh silks are present. The highest average nightly **CEW** blacklight trap catches are as follows:

SEE IPM ON PAGE 6

IPM FROM PAGE 4

Medford	59	Centerton	21	Folsom	20
Hammonton	44	East Vineland	21	Burlington	19
Elm	33	Porchtown	21	Mullica Hill	19
Shirley	22	Eldora	20	Indian Mills	16

ECB adult trap catches are moderate in southern and central counties. Scout fields prior to silk, and consider treating if 12% or more plants are infested with **ECB** alone or in combination with **fall army-worm (FAW)**. This pest will infest ears directly from egg masses deposited on or near ears. Silk spray schedules should control **ECB** at this growth stage. The highest average nightly **ECB** blacklight trap catches are as follows:

Shirley	10	Laurel Hills	5	Cohansey	3
Elm	8	Medford	5	Hammonton	3
Centerton	7	Mullica Hill	4	Seabrook	3
Woodstown	7	Burlington	3	Georgetown	2

***General Sweet Corn Silking Spray Schedule**

South	2-3 days
Central	2-3 days
North	2-3 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.

SEE ECB AND CEW DISTRIBUTION MAPS PAGE 6

Weekly Weather Summary

Keith Arnesen, Ph.D., Agricultural Meteorologist

Temperatures averaged much above normal. Extremes were 89 degrees at Pemberton on the 9th and 45 degrees at Charlotteburg on the 12th and 13th. Weekly rainfall averaged 1.17 inches north, 1.05 inches central, and 1.38 inches south. The heaviest 24 hour total was 1.49 inches at Atlantic City Marina on the 7th to the 8th. Estimated soil moisture, in percent of field capacity, this past week averaged 84 percent north, 68 percent central and 65 percent south. Four inch soil temperatures averaged 71 degrees north, 73 degrees central and 74 degrees south.

Weather Summary for the Week Ending 8 am Monday 9/13/99

WEATHER STATIONS	RAINFALL			TEMPERATURE				GDD BASE50		MON %FC
	WEEK	TOTAL	DEP	MX	MN	AVG	DEP	TOT	DEP	
BELVIDERE BRIDGE	1.04	16.70	-9.46	87	54	72.	8	2818	425	76
CHARLOTTEBURG	.78	19.67	-8.05	85	45	68.	6	2386	464	91
FLEMINGTON	1.13	15.40	-10.91	88	51	72.	7	2923	442	78
LONG VALLEY	1.73	15.99	-12.48	83	52	70.	7	2544	411	93
LONG BRANCH	.71	17.73	-8.22	80	56	71.	4	2869	301	58
NEW BRUNSWICK	1.19	19.51	-6.45	87	53	73.	6	3076	312	83
PEMBERTON	.87	21.29	-5.00	89	50	73.	6	3170	474	61
TOMS RIVER	.58	12.14	-14.38	86	53	74.	6	2888	317	51
TRENTON	1.91	22.69	-1.90	86	51	73.	5	2849	-16	90
CAPE MAY COURT HOUSE	1.22	14.11	-8.85	85	57	74.	4	3091	515	78
DOWNSTOWN	.90	21.21	-2.97	87	54	75.	7	3098	223	62
HAMMONTON	.40	20.50	-4.81	86	53	74.	6	3081	228	39
POMONA	.77	17.92	-5.22	85	55	73.	6	3044	382	53
SEABROOK	1.46	22.55	-.66	86	56	75.	6	3258	367	82
ATLANTIC CITY MARINA	3.50	19.56	-2.67	81	63	74.	6	3108	490	86
WOODSTOWN	2.16	26.35	1.47	88	54	75	NA	3268	NA	NA
WES KLINE — GDD BASE 40 PINEY HOLLOW										
Last Week 220 (Ending 9/6/99)										
This Week 244 (Ending 9/13/99)										

The Future of our Food and Farms Conference

The Delaware Valley region - Pennsylvania, New Jersey, Delaware and Maryland - boasts a very productive agricultural base with farming and food-related industries supplying jobs, open space, wildlife habitat and many other benefits. Despite its economic, environmental, and social advantages, the agricultural base in this region is gradually declining and access to locally produced food is increasingly in the region's political and economic landscape. The Future of our Food and Farms summit is a collaborative gathering of farmers, industry, government, and consumers. It will examine key issues facing those working to sustain or even expand the Delaware Valley's farm and food system. This summit is coordinated by the Farmers' Market Trust of Philadelphia, PA.

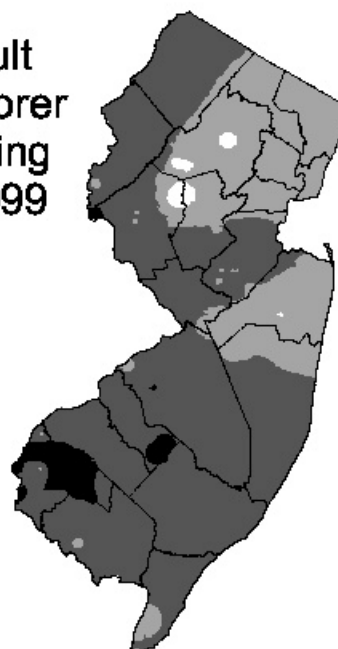
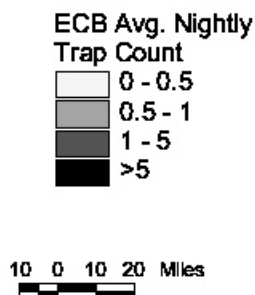
The summit will be held at the Raddison Inn Airport, Philadelphia on December 2 and 3, 1999. There are three tracks - food, farming, and hunger. For more details contact: Sanjib Bhuyan, Dept. of Agricultural, Food, and Resource Economics, 55 Dudley Road, Rutgers University, New Brunswick, NJ 08901-8520, 732-932-9157 x60 or e-mail bhuyan@aesop.rutgers.edu. □

SAFETY & HEALTH FROM PAGE 3

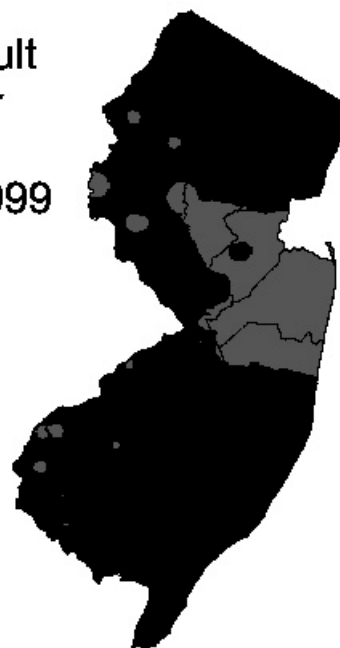
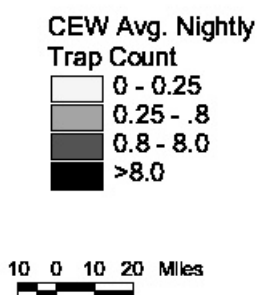
- North American Guidelines for Children's Agricultural Tasks
- Completely Revised Farm Rescue Publication Now Available from NRAES
- How to Cope with the Stress on the Farm

Additional information and materials on farm safety and health are available at the National Safety Council's web site <http://www.nsc.org/farmsafe.html>. □

Distribution of Adult European Corn Borer for the Week Ending September 15, 1999



Distribution of Adult Corn Earworm for the Week Ending September 15, 1999



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

Rutgers Cooperative Extension - NJAES
U.S. DEPARTMENT OF AGRICULTURE
Rutgers - The State University of New Jersey
Plant & Pest Advisory
18 College Farm Road
Cook College
New Brunswick, N.J. 08901-8551

PLANT & PEST ADVISORY

VEGETABLE CROPS EDITION CONTRIBUTORS

Rutgers Cooperative Extension Specialists

Joseph A. Fiola, Ph.D., Small Fruit & Viticulture
Stephen A. Garrison, Ph.D. Vegetable Crops
Gerald M. Ghidui, Ph.D. Vegetable Entomology
George Hamilton, Ph.D., Pest Management
Joseph R. Heckman, Ph.D., Soil Fertility
Stephen A. Johnston, Ph.D. Plant Pathology
Bradley A. Majek, Ph.D. Weed Science

Rutgers Cooperative Extension County Agricultural Agents

Atlantic, Richard W. VanVranken (609-625-0056)
Burlington, Raymond J. Samulis (609-265-5050)
Cumberland, Wesley Kline, Ph.D. (609-451-2800)
Gloucester, Michelle Infante (609-863-0110)
Hunterdon, Winfred P. Cowgill, Jr. (908-788-1338)
Mercer, Daniel Kluchinski (609-989-6830)
Middlesex, William T. Hlubik (732-745-3443)
Monmouth, Bill Sciarappa, Ph.D. (732-431-7260)
Morris, Peter J. Nitzsche (973-285-8300)
Salem, Peter R. Probasco (609-769-0090)
Warren, William H. Tietjen (908-475-6505)
Vegetable IPM Program (732-932-9802)

Joseph Ingerson-Mahar, Vegetable IPM Coordinator
Kristian E. Holmstrom, IPM Program Associate
Sarah Walker, IPM Program Associate

Newsletter Production

Jack Rabin, Assistant Director, NJAES
Cindy Rovins, Editor and Designer
Mary Ann Hughes, Assistant Editor

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