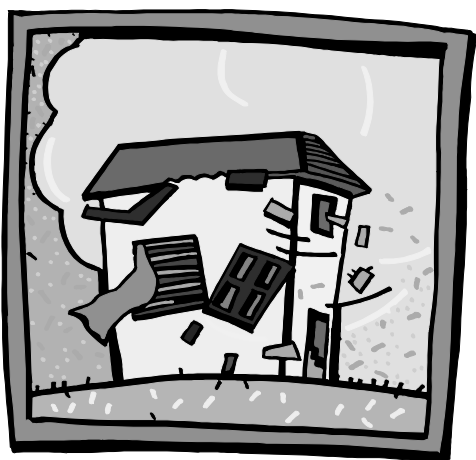


PLANT & PEST ADVISORY

VEGETABLE CROPS EDITION \$1.50

SEPTEMBER 17, 2003



Preparing Greenhouses for a Hurricane

Skip Paul, Grower, Little Compton, RI

Reprinted from Vermont Vegetable and Berry News, September 15, 2003, University of Vermont Extension.

This week a large hurricane is heading toward New England. My farm is a half mile from the coastline with not much between us and the sea. Dealing with the inevitable show-downs with hurricane force winds has been an obsession of mine since I built my first greenhouse. Now we have six with over 20,000 square feet. Here is some advice I've collected about preparing greenhouses for a powerful storm.

- 1.) Clean and check all the plastic inflation fans, and open their reduction apertures as the storm approaches. You want the two layers of plastic extra tight and rigid so the greenhouse superstructure moves as little as possible. Have a backup generator ready so if you loose power you won't lose your inflation fans and then have a loose gigantic sail smashing into your greenhouse adding to its misery.
- 2.) Be sure all connectors are tight. As the years go by and wind storms come and go your greenhouse moves and shakes. These small movements can unwind some critical bolts that could lead to failure of major structural components. (Every time you change your greenhouse covering, take an hour to check critical bolts and points of stress. It is much easier then when it is all clear and exposed).
- 3.) Don't let the wind get inside the structure. That means check that all doors are secured; check all intake and fan output louvers are locked down and can't flap open. Duct tape on the bottom three fins works well.
- 4.) Check your system for securing the plastic. If it fails wind will get in. Don't rely on weak twine or single strands of rope to hold everything in place; add a second rope here and there across the run for added security.
- 5.) Install diagonal wind braces during initial construction at both ends of the greenhouse. Insist that the greenhouse manufacturer make them to fit. Don't assume they will be included; it is cheap insurance.
- 6.) Take a minute to contemplate the environment immediately outside your greenhouse. It will do you no good to go through all these preparations if you don't notice a loose metal object like a trash can top and it gets sent through the greenhouse walls.

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Pest Notes

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

✓ **General:** The EPA has cancelled all Syngenta diazinon products (only the Syngenta brand) for agricultural, outdoor and non-outdoor uses. Existing stocks can be sold and used until depleted. This cancellation does not affect other brands of diazinon.

✓ **Cabbage:** **Cabbage looper** and **diamondback moth** are causing damage to cole crops (especially cabbage) in some areas of southern New Jersey. Although many materials are labeled and are effective for cabbage looper, the best materials for **diamondback moth** larvae include Avaunt, any of the biological insecticides (or Bt's) with diamondback moth control on the label, Proclaim, or SpinTor. For **beet armyworm** control, the best materials include Avaunt, any of the Bt's with beetle armyworm control on the label, Confirm, Larvin, Proclaim, or SpinTor. Note that none of the pyrethroids are listed in the recommendations for beetle armyworm and diamondback moth larvae control because of insecticide resistance and inadequate control. Make sure the pest is correctly identified before a management material is selected for best results.

✓ **Pepper:** **European corn borer moth** activity is still ongoing, and the predicted hurricane that is heading towards the east coast will likely bring much rain and warmer temperatures. It is likely that moth activity of the major worm pests (**European corn borer, corn earworm and various armyworms**) will continue during these warm temperatures. You can determine moth activity in your area through the IPM Update, which shows current moth activity at various locations throughout the state. For best control of European corn borer, some of the most effective insecticides in various trials have been SpinTor, MustangMax, Avaunt, Entrust, and Orthene (only 2 applications of Orthene are permitted per season).

✓ **Sweet Corn:** If corn is still in the late stages of silking, and ears will soon be picked, continue the **corn earworm** spray program for best results. The upcoming storm fronts will bring both warm weather and moisture, as well as southern pests including the corn earworm, to this area. It is likely that worm pressure will remain high for the next week or so because of the warm evening temperatures we will probably experience. You can keep accurate track of corn earworm activity through the IPM Update for any particular area in New Jersey. See pages F88 through F91 of the *2003 Commercial Vegetable Production Recommendations for New Jersey* for more suggestions on worm pest management in sweet corn and recommendations of most effective materials. □

IPM Update

Kristian Holmstrom, Program Associate in Vegetable IPM

Note: There are no **corn earworm** or **European corn borer** population maps in this week's issue.

Sweet Corn

European corn borer (ECB) adult activity is reasonably low in many areas of New Jersey, although higher catches continue in Salem and Cumberland Counties. Currently active adults will lay eggs on all stages of corn. Regular insecticide applications on silks as dictated by the local **corn earworm (CEW)** catches should prevent ECB from directly infesting ears.

Corn earworm adult activity decreases with cooler weather and northerly winds, and increases when the weather comes from the south. Over the past week, CEW catches decreased significantly throughout much of New Jersey, only to rebound somewhat with the recent southerly pattern. As a result, CEW adult activity is moderate at this time, and represents a threat to silking sweet corn. The trajectory that hurricane Isabel is currently forecast to take is one that will potentially result in further increases in CEW adults in our area. It is a good idea to assume that there will be increased CEW activity following the storm. Resume regular silking spray schedules as soon as possible.

General Sweet Corn Spray Schedule

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

Fall armyworm (FAW) continues to re-infest sweet corn plantings throughout New Jersey. Silk spray schedules for CEW control should prevent FAW from damaging ears, but it is important not to skip treatments. For fields not yet silking, scout 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.

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.

SEE IPM ON PAGE 3

This disease, favored by moist conditions, infects all cucurbit crops. 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. Try to apply fungicides in advance of the predicted tropical storm system. This will help protect during that event, and it may be some time before another treatment can be applied. 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.

As pumpkin fruit begin to mature, it is important to check fields periodically for the presence of **cucumber beetles**. Early in the season, these insects are a threat to transmit **bacterial wilt**. At this time of the season, they sometimes begin to feed on the rinds of mature fruit, causing direct damage and allowing rot organisms to establish. Cucumber beetles are often not distributed evenly throughout the field, so it is important to visit several areas to evaluate the situation. If cucumber beetles are found feeding on fruit consider treating to prevent further injury. Generally, cucumber beetle has not been a problem thus far in the northern counties. During last season's dry conditions, they were much heavier. In general, it is a good idea to remove fruit as soon as is convenient after they have matured. Leaving mature fruit in the field for extended periods of time exposes them to various threats like insect and animal injury as well as pathogens like **phytophthora** and **bacterial soft rot** organisms.

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. Again, it is a good idea to apply fungicides in advance of the predicted heavy rainfall events.

Bacterial infections continue in many tomato plantings. 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 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.

Snap and lima beans

CEW is now a major threat to snap and lima bean plantings throughout the state. Consider treating snap beans at 5-7 day intervals if local CEW activity is heavy in your area. Check lima beans for the presence of larvae, and consider treating if averages of more than 2 larvae are found per 6 feet of row up to 4 weeks before harvest. After this, the threshold is 3 larvae per 6 row feet. It is important to choose an appropriate control material, as acephate is not effective against CEW. See *2003 Commercial Vegetable Production Recommendations* for spray materials.

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

If local **CEW** catches are high, consider a weekly protectant insecticide schedule to prevent fruit injury. As eggs hatch, larvae will tunnel into the fruit around the cap like ECB does. As the larvae feed in the fruit, bacteria enter and can result in a high incidence of **soft rot**. When scouting, look at two fruit on five consecutive plants in ten random locations throughout the planting. Consider treating for CEW if fruit injury is increasing in the field. Consult the *2003 Commercial Vegetable Production Recommendations* for spray materials.

High **FAW** activity is a problem 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 Vegetable Production Recommendations* for spray materials effective against both pests. □

Precision Agriculture Tools for Diverse NJ Farms

Jack Rabin, Associate Director for Farm Services, NJAES

We are a few months into our NJ Department of Agriculture grant developing mobile GIS/GPS tools for seven pilot growers. Each grower has unique approaches to managing their operations, and each grower wants different information recorded.

In consultation with growers and their concerns, we have selected the Trimble Recon as the handheld device. It is like a typical handheld Personal Digital Assistant, only ruggedized. The Recon can fall from a pickup truck seat into a puddle, and not be affected.

At this time, what is possible? What things can we measure, map, and place in growers' hands? Though not all features are complete, and no grower needs nor wants too much information, below is a general list of the possibilities:

Fields Management (overhead view on screen)

- Base Map. Has exact field dimensions and area. This can save fertilizer and pesticide applications. Makes accurate automatic calculation of summary information easier.
- USDA map. This includes soil types, and may include elevation and slope maps for fruit production.
- Aerial image of farm and fields. May include land use/land cover or zoning of Twp. Map (if available).
- Soil sample test results. Fertility, pH, lime, soil electrical conductivity map, or even soil compaction maps can be produced if the information is collected. Manure management is currently being worked on.
- Irrigation system. Location of mains, risers, pumps can be mapped.
- Notes can be made by grower, and linked to fields.
- Weed and/or pest map.

Crops Management

- Current Crop. Track management of beds, groups of beds, and fields.
- Crop histories and yield histories.
- Pesticide records verified and printed on demand.
- Fertility applications recorded, totaled, and printed.
- Irrigation water management. We are still working on building a recording feature for this state regulation.
- Organic Transition Management. Provide NOP (National Organic Program) audit trail compliance. Accurately record and report rotations, buffers, and practices.
- Crop insurance. Accurately delineate size and scope of crops, fields, or parts of fields damaged by disasters like drought, excess precipitation, or hail etc.

2nd Annual Rutgers Farm Safety/Health Twilight Program

September 24, 2003

Registration Time: 4:30 p.m.

Russo's Orchard Lane Farm 310

Extonville Road Allentown, NJ

All farm families are invited to attend the 2nd Annual Rutgers Cooperative Extension Farm Safety/Health Twilight Program designed to address the issues of farming safety and farmer's health. We intend this program to be an informal, educational experience with hands-on demonstrations, and a lot of fun for the entire family.

Some of the topics:

- ❖ Chainsaw Safety
- ❖ Gun Safety
- ❖ Fire Safety and Preparedness
- ❖ Farm Safety for Children

Also:

- ❖ An exceptional buffet supper, PLUS outstanding desserts provided by the Burlington County Farm Bureau Women's Committee!
- ❖ Receive safety related items!
- ❖ Pesticide credits will be issued.

Reservations are necessary. Please call Rutgers Cooperative Extension of Burlington County at (609) 265-5050 by September 19, 2003. □

- Greenhouse inventories of landscape perennials.

Integrating these production tools and information with farm management can be done, but it requires appropriate software and grower time commitment. Information that can be determined includes:

- Tracking costs and returns by crop, field, variety, etc. (this has never been easy on diversified farms, even when growers have production budgets and know their yields)
- Equipment and labor time by field/crop
- Packed out yields and dollars by field/crop.

Growers will always think up their own ways to use these tools once the portability and technical difficulties are overcome. For example, though not part of our project, a landscape manager is interested in mapping all managed properties for size and features such as plants or areas requiring special management. □

RCE Website: Hurricane and Flood Resources

Rutgers Cooperative Extension's web site now includes Hurricane and Flood Resources at: <http://www.rce.rutgers.edu/storm>. The site provides links to RCE Factsheets on dealing with disasters/flooding; NJ Ag Weather Advisory; Track Hurricane Isabel; and other hurricane and flood resources.

For the most up-to-date weather information in your area, tune your radio or television to local weather or National Weather Service information. ☐

GREENHOUSE PREP FROM PAGE 1

- 7.) We've built lean-to sheds on the north end of our newest greenhouses. They are 18' by 12' and serve many purposes: a home for furnaces and indoor oil storage, storage for chemicals and misc. pots, and most importantly they add considerable rigidity to greenhouses.
- 8.) We cement in every other ground post and add cement filled sonotubes to the end walls which increase greenhouse rigidity and act as anti-lifting anchors. ☐

Weekly Weather Summary

Keith Arnesen, Ph.D., Agricultural Meteorologist

Temperatures averaged slightly above normal. Extremes were 85 degrees at several locations on the 15th, and 48 degrees at Pomona on the 12th. Weekly rainfall averaged 1.88 inches north, 0.81 inches central, and 0.87 inches south. The heaviest 24 hour total reported was 3.28 inches at Long Valley on the 14th to 15th. Estimated soil moisture, in percent of field capacity, this past week averaged 89 percent north, 79 percent central and 66 percent south. Four inch soil temperatures averaged 65 degrees north, 67 degrees central and 68 degrees south.

Weather Summary for the Week Ending 8 am Monday 9/15/ 3

WEATHER STATIONS	RAINFALL			TEMPERATURE				GDD BASE50		MON
	WEEK	TOTAL	DEP	MX	MN	AVG	DEP	TOT	DEP	%FC
BELVIDERE BRIDGE	1.03	38.73	12.30	83	51	68.	4	2638	197	95
CANOE BROOK	.82	35.37	7.63	85	52	68.	3	2742	294	94
CHARLOTTEBURG	MISSING									
FLEMINGTON	2.02	35.30	8.72	85	51	68.	3	2581	70	100
LONG VALLEY	4.13	35.97	7.22	78	52	65.	3	2052	-105	100
NEWTON	1.39	34.97	9.14	82	53	66.	4	2384	185	100
FREEHOLD	.49	28.42	2.56	85	53	68.	2	2781	122	82
LONG BRANCH	.11	30.01	3.81	78	55	68.	1	2608	6	61
NEW BRUNSWICK	1.07	32.40	6.18	85	53	68.	2	2749	-47	96
TOMS RIVER	.64	33.04	6.27	83	51	68.	1	2783	177	78
TRENTON	1.75	27.63	2.79	83	53	68.	1	2720	-180	100
CAPE MAY COURT HOUSE	.60	25.41	2.22	80	50	67.	-3	2696	80	51
DOWNSTOWN	.79	27.76	3.36	83	49	68.	0	2846	-65	83
GLASSBORO	1.12	29.17	3.60	83	56	70.	2	3007	127	97
HAMMONTON	.69	24.54	-1.02	85	50	68.	0	2972	83	74
POMONA	.52	23.27	-.07	84	48	69.	3	2828	132	58
SEABROOK	1.48	30.23	6.79	84	54	70.	2	3076	149	98
SOUTH HARRISON	.88	26.48	1.37	82	55	69	NA	2978	NA	NA
WES KLINE — GDD BASE 40 PINEY HOLLOW										
Last Week	212 (Ending 9/8/03)									
This Week	196 (Ending 9/15/03)									

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