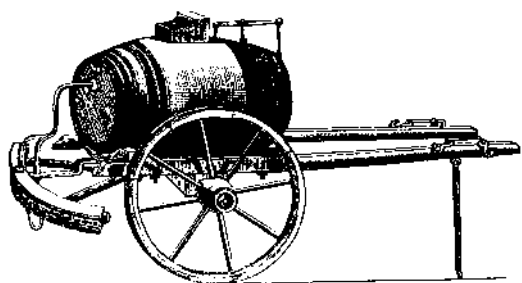


PLANT & PEST ADVISORY

VEGETABLE CROPS EDITION \$1.50

JUNE 18, 2003



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Pesticide Safety Around the Farm

Bill Coli, UMass Extension Farm Safety Coordinator

Reprinted from Healthy Fruit-UMASS Fruit News Letter, Vol. 11(9) June 3, 2003: <http://www.umass.edu/fruitadvisor/>.

Those of us who use pesticides certainly make every effort to do so in accordance with label conditions regarding rates, personal protective equipment (PPE), re-entry intervals (REIs), pre-harvest intervals (PHIs) and the like, and take pains to be sure that farm workers and family members are not exposed to pesticides. With the passage in 1996 of the Food Quality Protection Act (FQPA), additional attention has been paid by the EPA to concerns about worker exposure and potential dietary effects of pesticides on children.

However, studies conducted at the Pacific Northwest Agricultural Safety and Health Center (PNASHC) have indicated that children may be exposed to pesticides in other ways (See "Pesticides and Farming: Are Children in Harm's Way?" NIOSH Ag. Research Centers Update, Spring 2003, Vol. 1, No. 2). The PNASHC found "elevated" levels of agricultural chemicals in household dust in homes of agricultural workers compared to the general public. A recent report on the studies went on to add that "children of pesticide applicators also had higher levels of pesticide metabolites" in their urine than children whose parents did not work in agriculture.

Another PNASHC study of 44 pre-school children of non-agricultural workers who live in close proximity to sprayed agricultural areas found that levels of pesticide metabolites in their urine increased during the spraying season and returned to normal after the end of the season. Of course the situation in Massachusetts is likely very different from Washington State in terms of the size of agricultural areas being treated with pesticides. Nonetheless, as noted by the PNASHC study authors, it would still seem prudent to consider ways "to strike a proper balance between the risks and benefits of agricultural pesticide use", and minimize potential exposure of our families and our neighbors.

Applicators cannot completely avoid exposure to the chemicals that they apply. Exposure occurs during any of the many activities involved in the spraying operation, including transporting the pesticide, tank filling and mixing, container rinsing, sprayer maintenance, pesticide storage and early re-entry to treated areas.

Exposure can involve contact with pesticide vapors and aerosols, the concentrated pesticide formulation in a liquid, granular, or powder form,

SEE PESTICIDE SAFETY ON PAGE 2

and the spray mixture itself. Workers absorb chemicals into the body through the skin, eyes, respiratory (breathing) or digestive system (swallowing). Studies have shown that good personal hygiene practices reduce the risk of long term health effects.

General Recommendations

- Read and understand the product label and material safety data sheet before application.
- Bathe or shower after completion of pesticide application, including shampooing hair thoroughly and cleaning under nails.
- Put on clean clothing.
- Clothing worn during application must be washed daily after each use.
- Launder all clothing used for spraying separately from the family's regular clothes.
- Personal protection equipment should be cleaned daily after use.
- Discard any clothing that is heavily soiled with pesticide concentrate.

Preparation for Laundering

- Remove pesticide granules from cuffs and pockets outdoors (in the field).
- Discard (according to label instructions) any garment saturated with a full-strength chemical.
- Handle soiled clothing with chemical resistant gloves.
- Use disposable plastic garbage bags for temporary storage of pesticide-soiled clothes before washing.
- Pre-treat pesticide-soiled clothes with a laundry stain removal product intended for oily stains when an oil-base (emulsifiable) formulation has been used.
- Pre-treat heavily soiled areas.
- Read the pesticide label for information.
- Pre-rinse pesticide-soiled clothing: on pre-soak cycle of automatic washer or presoaking in a suitable container (dump water on field) or spray/ hose the garment outdoors (away from children and pets).

Laundering

- Isolate pesticide-contaminated work clothes and wash them separately from the regular family laundry to avoid contamination.
- Do not overcrowd clothes in the washing machine.
- Use hot water (140°F) setting.
- Use full water level.
- Use normal wash cycle (about 12 minutes).
- Use more detergent than recommended by product label.
- Use fabric starch. Pesticide residues cling to the starch and are removed in the subsequent wash cycle when the starch is washed away.
- Choose a heavy-duty detergent (liquid or powder).
- Re-wash clothing two or three times.

SEE LAUNDERING ON PAGE 3

Worker Protection Standard Inspections

Raymond J. Samulis, Burlington County Agricultural Agent

Some growers have expressed concern over the seemingly abundant messages to expect DEP inspectors this year for both the Worker Protection Standards as well as irrigation issues. The Worker Protection Standards have been in place for many years; however, a little bit of review never hurts anyone. Growers have asked me what an average inspection for Worker Protection Standard might entail. If you will remember back a few years, one of the first parts of the Worker Protection Standard program was to establish a central location for information to be posted and available for the workers' review. In fact, a few years ago, our office was one of the first to produce a complete Worker Protection Standard package that could be used on the farm. Since that time, commercial companies like Gemplers now have complete posting packages, and also separate individual parts for the bulletin board. Some items that must be included on the bulletin board are the Worker Protection Standard poster, application records, and location of emergency facilities. Another part of the program entails the actual training of the workers, which can occur as a group function, and must include giving each worker a training booklet.

Another important part of the Worker Protection Standard program is the availability of a decontamination site that should include water, soap, towels, etc. Also, inspectors will most likely check for a plan to deal with the transportation of and assistance to workers in case of an emergency. It is a common technique for the inspectors to verify the truth of what the farmer said by asking the workers various questions about items available to them around the farm. Be sure to verify that the workers know where the bulletin board is, and that they are aware of the training materials that they should have. A total lack of knowledge by the workers of any of these will assure even closer scrutiny on other items. While the abovementioned items are common to all types of farms, be aware that there are additional requirements for each specific type of operation. For example, nurseries and greenhouses have more specific requirements regarding reentry intervals and posting requirements where needed. Fortunately, our Rutgers web site has a new section on farm safety, which contains the complete checklist for Worker Protection Standard inspections. You can view it at <http://www.rce.rutgers.edu/farmsafety/>. This web site contains information on Worker Protection Standards as well as many other farm safety topics. Be sure to listen to the sound effects at the beginning!

SEE WPS ON PAGE 3

WPS FROM PAGE 2

Many of the county agricultural agents meet with various officials of the Bureau of Water Allocation of the DEP as well as with enforcement personnel. Due to continued water shortages and competition for water supplies, expect increased enforcement activities this summer. Enforcement inspections have already begun in Northern and Central New Jersey. Remember to keep your water use logbooks current. Our office still has a supply of these pocket books we designed for keeping records of your water use. We were told that in the not too distant future, the DEP would be looking for comments regarding updating their regulations for agricultural water use. As agents, we are on top of this issue; however, it will also be imperative for growers to give input on how some of these proposed changes may effect their operation. We are currently having philosophical arguments with them as to whether the water allocation permits should reflect actual water used or water needed under extreme drought conditions where no rainfall occurs. All of the allocations were designed to reflect the latter in order to provide farmers with the necessary water. It will be in our best interest to continue protection of the water allocations as they are currently designed.

With increased competition for water in our state, this issue is not going away. Agriculture needs to be on the forefront of this issue and if farming is to be preserved in the "Garden State" farmers need adequate amounts of water to remain in business. Additionally, this state needs farmland and open space to benefit water resources and the environment. □

LAUNDERING FROM PAGE 2

- Line dry clothing to avoid contamination of the dryer and to allow sunlight to break down pesticide residues.
- Run the empty washer through a full/wash rinse cycle afterward.

Instructions for Cleaning Protective Equipment

- Wear rubber gloves while cleaning equipment.
- Wash hard hat or waterproof hat, goggles, face shield, apron, boots with hot soapy water, rinse and dry.
- Wash the respirator face-piece only. Before cleaning, remove the cartridges.
- Wash the respirator in warm soapy water, rinse and air-dry.
- Check seals and valves for signs of damage or wear.
- Store the respirator and cartridges in a sealed plastic bag.
- Last wash your gloves with hot soapy water, rinse and dry.
- Inspect and replace any worn or damaged protective equipment.

Adapted from the Institute of Rural and Environmental Health, University of Saskatchewan by Craig Hollingsworth.

Submitted by Win Cowgill, Hunterdon County Agricultural Agent. □

Vegetable of the Week: Cucumber

Michelle Infante-Casella, Gloucester County Agricultural Agent

Cucumber (*Cucumis sativus*) is native to an area of India between the Bay of Bengal and the Himalayas. It may very well be among the oldest of cultivated vegetables in our history. Cucumber is specifically mentioned in the Bible as being grown in North Africa, Italy, Greece, and Asia Minor. Christopher Columbus planted cucumber seeds in Haiti in 1539. Indians grew them in Florida shortly thereafter. In 1584, records show that they were planted in Virginia and in Massachusetts in 1629. Today cucumbers are grown just about everywhere. Florida, Georgia, California, Michigan and New Jersey are the leading states for production, in that order.

Cucumbers grow rapidly under the proper growing conditions. As soon as lateral branches form, flower clusters appear at the leaf axils. Flower development and the sex of the flower is greatly affected by day length. In most cultivars, the first flower cluster always consists of male flowers due to long photoperiods in excess of 14 hours. When the photoperiod begins to decline (days become shorter), single or pairs of female flowers become more abundant and subsequent harvests are heavier. Varieties are either monoecious or gynoecious. Monoecious varieties have male and female flowers occurring on the same plant. Gynoecious varieties produce only female flowers and produce higher and more concentrated yields. In order for proper pollination, seed companies mix a pollinator variety at a rate of 1 to 15 before shipping seed to farmers.

Pollination is also dependent on insect pollinators and weather conditions. It has become a common practice to place beehives in close proximity to the crop that needs to be pollinated. For cucurbit crops, recommendations are for 1-2 hives per acre. Timing of pollination is very important since this event must take place on the day the flowers open, since pollen viability, the receptiveness of the stigma, and attractiveness to bees only lasts for that day. Female cucumber flowers must be visited by a bee carrying pollen 15-20 times in order for adequate pollination to occur. If weather conditions do not favor bee activity, pollination of the crop will be poor. Poor pollination results in abortion of the fruit when small or the formation of misshapen fruit. Once, pollinated seeds give off natural plant chemicals that stimulate the proliferation of cells that form the fruit. If seeds are unpollinated, the fruit will not form. This is why we see "knobby" cucumbers. Pollination can also be unsuccessful even when insects do their job. Drought stress or excessive temperatures can hinder the pollina-

SEE CUKES ON PAGE 4

CUKES FROM PAGE 3

tion process. When flowers wilt or wither, pollen tubes are either not formed or become constricted, inhibiting pollen from reaching the ovules. Harvest of cucumbers generally occurs 7-10 days after pollination.

Once harvested, cucumbers should be cooled to maintain freshness. However, cucumbers are sensitive to chilling injury and should be stored at a temperature of 50°F. Damage from cold injury occurs when cucumbers are exposed to less than 45°F. Relative humidity in storage is also important and should be at 95%. If humidity is low, cucumbers lose water and become flaccid. Additionally, adding a waxy coating to cucumber skins will reduce moisture loss by 50%.

Resources used for this article include: Vegetables; Characteristics, Production, and Marketing. L.C. Pierce; The Packer; Produce Availability and Merchandising Guide; Commercial Vegetable Production Recommendations for New Jersey. □

Pest Notes

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

✓ **Asparagus:** **Asparagus beetles** are feeding on the ferns of asparagus plants, often stripping the leaves. Larvae are difficult to detect until damage is evident, so monitor plants closely for larval development. Effective treatments include methomyl (Lannate), methoxychlor, permethrin (Pounce or Ambush), and carbaryl (Sevin). Malathion is registered, but effectiveness is unknown. Of all the labeled materials, methoxychlor is the least toxic to bees, which may be foraging at this time (Methoxychlor is no longer being produced, and supplies can be used until depleted).

✓ **Cabbage:** Very few pests are found on cole crops because of the cool, wet season. **Imported cabbageworms** are found in low numbers, and are easily controlled using any of the products listed on page F14 of the *2003 Commercial Vegetable Production Recommendations for New Jersey*.

✓ **Lettuce:** **Aphid** populations remain high in leaf lettuce plantings. Weather conditions have been ideal for aphid survival and reproduction. Assail, dimethoate, Lannate, Fulfill, and Provado are all labeled on leaf lettuce and are effective against **potato aphids** and **green peach aphids**.

Also on lettuce, **tarnished plant bugs** and **leafhoppers** are starting to increase in numbers. Tarnished plant bugs cause much damage especially to the ribs of lettuce leaves, and are especially numerous when weeds abound near the crop. Leafhoppers suck plant sap from the leaves, and transmit **lettuce yellows disease**. Use any labeled pyrethroid (Mustang, Mustang Max), dimethoate, or carbaryl for effective control. Apply using high volume, high pressure to force the material into the crop canopy where the pests are feeding. Consult label for all rates and restrictions before use.

✓ **Potatoes:** The hot, humid weather last week was favorable to egg hatch and larval development of **Colorado potato beetles**. Small larvae are beginning to show up on potatoes, and minor defoliation can be observed. At-plant or seed treatment applications of materials such as imidacloprid (Admire), or thiamethoxam (Platinum) will likely not be very effective at this time, considering the time since planting and the amount of rainfall during the past 2 months. Closely monitor potato fields for potato beetle buildup, and if treatments are necessary, avoid materials in the neonicotinoid class of insecticides (Actara, Assail, Provado) for the remainder of this year. Overuse of any of these materials will likely lead to potato beetle insecticide resistance in a very short period of time. Alternative materials include Agri-Mek, Avaunt WDG + piperonyl butoxide (PBO), azadirachtin (neem), cryolite (Kryocide), Guthion, Imidan, SpinTor, Thionex (Thiodan), and Vydate.

More importantly, monitor closely for **potato leafhopper** buildup. These pests can cause significant damage in a short period of time, and the plant cannot compensate for even moderate leafhopper damage. For leafhopper control, consider dimethoate, Guthion, Imidan, Lannate, Thionex, or Vydate, or a pyrethroid such as Baythroid, Asana, or permethrin (Ambush/Pounce). Leafhopper populations rapidly increased during the past few days of hot, humid weather. Do NOT let leafhopper populations reach a damaging level. □

IPM Update

Kristian Holmstrom, Program Associate in Vegetable IPM

Tomatoes

Scouts continue to report cases of foliar disease in staked tomatoes, even prior to the onset of fruit. Diseases include **alternaria**, **septoria**, **botrytis**, and **bacterial infections**. Much of this is a consequence of prolonged wet weather. Do not assume that tomatoes can wait until the crown fruit are sizing up before initiating a fungicide program. Under current conditions, it is advisable to maintain a regular program against both fungal and bacterial infections of the foliage. Consult the *2003 Commercial Vegetable Production Recommendations* for materials.

Cucurbit Crops

Striped cucumber beetle has been extremely heavy on newly emerged and transplanted cucurbit crops. This pest has been active in all areas of the state. A systemic insecticide at planting is the best way to protect against feeding and transmission of **bacterial wilt** by this pest. If this has not been done, be sure to scout fields twice a week for the presence of beetles. Check 5 consecutive plants in 10 random locations in the field. In pumpkins and winter squash, consider treating if two or more beetles are found at more than one half of the sites. For cucumbers, summer squash and muskmelons, consider treating if beetles are found at more than one site, as these crops are generally more susceptible to bacterial wilt. The critical time for transmission of this disease is from emergence to 4 true leaves.

Potatoes

Potato leaf hopper (PLH) numbers have risen dramatically over the past week. Recent sweep samples in Hunterdon County have returned upwards of 200 adults per 50 sweeps. The recommended action threshold for PLH is an average of one adult per sweep. As yet in the northern counties, no nymphs have been found. Nymphs are sure to follow as warmer weather allows reproduction. If nymphs are found in sweeps, or no sweep net is available, check 10 consecutive stems in 10 random locations in the field. Consider treating if one or more nymphs are found per 10 leaves.

Snap Beans

PLH are also now present in snap beans. This pest can cause considerable damage and yield loss in beans. PLH adults, though small, are easy to spot in the field because they readily fly from plant leaves when disturbed. If numbers of nymphs and/or adults exceeds 100 per 20 sweeps prior to bloom, consider treating. If no sweep net is available, check plants in 10 random field locations. If adults are seen flying at most sites, consider treating. Consult the *2003 Commercial Vegetable Production Recommendations* for materials.

Sweet Corn

European corn borer (ECB) adult activity remains low throughout the state, with somewhat higher adult populations in Salem, Cumberland, and Burlington Counties (see ECB map). Even in these areas, however, activity is much lower than in a normal year. Some feeding has begun to appear in whorl stage sweet corn. Garden State Pest Management reports feeding as high as 6% plants infested in the Allentown area and up to 8% in parts of Middlesex County. In southern Hunterdon County, feeding as high as 8% plants infested has been found this week. This level of feeding is not serious now, but is likely to increase somewhat with warmer conditions. Feeding in the southern counties is probably somewhat higher than what has been found further north. Look at 5 consecutive plants in each of 10 random locations throughout the planting. If plants with feeding exceed 12%, consider treating. Generally, feeding may be allowed to get higher than this if the planting is in the whorl stage. At pre-tassel, this threshold should be adhered to more strictly. A treatment at the full-tassel to first silk stage is also advisable to prevent ear damage from ECB larvae that may have survived previous treatments. The highest average nightly **ECB** blacklight trap catches are:

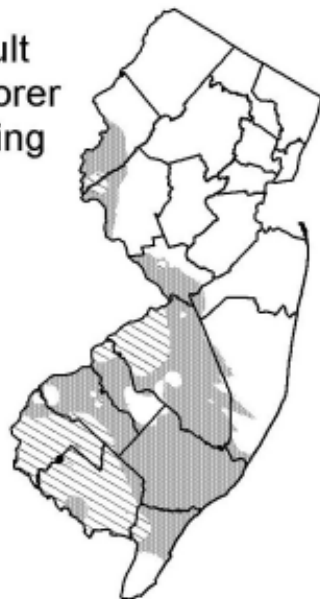
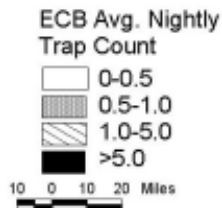
Cinnaminson	3	Eldora	2	Medford	2
Allentown	2	Elmer	2	Pole Tavern	2
Burlington	2	Hammonton	2	Shirley	2
Chapel Heights	2	Little York	2	Bayside	1

Corn earworm (CEW) adult activity remains very low at this time. The focus of activity has shifted slightly west from last week (see **CEW** map). At most, some traps are capturing 3-4 moths per week in this area. As there is no silking corn in these areas at this time, this population does not represent an economic threat. The highest average nightly **CEW** blacklight trap catches are:

Allentown	1	Elmer	1	Indian Mills	1
Crosswicks	1	Georgetown	1	Medford	1
Egg Harbor	1	Hammonton	1	Sykesville	1

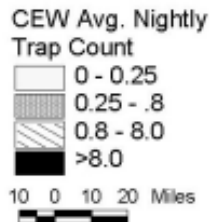
SEE ECB AND CEW DISTRIBUTION MAPS ON PAGE 6

Distribution of Adult European Corn Borer for the Week Ending June 18, 2003



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

Distribution of Adult Corn Earworm for the Week Ending June 18, 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 near normal north and central and above normal south. Extremes were 89 degrees at Hammonton, on the 13th and 48 degrees at Charlotteburg on the 10th. Weekly rainfall averaged 1.70 inches north, 1.69 inches central, and 1.50 inches south. The heaviest 24 hour total reported was 1.39 inches at New Brunswick on the 12th to 13th. Estimated soil moisture, in percent of field capacity, this past week averaged 97 percent north, 93 percent central and 88 percent south. Four inch soil temperatures averaged 66 degrees north, 68 degrees central and 70 degrees south.

Weather Summary for the Week Ending 8 am Monday 6/16/ 3

WEATHER STATIONS	RAINFALL			TEMPERATURE				GDD BASE50		MON
	WEEK	TOTAL	DEP	MX	MN	AVG	DEP	TOT	DEP	%FC
BELVIDERE BRIDGE	.97	17.44	4.00	83	51	70.	2	577	-25	92
CANOE BROOK	MISSING									
CHARLOTTEBURG	2.72	20.85	6.23	81	48	65.	0	359	-66	97
FLEMINGTON	1.14	17.47	3.57	84	54	69.	0	562	-28	96
LONG VALLEY	1.80	16.14	1.22	78	52	65.	-1	350	-128	96
NEWTON	1.89	15.09	1.97	82	52	67.	0	489	2	97
FREEHOLD	1.66	16.72	2.99	87	55	72.	2	637	-34	96
LONG BRANCH	1.17	18.18	4.26	86	55	69.	0	512	-98	90
NEW BRUNSWICK	2.40	18.25	4.80	85	57	70.	0	588	-125	97
TOMS RIVER	1.77	16.30	2.64	88	56	72.	4	604	-3	92
TRENTON	1.43	15.87	3.41	85	57	71.	0	581	-177	89
CAPE MAY COURT HOUSE	.16	13.64	1.56	85	56	72.	3	559	-118	60
DOWNSTOWN	1.76	15.55	3.17	87	57	73.	2	656	-124	93
GLASSBORO	1.93	16.88	3.59	86	58	74.	3	719	-41	93
HAMMONTON	2.10	13.59	.65	89	57	74.	3	689	-62	92
POMONA	1.25	14.72	2.84	87	57	73.	3	590	-93	86
SEABROOK	1.82	15.07	3.40	87	60	74.	3	754	-32	86
ATLANTIC CITY MARINA	MISSING									
SOUTH HARRISON	1.93	16.52	4.18	86	58	73	NA	719	NA	NA
WES KLINE — GDD BASE 40 PINEY HOLLOW	Last Week 143 (Ending 6/9/03) This Week 233 (Ending 6/16/03)									

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