

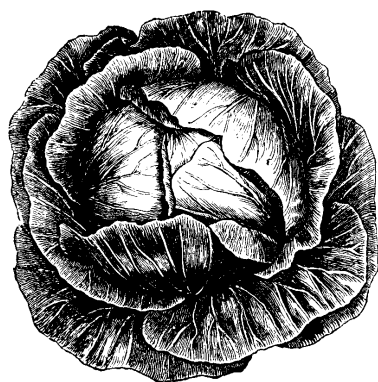
# PLANT & PEST ADVISORY

VEGETABLE CROPS EDITION \$1.50

MAY 16, 2007

## IPM Update

*Kristian Holmstrom, Research Project Coordinator II, Vegetable IPM Program*



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### Sweet Corn

A few **European corn borer (ECB)** adults have been captured as of the first part of this week. These individuals represent the first of the spring flight. As yet, all catches have occurred in the southern and central counties (see below), and are not numerous enough to appear as a mapped population. As catches increase, an ECB adult population map will be published. In the central counties, the earliest sweet corn plants are not quite large enough to be targets for ECB larval injury. In the southern counties, egg-laying and larval injury will likely occur within the next 1-2 weeks as adult activity increases.

The highest nightly ECB catches for the previous week are as follows:

Allentown	1	Halltown	1	Seabrook	1
Crosswicks	1	Jones Island	1	Woodstown	1
Dayton	1	New Egypt	1		
Georgetown	1	Princeton	1		

For sweet corn in the whorl stage, check 5 consecutive plants each in 10 random locations throughout the planting. Look for the presence of "shot-hole" type feeding that is characteristic of ECB larvae. Consider treating if fresh damage is found on 12% or more plants. Do not count plants with larger holes that appear in straight lines across leaves. This feeding is caused by the **billbug**, and occurred when the plants were very small. It is not economically important.

For newly emerged plantings, check 10 consecutive seedlings each in 10 random locations in the field for the presence of corn **flea beetle**. This pest is capable of transmitting **Stewart's wilt** to small sweet corn plants. If the variety has been purchased with a seed treatment (Gaucho or other systemic insecticide), or a systemic insecticide was used at planting, it is unlikely that flea beetles will be present on the plants. If no systemic insecticide was used and the variety is susceptible to Stewart's wilt, a foliar insecticide treatment should be applied when >6 flea beetles are found per 100 seedlings.

### Cole Crops

**Imported cabbage worm (ICW)** infestations are appearing, and adults (the white cabbage butterfly) are visibly active in fields on warm days. In heading type cole crops like cabbage and broccoli, check 5 consecutive plants each in 10 random locations. Look on the under-

SEE IPM ON PAGE 2

# Establish a Stand at a Farmers Market

9 easy steps to ensure  
your move is successful

Jhilson Ortiz, Senior Program Coordinator  
- Agriculture

1. Make sure your farmers market and you have the same goals and methods to excel in the business. Everyone wants to successfully sell their products, but what prices and practices you'll be able to apply are limited by the market regulations and current consumer profile
2. Plan your sales stand layout based on business functionality; products are easy to reach and re-supply, product areas are clearly differentiated, product demonstration site is clean, staff can move easily, and all consumers can be taken care of
3. Choose a farm theme, define your core business principles and display them together with your farm history
4. Dress for success; management and staff should wear a uniform with your business name and what you stand for (no political statements, instead, focus on product or service quality statement)
5. Sell what your consumers want, not what you can grow. Consumers are keen to visit places where most of their needs are met
6. Offer different options for each product or service you offer. Ex. 3 pack vs. 7 pack of quality grade A tomatoes
7. Make sure your consumers can recognize you in bags, hats, t-shirts, etc. Create a culture of freshness called (your business name here)
8. Treat customers well. Go beyond duty to make sure they are happy with their purchase and the service they received. Make sure that's the case by providing a comments box
9. Have a weekly meeting with your staff to go over performance goals, service enhancement measures, staff recognition, etc. □

## IPM FROM PAGE 1

sides of leaves and on the youngest leaves at the center of the plant. Consider treating if 10% or more plants are infested while in the 0-9 true leaf stage. The threshold may increase to 20% from 9 true leaves to the early head stage. Once heads form, the threshold becomes a more conservative 5%, in order to protect the marketable portion of the plant.

While scouting for caterpillar pests, note the presence of **crucifer flea beetle**, especially on new transplants or recently emerged plants. This pest can be very destructive, particularly to newly emerged seedlings. Consider treating if 50% or more plants have flea beetles on them, and damage is visible. It is important to check these young fields at least weekly, as reinfestation can occur quickly after a foliar insecticide application.

## Tomatoes

Tomatoes are in the field in many places now, and are subject to infestation by **aphids**. Check 5 consecutive plants each in 10 random locations in the planting. Look at two complete leaves per plant. Aphid colonies may be tolerated on plants for a time as long as they are not numerous and heavy enough to result in honey dew (sticky droppings) on the surface of fruit. In most cases, there are no fruit present on plants yet. Aphids may be controlled by natural predators and parasites if broad spectrum insecticides are not used. Note whether colonies are increasing in number and note the presence of predators such as ladybird beetles/larvae, lacewing larvae, syrphid maggots and the presence of bloated, gold colored aphid mummies (indicating parasitism by aphidiid wasps). If aphid colonies are still present when fruit begin to size, and are heavy enough to result in honey dew deposition in several samples, consider a foliar insecticide application to control them.

**Two-spotted spider mites (TSSM)** have been found in several tomato high tunnels in the northern counties. As yet, infestations are limited. With warm temperatures, TSSM is likely to increase in the tunnels. At low levels, TSSM can be managed effectively with the predatory mite *Neoseiulus fallacis*, which can be purchased from several biological control suppliers. A partial list of biological control suppliers may be found on the website for the Association of Natural Biological Control Providers at [www.anbp.org/](http://www.anbp.org/). It is important that TSSM be identified early however, because once they are found throughout the tunnel, control will be difficult. Predatory mites typically arrive in a vial of corn grit, which is sprinkled on plants with heavier applications where TSSM colonies have been identified. Generally, predatory mites provide good suppression of TSSM until temperatures in the tunnel surpass 90° F consistently. At this point, TSSM can rebound while the predators decline. Usually, suppression lasts long enough for the crop to be harvested without economic loss. If TSSM increases more quickly, or is discovered at high initial levels, consider a miticide application for effective suppression. □

## Pest Notes

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

### New Vegetable Crop Labels for 2007

There have been many new labels approved for the upcoming growing season for vegetable crops. Some are for brand new products, some are for existing products, and some are new names for older products. Be sure to read and fully understand all label directions and restrictions for complete information before using any product.

### Cancellations

diazinon – diazinon can still be used throughout 2007 according to the label directions. In the near future these uses will likely be cancelled, but commercial growers can use existing stocks as per label uses.

Guthion – Guthion has been phased out on any remaining vegetable crops. Product can still be used on parsley for **carrot weevil** control (a special local needs label is required for this use).

Dimethoate – EPA cancelled dimethoate uses on cabbage, collards, lettuce, lentils, and spinach. Stocks in existence can still be used on these crops until all stocks are depleted.

### New Names and New Products

Fanfare 2EC (bifenthrin) is similar to Capture with the same crops listed on the label.

Bridgade 2EC (bifenthrin) has expanded the label to include cucurbits, leafy Brassicas, sweet potatoes, white potatoes, and tomatoes for the control of various insect pests.

Sluggo Snail and Slug Bait (iron phosphate) is labeled for use around any vegetable crop in the field or in the greenhouse. Apply in the evening hours when the soil is moist for best results.

Mustang MAX received a NJ Supplemental Label to include a 1-day-to-harvest interval on cucurbits, leafy vegetables, and root & tuber crops (potatoes, turnips, etc).

Hero EC – received EPA registration for a bifenthrin PLUS zeta-cypermethrin mix for use on beans, head and stem Brassica, head lettuce, eggplant, peas, peppers, sweet corn and tomatoes. This mix is of materials similar to Capture plus Mustang.

Capture LFR (liquid fertilizer ready) is now labeled on many vegetable crops for at-plant uses, including sweet corn, peas, head and stem Brassicas, cucurbits, head lettuce, eggplant, bell and non-bell peppers, spinach and tomato. Capture LFR can be mixed directly with liquid fertilizer to control soil insect pests.

Respect (zeta-cypermethrin) – a pyrethroid now marketed by BASF, labeled on many fruiting, leafy and bulb vegetable crops as a broad-spectrum insecticide.

This is the same active ingredient as contained in Mustang MAX and Fury.

Consero – an insecticide containing a package of spinosad and a package of gamma-cyhalothrin. These two packages are to be mixed before application for use on field corn, sweet corn and beans.

Conserve SC (spinosad) – this is the ornamental version of SpinTor which now has many vegetables on the label that are from the SpinTor label.

Spinosad – the federal EPA has granted Dow Agro registration for use in bulb vegetables (a label addition).

Renounce 20WP (cyfluthrin) – the same active ingredient as Baythroid, and is labeled on cole crops, lettuce, leafy vegetables, cucurbits, tomatoes, pepper, potatoes, sweet potatoes, carrots, radish, sweet corn, beans and peas. This is a new formulation for this pyrethroid.

GF120 Naturalyte Fruit Fly Bait – a new formulation of spinosad that has received label registration for the control of **tephritid fruit flies** within any vegetable crop that serves as a resting place for **adult flies**.

Abba 0.015EC – (abamectin) – labeled for **Colorado potato beetle** on tomato and potato, and for **mites** and **leafminers** on cucurbits, celery, pepper, leaf lettuce and tomato. Similar to Agri-Mek.

Floramite SC (bifenazate) – a newly registered miticide for use on greenhouse tomatoes for the control of **mites**. Fruit must be greater than 1" in diameter when mature.

Pylon (chlorfenspar) – received registration for use on greenhouse solanaceous crops (eggplant, tomato, pepper). This is a new chemistry insecticide that is effective against **spider mites**, **thrips**, and **certain caterpillars**.

Talus (buprofenzin) – a new insecticide that acts as an insect growth regulator, disrupting the formation of the cuticle during molting by the larval stage of the insect pest. It is registered on greenhouse tomatoes for the control of **whiteflies**, **mealybugs**, and **leafhoppers**.

BotaniGard – a fungal insecticide (biological insecticide) containing *Beauveria bassiana* for the control of **whiteflies**, **thrips** and **aphids** on many vegetable crops. This new product is available from BioWorks, Inc.

### Special Labels and Section 18 Label

#### Approvals

Coumaphos – received a Section 18 Specific Exemption label in New Jersey for use in beehives to control small hive **beetles** and **varroa mites**. This label is in effect for this year only.

Remember, it is up to you as the end user to read and fully understand all label directions, instructions and restrictions for each product. Label information has all pertinent information concerning crops uses, reentry times, days to harvest, environmental and worker safety, and other information that is necessary to know before use. □

# Vegetable Disease Update

Andy Wyenandt, Ph.D., Specialist in Vegetable Pathology and Wesley Kline, Ph.D., Cumberland County Agricultural Agent

✓ **Collard/Turnip – Peppery leaf spot** - Symptoms of Peppery leaf spot include water-soaked spots that turn purplish-brown surrounded by yellow ‘halos’. These lesions can be up to 1/8 inch and can join together turning leaves yellow can causing them to drop off. The pathogen can survive in the soil and on debris from previous crops. During cool, wet periods, the disease can become severe and be spread by splashing rain. Best management practices for control include i) start with clean seed ii) plant in clean beds and iii) use proper crop rotation of one year or more. If Peppery leaf spot has been a problem in the past, beds should be sterilized prior to planting.

✓ **Cucumber/Pickles –Angular leaf spot** - Symptoms are distinct and easily diagnosed. Small water-soaked **lesions** develop on leaves and expand until they are **delimited by larger secondary veins** in leaves resulting in angular lesions. After time these lesions turn brown and infected tissue drops-off resulting in ‘shotholes’. Angular leaf spot can be spread by splashing rain, insects, on the hands of workers and on farm machinery. Working in the field when the foliage is wet favors the spread of the disease. The disease can also be spread by blowing wind and in irrigation water. Best management of Angular leaf spot begins with clean-seed and planting in fields that has been out of cucurbit production for at least 2 years. Cultivating when foliage and soil are wet and irrigating with pond water should be avoided. There are cucurbit varieties with resistance. Add label rate of fixed copper + mancozeb to fungicide maintenance program and repeat applications every 7 days.

✓ **Lettuce – Bottom Rot/Drop – Reports of lettuce drop have increased this past week**, growers should take precautions to help control Bottom rot (*Rhizoctonia*) and Lettuce drop (*Sclerotinia*) which may cause potential problems. For Bottom Rot, Endura 70W (boscalid, Group 7) at 8 to 11 oz/A, or Rovral 50WP (iprodione, 2) at 1.5 to 2 lb/A or OLF should be applied one week after transplanting or thinning and 10 and 20 days later. For Lettuce drop, the biological Contans 5.3WG at 2 to 4 lbs/A pre-plant can be incorporated at a depth of 1 to 2 inches; or apply Rovral (iprodione, 2) at 1.5 to 2 lb/A 50WP or Endura (boscalid, 7) at 8 to 11 oz 70W/A beginning one week after transplanting or thinning and again at 10 and 20 days later. For more information on control of Bottom rot and Lettuce drop and other important diseases of lettuce please see the 2007 *New Jersey Commercial Vegetable Production Recommendations Guide*.

## ✓ **Pepper – Phytophthora blight**

### **For control of the crown rot phase of blight:**

Apply 1 pt Ridomil Gold 4E/A or 1 qt Ultra Flourish 2E/A (mefenoxam, 4). Apply broadcast prior to planting or in a 12- to 16-inch band over the row before or after transplanting. **Make two additional post planting** directed applications with 1 pint Ridomil Gold 4E or 1 qt Ultra Flourish 2E per acre to 6 to 10 inches of soil on either side of the plants at 30-day intervals. Use formula in the “Calibration for Changing from Broadcast to Band Application” section of Calibrating Granular Application Equipment to determine amount of Ridomil Gold needed per acre when band applications are made.

When using polyethylene mulch, apply Ridomil Gold 4E at the above rates and timing by injection through the trickle irrigation system. Dilute Ridomil Gold 4E prior to injecting to prevent damage to injector pump.

✓ **Tomato – Bacterial spot and speck** – Both bacterial diseases can cause serious problems in the field if infections begin in the greenhouse prior to transplanting. Symptoms of spot and speck look very similar on infected leaves. Lesions are small, circular, blackish-brown and with time develop a halo, or yellowing of tissue surrounding the lesion. As lesions develop they can coalesce (join together) and can cause premature death. Since sources for these diseases include seed, weed hosts, volunteer plants and contaminated wood (benches) make sure production or holding areas are disinfested, weed-free and clean prior to introducing transplants. Inspect all seedlings prior transplanting. Infections can occur on all parts of the tomato plant and can easily be spread during transplant production and transplanting with contaminated equipment and workers hands. Tomato plants with suspected symptoms can be treated with streptomycin (Agri-Mycin 17, Agri-Strep, 25) at 1 lb/100 gallons, or 1.25 teaspoon per gallon prior to transplanting every 4 to 5 days. After transplanting apply Actigard at 0.33 oz 50 WG/A, or fixed copper (M1) at 1 lb a.i./A *plus* a mancozeb (Dithane, Manex II, Manzate, Penncozeb, M3) at 1.5 lb 75DF or OLF, or ManKocide (M1 + M3) at 2.5 to 5.0 lb 61WP/A, or Cuprofix MZ (M1 + M3) at 1.75 to 7.25 lb 52.5DF/A on a 7 day schedule. □

# Using Cover Crops to Reduce Erosion in Plasticulture Vegetable Production

*Tim Elkner, Penn State Cooperative Extension, Regional Horticulture Educator, Penn State University, Dave Johnson, Manager, Penn State Southeast Research and Extension Center and Jeff Stoltzfus, ELANCO Adult Farmer Program*

*Reprinted from The Vegetable and Small Fruit Gazette, May 2007, Penn State University*

A considerable amount of fresh market vegetables are produced using raised-beds and plastic mulch. The plasticulture system has numerous production advantages for the grower. However, using plastic mulch requires extensive soil tillage and can lead to increased soil erosion during heavy rainfalls. Runoff from the plastic will also increase erosion, especially on sloped sites.

Cover crops have been shown to reduce soil erosion, especially those that provide a dense cover. However, a living cover crop can compete with the vegetable crop for water and nutrients as well as potentially harbor insect pests. Growers using the plasticulture system have begun to experiment with living mulches between rows of plastic in some areas of Pennsylvania. In 2005 and 2006 we examined the effects of living and burned down cover crops in row middles of vegetables produced using plasticulture to provide recommendations to growers. In all studies the crop was grown using standard production practices regarding fertility and pest control.

In 2005 tomatoes were grown in a field that had bare soil, annual ryegrass, or red clover cover crops between the rows. The cover crops were established just after the plastic mulch was laid. Cover crops were mowed as necessary until harvest started. Yields were recorded at each harvest and combined to give total yields for each mulch treatment.

A similar evaluation with watermelon was conducted with bare soil, annual ryegrass or oats as cover crops. The cover crops were burned down with glyphosate prior to vine running. Yields were measured at each harvest and combined for total yields per mulch treatment.

Pumpkins were utilized as a third crop to evaluate. Treatments were bare soil (no herbicide), bare soil + Strategy herbicide, living cover crops, cover crops burned down with glyphosate, and cover crops burned down and Strategy applied. Cover crops used were oats, annual ryegrass or cereal rye. Due to the dry weather cover crops did not establish well in this part of the trial.

While there was no difference in total yields between the cover crops (annual ryegrass and red clover) tomato yields were 65% higher with a cover crop than bare soil. The grower cooperater in this trial noted that fruit set was better in the lower portion of the plants in plots with cover crops than in bare soil. Since these cover crops were alive and controlled by mowing, we suspect that the cover crops resulted in lower (more favorable) temperatures for fruit set. The 2005 growing season was hot and this effect may not be present every season, especially in a normal season where this cooling could lower yields.

In watermelon, yields from mulch treatments that were rolled and sprayed had equal yields to the bare soil. Cover crop plots that were only sprayed (but not rolled) had lower yields than the other treatments. Two explanations we have are better weed control because of formation of a better "mat" of vegetation with rolling and possible pollination problems in plots with standing residue.

High weed pressure in the untreated plot in pumpkins significantly reduced yield. In the non-killed cover crops yields were also reduced but not as much as in the untreated plots. Cover crops that were killed prior to vine run resulted in yields that were the same as the standard treatment of Strategy herbicide.

In 2006 we again looked at a cover crop in row middles in pumpkins grown using plastic mulch. The treatments were bare soil with no herbicides, bare soil with Strategy herbicide and annual ryegrass burned down prior to vine run. The 2006 season was cooler and weed pressure was not as great as in 2005. There were no significant differences among the treatments although yield was slightly lower in annual ryegrass plots. Some grass and weeds emerged in these plots after burn down and may have competed with the crop or affected pollination.

Based on these studies we believe that cover crops, when properly managed, can be successfully used in plasticulture row middles for vegetable production. Living mulches can be used in upright crops where they can be managed by mowing. Vine crops require the cover crop to be killed prior to vine run. Besides cleaner crops at harvest, mulches in row middles will help protect the soil from erosion.

We would like to thank the PA Vegetable Marketing and Research program for funding to support these studies. □

# Weekly Weather Summary

Keith Arnesen, Ph.D., Agricultural Meteorologist

Temperatures averaged above normal, averaging 62 degrees north, 62 degrees central and 63 degrees south. Extremes were 84 degrees at Hammonton and Flemington on the 12th, and 34 degrees at Pomona on the 9th. Weekly rainfall averaged 0.18 inches north, 0.41 inches central, and 0.38 inches south. The heaviest 24 hour total reported was 0.72 inches at Trenton on the 12th to 13th. Estimated soil moisture, in percent of field capacity, this past week averaged 86 percent north, 77 percent central and 66 percent south. Four inch soil temperatures averaged 59 degrees north, 59 degrees central and 59 degrees south.

## Weather Summary for the Week Ending 8 am Monday 5/14/ 7

WEATHER STATIONS	RAINFALL		TEMPERATURE				GDD BASE50		MON		%FC
	WEEK	TOTAL	DEP	MX	MN	AVG	DEP	TOT	DEP		
CANOE BROOK	.29	18.76	8.38	83	37	63.	5	257	141	85	
CHARLOTTEBURG	.08	14.15	3.93	82	35	62.	6	213	151	75	
FLEMINGTON	.19	17.96	8.08	84	36	62.	3	242	116	83	
NEWTON	.16	10.52	1.42	81	36	62.	5	202	117	80	
FREEHOLD	.31	13.60	3.78	83	49	66.	6	356	190	75	
LONG BRANCH	.62	13.71	3.56	73	39	58.	-1	224	86	86	
NEW BRUNSWICK	.19	17.90	8.33	83	38	63.	2	272	81	83	
TOMS RIVER	.20	11.08	1.22	80	37	60.	0	272	121	64	
TRENTON	.73	15.19	6.29	83	39	64.	2	311	94	81	
CAPE MAY COURT HOUSE	.39	7.32	-1.31	81	38	59.	-2	262	72	72	
DOWNSTOWN	.30	12.24	3.36	83	35	63.	1	328	100	66	
GLASSBORO	.41	11.18	1.78	83	42	65.	3	384	167	65	
HAMMONTON	.26	11.38	2.23	84	35	63.	2	336	127	59	
POMONA	.41	9.48	.86	83	34	61.	1	307	138	70	
SEABROOK	.50	12.15	4.11	83	39	66.	4	400	168	68	
SOUTH HARRISON	.44	13.73	5.08	83	38	65	NA	367	NA	NA	
WES KLINE -- GDD BASE 40 PINEY HOLLOW											
LAST WEEK 125 (Ending 5/7/07)											
THIS WEEK 163 (Ending 5/14/07)											

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**Pesticide User Responsibility:** Use pesticides safely and follow instructions on labels. The pesticide user is responsible for proper use, storage and disposal, residues on crops, and damage caused by drift. For specific labels, special local-needs label 24(c) registration, or section 18 exemption, contact RCE in your County.

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