

# PLANT & PEST ADVISORY

VEGETABLE CROPS EDITION \$1.50

APRIL 30, 2008



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## Food Safety Plans and Third Party Audits for 2008

*Wesley Kline, Ph.D., Cumberland County Agricultural Agent*

As we move into the summer determine whether you will need a third party audit for food safety. I am doing more and more mock audits (give ideas for changes prior to a formal audit) where I assess an operation to see if they are ready for an audit. This works for growers and buyers because they can make any changes needed before the season really gets going. What you do not want to do is wait until harvest season starts then expect to schedule an audit. If you wait to schedule the audit, the New Jersey Department of Agriculture auditors probably will be occupied with other work. The operation cannot be audited until you are in full operation, but everything must be ready including all the records and logs. At least two weeks of records are required before an audit can take place.

Most of the problems I have seen were minor, but they take time to correct. Generally, holes need to be sealed to reduce the chance of rodents entering a building, some lights were not covered, additional signage was required and a general cleaning was needed. It is much easier to do these things now when there is some spare time.

The biggest concern I see during mock audits is the operation not having their food safety program completed. If the manual is not complete, there is no reason to ask for an audit. Auditors will first ask to see your food safety plan before starting the audit. Without the plan they will not proceed. Once your plan is completed, someone doing a mock audit can help evaluate it and make suggestions for any changes.

### Changes in the program

As we move forward in the food safety arena, people continue to ask me when all this is going to stop. The truth is, it is not going to stop. There will be continual modifications as the science and politics change. There are groups working to make the audits more commodity specific, but it will take at least another growing season. The changes for 2008 include:

1. An agreement is signed between the auditee and NJDA/USDA to allow for the regular (announced) and unannounced audits. It outlines the expectations for each party and must be signed before audits can commence. The number of unannounced audits will depend on the length of the growing season. If less than 30 days only one regular

SEE FOOD SAFETY AUDITS ON PAGE 2

## Pest Notes

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

### Aphids

**Aphid** populations have been rapidly increasing both in the greenhouse and in the field (especially under tunnels). Many materials are available for aphid management, including some of the older materials that are still effective (acephate, dimethoate, Lannate, Mestastox-R, Thioxex), many neonicotinoids that are effective (imidacloprid, Assail, Actara, Venom), and several new chemistry aphicides (Beleaf, Fulfill, and Talus) that have been recently labeled.

Of these materials, Beleaf, Fulfill and Talus are specifically for aphids or related pests, and **won't** control **worms, beetles**, etc.

For most of these materials, thorough coverage of the foliage is important for effective control. Make sure to spray upper and lower leaf surfaces to ensure contact with the aphids. □

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#### FOOD SAFETY AUDIT FROM PAGE 1

audit; if 30 to 90 days one regular and one unannounced and if greater than 90 days one regular and two unannounced audits.

2. If any audit does not meet the minimum score (80%) or has an automatic unsatisfactory, the operation must file a corrective action report before being re-audited explaining what they did to fix the problem in the short term and the root cause.

3. The operation must pass all scopes requested in order to be posted on the USDA website. **It is important to know exactly which selections you want audited before the assessment starts!**

4. If an unannounced audit results in a failure, the operation will be removed from the USDA website until it passes a follow-up audit. □

## Flea Beetles in

## New Jersey Vegetables

Gerald M. Ghidui, Ph.D., Specialist in Vegetable Entomology and Michelle Infante-Casella, Agricultural Agent, Gloucester County

**Flea beetles** attack most vegetable crops grown in New Jersey. Several species can be found throughout the year, including the **cabbage flea beetle, corn flea beetle, crucifer flea beetle, horseradish flea beetle, eggplant flea beetle, palestriped flea beetle, potato flea beetle, spinach flea beetle, striped flea beetle** and the **sweet potato flea beetle**. They generally have 1-2 generations per year, and overwinter as adults, usually in soil and litter or other protected areas, becoming active in early spring (early April – May in New Jersey).

Flea beetle adults feed on the leaves, chewing small holes in the foliage. However, when feeding is extensive and the leaves become riddled, the adjacent tissue dies or dehydrates, and the leaf takes on a bronzed or burned appearance. Leaves will die and drop off the plant. Some species, such as the corn flea beetle, can completely skeletonize leaf tissue of seedling corn, often defoliating the plants. And the corn flea beetle adult also transmits a disease, **Stewart's bacterial wilt** of corn, which can stunt or even kill corn plants infected early in the season.

Larvae are generally root feeders, and several species occasionally cause considerable damage to roots and tubers.

### Management of Flea Beetles

For most crops, a flea beetle threshold has not been developed. For crucifers, a control tactic is suggested if there is one beetle per plant during the seedling stage of crop growth. In sweet corn, treat susceptible (to Stewart's wilt) varieties at spike stage of crop growth when 5% of the plants are infested.

Effective control measures include labeled seed treatments (Cruiser, Gaucho, Poncho, etc), at-plant or pre-plant insecticides (Furadan, Counter, etc), or foliar sprays (numerous materials are effective against flea beetle adults, including carbaryl, cryolite, Thionex, Vydate, numerous pyrethroids, Lannate, Lorsban, and various neonicotinoids). Check label for specific uses on each crop.

As a general rule, the use of imidacloprid or thiamethoxam applied to the root zone when labeled for that crop will reduce flea beetle populations.

If foliar sprays are needed, apply during warm, sunny weather when adults are active on the plants. Obtain thorough coverage of the foliage. Monitor the field after spray application to assess effectiveness. Even if good control is obtained, keep monitoring or scouting flea beetle population as reinfestations can occur rapidly during warm weather. □

# Vegetable Disease Update

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

## ✓ Asparagus – Phytophthora crown and spear rot

– In fields with low spots (poorly drained soils) or fields with a history of crown and/or spear rot apply Ridomil Gold 4E (mefenoxam, 4) at 1 pt/A over beds just before 1<sup>st</sup> harvest. For new plantings, apply the same after planting or after crown covering. For more information please see *2008 New Jersey Commercial Vegetable Production Recommendations Guide*.

## ✓ Cabbage – Damping-off

– To help control losses due to damping-off pathogens apply Ridomil Gold (mefenoxam, FRAC code 4) at 1 to 2 pt/A 4E or Quadris (azoxystrobin, 11) at 0.4 to 0.8 fl oz 2.08F/1000 row ft (for Rhizoctonia only) in a band up to 7 in. after seeding. For more information please see *2008 New Jersey Commercial Vegetable Production Recommendations Guide*.

## ✓ Cole crops – Downy Mildew and Alternaria

– The spring season is just around the corner and it's not too early to think about Downy mildew control. Symptoms of Downy mildew include purple to yellowish-brown spots on upper leaf surfaces. A grayish-white spore mass will develop and cover the underside of leaves under ideal temperatures (night temperatures of 46 to 61°F and day temperatures below 75°F. Downy mildew can kill young plants. Heavily infected leaves may drop providing entry points for bacterial infections (Black rot and Soft rot). Symptoms of Alternaria on infected leaves include small, expanding circular lesions with concentric rings that may have a 'shot-hole' appearance as lesions age. Heavily infected seedlings may result in damping-off. Control of Downy mildew and Alternaria begin with preventative fungicide applications. Use one of the following at the first sign of disease and continue every 7 to 10 days (Please refer to the pesticide table on page F20 of the *NJ Commercial Vegetable Production Recommendations* to determine which fungicide is labeled for each specific crop.): Quadris (azoxystrobin, 11) at 6.2 to 15.4 fl oz 2.08F/A, or chlorothalonil (M5) at 1.5 pt 6F/A or OLF, or Cabrio (pyraclostrobin, 11) at 12 to 16 oz 20EG/A, or Endura (boscalid, 7) at 6 to 9 oz 70WG/A, or maneb (M3) at 1.5 to 2 lb 80WP/A or OLF, or Ridomil Gold Bravo (mefenoxam + chlorothalonil, 4 + M5) at 1.5 lb 76.5WP/A (14-day schedule), or Switch (cyprodinil, 9) at 11 to 14 oz 62.5WG/A (Alternaria only). For downy mildew only, apply Actigard (acibenzolar-S-methyl, P) at 1 oz 50WG/A (begin applications 7-10 days after thinning and re-apply every 7 days for a total of 4 applications per season.), or Aliette (fosetyl AI, 33) at 3 to 5 lb 80WDG/A (on 14-day schedule). For more information please see *2008 New Jersey Commercial Vegetable Production Recommendations Guide*.

✓ **Lettuce – Bottom Rot/Drop** – Spring lettuce season is beginning and 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, FRAC code 7) at 8 to 11 oz/A, or iprodione (FRAC code 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 Endura (FRAC code 7) at 8 to 11 oz 70WG/A, Botran (dichloran, FRAC code 14) at 2 to 5.5 lb 75WP/A, or iprodione (FRAC code 2) at 1.5 to 2 lb/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 *2008 New Jersey Commercial Vegetable Production Recommendations Guide*.

✓ **Strawberry – Anthracnose fruit rot** - Strawberry anthracnose can be extremely destructive during warm, wet weather causing significant fruit rot. Symptoms of Anthracnose include blackish-brown circular spots on maturing green fruit and soft, sunken (flat) circular lesions on ripe fruit. On ripe fruit, lesions can expand rapidly and are often covered with a pinkish-orange spore mass. Spores are spread from infected to healthy fruit with splashing water. Control of Anthracnose always begins with a 7 to 10 day preventative spray program no later than 10% bloom and/or prior to disease development. For control apply the following combinations:

#1 captan (M3) at 4 lb 50WP/A plus Pristine (pyraclostrobin + boscalid, 11 + 7) at 18.5 to 23.0 oz 38WG/A

#2 captan 5(M3) at 4 lb 50WP/A plus Abound (azoxystrobin, 11) at 6.2 to 15.4 oz 2.08F/A or Cabrio (pyraclostrobin, 11) at 12 to 14 oz 20EG/A

#3 Captevate (captan + fenhexamid, M3 + 17) at 3.5 to 5.25 lb 68WDG/A

For subsequent applications, alternate:

captan (M3) at 4 lb 50WP/A plus Abound (azoxystrobin, 11) at 6.2 to 15.4 oz 2.08F/A, or

Cabrio (pyraclostrobin, 11) at 12 to 14 oz 20EG/A with

captan (M3) at 4 lb 50WP/A, or

Captevate (captan + fenhexamid, M3 + 17) at 3.5 to 5.25 lb 68WDG/A

To help manage fungicide resistance development, do not make more than 2 consecutive applications of either Pristine (pyraclostrobin + boscalid, 11 + 7), Cabrio (pyraclostrobin, 11) or Abound/Quadris (azoxystrobin, 11) before switching to another fungicide chemistry.

✓ **Strawberry – Botrytis (Gray Mold) and Blossom blight** – can cause serious losses in strawberry plantings if not controlled properly. Development is favored by moderate temperatures (59 to 77 F) with prolonged

SEE DISEASE UPDATE ON PAGE 4

periods of high relative humidity and surface wetness. Control of Gray mold begins with preventative fungicide applications. Apply at 5 to 10 percent bloom and every 10 days until harvest. During periods of excessive moisture, spray intervals of 5 to 7 days may be necessary. Rotate fungicide chemistries to aid fungicide resistance management.

Application #1: captan (M3) at 4 lb 50WP/A plus Topsin M (thiophanate-methyl, 1) at 1 lb 70WP/A or Switch (cyprodinil, 9) at 11-14 oz. 62.5WG/A

Application #2; Elevate (fenhexamid, 17 - See restrictions) at 1.1 to 1.5 lb 50WDG/A, or Pristine (pyraclostrobin + boscalid, 11 + 7) at 18.5 to 23 oz 38 WG/A

Application #3: captan (M3) at 4 lb 50WP/A plus Topsin M (thiophanate-methyl, 1) at 1 lb 70WP or Switch (cyprodinil, 9) at 11 to 14 oz. 62.5WG/A

For subsequent applications, alternate:

Captan (M3) at 4 lb 50WP/A, or Captevate (captan + fenhexamid, M3 + 17) at 3.5 to 5.25 lb 68WDG/A, or Switch (cyprodinil, 9) at 11 to 14 oz. 62.5WG/A or Pristine (pyraclostrobin + boscalid, 11 +7) at 18.5 to 23 oz 38 WG/A, or Thiram (M3) at 4 to 5 lb 65WSB/A

✓ **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 transplants 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 every 4 to 5 days prior to transplanting. Additionally, Kocide 3000 (copper hydroxide, FRAC code M1), the updated formulation from Dupont, has a greenhouse label for speck and spot control in the greenhouse. Apply ½ to 1.5 TBSP per 1000 sq ft. every 5 to 10 days. Remember, phytotoxicity is an important issue when apply copper in enclosed structures, see label for cautions, restrictions and liabilities. 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. □

## Pesticide Applicator Storage Inventory and Cover Letter Submittal Due May 1st to Fire Department

All licensed pesticide applicators who store pesticides are required by law to send a copy of their storage inventory(ies) with an explanatory cover letter to the local fire company along with the actual location of each storage area by May 1st each year. In New Jersey, all licensed pesticide applicators who store pesticides are required per N.J.A.C. 7:30-9.5 to maintain a list of the pesticides stored or likely to be stored during the license year. This includes storage in the vehicles. A storage inventory should be kept separate from the actual storage area.

The Rutgers New Jersey Agricultural Experiment Station Cooperative Extension Pest Management Office 'Records & Forms' webpage at:

[www.pestmanagement.rutgers.edu/PAT/record\\_forms.htm](http://www.pestmanagement.rutgers.edu/PAT/record_forms.htm) has template forms for what is required as explained below.

1. See [www.pestmanagement.rutgers.edu/PAT/Record-Forms/storageinventoryr.pdf](http://www.pestmanagement.rutgers.edu/PAT/Record-Forms/storageinventoryr.pdf) for a **template storage inventory form** that meets the requirements for either a single storage location or address. The purpose of the inventory is to provide local fire departments with an accurate description of things stored by location in case of fire or other emergency. We suggest filling out a form per storage address of your establishment. You may also devise a form that suits your needs as long as it meets the requirements of N.J.A.C. 7:30-9.5.
2. See [www.pestmanagement.rutgers.edu/PAT/Record-Forms/InventoryLetter.PDF](http://www.pestmanagement.rutgers.edu/PAT/Record-Forms/InventoryLetter.PDF) for a **template cover letter** that meets the requirements. Specifically, NJDEP regulations provide; " The cover letter shall explain that this list has been sent pursuant to N.J.A.C. 7:30-9.5(b).4".

Submittal to the fire department is required annually by May 1st of each year. (This does not pertain to pesticides stored for personal use, or to those storing pesticides at loading or application areas for less than 7 days.) Applicators must keep the cover letter on file for a minimum of three years and should have it available for NJDEP upon request. □

# A Taste of Jersey Fresh™!

**Annual Open House and Tomato Tasting  
Rutgers Snyder Research and Extension  
Farm, Pittstown, Hunterdon County, NJ  
Wednesday, August 27, 3pm - dusk  
(RAIN OR SHINE)**

Rutgers NJ Agricultural Experiment Station and Cooperative Extension proudly announce "A Taste of Jersey Fresh™", a farm open house and research tour on Wednesday August 27, 2008 from 3 pm - dusk. The event will include opportunities to taste approximately 80 varieties of tomatoes suitable for New Jersey farms and gardens, along with a sampling of other farm

grown produce. The Melda C. Snyder Teaching Garden will showcase culinary herbs and "chef" gardens, perennial beds of deer tolerant landscape plants, plants that can attract beneficial insects to your garden, the Rutgers ornamental plant breeding program, columnar varieties of fruit trees for the home landscape, and award-winning Jersey Grown™ daylilies. Wagon tours will be available throughout the event, highlighting Rutgers NJAES agricultural research. Rutgers NJAES faculty, staff, and Master Gardener volunteers will be available throughout the event to answer your gardening questions.

Registration - \$5.00 per person, children under 10 are free.

Please RSVP at 908-713-8980.

More information can be found on our website

<http://snyderfarm.rutgers.edu>. □

## Weekly Weather Summary

Keith Arnesen, Ph.D., Agricultural Meteorologist

Temperatures averaged much above normal in the north and above normal central and south, averaging 58 degrees north 57 degrees central and 59 degrees south. Extremes were 81 degrees at Belvidere and Hammonton on the 25th, and 39 degrees at Charlotteburg on the 23rd. Weekly rainfall averaged 0.24 inches north, 0.24 inches central, and 0.19 inches south. The heaviest 24 hour total reported was 0.31 inches at Flemington on the 27th to 28th. Estimated soil moisture, in percent of field capacity, this past week averaged 81 percent north, 75 percent central and 68 percent south. Four inch soil temperatures averaged 59 degrees north, 57 degrees central and 59 degrees south.

**Weather Summary for the Week Ending 8 am Monday 4/28/ 8**

WEATHER STATIONS	RAINFALL			TEMPERATURE				GDD BASE50		MON %FC
	WEEK	TOTAL	DEP	MX	MN	AVG	DEP	TOT	DEP	
BELVIDERE BRIDGE	.21	7.51	-.02	81	42	59.	5	147	121	75
CANOE BROOK	.40	6.90	-1.40	80	40	58.	5	133	115	87
CHARLOTTEBURG	.10	8.28	.13	76	39	57.	6	128	126	75
FLEMINGTON	.38	7.38	-.57	79	41	58.	4	146	124	86
NEWTON	.10	7.19	-.06	78	45	60.	8	191	184	75
FREEHOLD	.23	4.73	-3.15	78	44	58.	3	141	101	77
LONG BRANCH	.21	6.12	-2.04	75	44	54.	0	82	52	75
NEW BRUNSWICK	.60	5.54	-2.02	79	45	58.	2	132	76	92
TOMS RIVER	.01	6.10	-1.87	77	43	56.	1	135	101	61
TRENTON	.14	5.75	-1.40	79	45	60.	3	189	119	62
CAPE MAY COURT HOUSE	.27	4.49	-2.45	77	47	58.	2	153	96	73
DOWNSTOWN	.08	5.55	-1.61	80	42	59.	2	194	120	63
GLASSBORO	.22	4.54	-3.00	79	47	62.	5	221	151	64
HAMMONTON	.08	4.94	-2.38	81	44	59.	3	206	141	59
POMONA	.28	5.95	-1.07	80	44	58.	3	180	136	70
SEABROOK	missing									
SOUTH HARRISON	.32	5.48	-2.23	78	46	60	NA	210	NA	NA
WES KLINE -- GDD BASE 40 PINEY HOLLOW										
LAST WEEK	108 (Ending 4/21/08)									
THIS WEEK	135 (Ending 4/28/08)									

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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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