

PLANT & PEST ADVISORY

VEGETABLE CROPS EDITION \$1.50

APRIL 25, 2007



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Successful Farmer's Market Operations

Jhilson Ortiz, Agricultural Agent, Rutgers Cooperative Extension of Mercer County

A Farmer's Market is a place where farmers market their products and their stories.

Farmer's Markets have been considered the connection between farms, their environment and values with the urban and suburban communities. As given entities, they do not only offer wholesome products, but also the opportunity for consumers to learn more about their rural environment and help protect it.

A successful Farmer's Market vendor accomplishes these goals and much more by providing more than quality products, but also the *experience* of buying at a farmers market. Now, what experience is this?

As a seasoned marketer, you have to think like your customer and wonder what they want to see, know and buy and make sure you can answer those questions with a touch of friendliness and fun.

What do you sell, for how much, when do you harvest it, how does it feel to be a farmer, how long have you been one, how does your farm help preserve a clean environment, what can they do with your product (recipes), what those strange looking squashes are, and when will strawberries become available are a good group of questions to address in your sales stand. Use a customized display with bright colors and big letters to achieve this.

The sales staff should interact with the consumer and find out what they would like to buy/know in a friendly manner. A "can I help you?" won't cut it. It is better to start the interaction with a friendly chat. "We had a good amount of rain last week and our peaches are really sweet."

Selling produce should be the last thing in your mind. Try instead fulfilling the expected needs and wants of your customers and make them feel welcome. Your products will sell as a result. □

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 1st harvest. For new plantings, apply the same after planting or after crown covering. For more information please see 2007 *New Jersey Commercial Vegetable Production Recommendations Guide*.

✓ **Cabbage – Damping-off** – To help control losses due to damping-off pathogens apply Ridomil Gold (mefenoxam, 4) at 1 to 2 pt/A 4E or Amistar (azoxystrobin, 11) at 0.125 to 0.25 oz 80WDG or OLF/1000 row ft. (for Rhizoctonia only) 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 2007 *New Jersey Commercial Vegetable Production Recommendations Guide*.

✓ **Cole crops – Downy mildew and Alternaria** – 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 F17 of the *NJ Commercial Vegetable Production Recommendations* to determine which fungicide is labeled for each specific crop.): Amistar (azoxystrobin, 11) at 3.5 to 5.0 oz 80 WDG/A or 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 + M4) at 1.5 lb 76.5WP/A (14-day schedule), or Switch (cypridonil, 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 Al, 33) at 3 to 5 lb 80WDG/A (on 14-day schedule). For more information please see 2007

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New Jersey Commercial Vegetable Production Recommendations Guide.

✓ **Parsley – Septoria Blight /Bacterial (blight) leaf spot** – Leaf spots caused by **Septoria blight** are easily distinguished by small, angular to round leaf spots with grayish-brown centers with a definitive dark, brown margin. Numerous black fruiting bodies develop in the center of lesions. Septoria blight is spread by wind-driven rain, heavy dews and overhead irrigation. Workers and equipment may also spread the disease during wet conditions. Best management practices include i) proper crop rotations of at least 2 years and by using clean or treated seed ii) scouting fields early for symptom development iii) keeping workers and equipment out of fields with wet foliage iv) plowing under residue of harvested crop and avoid planting in fields adjacent or near previously infected fields. Applications of azoxystrobin (Amistar or Quadris) and fixed copper can be alternated every 7 days for control. **Bacterial leaf spot** (*Pseudomonas syringae*) of parsley can also show up at the same time as **Septoria blight**. Leaf spots caused by Bacterial blight appear as small brown to black spots on the leaves. The pathogen can be soil or seed borne and develops during cool, moist weather. The disease spreads during cool, rainy weather or with overhead irrigation; and is exacerbated by high plant density. The same control measures listed for **Septoria** will assist in preventing the spread of **Bacterial leaf spot** as long as the fixed copper is included with azoxystrobin and the fungicides are applied preventatively. If Oxidate is used, follow the label carefully.

✓ **Spring Peas – Damping-off** - Use seed already treated with an approved seed treatment, or treat seed with a slurry or dust that contains an approved commercial fungicide-insecticide mixture. For Pythium control and/or for damping-off and root rot caused by Pythium, apply Ridomil Gold (mefenoxam, 4) at 0.5 to 1.0 pt 4E/A or Amistar (azoxystrobin, 11) at 0.125 to 0.25 oz 80 WDG/1000 row ft or Quadris (azoxystrobin, 11) at 0.40 to 0.80 fl oz 2.08F/1000 row ft as a broadcast treatment at seeding. For more information on seed treatment options and control please see the 2007 *New Jersey Commercial Vegetable Production Recommendations Guide*.

✓ **Spinach Greens (Damping-off)** – See table on page E30 for seed treatment options. Apply Ridomil Gold 4E/A (mefenoxam, 4) at 1 to 2 pt/A or Ultra Flourish 2E (mefenoxam, 4) at 2 to 4 pt/A pre-plant incorporated or as a soil surface spray after planting. For more information please see the 2007 *New Jersey Commercial Vegetable Production Recommendations Guide*.

✓ **Strawberry – Anthracnose fruit rot** -Strawberry

SEE DISEASE UPDATE ON PAGE 3

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 +) 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 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 (cypridonil, 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 (cypridonil, 9) at 11 to 14 oz. 62.5WG/A

Tax Law (Sales and Use) for Agro Enterprises in New Jersey



A 40 minute presentation by Robert Bruch from the New Jersey Department of Agriculture

When: Monday, May 14, 2007 at 7:30 p.m.
Where: Rutgers Cooperative Extension of Mercer County
930 Spruce Street,
Lawrenceville, NJ 08648

Please RSVP by May 1st

Contact: Jhilson F Ortiz, Sr. Ag Program Coordinator, Rutgers Cooperative Extension of Mercer County at (609) 989-6830

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 (cypridonil, 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 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. □

Vegetable Disease Briefs

Andy Wyenandt, Ph.D., Specialist in Vegetable Pathology

Vegetable growers guide to understanding the strobilurin fungicides (FRAC code 11).

The strobilurin, or QoI, fungicides (FRAC code 11) have been extremely useful in controlling a broad spectrum of common vegetable pathogens. You may know some of strobilurins as azoxystrobin (Amistar or Quadris), trifloxystrobin (Flint), pyraclostrobin (Cabrio), or Pristine (pyraclostrobin + boscalid, 11 + 7). All strobilurin fungicides inhibit fungal respiration by binding to the cytochrome b complex III at the Q_o site in mitochondrial respiration. Simply said, the fungicide works by inhibiting the fungi's ability to undergo normal respiration. The strobilurin chemistries have a very specific target site, or mode-of-action (MOA).

Although highly effective, fungicide chemistries like those in FRAC code 11, with a very specific MOA are susceptible to fungicide resistance development by some fungi. Why is that? In the strobilurins, a single nucleotide polymorphism of the cytochrome b gene leads to an amino acid substitution of glycine with alanine at position 143 of the cytochrome b protein. For us, knowing the specifics on the technical jargon isn't so important, its understanding what is at stake. So, if we hear someone speak about G143A resistance development to the QoI fungicides (where resistance is already known in cucurbit Powdery mildew and Downy mildew), we know what they are talking about and how important it is! So much so, if cucurbit powdery mildew develops resistance to one strobilurin compound it may develop what is known as cross resistance and become resistant to all chemistries in FRAC code 11, even if only one chemistry has been used! So, how do we avoid the chances for fungicide resistance like this to develop? It's simple, don't let the fungus 'figure out' what it is being sprayed with and do this by rotating different fungicide chemistries (i.e. FRAC codes).

Proper fungicides rotations are necessary when fungicides with specific MOA's are used in spray programs for controlling important diseases. That's why it is important to follow a fungicides label precisely and be certain that some fungicide chemistries aren't overused. All strobilurin fungicides should be tank mixed with a protectant fungicide, when possible. Remember tank-mixing high-risk fungicides (i.e. FRAC code 11) with low-risk, protectant fungicides (FRAC codes M1-M9) helps reduce (and/or delay) the chances for fungicide resistance development. Never tank mix strobilurins together and never apply any strobilurin fungicide (either the same chemistry

or different chemistry) in consecutive applications if stated by the label. Remember, azoxystrobin acts against the fungus the same way as trifloxystrobin does and so on. Even though you are spraying two different fungicides, each has the similar MOA and is acting against the fungus in the same exact way.

Controlling Leather rot of strawberry.

Leather rot caused by *Phytophthora cactorum* can be extremely damaging if left uncontrolled, especially if wet soil conditions and rainy weather persist for extended periods. Weather conditions which favor Gray mold development may also favor Leather rot. *Fungicides effective against Gray mold are not highly effective against Leather rot* (i.e. Captan, Topsin-M). Symptoms of Leather rot begin to develop as green fruit begins to develop and mature. On green fruit, infected areas often turn a dark-brown. As infection spreads, entire fruit may turn dark-brown and become 'leathery'. However, some fruit may remain mostly green with only dark-brown margins developing around the point of infection. Importantly, infection may cause fully mature fruit to turn reddish-brown to dark purple or cause no distinct symptoms. These 'healthy-looking' fruit have a very unpleasant taste and may be unintentionally harvested for sale. For control of Leather rot in:

New Plantings:

Aliette (fosetyl-AI, 33) at 2.5 to 5.0 lb 80WDG/A. Begin 14 to 21 days after planting and continue on a 30 to 60 day interval as long as favorable disease conditions occur, or

Ridomil Gold (mefenoxam, 4) at 1 pt 4E/A. Make one application at transplanting plus an additional application at fruit set or 30 days before harvest.

Established Plantings:

Aliette (fosetyl-AI, 33) at 2.5 to 5 lb 80WDG/A, or Ridomil Gold (mefenoxam, 4) at 1 pt 4E/A. Apply in spring before first bloom and repeat once in the fall. □

Weekly Weather Summary

Keith Arnesen, Ph.D., Agricultural Meteorologist

Temperatures averaged much below normal south, and below normal central and north, averaging 50 degrees north, 51 degrees central and 50 degrees south. Extremes were 82 degrees at Seabrook on the 23rd, and 32 degrees at Downstown, Hammonton and Pomona on the 22nd. Weekly rainfall averaged 0.44 inches north, 0.56 inches central, and 0.82 inches south. The heaviest 24 hour total reported was 1.50 inches at South Harrison on the 16th to 17th. Estimated soil moisture, in percent of field capacity, this past week averaged 98 percent north, 96 percent central and 95 percent south. Four inch soil temperatures averaged 50 degrees north, 51 degrees central and 50 degrees south.

The following table contains meteorological information since the start of the growing season March first. The table is updated each Monday and the following is an explanation for each column.

WEEK=TOTAL RAINFALL FOR THE PREVIOUS 7 DAYS ENDING MONDAY MORNING

TOTAL=TOTAL RAINFALL SINCE MARCH 1ST

DEP=DEPARTURE FROM NORMAL OF RAINFALL SINCE MARCH 1ST. A NEGATIVE SIGN INDICATES BELOW NORMAL AND NO SIGN INDICATES ABOVE NORMAL.

MX=HIGHEST TEMPERATURE FOR THAT 7 DAY PERIOD

MN=LOWEST TEMPERATURE FOR THAT 7 DAY PERIOD

AVG=AVERAGE TEMPERATURE FOR THAT 7 DAY PERIOD

DEP=DEPARTURE FROM NORMAL OF THE AVERAGE TEMPERATURE FOR THAT 7 DAY PERIOD

TOTAL=TOTAL NUMBER OF GROWING DEGREE UNITS SINCE MARCH 1ST

DEP=DEPARTURE FROM NORMAL OF GROWING DEGREE UNITS

%FC=PERCENT OF FIELD CAPACITY (SOIL MOISTURE)

Weather Summary for the Week Ending 8 am Monday 4/23/ 7										
WEATHER STATIONS	RAINFALL			TEMPERATURE				GDD BASE50		MON %FC
	WEEK	TOTAL	DEP	MX	MN	AVG	DEP	TOT	DEP	
CANOE BROOK	.48	15.07	7.45	80	34	51.	-1	57	52	94
CHARLOTTEBURG	.52	12.47	5.04	78	34	50.	0	46	46	94
FLEMINGTON	.25	14.58	7.30	82	34	51.	-1	58	51	93
NEWTON	.51	9.21	2.63	78	34	49.	-1	37	37	94
FREEHOLD	.60	11.74	4.47	76	35	51.	-2	88	70	93
LONG BRANCH	.20	11.24	3.71	73	37	51.	-2	53	41	84
NEW BRUNSWICK	.49	15.14	8.21	78	35	51.	-4	68	39	94
TOMS RIVER	.58	10.17	2.86	77	33	51.	-2	85	72	85
TRENTON	.93	12.30	5.71	80	36	52.	-3	86	46	85
CAPE MAY COURT HOUSE	.72	6.73	.33	75	34	48.	-6	67	36	89
DOWNSTOWN	1.19	11.59	4.99	81	32	49.	-6	100	57	87
GLASSBORO	1.02	9.66	2.72	81	36	52.	-3	119	79	83
HAMMONTON	1.34	10.71	3.98	81	32	50.	-5	103	66	85
POMONA	.54	8.79	2.30	79	32	50.	-4	90	68	85
SEABROOK	.14	10.84	4.99	82	34	51.	-4	124	79	88
SOUTH HARRISON	1.53	12.25	5.77	79	33	51	NA	108	NA	NA
WES KLINE -- GDD BASE 40 PINEY HOLLOW										
LAST WEEK 30 (Ending 4/16/07)										
THIS WEEK 69 (Ending 4/23/07)										

New Jersey Agricultural
Experiment Station
Plant & Pest Advisory
Rutgers School of Environmental
and Biological Sciences
ASB II, 57 US Hwy. 1
New Brunswick, N.J. 08901

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PLANT & PEST ADVISORY VEGETABLE CROPS EDITION CONTRIBUTORS

Rutgers Cooperative Extension (RCE) Specialists

Gerald M. Ghidui, Ph.D., Vegetable Entomology
George Hamilton, Ph.D., Pest Management
Joseph R. Heckman, Ph.D., Soil Fertility
Bradley A. Majek, Ph.D., Weed Science
Andy Wyenandt, Ph.D., Vegetable Pathology

RCRE County Agricultural Agents

Atlantic, Richard W. VanVranken (609-625-0056)
Burlington, Raymond J. Samulis (609-265-5050)
Cape May, Jenny Carleo (609-465-5115)
Cumberland, Wesley Kline, Ph.D. (856-451-2800)
Gloucester, Michelle Infante-Casella (856-307-6450)
Hunterdon, Winfred P. Cowgill, Jr. (908-788-1338)
Middlesex, William T. Hlubik (732-398-5260)
Monmouth, Bill Sciarappa, Ph.D. (732-431-7260)
Morris, Peter J. Nitzsche (973-285-8300)
Passaic, Elaine F. Barbour, Agric. Assistant (973-305-5740)
Salem (856-769-0090)
Warren, William H. Tietjen (908-475-6505)

Vegetable IPM Program (732-932-9802)

Joseph Ingerson-Mahar, Vegetable IPM Coordinator
Kristian E. Holmstrom, Research Project Coordinator II

Newsletter Production

Jack Rabin, Associate Director for Farm Services, NJAES
Cindy Rovins, Agricultural Communications Editor

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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