RUTGERS COOPERATIVE EXTENSION AT THE NEW JERSEY AGRICULTURAL EXPERIMENT STATION

PLANT & PEST ADVISORY

VEGETABLE CROPS EDITION $1.50 JULY 18, 2007

INSIDE

Location Selection - Farmers Market Establishment

Part of the Farmers Market Establishment Guide

Jhilson Ortiz, Senior Program Coordinator - Agriculture

The first step in the farmers market establishment plan is the selection of a location for retail business. Well-chosen locations can make or break a retail business opportunity. A good location is important because it is the place where your goods should have *good prospective client exposure, low number of competitors and support from local government agencies*.

Good client exposure potential can be measured in the quantity of people transiting through your commercial area, people residing or working in the proximities and purchasing interest (the right consumer).

When choosing a location, do not assume your market will be successful because it is on a major highway. It is hard to get people to stop and shop if they do not have that on their travel plan. It is also important to consider time of the day, weather conditions and traffic patterns that contribute to the client's comfort level translated into purchasing interest.

A good location for a good group of consumers relies heavily on a combination of who those consumers are, what products you are offering, at what time, what cost and how many reasons they have to stop by and shop. Most consumers require previous knowledge of the market existence to decide to visit the marketplace. Hard to reach areas, confusing streets, unfavorable parking spots, and not visible sales stands are detrimental to market success. Consumers need to know you are there, what you offer and how to get there. When using road stands, use distance-assisting signs such as: "Farmers Market one mile ahead on the left".

When choosing a future market location, review how many and what kind of competitors are close to you. Their presence is not necessarily a bad thing; it all depends on the product, service and price differences between you and them and how you can use those differences to your advantage. Competitors can provide you with advantages, such as a greater number of clients shopping in the vicinity and most importantly, the right mixes of clients with the ideal needs (which you offer as well). ❑

Vegetable Disease Update

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

✔ **Cucurbits – Powdery mildew -** Powdery mildew typically occurs from mid-July until the end of the season. Symptoms typically begin on older, lower leaves and can develop and spread rapidly under dry, humid conditions. **Control of Powdery mildew begins with regular scouting for symptoms and weekly fungicide applications.** Fungicide resistance management of the fungus which causes Powdery mildew is critical. Fungicides with a high risk for resistance development such as the strobilurin (Pristine, FRAC code 11) should be tank mixed with a protectant fungicide such as chlorothalonil (M5) or sulfur (M2) and rotated with fungicides of a different chemistry such as chlorothalonil + Nova or Procure (FRAC code 3). FRAC code 3 fungicides are also high-risk and should never be applied alone. Growers need to read and follow restrictions on labels carefully. For more information on control of Powdery mildew and other important diseases of cucurbits please see the *2007 New Jersey Commercial Vegetable Production Recommendations Guide*.

✔ **Cucurbits – Bacterial Wilt –** Symptoms of Bacterial wilt will vary depending on crop. In general, plants may wilt during the day in hot weather and 'recover' during cooler parts of the evening and morning. Margins and interveinal areas of leaves become necrotic which cause leaves to appear 'scorched'. Healthy green plants turn chlorotic with time and infected plants eventually collapse and die exposing fruit to sunscald injury. Cutting through stem tissue at the base of infected plants often reveals a coppery-tan color where the bacterium causes the vascular tissue to 'plug up'. Control of Bacterial wilt begins with controlling striped and spotted cucumber beetles which vector the pathogen early in the growing season as plants emerge. Late-season beetle control will remain important as fruit begins to mature. Late-season beetle feeding may cause injury to stems ruining aesthetic quality. For more information on cucumber beetle and bacterial wilt control please see the *2007 New Jersey Commercial Vegetable Production Recommendations Guide*.

✔ **Eggplant – Phomopsis blight –** can affect all above ground portions of the plant. Symptoms include well-defined circular lesions on infected leaves with **diagnostic black fruiting bodies** developing within the lesion. If disease progresses infected leaves may turn yellow and die. Fruit lesions are similar to leaf infections, but lesions may become much larger causing fruit to become soft. Wet weather and high temperatures favor Phomopsis blight development. Control of Phomopsis blight begins with scouting and weekly preventative fungicide applications. Alternate one of the following: azoxystrobin (FRAC group 11, Amistar 80WDG at 2 to 5 oz/A or Quadris at 6.2 to 15.4 fl oz 2.08F/A), or Flint (trifloxystrobin, 11) 50WDG at 2 to 4 oz/A, or Cabrio (pyraclostrobin, 11) 20EG at 8 to 12 oz/A with maneb (M3) 75DF at 1.5 to 2 lb/A or OLF.

✔ **Pepper - Bacterial leaf spot –** Symptoms of Bacterial spot on pepper leaves include small, brown water-soaked lesions that turn brown and necrotic in the centers. Spots may coalesce and form large blighted areas on leaves and premature defoliation can occur. On fruit, brown lesions can form which have a roughened, cracked wart-like appearance. High temperatures, high relative humidity and rainfall favor Bacterial spot development. Loss from Bacterial spot can be reduced somewhat by maintaining high levels of fertility, which will stimulate new growth. Applying a fixed copper (M1) at labeled rates plus maneb (M3) at 1.5 lbs 75DF/A or 8 to 10 oz Tanos (famoxadone + cymoxanil, 11 + 27) may help suppress spread. For more information on control of Bacterial spot of pepper please see the *2007 New Jersey Commercial Vegetable Production Recommendations*.

✔ **Pepper – Anthracnose -** Symptoms of fruit infection include sunken, circular spots which develop blackish-tan to orange concentric rings as lesions develop. Lesions on stems and leaves appear as grayish-brown spots with dark margins and can easily be overlooked. Control of Anthracnose begins with using clean-free seed and/or transplants. A three-year crop rotation with non-solanaceous crops is recommended. After the harvest season, pepper fields should be disced and plowed under thoroughly to bury crop debris. Beginning at flowering, alternate one of the following FRAC code 11 fungicides: azoxystrobin (Amistar 80WDG at 2 to 5 oz/A or Quadris at 6.2 to 15.4 fl oz 2.08F/A), or Flint (trifloxystrobin) 50WDG at 2 to 4 oz/A, or Cabrio (pyraclostrobin) 20EG at 8 to 12 oz/A with maneb (M3) 75DF at 1.5 to 3 lb/A or OLF.

✔ **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.

See Disease Update on page 3

Vegetable Diseases of the Week

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

Phytophthora fruit rot of watermelon.

Botrytis (Grey mold) on greenhouse tomato.

Disease Update from page 2

For prevention of the stem and fruit rot phase of blight:

Apply the following on a 7- to 10-day schedule:

Fixed copper at 2 lb 77WP/A or OLF, or

Ridomil Gold Copper (mefenoxam + copper, 4 + M1) at 2.5 lb 65WP/A. Make three to four applications at 10- to 14-day intervals. (Only apply Ridomil Gold 4E at planting and 30 days later. The third application of Ridomil Gold 4E cannot be made when Ridomil Gold Copper is applied.)

The following materials are labeled for Phytophthora on peppers, but there is little information on efficacy in the Mid-Atlantic region. For best results tank mix with a copper containing fungicide.

Forum (dimethomorph, 40) at 6.0 oz 4.18SC/A, or

Tanos (famoxodone + cymoxanil, 11 + 27) at 8-10 oz 50W/A

Tomato – Bacterial spot, speck and canker – Bacterial diseases can cause serious problems in the field if infections are allowed to spread. Apply Actigard (P) 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.

Tomato – Buckeye Rot – Wet weather and wet soils favor the development of Buckeye rot. Symptoms of Buckeye Rot on green fruit include brownish-tan lesions that have a **definitive concentric appearance**. As lesions form the fruit will begin to soften up, this is quite different than Late blight which will cause a dark brownish/black lesion with the fruit remaining somewhat firm. Unlike Late blight, Buckeye rot won't attack the foliage. For more information on control please see the *2007 New Jersey Commercial Vegetable Production Recommendations*. ❑

Fungal Leaf Blights of Carrot

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

Alternaria and **Cercospora** are two soil-borne fungal pathogens that may cause early defoliation in carrots reducing yields and making harvest difficult. Both pathogens produce distinct symptoms on carrots. **Powdery mildew causes characteristic white, powdery lesions on foliage. Symptoms of Alternaria include irregular, dark brown to black spots which typically show up on older leaves first. Cercospora leaf spots are round, grayish-brown and are more prevalent on younger foliage.**

Both leaf blights typically start at the margins of leaflets and as more spots develop leaflets begin to wither and die. Symptoms similar to leaf infections can develop on stems and petioles. Control of both diseases begins with regular scouting and preventative fungicide applications on susceptible varieties.

Apply Amistar 80WDG (azoxystrobin, FRAC code 11) at 3 to 5 oz/A or Quadris (azoxystrobin, 11) at 9.2 to 15.4 fl. oz 2.08F/A, or Cabrio 20EG (pyraclostrobin, 11) at 8 to 12 oz/A, or Pristine (pyraclostrobin + boscalid, 11 +7) tank-mixed or alternated with Bravo, Echo, Equus (chlorothalonil, M5) at 1.5 to 2 pt/A or OLF, or Endura 70W at 4.5 oz/A. Apply Rovral 50WP (iprodione, 2) at 1 to 2 lb/A or Switch (cypridonil, 9) at 11 to 14 oz/A for Alternaria only. Do not make more than one sequential application of Amistar, Pristine or Cabrio (FRAC code 11). For more information on tolerant varieties and control please see the *2007 New Jersey Commercial Vegetable Production Recommendations*. ❑

Pest Notes

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

Aphid populations are high on cucurbit and bean crops in southern NJ. All of the aphid species are present, including **bean aphid**, **potato aphid**, **melon aphid** and **green peach aphid**. Once the leaves begin to curl under, it is difficult to control aphids because the spray does not easily reach the aphids hiding on the leaf undersides within the 'curls' of the leaves. The registered aphid materials are all very effective, but should be applied before the population reaches a high level. Depending on the crop, use any of the neonicotinoids (Actara, Assail, Assail, Provado/imidacloprid and generics, and Venom). Insecticides belonging to other classes that are effective include Fulfill, Lannate, Monitor, MSR, Orthene, Thionex, and Vydate. Refer to label for all rates, directions and restrictions before using any pesticide to determine if appropriate for that particular crop.

Squash bug adults and eggs have been appearing in squash plantings over the past week, and eggs will soon hatch if they haven't already. Closely monitor the egg hatch in cucurbit fields because it is critical to target pesticide sprays against the newly-hatched nymphs for successful squash bug management. If more than one egg mass per plant is found, treatments should begin. Use either Asana, bifenthrin (Capture or generics), permethrin, Sevin, or Thionex. Obtain thorough coverage of the canopy as the nymphs may tend to hide on the leaf undersides.

Spider mites continue to be a problem in several crops, especially with the extended current hot, dry weather. Mites can go through a complete cycle from egg to adult in less than a week, resulting in a very quick population buildup. Apply sprays before the mites curl the leaves and spin a webbing under the leaves, as this protects the mites from predators and even spray deposits. For beans, use Kelthane MF if you can obtain it or have it in stock. A second consideration is dimethoate (ex-Cygon), although Delaware reports some resistance by spider mites to dimethoate. Bifenthrin is labeled, but will not control the population once the mites are well-established, and may even increase the problem. It is much more reasonable to control the mites before they become a serious problem. On other crops, such as cucurbits, Acramite, Agri-Mek and Oberon are excellent miticides that are registered. Again, thorough coverage to the leaf undersides is critical for effective spider mite management.

Both **spotted** and **striped cucumber beetles** are present in cucurbit plantings. These beetles can cause direct feeding damage to the leaves and flowers, but also are capable of transmitting **bacterial wilt**. They are more of a concern during the early stages of plant development, but if the population continues to increase, consider any of the pyrethroids such as Asana, Baythroid, bifenthrin, Danitol, or permethrin. Alternatives to pyrethroids include Lannate, Sevin, and Thiodan. Treatments are likely not needed after vines begin to run unless the beetle population is very high.

✔ **General** – The black light trap at the Rutgers Agricultural Research and Extension Center, Bridgeton, caught the first **corn borer** of the second generation yesterday, followed by 8 more last night. It's a little earlier than usual for the second generation to begin, but the hot dry weather likely accelerated the development of the borer population. Also, **corn earworm** numbers are rapidly increasing (>5 per night), and both **fall armyworm** and **beet armyworm** adults are starting to appear in the black light trap. Crops most at risk from all of these pests are sweet corn and peppers. If sweet corn is in the tassel or silk stage, a spray program should be initiated. Temperatures are expected to remain high all thru this week, with corresponding warm nights, which means moth activity during the evening hours will be significant.

Finally, **bad news**: The black light trap on the Tupper Farm portion of RAREC caught what is suspected to be a **brown marmorated stink bug**. This pest has been spreading throughout NJ, and was reported throughout much of the state, including Mullica Hill and other nearby areas. If confirmed, it shows the pest has reached the southern NJ agricultural areas. ❑

IPM Update

Joseph Ingerson-Mahar, Vegetable IPM Coordinator

Blacklight trap catches for **European corn borer** are increasing in the southern part of the state with the largest numbers being caught in the central and eastern areas of Salem County and the western portion of Cumberland County. This is the second generation moth flight. There is little or no moth activity for corn borers in the central and northern part of the state aside for the Allentown/Crosswicks area where moths are being caught at about 1 per night.

Blacklights with the largest nightly catches (moths per night):

Elmer	5	Shiloh	3
Shirley	4	Shirley H	3
RAREC	3		

Corn earworm numbers remain low in the blacklights state-wide. Three blacklights in the Salem/Cumberland County area have trap counts of 2 to 3 per night. All other locations reported 1 or fewer moths per night.

Blacklight locations with the largest nightly catches (moths per night):

Shirley	3	Woodstown	1
Centerton	2	Elmer	1
Shiloh	2	RAREC	1
Shirley H	1		

Beet armyworm has been trapped in pheromone traps that were set last week. All counts are low relative to peak trap catches that occur later in the season. More traps will be set this week.

Pheromone trap locations with the highest nightly catch (moths per night):

Shirley	7	Mannington	1
Cedarville	4	Woodstown K	1
Jones Island	4		

Much of the state has been dry now for several weeks. With dry conditions and high temperatures **two-spotted spider mites** become a concern on nearly all vegetable crops. First injury symptoms to appear are pale yellow or white stippling on upper leaf surfaces, especially between leaf veins. The stippling is the result of mites feeding on the under surface of the leaf. Look for individual mites there amidst fine webbing. Eggs, if present are gray and spherical. Ten power hand lens can be used to see the eggs.

There are no pest maps this week. ❑

"Organic Sweet Corn System" Twilight Meeting

Thursday, July 19, 2007, 5 pm until dark
Muth Family Farm, Williamstown, NJ

Sponsored by NOFA-NJ

Sweet corn has been one of the trickier crops to figure out. Therefore, we are very excited to offer this chance for organic & conventional growers alike to learn about a successful "system" for growing sweet corn organically. Bob Muth will offer a tour and discussion on factors for success, including controlling corn earworm. Rutgers' Joseph Ingerson-Mahar will also be on-hand to discuss Integrated Pest Management, and the event will conclude with a Corn Roast & tasting!

All meetings begin at 5pm and go until dark. Fee is $10 / $5 for NOFA-NJ members.

To register, call (609) 737-6848.

For directions, go to:

http://www.nofanj.org/twilights07directions-MuthFarm.htm

And don't miss these other great NOFA-NJ events.

Thursday, July 26: NOFA-NJ's "Cut Flowers for Profit" Twilight Meeting at Cherry Grove Organic Farm, Lawrenceville, NJ

Cut flowers can be a very profitable (and eye-catching) addition to any vegetable stand, farmers market, or CSA farm. Join Matt Conver and friends for a tour and discussion on both successful production and marketing. From variety selection & cutting to bunching, storing, and pricing, learn from some of the best cut flower growers in New Jersey.

Thursday, August 16: NOFA-NJ's "Heirloom Tomatoes and Specialty Garlic" Twilight Meeting at Catalpa Ridge Farm, Wantage, NJ

Rich and Sue Sisti take great pride in their wide selection of both heirloom tomatoes and specialty garlic. Learn about their favorite varieties, production techniques, and special events to educate the public about the benefits (most importantly, really great flavor) of growing heirloom crops. To close the meeting, we'll taste! ❑

Weekly Weather Summary

Keith Arnesen, Ph.D., Agricultural Meteorologist

Temperatures averaged above normal in the north and central, averaging 74 degrees and 77 degrees, respectively, and much above normal in the south, averaging 80 degrees. Extremes were 98 degrees at Pomona on the 10th, and 56 degrees at Charlotteburg on the 13th and 14th. Weekly rainfall averaged 0.60 inches north, 0.50 inches central, and 0.04 inches south. The heaviest 24 hour total reported was 1.22 inches at Newton on the 11th to 12th. Estimated soil moisture, in percent of field capacity, this past week averaged 82 percent north, 72 percent central and 47 percent south. Four inch soil temperatures averaged 73 degrees north, 76 degrees central and 78 degrees south.

WEATHER SUMMARY FOR THE WEEK ENDING 8 AM MONDAY 7/16/ 7

	RAINFALL			TEMPERATURE				GDD BASE50		MON
WEATHER STATIONS	WEEK	TOTAL	DEP	MX	MN	AVG	DEP	TOT	DEP	%FC
CANOE BROOK	MISSING									
CHARLOTTEBURG	.25	20.60	1.84	92	56	73.	3	1344	383	65
FLEMINGTON	.26	25.09	7.19	96	57	76.	2	1456	224	75
NEWTON	1.29	17.52	.43	93	57	74.	3	1315	257	87
FREEHOLD	1.20	21.97	4.53	97	58	77.	3	1645	312	82
LONG BRANCH	.45	21.20	3.82	95	64	77.	3	1438	180	54
NEW BRUNSWICK	.15	26.87	9.63	96	59	77.	2	1566	154	70
TOMS RIVER	MISSING									
TRENTON	.21	22.77	6.44	94	63	78.	2	1632	161	46
CAPE MAY COURT HOUSE	MISSING									
DOWNSTOWN	MISSING									
GLASSBORO	.07	20.38	3.29	96	66	80.	4	1824	361	39
HAMMONTON	MISSING									
POMONA	.00	15.87	.59	98	62	80.	5	1631	281	29
SEABROOK	.00	16.77	1.30	97	64	80.	4	1832	339	35
SOUTH HARRISON		MISSING								

WES KLINE -- GDD BASE 40 PINEY HOLLOW
LAST WEEK 226 (Ending 7/9/07)
THIS WEEK NA (Ending 7/16/07)

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