

PLANT & PEST ADVISORY

VEGETABLE CROPS EDITION \$1.50

JULY 11, 2007

Pest Notes

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



Cumberland County Agricultural Agent Wes Kline reports outbreaks of **spider mites** in various crops throughout southern NJ. Spider mite populations have increased to damaging levels very quickly because of the recent hot temperatures and dry conditions. Females deposit over 100 eggs, and the adult stage can be obtained in 5 days or less when temperatures reach above 85 degrees. Crops most susceptible include beans, cucurbits, eggplant and tomatoes, although other crops can be attacked (carrots, corn, peppers, etc). Scout for spider mite infestations by checking leaf undersides for mites or the ensuing feeding damage, showing up as a bronzing or speckling of the leaf tissue, followed by webbing. Control spider mites before the population reaches a damaging level, and especially before webbing begins (the webbing actually prevents the spray from reaching the mites, reducing the effectiveness of the miticide).

Labeled miticides include Acramite, Agri-Mek, Kelthane and Vendex. Insecticides that are very effective against spider mites include dimethoate (ex-Cygon), Metasystox-R, and Oberon. Pyrethroids that are labeled for spider mites include bifenthrin (Capture and generics) and Danitol. Check label before using any pesticide for all listed crops, rates, restrictions, and directions as some pesticides are labeled for specific crops.

Note: Make sure to scout the infested areas after application to ensure effectiveness. If the mite population is still high, use an alternative material. Overuse of pyrethroids will actually stimulate mite production, and the problem can get worse. The newer labeled miticides (Agri-Mek, Acramite, Oberon) are generally more efficacious against spider mites than the older materials, including the pyrethroids.

✓ **Cucurbits: Squash bug** adults are active on many cucurbit plantings, and egg masses are beginning to appear in numbers above the threshold. If more than one egg mass per plant is found, treatments should be applied. Applications should target the early nymphal stages as this stage is most susceptible to the pesticide. Effective materials include Sevin, Thionex (ex-Thiodan), azadirachtin (neem-based), or a pyrethroid such as Asana, bifenthrin (Capture and generics), or Permethrin. Thorough coverage of the foliage is important for effective management of squash bugs.

✓ **Tomatoes: Thrips** have been found in varying levels on tomato plants, and thrips damage is starting to appear on tomato fruit. To

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Cucurbit Downy Mildew

Found on Watermelon in PA

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

Cucurbit downy mildew has now been reported in two watermelon fields near Shippensburg (Franklin County), Pennsylvania located just north of state college. *Once Downy mildew has been detected in the mid-Atlantic region, basic fungicide maintenance programs for cucurbit crops should be adjusted to include Downy mildew control.* Control of Downy mildew begins with regular scouting, recognizing symptoms and protectant fungicide applications. The following are the most effective materials.

Tank mix one of the products listed below with a protectant fungicide such as chlorothalonil (M5), or maneb (M3), or mancozeb (M3) (see label for rates and specific crop uses):

Ranman (cyazofamid, 21) at 2.1 to 2.75 fl. oz. 400SC/A, or

Previcur Flex (propamocarb HCL, 28) at 1.2 pt 6F/A, or

Gavel (zoxamide + mancozeb, 22 + M3) at 1.5 to 2.0 lb 75DF/A (some muskmelon may be sensitive) or

Curzate (cymoxanil, 27) at 3.2 oz 60DF/A, or

Tanos (famoxodone + cymoxanil, 11 + 27) at 8 oz 50WDG/A

Remember that downy mildew materials should always be tank mixed with a protectant fungicide and rotated weekly with fungicides from a different FRAC code to reduce the chances for fungicide resistance development.

To track the progress of Downy mildew in the eastern US and to keep up with reports of Downy mildew from other states please visit North Carolina State University's Cucurbit Downy Mildew Forecasting Center at <http://www.ces.ncsu.edu/depts/pp/cucurbit/>. For more information on Downy mildew control for specific cucurbit crops please see the *2007 New Jersey Commercial Vegetable Production Recommendations Guide*. □

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scout for thrips, closely inspect flowers by tapping or squeezing flowers over a light-colored piece of cardboard or paper, or blow lightly into the blooms to force thrips out. They can be readily observed against the light background. Effective materials include Assail, Monitor (NJ Special Local Needs Label), Proaxis, imidacloprid (many generics. Thrips not on label but is effective in controlling thrips when used against other pests), SpinTor/Entrust, Warrior (or generics), and Venom (for tomatoes >2 inches in diameter). □

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

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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.

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

✓ **Potato – Black Leg** – Black leg is caused by *Erwinia* spp. which also cause ‘soft rots’. The bacteria which lead to the aerial phase of Blackleg are soil-borne (originate from old crop debris) and spread by rainfall, overhead irrigation and wind. The aerial phase of Blackleg does not originate from decaying seed pieces. The bacterium can enter the plant through wounds created by cultivation or through stems damaged by blowing wind, sand or hail. Dense canopies, warm weather and prolonged periods of leaf wetness favor the spread of aerial Blackleg. Fortunately, the disease rarely extends below ground and only causes dieback of stems over time. Symptoms of the aerial phase of Blackleg first appear as an irregular, water-soaked ‘green’ decay on stems that turns light-brown to black over time. Hot, dry weather will cause infected areas to dry out and become brittle. To help suppress aerial Blackleg, avoid excessive overhead irrigation if possible. Do any cultivating when plants are dry, cultivating in the presence of dew or wet plants may help to spread the bacterium around.

✓ **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 - Stem Rot/Pith Necrosis** – Symptoms begin to develop as green fruit begins to mature. Bacteria are most likely ubiquitous to tomato fields and develop when weather conditions and cultural practices lead to favorable conditions for disease development. Symptoms include the development of irregular brown lesions on main stems and branches. Late pruning (suckering) can provide entry points for both bacterial diseases,

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IPM Update

Kristian Holmstrom, Research Project Coordinator II, Vegetable IPM Program

Note: Maps will not be published in next week's newsletter (7/18/07).

Sweet Corn

European corn borer (ECB) adult numbers are very low in most of the state except in the Salem-Cumberland border area, where increased catches indicate the beginning of the second adult flight (see ECB map). Larvae are still present in a few pre-tassel plantings in the far northern counties, although plantings that are in whorl stage are largely free of damage. New egg-laying should start very soon in the areas where adults are being caught, and will progress northward over the next several weeks as adult activity increases. 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. On pre-tassel stage plants, look for discoloration or actual caterpillars in the emerging tassels. Consider treating if fresh damage is found on 12% or more plants. Be sure to treat again at the full tassel to first silk stage to protect the forming ears from ECB larvae that are leaving the tassel and traveling down the stalk.

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

Shiloh	2	Eldora	1	Seeley Lake	1
Beckett	1	Folsom	1	Shirley	1
Centerton	1	Jones Island	1	Springdale	1
Downer	1	Medford	1	Woodstown	1

Corn earworm (CEW) catches are low-to-none in much of the state. Areas with low activity include southwestern Burlington County south through Atlantic and Cumberland Counties and a lone hot-spot in the Holmdel area of Monmouth County (see CEW population map). This is the time of year when we expect to see slow, gradual increases in CEW adults. If CEW adults are present when plantings go to silk, there is a threat of infestation. The shaded area on the map (blue on the web version, found at: www.pestmanagement.rutgers.edu/IPM/Vegetable/Pest%20Maps/maparchive.htm) corresponds to a 5-day silk spray schedule. The cross-hatched area (green on the web) corresponds to a 3-4 day silk spray schedule.

Silking Spray Schedules*:

- North – 6-7 days
- Central – 5-7 days
- South – 3-5 days

* Note: These are general recommendations. Local trap catches may indicate some variation in the frequency of insecticide applications to silking corn.

TOMATO DISEASES FROM PAGE 3

especially during wet conditions. Internally, stems will become brown and mushy. High humidity is necessary for disease development in both cases. High nitrogen and low night temperatures are associated with Pith Necrosis development. Control of both begins with cultural practices such as avoiding working in fields with wet foliage, avoiding late pruning and watching the amount of N applied to plantings.

✓ **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*. □

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

Beckett	1	Downer	1	Medford	1
Burlington	1	Folsom	1	Seely Lake	1
Cedarville	1	Hammonton	1	Shiloh	1
Crosswicks	1	Matawan	1	Shirley	1

Tomatoes

A few plantings in the northern and central counties have developed **bacterial infections** recently. All infections are characterized by very dark, often wet looking lesions on leaves of any age. In the case of bacterial canker, lesions often start at leaf margins but may also be found on petioles. Bacterial speck results in a dark blister-like lesion on infected fruit, while bacterial spot causes a more severe dark fruit lesion. Bacterial canker causes a whitish blister referred to as "bird's-eye spot" on fruit. If these symptoms appear in a planting, consider regular applications of copper if this is not already part of the program. Avoid fields when wet. Always work in younger plantings first if activity is planned in multiple plantings. This will prevent the distribution of bacteria from older infected plants to younger ones. The younger the plants are when they are infected, the more likely economic injury is to occur. Consider placing buckets with a 5-10% bleach solution in water at the end of rows when tying or pruning. This will enable workers to dip wands or pruning tools in the solution between rows to limit spread among plants.

Brown stinkbugs are active in many areas now. This is the time of year when adults are present and moving around in search of food and egg laying sites. Tomatoes are a favored host, especially if dry weather

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reduces the availability of native host plants. Recent wet weather may help keep stinkbugs on non-crop hosts, but now is the time to pay attention to fruit in the field for signs of feeding. Stinkbug feeding on tomatoes first appears as a diffuse whitish blotch on green fruit. The spot changes to bright yellow as the fruit matures. If this feeding is on the increase in the field or in harvested fruit, consider treating to suppress the population.

As always, be aware that **thrips** thrive under warm conditions. Thrips are capable of causing the "gold fleck" symptom on ripening fruit, as well as significant foliar injury should the population get very large. When sampling for other pests, tap a fresh flower cluster over an index card or other small piece of paper. Look for very small, yellow thrips to be shaken out onto the paper. Low to moderate populations are often best found using this method. If the population gets very high, thrips will be seen moving about on the leaflets and will cause clear patches to develop as they feed on foliage. While it is not necessary to treat if thrips are found in one or two flower clusters, consider treating for this pest if they are increasing in sampled flower clusters and fruit are present. Treatment is also warranted if thrips are numerous enough to be present on foliage. It is a good idea to inspect transplants prior to planting to insure that they do not get placed in the field with a thrips infestation. Check the *2007 Commercial Vegetable Production Recommendations* for labeled insecticides.

Two-spotted spider mites (TSSM) have been on the increase in tomato plantings recently. When scouting for other pests, note the presence of whitish "pin-spots" on the surface of lower leaves. Upon closer inspection, **(TSSM)** may be found on the lower surface of leaves with the pin-spots. This pest is best dealt with before it becomes widespread in the field. Spot treatments with miticides may be sufficient to prevent larger infestations. Be sure to take several samples from field edges to account for potential mite migration into the field from grassy edges or other near by host crops.

Peppers

In southern counties, it is important to check peppers weekly for the presence of **ECB** eggmasses, as well as **aphids** and **TSSM** at this time. ECB eggmasses are flat and waxy looking, having the appearance of fish scales on the underside of the pepper leaf. As the larvae emerge, they will bore into the fruit where the cap meets the shoulder of the pepper. Uncontrolled infestations will result in many fruit developing soft rot. Check 5 consecutive plants each in 10 random field locations. Look at the underside of 2 leaves per plant. If 2 or more ECB eggmasses are found in the total sample, consider an insecticide application to minimize plant injury. Additionally, a weekly spray schedule is warranted on fruiting plants when ECB adult numbers reach 1 or more per night in local blacklight traps. At present, adult ECB

activity at this level is confined to the Salem-Cumberland border area, but will spread north and east over the next several weeks. All shaded and cross-hatched areas on the ECB map (blue and green on the web version) correspond to a weekly spray schedule on fruiting peppers.

Snap Beans

ECB are a threat to plants with developing pods in the southwest counties at this time. Treat at full bloom and again at pin-pod if moths are being caught in local light traps. Continue treating if ECB catches exceed 2 per night on average for the previous week. Cross-hatched areas on the ECB map (green on the web version) indicate a weekly spray schedule through pod development.

Cole Crops

Imported cabbage worm (ICW) infestations are high in many areas, and adults (the white cabbage butterfly) are visibly active in fields. Additionally, **diamondback moth larvae (DBM)** remain active in many fields. In heading type cole crops like cabbage and broccoli, check 5 consecutive plants each in 10 random locations. Look on the undersides 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.

Pumpkins and Winter Squash

Many fields are now in the vine-run (or bush) stage at this time, and are less affected by cucumber beetle feeding. It is very important to scout fields weekly, however, for the presence of pests including **aphids** and **TSSM**. Check 10 mature leaves per site in 10 random sites throughout the field. Consider treating if leaves with an average of approximately 25 aphids are found in each of 10 sample sites. Populations this high can result in deposition of droppings onto the surface of maturing fruit, as well as overall stress to the plants. TSSM occasionally becomes an economic pest on smaller plantings under hot, dry conditions. If TSSM is found in more than one site in the field, and the overall trend is increasing, consider treating.

As fruit set occurs and fruit begin to gain size, **powdery mildew (PM)** infections will develop. This fungal pathogen first appears as a dime-sized lesion that looks like white powder. They can develop on either leaf

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Farmers Market Establishment Guide

Jhilson Ortiz, Senior Program Coordinator - Agriculture

Every good business endeavor has a mix of good luck and good marketing planning. Luck is something that comes along sporadically and goes away in the same fashion. Your marketing plan, shouldn't. But let's recognize marketing for what it should be, when creating a business management plan.

Marketing is *the whole set of business activities that ensure clients receive their wants and needs at a profit for the grower/manufacturer*. Marketing should never be concentrated solely on sales efforts. What good would sales efforts be if the product offered is the wrong kind, at the wrong time, in the wrong place?

Farmers Markets: As previously discussed in the May 8th, 2007 Plant & Pest Advisory, Farmers Markets are business venues where farmers provide **products and services** that should offer higher quality standards and an exhaustive view of the benefits of preserving farms in the state in contrast to the competition. All these objectives should be reached through staff training in sales and customer service, proper displays at the farm stand, and a competitive assortment of products that satisfy most of the consumer purchasing needs at one place.

As opportunities arise to develop farmers markets in new residential and commercial areas, a clear understanding of farm business operation requirements becomes imperative to ensure economic success. Pre farmer market operation activities should include:

- Location selection
- Target area functional survey
- Competitor and collaborator review
- Prospective consumer review
- Promotion & advertisement plan
- Financial program
- Educational review
- Business operation plan and
- Post opening day review in SWOT approach.

Most farmers already take care of some of these concepts through common sense planning and careful thinking. This guide will help them check off all the important factors that affect sales performance.

Location selection

Consider: Proximity to clients, competition presence, complementary businesses that attract foot traffic, township regulations, and traffic flow



Functional Survey of Target Area

Review: Number and kind of client groups, number and kind of business competitors, vehicular and pedestrian traffic flow per week day

Competitor & Collaborator Review

Collect and study business profiles of all food establishments that interact directly or indirectly with proposed plan, business profile of all other businesses that can influence the market



Prospective

Consumer Review

Analyze: Size and composition of the population, purchasing and entertainment habits, concentration clusters, and daily routines

Business Operation Plan

With detailed information of who and where the clients are, how, when and why do they buy, generate a sales plan based in: Hours or service, location, product offerings, forms of payment collection, sales support, number of sales people required, and local regulations to follow

Promotion & Advertisement Plan

Based on market background information, plan promotional campaigns; choose methods to reach consumers, promotional activities and educational plans for client reach & public relations

Financial Program

Calculate investments and expenses for operational season, product mix acquisition (representational businesses only), and advertisement costs among others

Educational Program

Based on the principle of educating society on the benefits of local food economies, and social & ecological impacts of preserving farms, among others

Farmer Market Operational Review

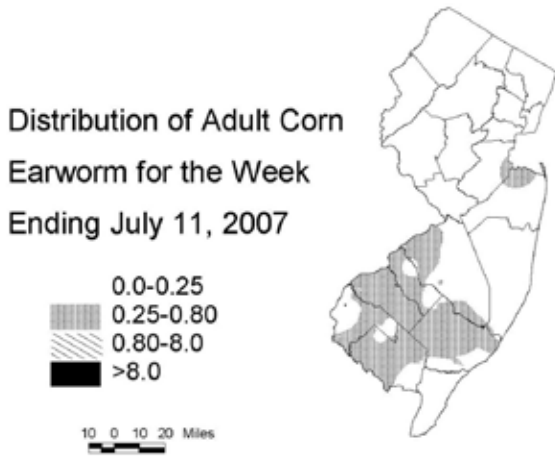
Not all the business activities chosen for the market will be effective all the time. A performance review twice a year will help management decide what activities should be changed to improve market operations. □

PUMPKINS AND WINTER SQUASH FROM PAGE 5

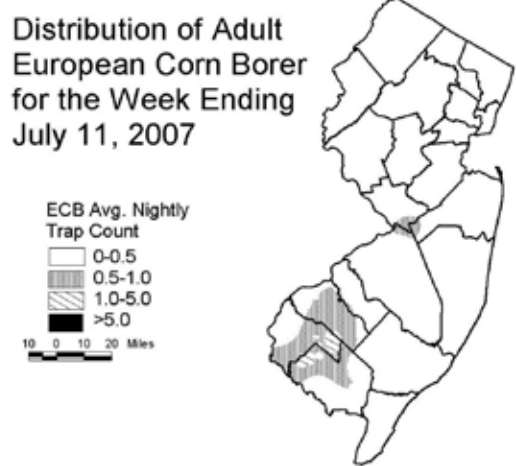
surface as well as the petioles. While scouting, look on mature leaves, particularly those within the canopy for PM lesions. When the threshold of 1 lesion per 50 older leaves is reached, begin the regular, weekly protectant fungicide program.

Recent alerts indicate that **downy mildew (DM)** is getting closer to our area. As of July 10, DM has been detected as near as Franklin County in south-central Pennsylvania. The trajectory of this week's storms may cause infections to develop in New Jersey. DM first

appears as sharp yellow lesions on the upper surface of leaves. Veins are yellow and constricted on the lower leaf surface. Shortly after this, dark sporulation occurs along veins on the lower surface beneath the lesion. This sporulation will be present when conditions are wet or very humid. In a matter of several days, significant defoliation can occur. Fungicides specific to DM and related fungi are required for good control of this pathogen. For recommended fungicide rotations for DM and PM, consult the *2007 Commercial Vegetable Production Recommendations*.



Data collected and processed by: Kris Holmstrom, Rutgers Cooperative Extension Pest Management Office



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 below normal, averaging 70 degrees north, 71 degrees central and 73 degrees south. Extremes were 95 degrees at Pomona on the 9th, and 47 degrees at Flemington on the 3rd. Weekly rainfall averaged 1.42 inches north, 1.25 inches central, and 0.40 inches south. The heaviest 24 hour total reported was 1.96 inches at Canoe Brook on the 4th to 5th. Estimated soil moisture, in percent of field capacity, this past week averaged 92 percent north, 81 percent central and 60 percent south. Four inch soil temperatures averaged 68 degrees north, 70 degrees central and 71 degrees south.

Weather Summary for the Week Ending 8 m Monday 7/ 9/ 7

WEATHER STATIONS	RAINFALL			TEMPERATURE				GDD BASE50		MON %FC
	WEEK	TOTAL	DEP	MX	MN	AVG	DEP	TOT	DEP	
CANOE BROOK	2.11	27.13	9.52	91	50	72.	0	1371	338	89
CHARLOTTEBURG	.75	20.35	2.54	83	48	69.	0	1179	356	82
FLEMINGTON	1.96	24.83	7.91	89	47	70.	-3	1275	207	93
NEWTON	.87	16.23	.08	87	49	68.	-2	1148	235	87
FREEHOLD	1.55	20.77	4.25	91	48	72.	-1	1453	287	87
LONG BRANCH	1.02	20.75	4.24	92	54	72.	-1	1249	156	75
NEW BRUNSWICK	1.62	26.72	10.48	91	52	72.	-2	1372	132	90
TOMS RIVER	.59	16.08	-.52	91	50	71.	-3	1296	196	55
TRENTON	1.48	22.56	7.27	90	53	71.	-4	1436	144	76
CAPE MAY COURT HOUSE	.06	11.52	-3.07	92	54	72.	-2	1323	144	47
DOWNSTOWN	.54	16.05	1.00	92	51	72.	-3	1437	130	55
GLASSBORO	.95	20.31	4.15	92	54	74.	-1	1610	324	69
HAMMONTON	.27	15.54	-.36	94	52	73.	-2	1484	204	42
POMONA	.26	15.87	1.50	95	51	73.	-1	1422	242	42
SEABROOK	.34	16.77	2.25	93	54	75.	0	1616	301	44
SOUTH HARRISON	.69	18.24	1.19	91	56	73	NA	1558	NA	NA
WES KLINE -- GDD BASE 40 PINEY HOLLOW LAST WEEK 245 (Ending 7/2/07) THIS WEEK 226 (Ending 7/9/07)										

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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.

Use of Trade Names: No discrimination or endorsement is intended in the use of trade names in this publication. In some instances a compound may be sold under different trade names and may vary as to label clearances.

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