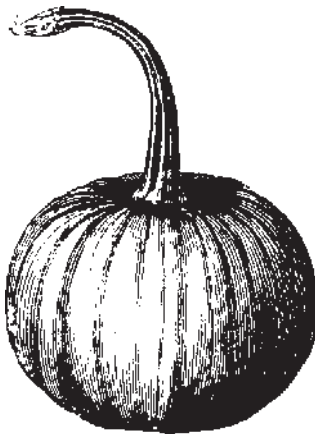


PLANT & PEST ADVISORY

VEGETABLE CROPS EDITION \$1.50

OCTOBER 6, 2004



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Vegetable Disease:

A Look Back in 2004, Part II

Andy Wyenandt, Ph.D., Post Doctoral Associate in Vegetable Pathology and Wes Kline, Ph.D., Cumberland County Agricultural Agent

Phytophthora blight continues to be destructive on pepper and Cucurbit crops

Phytophthora blight continues to affect pepper and Cucurbit crops throughout the state. The wet summer made conditions for Phytophthora blight development ideal, especially in the northern part of the state. Although controlling Mother Nature is completely out of our hands, there are a number of management strategies growers can use to help minimize the destructiveness of the disease.

First and foremost should be proper crop rotations. **One reason why blight is such a problem is the fact that not only is it destructive on peppers, but the same pathogen can cause fruit rot in tomato, fruit and stem rot in eggplant, and crown and fruit rot in Cucurbits.** Therefore, growers should always follow strict rotations and never follow peppers with tomatoes or eggplant and/or cucurbit crops and visa versa. **Poor crop rotations with these crops will only exacerbate the Phytophthora problem and will make it more difficult to control.**

If strict and long crop rotation cannot be done, then strides need to be done to improve surface drainage and run-off. Standing water in low lying areas is a major problem and this is most likely the place where Phytophthora epidemics are going to start in your fields. If you know there are low-lying areas in a particular field and you have had Phytophthora problems in that field in the past **you should never start your season by planting in those areas.** Do yourself a tremendous favor this winter and map out (not only in your head, but on paper) all those areas on your farm where standing water and/or poor drainage has always been a problem and develop a simple plan on how you are going to deal with that area. This may be as simple as avoiding the area altogether. Ask yourself a simple question, how much money do I lose to Phytophthora every time I plant in this one area, and how much time and money could I save if I just avoided it by not planting in it or by just planting another crop? Plant a cover crop to remind yourself to stay out of that area, as well as bring back the natural waterways on your farm. Natural waterways are there for a purpose, they allow water to effi-

SEE A LOOK BACK ON PAGE 3

Vegetable Disease Update

Andy Wyenandt, Ph.D., Post Doctoral Associate in Vegetable Pathology and Wes Kline, Ph.D., Cumberland County Agricultural Agent

✓ **Cole Crops – Downy mildew** can be a problem in fall cole crops (cabbage, collards, broccoli, cauliflower and kale). Infection begins as irregular yellow spots on leaves which later turn brown. A white fluffy growth develops on the underside of leaves during cool moist weather. When the disease first appears apply a fungicide every 7 to 10 days. Bravo, maneb, Ridomil Gold Bravo and Aliette are labeled. For more information on control please see the *2004 New Jersey Commercial Vegetable Production Recommendations*.

✓ **Cucurbits – ‘White speck’ of Pumpkin** – also known as **Microdochium** or **Plectosporium blight** causes small, distinct lesions on infected vines, petioles, leaves, handles and fruit. Symptoms include light tan to pure white ‘spindle-shaped’ lesions that have a dry, scabby appearance. These small ‘white specks’ often coalesce to form large, dry scabby whitish-tan areas on infected plant parts. Heavy vine infection can lead to complete defoliation and handle and fruit infection can ruin aesthetic fruit quality. Control of White speck begins with proper rotations with crops other than cucurbits. Maximum coverage with fungicide applications is necessary. For more information on control please see the *2004 New Jersey Commercial Vegetable Production Recommendations*.

Choanephora fruit rot – also known as **blossom blight** is a disease which affects blossoms and young developing fruit. Infected female flowers may turn brown, ‘mushy’ and fall off prior to fruit set. Blossom infection can lead to fruit infection. Young fruit may turn a yellowish-brown with *masses of dense, white fungal growth with black ‘pinpoint’ spores developing on infected fruit*. Long periods of wet weather with excessive rainfall and high relative humidity favor the development and spread of Choanephora fruit rot. Unfortunately, control of Choanephora is difficult due to the constant development of new flowers and fruit, canopy production by the plant, and the ability of the fungus to live off of dead/dying plant tissue. For more information on control please see the *2004 New Jersey Commercial Vegetable Production Recommendations*.

Powdery mildew – Powdery mildew has now been identified in southern and northern New Jersey on a variety of winter squash and pumpkin. Powdery mildew typically occurs from mid-July until the end of the season. Powdery mildew can cause 100% defoliation very quickly if not controlled properly. The diagnostic characteristics of Powdery mildew are pure white ‘fuzzy’ growth on the upper and lower leaf surface, petioles and

stems. Symptoms typically begin on older, lower leaves and can develop and spread rapidly under dry 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. For more information on control of Powdery mildew and other important diseases of cucurbits please see the *2004 New Jersey Commercial Vegetable Production Recommendations Guide*.

Phytophthora fruit rot – Unfortunately, regular wet weather conditions throughout the summer have been ideal for development of crown rot phase of the disease and in some areas the fruit rot phase of the disease is beginning to show up. Symptoms on mature fruit appear as white, ‘greasy’ lesions which can extensively cover the fruit leading to its collapse. **Control of Phytophthora blight begins with proper crop rotations. Rotate with crops other than peppers, eggplants, tomatoes and other cucurbits and plant in well-drained fields.** Apply Acrobat 50WP at 6.4 oz/A (must be tanked mixed with another fungicide active against Phytophthora blight on pumpkins and winter squash such as fixed copper) when conditions favor disease development. For more information on control please see the *2004 New Jersey Commercial Vegetable Production Recommendations*.

✓ **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 the 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 weekly preventative fungicide applications which may include Amistar or Quadris 80WDG at 2 to 5 oz/A, or Flint 50WDG at 2 to 4 oz/A, or Cabrio 20EG at 8 to 12 oz/A or, maneb 80WP at 1.5 to 2 lb/A or OLF.

✓ **Leeks – Purple Blotch** – Symptoms of Purple blotch include tannish-brown, elongated, concentric, circular lesions with chlorotic margins. Lesions run parallel with the leaf veins. Development of Purple blotch is favored by warm night temperatures. Fungicide applications should begin in the fall as soon as transplants are set out on 10-day intervals as long as night temperatures remain warm (optimum temperature 77 to 81°F). There are a number of fungicides labeled for the control on Purple blotch. For more information on control please see the *2004 New Jersey Commercial Vegetable Production Recommendations*.

✓ **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 and are

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visible in the center of lesions. Spread of Septoria blight is 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) **scout 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. Leaf spots caused by Bacterial blight appear as small brown to black spots on the leaves. It does not have the grayish brown centers or brown margins like Septoria. The pathogen can be soil or seed borne and develops during cool, moist weather. The disease spreads during cool rainy periods or under sprinkler irrigation; and a high plant density. The same control measures listed for Septoria will assist in preventing spread of Bacterial leaf spot as long as the fixed copper is included with the azoxystrobin. If Oxidate is used, follow the label carefully. See the June 16 Plant & Pest Advisory Vegetable Crops edition for more information on copper and Oxidate applications.

✓ **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. At flowering, Maneb 74DF at 1.5 to 3.0 lbs/A should be alternated every 7 to 10 days with azoxystrobin (Amistar, Quadris 80 WDG) at 2 to 5 oz/A, or Cabrio 20 EG at 8 to 12 oz/A, or Flint 50 WDG at 3 to 4 oz/A. For more information on control please see the *2004 New Jersey Commercial Vegetable Production Recommendations*.

✓ **Spinach – White Rust** – Symptoms of White rust include *irregular, chlorotic areas on the upper leaf surface with white, blister-like pustules developing on lower leaf surface*. Development of White rust is favored by cool nights and mild day temperatures with *prolonged periods of dew or fog which favor wet leaf surfaces*. Control of White rust begins with crop rotations of 2 or more years. Some varieties have partial resistance and should be used if possible. A preventative fungicide schedule should begin 2 to 3 weeks after planting, and/or *if weather conditions favor disease development*. There are a number of fungicides labeled for the control of White rust on spinach. For more information on the control of White rust on spinach please see the *2004 New Jersey Commercial Vegetable Production Recommendations*.

✓ **Tomato – Anthracnose** – or **red fruit rot** is now showing up on mature tomato fruit. Symptoms of Anthracnose are easily diagnosed. Symptoms on ripe fruit appear as water-soaked circular lesions that often have a lighter colored tan center. Black fruiting bodies are often visible in the center of Anthracnose lesions. Control of Anthracnose begins with preventative fungicide applications. Fungicides labeled for other important foliar and fruit diseases of tomato will help control Anthracnose. If fruit-ripening agent has been used, additional fungicide applications may be necessary to help control Anthracnose. For more information on control please see the *2004 New Jersey Commercial Vegetable Production Recommendations*.

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 *2004 New Jersey Commercial Vegetable Production Recommendations*. □

A LOOK BACK FROM PAGE 1

ciently drain off your fields. Removing or altering natural waterways can lead to poor drainage and standing water and planting in them can only lead to problems.

These are just a few ideas on how growers can approach the Phytophthora problem heading into the growing season. Unfortunately, there are a number of other issues that haven't been addressed here. However, understanding the factors which may increase the chances for Phytophthora development in your fields and having a plan to deal with those issues is a good start to any season. A few years ago Dr. Steve Johnston developed a check-off list for disease management for peppers from transplant production to harvest. Anyone interested in the check-off list can contact the Vegetable Pathology Lab at 1(856) 455-3100 ext 4144 or via email at wyenandt@aesop.rutgers.edu. □

Looking for Stinkbugs

George Hamilton, Ph.D., Specialist in Pest Management

The **Brown Marmorated Stinkbug**, *Halyomorpha halys* is an invasive stinkbug that was first found in Allentown, PA in 1996. Since then it has spread throughout several Pennsylvania counties and into Hagerstown, MD and the northwestern part of New Jersey. This stinkbug has a large host range that includes peaches, plums, pears, raspberries and many ornamental plants including maple trees. Damage to host plants from the Brown Marmorated Stinkbug is typically small necrotic areas but ranges from leaf stippling, cat-facing on tree fruits, seed loss, and transmission of plant pathogens. In the fall it aggregates just like the Asian ladybird beetle and box elder bug and enters homes and buildings to overwinter where it becomes a nuisance.

In order to help us determine how widespread this insect is in New Jersey, New York and Pennsylvania, the Northeastern Integrated Pest Management Center provided us with funds to create a web site (<http://www.rce.rutgers.edu/stinkbug/>) that educates people about the stinkbug and allows them to report potential sightings. In addition, we created and a refrigerator magnet that provides pictures for identification and information on how to report a sighting. The state specific magnets have been distributed in New Jersey, New York and Pennsylvania. In New Jersey, you may obtain one at your local County Rutgers Cooperative Extension Office.

Should you come across this insect or similar looking stink bug please visit the web site and file a report or call Rutgers Pest Management Office at 732-932-9802. □

IPM Update

Kristian Holmstrom, Program Associate in Vegetable IPM

Sweet Corn

Although **corn earworm (CEW)** adults are still present at low to moderate levels, their activity will be suppressed by cold evening temperatures, and larval development will be very slow. For this reason, what silking sweet corn remains may be treated at relaxed intervals. Silk spray schedules of 5-7 days have been sufficient to keep corn clean in the northern counties over the past week.

General Sweet Corn Spray Schedule

Silking Corn:	North	5-7 days
	Central	5 days
	South	5 days

Tomatoes

Be sure to fully incorporate plant material into the soil this fall to allow more complete decomposition of fruit and stems that may be infected with **late blight** or **bacterial pathogens**. Do not leave debris on the soil surface over the winter. This will permit greater survival of fungal and bacterial pathogens and may adversely affect the following season's crop.

Pumpkins

At the present time, many fields contain mostly mature fruit. In these cases it is probably not necessary to continue to apply foliar fungicides, as the vines are in decline. However, it is important to move the fruit out of the field promptly to prevent loss from a variety of sources including **cucumber beetles**, **deer**, **phytophthora fruit rot** and **fusarium fruit rot**. The latter causes fruit to collapse without the obvious yeast-like growth on the surface that is characteristic of phytophthora. Fruit collapse from fusarium fruit rot is often preceded by the appearance of circular, oozing pits where there is fruit contact with the soil. There is no viable control for either pathogen, so prompt removal of undamaged fruit is important. Stacking of fruit prior to removal from the field is discouraged, as infections can spread to healthy fruit as infected ones collapse. Damage to fruit while harvesting should be avoided as well, because this will create points of entry for rotting pathogens including fusarium.

Cole Crops

Late season cole crops are still at risk of infestation from **imported cabbageworm**. These caterpillars prefer to feed on tender tissue, and as a result are capable of causing considerable damage to new foliage or to broccoli and cabbage heads. It is important to keep looking for these pests as long as the crops are growing. Consider treating if greater than 20% of plants are infested prior to heading or when 5% are infested and heads are present. For leafy greens like collards, consider treating when 10% or more plants are infested.

Alternaria and **downy mildew** are also typical late season diseases on cole crops. Be sure to apply labeled fungicides regularly to minimize damage from these pathogens. Alternaria starts out as small dark spots that expand to show the "bulls-eye" pattern that is characteristic to alternaria organisms. Downy mildew also causes dark lesions, but they tend to be irregular in shape, and under moist conditions, will exhibit dark fluffy spore bearing structures on the underside of the leaf. When a planting is finished, be sure to incorporate it into the soil as quickly as possible so that it doesn't act as a source of inoculum for later plantings. □

Weekly Weather Summary

Keith Arnesen, Ph.D., Agricultural Meteorologist

Temperatures averaged much above normal, averaging 60 degrees north, 62 degrees central and 64 degrees south. Extremes were 81 degrees at Seabrook on the 29th, and 40 degrees at Charlotteburg on the 4th. Weekly rainfall averaged 3.85 inches north, 4.39 inches central, and 2.32 inches south. The heaviest 24 hour total reported was 5.74 at Trenton on the 28th to 29th. Estimated soil moisture, in percent of field capacity, this past week averaged 95 percent north, 90 percent central and 84 percent south. Four inch soil temperatures averaged 61 degrees north, 66 degrees central and 66 degrees south.

Weather Summary for the Week Ending 8 am Monday 10/ 4/ 4

WEATHER STATIONS	RAINFALL			TEMPERATURE				GDD BASE50		MON %FC
	WEEK	TOTAL	DEP	MX	MN	AVG	DEP	TOT	DEP	
BELVIDERE BRIDGE	4.00	41.24	12.34	77	44	62.	5	3043	407	94
CANOE BROOK	3.56	37.31	6.91	80	44	61.	4	3109	457	96
CHARLOTTEBURG	3.46	35.28	4.53	78	40	60.	5	2845	751	94
FLEMINGTON	4.07	40.05	11.06	77	43	60.	2	3054	335	96
LONG VALLEY	missing									
NEWTON	4.18	31.48	3.25	76	43	58.	3	2613	263	94
FREEHOLD	5.05	32.66	4.52	78	46	62.	3	3255	350	94
LONG BRANCH	2.61	30.49	2.01	75	47	62.	2	3111	261	85
NEW BRUNSWICK	5.53	34.44	5.82	77	44	62.	2	3269	233	95
TOMS RIVER	2.50	30.41	1.25	80	49	63.	4	3377	529	79
TRENTON	6.28	32.59	5.54	76	49	62.	2	3346	185	89
CAPE MAY COURT HOUSE	1.33	22.89	-2.40	75	50	64.	1	3240	320	67
DOWNSTOWN	1.66	24.93	-1.52	80	47	64.	3	3440	256	91
GLASSBORO	3.88	41.97	14.08	79	51	65.	5	3506	363	97
HAMMONTON	2.11	27.91	.08	79	48	64.	4	3553	404	93
POMONA	2.33	25.09	.02	76	48	63.	3	3401	476	97
SEABROOK	2.60	30.73	5.17	81	50	65.	4	3780	575	91
SOUTH HARRISON	2.55	31.39	4.11	78	50	65	NA	3599	NA	NA
WES KLINE — GDD BASE 40 PINEY HOLLOW										
Last Week 179 (Ending 9/27/04)										
This Week 169 (Ending 10/04/04)										

Editor's Note: This is the last issue of the Vegetable Crops edition of the Plant & Pest Advisory for the 2004 season. Thank you for subscribing.

Join Us! On An Ethnic Culinary Adventure Tuesday, October 26, 2004

The market for ethnic products is one of the fastest growing categories in the US marketplace today. There are great opportunities for agricultural producers and start up food companies to capitalize on this exploding category. Mark your calendar for a fun and educational excursion where we will cross culinary borders to experience a wide range of fresh and prepared ethnic foods.



Rutgers Food Innovation Center and Rutgers Cooperative Extension of Atlantic County are pleased to co-sponsor a tour to explore this growing ethnic foods market.

Stop 1: Multi-cultural food trade show - Jacob Javits Center, NYC. Discover and sample hundreds of new food and beverage products throughout 3 separate shows, including **Expo Comida Latina** - the Hispanic Food and Beverage Show, the **All Asia Food Expo**, and **Kosherfest 2004**. Hear Phil Lempert, the "Supermarket Guru" and food trends editor for NBC News' Today Show deliver the keynote address.

Stop 2: A private dinner-demonstration with **Chef Maricel Presilla** of the hot new Pan Latino restaurant **Cucharamama** in Hoboken. A world authority on Latin American cuisine, Chef Presilla will create a custom dinner incorporating ethnic agricultural and specialty items into each course. Cuban born, she has traveled extensively throughout Latin America where upon she has developed broad culinary knowledge and skills. She is not only an accomplished chef and restaurateur, but also author of several cookbooks, business owner and scholar in history.

Cost: \$35/person, includes bus transportation, trade show admission, and dinner. Bus will have 2 pick-up points, one in Southern NJ and another in Central NJ. We will pre-register you for the trade show upon receipt of your payment (registration at the door is \$50 instead of \$20).

Seats are limited. We will be taking reservations on a first come, first serve basis. Please call Bernadette Gill (856/459-1125) of the Food Innovation Center by October 18 to confirm your reservation. Make checks payable to Rutgers University. Mail to Rutgers Food Innovation Center, 87 East Commerce Street, Bridgeton, NJ 08302. □



Photos courtesy of Rick VanVranken, Rutgers Cooperative Extension

New Jersey's 2005 Deer Fence Program Eligibility Criteria

The fence is anticipated to be high tensile-woven wire 6 1/2 feet in height with two strands of high tensile wire to be placed above the mesh at one-foot intervals. Under this program, up to 30% of the line posts will also be provided. The life expectancy of the fencing is 20 years.

Fence will be bid between galvanized mesh, high tensile tight-lock mesh and high tensile hinge block.

Each eligible applicant shall receive *up to* 5,000 linear feet of fencing and *up to* 30% of the corresponding line posts.

Eligibility Criteria

To be eligible to receive deer fencing and posts under this collaborative effort, an applicant must satisfy the following criteria:

- The applicant must be a New Jersey farmer having documented proof of a minimum of \$40,000 in sales of agricultural commodities produced by the applicant on a New Jersey farm OR a New Jersey certified organic farmer having documented proof of a minimum of \$20,000 in sales of agricultural commodities produced by the applicant on a New Jersey farm.
- The applicant must be the owner of the land upon which the fencing will be erected or the applicant must rent preserved farmland or farmland that is enrolled in an Eight-Year Farmland Preservation Program.
- The applicant must have a federal identification number.
- The applicant must attend at least one seminar sponsored by Rutgers Cooperative Extension on the proper installation procedures for deer fencing. Proof of attendance must be provided to the Department.
- The fencing installation procedures used must adhere to standards that ensure the fencing provides effective exclusion of deer incursions. Fact sheets such as Rutgers Cooperative Extension fact sheet #FS889 "High Tensile Woven Wire Fences for Reducing Wildlife Damage" as well as manufacturers specifications for installation provide information regarding proper installation procedures.

- Fencing must be installed within one year from the date of issue or returned to the NJDA for redistribution. Any fencing that is returned will be assessed for damage. Failure to install the deer fence within the one-year agreed time frame or failure to install the deer fence according to installation standards that ensure the fencing provides effective exclusion of deer incursions shall prohibit the applicant from receiving deer fencing under any future NJDA or NJDEP programs. In addition, the applicant will be required to reimburse the NJDA for any fencing that cannot be redistributed to other farmers.
- If additional fencing is required, the farmer will be added to the NJDA list for future consideration if additional funding is secured.

Ineligible Applicants/Projects

- Nonprofit organizations
- Fencing erected to contain equine, livestock, poultry or other animals

Distribution of Fence

Fence distribution will take place at the Rutgers Snyder Research & Extension Farm (Hunterdon County) and at the Rutgers Agricultural Research & Extension Center (Cumberland County). Forklifts will be available onsite to load the fencing material. Distribution dates will be determined.

Application Deadline

Applications must be postmarked by NOVEMBER 30, 2004 and returned to:

New Jersey Department of Agriculture
Division of Agricultural & Natural Resources
PO Box 330
Trenton, New Jersey 08625-0330
or by facsimile at (609) 633-7229

Additional Information

Contact the New Jersey Department of Agriculture at (609) 292-5532. □

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PLANT & PEST ADVISORY

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