Plant & Pest Advisory

A Rutgers Cooperative Extension Publication

Vegetable Disease Briefs

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

Important information available at the Vegetable Crops On-Line Resource Center.

The NJAES Vegetable Working Group would like to remind everyone to visit the Vegetable Crops On-Line Resource Center website at http://njveg.rutgers.edu for New Jersey vegetable farmers. The website is a dedicated source for information relating to all aspects of production, insect, weed and disease management, food safety, marketing and much more! The 2012 Commercial Production Recommendation Guide and the 2012 FRAC Guide for fungicide resistance management are currently available on-line for free, as well as other important information.

Knowing what pathogens are causing damping-off is important for proper control in the greenhouse and the field.

Damping-off is caused by a number of important vegetable pathogens and is very common during the spring. Damping-off can kill seedlings before they break the soil line (pre-emergent damping-off) or kill seedlings soon after they emerge (post-emergent damping-off). Common pathogens that cause damping-off include Pythium, Phytophthora, Rhizoctonia and Fusarium spp. Although all four pathogens are associated with damping-off, the conditions which favor their development are very different. In general, phytophthora and pythium are more likely to cause damping-off in cool, wet soils. While rhizoctonia and fusarium are more likely to cause damping-off under warmer, drier conditions. In general, pythium tends to kill seedlings before they emerge where rhizoctonia and fusarium tend to kill seedlings after emergence. There are exceptions to the rules in some cases, but none the less, all damping-off pathogens can cause serious losses if not controlled properly. Control of damping-off depends on a number of factors. First, is recognizing the conditions which may be leading to the problem (i.e., weather/greenhouse growing conditions) and secondly, identifying the pathogen causing the problem. Why is this so important? The fungicides applied to prevent or control pythium or phytophthora won’t control the other damping-off pathogens. Why is this? The biology of the fungus and the mode of action of the fungicide dictates fungicide efficacy. For example, Ridomil Gold and Ultra Flourish (mefenoxam, FRAC code 4), MetaStar (metalaxyl,4) and Previcur Flex (propamocarb, 28) helps control the ‘water molds’ (Pythium and Phytophthora spp.) where Terraclor or OLF (PCNB, 14), Rovral or OLF (iprodione, 2) and Quadris (azoxys-
trobin, 11) helps control damping-off caused by rhizoctonia. Ramman (cyazofamid, 21) and Previcur Flex (propamocarb HCL, 28) now have labels for use in transplant water. Presidio (fluopicolide, 43) is now labeled for use in drip irrigation. Please see labels for restrictions and uses. It is extremely important to know which pathogen is causing the damping-off problem and which fungicide to properly apply. Always refer to the fungicide label for crop use, pathogens controlled and application rates.

Greenhouse sanitation and inspection important for disease management in vegetable transplant production.

Proper greenhouse sanitation is important for healthy, disease-free vegetable transplant production. Efforts need to be made to keep transplant production greenhouses free of unnecessary plant debris and weeds which may harbor insect pests and disease. All equipment, benches, flats, plug trays and floors should be properly cleaned and then disinfested prior to use and efforts need to be taken throughout the transplant production season to minimize potential problems. Any weeds in or around the greenhouse structure should be removed prior to any production. Any transplant brought into the greenhouse from an outside source needs to be certified ‘clean’, as well as, visually inspected for potential insects and diseases once it reaches your location. Remember, disinfestants, such as Clorox, Green-Shield, or hydrogen dioxide products (ZeroTol – for commercial greenhouses, garden centers and Oxidate – commercial greenhouse and field), kill only what they come into direct contact with so thorough coverage and/or soaking is necessary. The labels do not specify time intervals for specific uses, only to state that surfaces be ‘thoroughly wetted’. Therefore, labels need to be followed precisely for different use patterns (i.e., disinfecting flats vs. floors or benches) to ensure proper dilution ratios. Hydrogen dioxide products work best when diluted with water containing little or no organic matter and in water with a neutral pH.

Seed treatment and selected fungicides and bactericides labeled for greenhouse use tables in 2012 recommendations guide.

All seed used in transplant production, as well as any transplants brought into the greenhouse should be certified ‘clean’ or disease-free. Important diseases such as Bacterial leaf spot of tomato and pepper can cause major problems in transplant production if introduced in the greenhouse. Bacterial leaf spot of tomato and pepper can be seed-borne and infested seed can be a major source of inoculum in the greenhouse and cause problems in the field later in the growing season. As a rule for any crop, any non-certified or untreated seed should be treated, if applicable, with a Clorox treatment, or hot-water seed treatment, or dusted to help minimize bacterial or damping-off diseases. For more information on seed treatments for specific crops please see Table E-13 on page E46 in Section E of the 2012 New Jersey Commercial Vegetable Production Recommendations Guide.

An updated table for selected fungicides and bactericides labeled for greenhouse use is available in Section E of the 2012 recommendations guide. The table includes a comprehensive list of fungicides and biological agents approved for greenhouse use. Table E-14 can be found on page E47 and E48 of the 2012 New Jersey Commercial Vegetable Production Recommendations Guide.

The Vegetable Working Group teams up with Cornell University’s Network for Environment and Weather Applications (NEWA) to bring disease and insect forecasting to vegetable growers throughout New Jersey.

The vegetable working group has teamed up with Cornell University’s NEWA to bring tomato and potato late blight and early blight forecasting to vegetable growers throughout New Jersey. Over 30 weather stations from Sussex to Cape May County now offer disease as well as insect forecasting services for 19 specific pests. The website managed by the New York state Integrated Pest Management (IPM) program can be found at http://newa.cornell.edu. Just click on the map and scroll down to New Jersey and chose a weather station within the closest proximity to your operation. Once you choose a location a new webpage will appear with the different forecasting options to choose from. Clicking on the potato early blight will automatically generate daily and accumulative P-day values for you for that location. Remember once 300 P-days are accumulated, spray programs for early blight control should be initiated. Clicking on either tomato or potato Late blight will bring up a table which will provide daily rainfall, average temperature, hours above 90% RH and daily and accumulative DSV values for that location. One important thing to remember for the disease forecasting is to track the accumulation of DSV or P-day values based on when you transplanted tomatoes or when potatoes emerged on your farm.

If you are interested in receiving weekly tomato and/or potato disease forecasting reports from the Rutgers IPM program, please go to http://njveg.rutgers.edu and provide us your email address in the sign-up box located at the bottom right hand side of the homepage and we will add your name to our listserv for the 2012 growing season.

The Vegetable Working Group Introduces its New Vegetable Crops Agricultural Update Service for the Vegetable Industry in New Jersey and Surrounding Region

Rutgers NJAES Vegetable Working Group would like to remind all stakeholders that the Vegetable Crops Agriculture Update blog is available for the 2012 season.

The new Rutgers Vegetable Crops Agriculture Update blog allows you get daily observations from the field and industry news from around the state and
Sweet Corn and Zinc Deficiency
Bruce Barbour, Warren County Agricultural Agent and Joseph Heckman, Ph.D., Specialist in Soil Fertility

The spring of 2010 was wetter and cooler than normal. Such weather conditions are conducive to zinc (Zn) deficiency on both sweet corn and field corn. And not surprisingly a case of suspected Zn deficiency was reported in a field of sweet corn growing in Warren County.

Often times when Zn deficiency occurs on young corn plants during cool cloudy weather, the symptoms - yellow or white strips between the veins – will disappear after a period of hot sunny weather. Thus, the prevailing weather conditions are an important consideration in the diagnosis of Zn deficiency.

Usually when a nutrient deficiency occurs the symptoms are not uniformly expressed across the field. For diagnostic purposes it is a good practice to collect both plant and soil samples from the area most strongly expressing the symptoms or “bad” area and the “good” area not exhibiting symptoms.

In the case of this Warren County sweet corn field, we noticed that while taking soil samples, the top soil in the “bad” area seemed shallow and perhaps more eroded than was the case for soil sample in the “good” area. Because Zn deficiency often occurs where top soils have eroded, this field situation further pointed towards a diagnosis of Zn deficiency.

Corn plant samples collected from the “bad” and “good” areas were sent to an agricultural testing lab. The results showed that the plant tissue sampled from the ‘bad’ area contained only 21 ppm Zn while tissue sampled from the ‘good’ area contained 31 ppm. These Mehlich-3 soil test results also suggested Zn deficiency. The “bad” area had a soil test zinc level of 4 ppm and the “good” area had 7 ppm Zn.

The soil test phosphorus (P) levels across this problem field were extremely high in both the “bad” and “good” field areas. This may be meaningful towards the diagnosis since excessive levels of soil P can make Zn deficiency more likely.

The soil pH of “bad” area was 5.6 and the “good” area was 5.7. So the soil pH levels were about the same. This field needs to be limed to raise the pH to 6.5 for growing sweet corn. Because Zn availability decreases as soil pH increases, once this field is limed, a Zn deficiency problem could become worse.

In some cases, another to consider may be from previous application of glyphosate. This herbicide, which persists in soil for many years, very strongly combines with micro-nutrients like Zn and makes them less available for plant uptake. However, in this particular field the grower reported that glyphosate had not been used.

In summary, a number of conditions in this sweet corn field were conducive towards Zn deficiency. These included a period of cool wet cloudy weather, soil erosion, and very high soil test levels of P.

To prevent a reoccurrence of Zn deficiency in future corn plantings in fields such as this, we recommended the following: Apply Zn fertilizer as zinc sulfate along with banded starter fertilizer at planting. On sandy soils, apply 4 lbs/acre of Zn and on loamy soils 8 lbs/acre. If Zn chelates are used instead of zinc sulfate, reduce those application rates by a factor of four. Also, because Zn availability is improved in the presence ammonium nitrogen, we recommended that the starter fertilizer should ideally contain nitrogen in the ammonium form. In the case of this particular field, no more P fertilizer should be applied for many years. Often times ammonium sulfate applied as a starter fertilizer containing zero P can provide an early corn growth stimulation.


Vegetable Blog from page 2
Adding Diversity to Vegetable Production with Pastured Poultry
Joseph Heckman, Ph.D., Specialist in Soil Fertility

Got eggs from chickens on pasture? “Pasture” is the key word for discriminating egg consumers. “Free Range” which can mean free to move inside a barn, is not the same as outside, in sunlight, and on green pasture. Producing and selling pasture eggs is also a way to diversify a farming operation and drawing new people to your farm market.

Compared to the typical grocery store egg, pasture eggs really are special. Not only because people who try them say they taste so much better, but they are measurably higher in vitamin content. According to a 1935 agricultural textbook, “yolk of eggs from hens on blue grass range may contain 10 times as much [vitamin] D as that of hens confined indoors” on the same feed. Exposure to ultra-violet irradiation from sunlight is responsible for the vitamin D increase. Other studies indicate that pasture increases concentrations of vitamin K and carotenoids. It is largely the carotenoids that give the golden color to the yolk of a pasture egg. A recent study (Dr. Karsten, Penn State), provides more data, showing that pasture eggs, in contrast to eggs from hens in confinement, have more vitamin E (+200%) and more vitamin A (+38).

Getting started in pasture egg production requires little capital investment. I suggest starting out small with a modest size flock. If you have a young son or daughter or grandkids, pasture poultry can be a good 4-H project. There are several excellent resources for getting started in pasture poultry. See selected references at the end of this article and The Soil Profile newsletter: http://njaes.rutgers.edu/pubs/soilprofile/sp-v19.pdf.

Once someone has become accustomed to pasture eggs, regular eggs just will not do. The current supply of pasture eggs is very limited. Selling pasture eggs may also help you move more vegetables.

Besides pasture, people seeking out these special eggs often prefer that the chickens be fed organic feed. An increasing number of people are becoming even more specific and seeking pasture eggs from chickens fed soy free organic feed. This type of organic feed, without any added soybean meal, is commercially available. But like any organic feed, at a premium.

These costs must be factored into market price for the eggs. Because pasture eggs are a premium food, it is not unusual for them to command $5 to $7 per dozen at a farmers market. Never try to pass off regular eggs as pasture eggs. Pasture egg foodies may be fooled once in the market but never in the kitchen.

A vegetable farm does not necessarily need to take land away from vegetable production to have a place for small-scale pasture egg production. The movable pasture pens can be rotated over any grassy field edge areas. In the winter, or any time fields are in cover crops, the pasture chickens can be grazed over regular fields. The important factor is to keep the flock rotated over soil covered with greens. Winter wheat and rye make great cover crops and forage that chickens love to graze. Chickweed may be considered a cool season weed but for grazing chickens, it’s a favorite. Greens such as cabbage leaves or bolted lettuce are also loved by chickens.

Establishing a semi-permanent pasture of bluegrass and clover as part of a crop rotation is a great way to build soil organic matter content. After a few years of being in pasture and grazing chickens, the land is well built with fertility to produce nutrient demanding crops such as sweet corn with little or no added nitrogen fertilizer.

In my experience under New Jersey conditions, pasture chickens can be out on the land any time the

See Pastured Poultry on page 5
Wildlife Conservation Efforts to Support Local Economies and Preserve Farm Traditions

Agriculture Secretary Tom Vilsack and Secretary of Interior Ken Salazar announced a new $33 million partnership to use innovative approaches with farmers, ranchers and forest landowners to restore and protect the habitats for seven specific wildlife species while also helping other vulnerable and game species.

USDA’s Natural Resources Conservation Service (NRCS) and Interior’s U.S. Fish and Wildlife Service (FWS) will jointly prepare species recovery tools such as informal agreements, safe harbor agreements and habitat conservation plans to provide regulatory certainty to landowners. The goal is to have these tools in place for all priority species within the next seven months, with the intent to continue this targeted species recovery work beyond this year. Two of the species initially selected for this expanded campaign, the bog turtle and golden-winged warbler, are found in New Jersey.


New Jersey landowners can sign-up to manage and restore high-priority habitats for bog turtle and golden-winged warbler. New Jersey NRCS State Conservationist Donald Pettit said, “We hope to be able to reach all eligible New Jersey landowners with this new opportunity.” Applications within the priority habitat areas will receive highest consideration.

Interested producers and landowners can check the New Jersey NRCS website to see target areas http://www.nj.nrcs.usda.gov/programs/whip/WLFW.html for these species. Producers and landowners can enroll in the Wildlife Habitat Incentive Program (WHIP) http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/whip on a continuous basis at their local NRCS field office http://www.nj.nrcs.usda.gov/contact. NRCS funds from WHIP will share the cost of conservation practices with landowners in areas known to support one or both of the selected species.

For 14 years, WHIP has worked to protect, restore or develop fish and wildlife habitat for many species, including those considered at-risk. Since 2003, about $310 million has been committed to 23,000 farmers, ranchers and landowners to provide wildlife treatments on four million acres of private working lands.
2012 New Jersey Agricultural Water Summit
March 21, 2012, 9:00 A.M. to Noon
Rutgers Cooperative Extension of Burlington County
2 Academy Drive
Westampton, NJ 08060

All New Jersey farmers are invited to the Second Annual Agricultural Water Summit, developed to answer all questions regarding permitting, use of maps, what constitutes good quality irrigation water, how nurseries can safely use run-off, proper pond management and much more.

Ask yourself these questions:
- Did you know that as an agricultural water user, you must now obtain a special permit when spraying near or in the wetlands? (Virtually all New Jersey farms have wetlands)
- Do you know if your farm is located in a critical water area that has restrictions?
- Do you have questions when you file your Water Use Certifications or fill out your Annual Water Use Reports?
- These are just a few of the questions answered and explained for farmers who irrigate in New Jersey.

No registration is required

Due to the critical nature of the subject matter addressed, all growers in New Jersey are strongly encouraged to attend. I hope to see all you at this crucial special meeting.

For more information, call 609-265-5050 or go to: http://www.njaes.rutgers.edu/county/quickinfo.asp?Burlington for directions.

Workshops for Farmers and Forest Land Owners

New Jersey farmers and forest land owners who want to know more about how to improve the quality of the soil and other resources on their land are invited to attend one or more of nine morning workshops being offered in March and early April at various locations. Each workshop will include a presentation on the workshop’s specific topic, how to develop a conservation plan, and the technical and financial assistance available from the Natural Resources Conservation Service (NRCS). Technical experts will be on hand to answer questions and take applications from those who wish to sign up for NRCS assistance.

Energy Conservation workshops will cover ways to save money on your monthly electric bill and the funding available for farm energy audits, renewable energy and other energy savings measures. This topic will be offered March 12 at the Gloucester County Complex, Delsea Drive, Clayton, March 14 at the Monmouth County Ag. Complex / NRCS Service Center, 4000 Kozloski Road, Freehold, and March 15 at the Rutgers Cooperative Extension, Garibaldi Hall on Eagle Rock Ave., Roseland. These start at 8:30 a.m.

Ethnic Specialty Crops workshops will highlight opportunities for farmers interested in growing crops for this market. Topics such as marketing, horticultural challenges, trial results and production tips will be presented. This workshop will be offered three times: March 16 at the Rutgers Cooperative Extension of Burlington County in Westampton (Language assistance for speakers of Korean, Spanish and Mandarin Chinese will be available at this workshop.), March 21 at Alstede Farms in Chester, and March 29 at Rutgers Cooperative Extension of Cumberland County in Millville. All start at 8:30 a.m.

Soil Quality and Composting will be the topic covered at the March 27 workshop at Genesis Farm in Blairstown. Experts will cover soil quality basics, crop management and fertility, composting and marketing organic and certified naturally grown food. Session starts at 8:30 a.m.

Forest Landowners workshop will include information on best practices for forest management and the cost share programs available to provide funding for these efforts. Maintenance of farmland assessment will also be covered. This workshop will be offered twice: March 31 at Rutgers Cooperative Extension of Burlington County in Westampton and April 5, at the NRCS Service Center, 51 Cheney Road, Woodstown. Both start at 9 a.m.

Registration for these workshops is required. Reasonable accommodation for persons with disabilities is available at all sessions. Please request any necessary disability accommodation when you register. If language assistance is needed, please note that at time of registration and every effort will be made to accommodate these requests.

Workshops are sponsored by the Natural Resources Conservation Service (NRCS) in partnership with Gloucester County Soil Conservation District (SCD), Mercer County Soil Conservation District, and Morris County Soil Conservation District. Visit www.nj.usda.gov/about/events for workshop details and registration information, or call Gloucester County SCD (856) 5895250, Morris County SCD (973) 2852953, or Mercer County SCD (609) 5869603.
Weekly Weather Summary

Keith Arnesen, Ph.D., Agricultural Meteorologist

Temperatures averaged much above normal, averaging 41 degrees north, 44 degrees central, and 44 degrees south. Extremes were 72 degrees at Flemington and Trenton on the 9th and 19 degrees at Newton on the 7th. Weekly rainfall averaged 0.12 inches north, 0.04 inches central, and 0.04 inches south. The heaviest 24 hour total reported was 0.17 inches at Charlotteburg on the 9th to 10th. Estimated soil moisture, in percent of field capacity, this past week averaged 99 percent north, 97 percent central and 95 percent south. Four inch soil temperatures averaged 40 degrees north, 43 degrees central and 44 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 3/12/12

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WES KLINE -- GDD BASE 40 PINHEY HOLLOW LAST WEEK (24 Ending 3/5/12) THIS WEEK (42 Ending 3/12/12)
SNOWFALL TOTALS PER EVENT CAN BE OBTAINED BY VISITING THE NEW JERSEY STATE CLIMATE WEB-SITE AT
http://climate.rutgers.edu/stateclim THEN CLICK ON “Winter 2009-2010 Snow Event Totals”

Counties for Weather Station Locations

| Belvidere Bridge | Warren |
| Canoe Brook      | Essex  |
| Charlotteburg    | Morris |
| Flemington       | Hunterdon |
| Newton           | Sussex |
| Freehold         | Monmouth |
| Long Branch      | Monmouth |
| New Brunswick    | Middlesex |
| Toms River       | Ocean  |
| Trenton          | Mercer |
| Cape May Court House | Cape May |
| Downtown         | Gloucester/Atlantic county line |
| Glassboro        | Gloucester |
| Hammonton        | Atlantic |
| Pomona           | Atlantic |
| Seabrook         | Cumberland |
| South Harrison   | Gloucester |

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Pesticide User Responsibility: Use pesticides safely and follow instructions on labels. The pesticide user is responsible for proper use, storage and disposal, residues on crops, and damage caused by drift. For specific labels, special local-needs label 24(c) registration, or section 18 exemption, contact RCE in your County.

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The Vegetable Crops On-Line Resource Center website is a dedicated source for information on production, insect, weed and disease management, food safety, marketing and more: www.njveg.rutgers.edu

For back issues of the Plant & Pest Advisory: www.rce.rutgers.edu/pubs/plantandpestadvisory