RUTGERS
New Jersey Agricultural Experiment Station

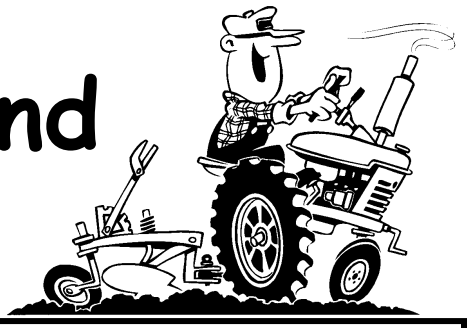
Cooperative Extension of Cumberland County
Extension Education Center
291 Morton Avenue
Millville, NJ 08332-9791

http://cumberland.njaes.rutgers.edu

Phone: 856-451-2800 x1
Fax: 856-451-4206

Cultivating Cumberland

June - 2015 VOL. 20, ISSUE 6



Inside this issue:

Attachments:

Locally Grown Proposal

Lynne Richmond, NJ Department of Agriculture

The Dept. of Agriculture is proposing new rules to set forth definitions, the standard for classification, and the penalties for mislabeling or otherwise misidentifying farm products sold in New Jersey as "local" (N.J.A.C. 2:71-10).

Based on review of the Dept. of Agriculture (USDA) food program information, there is no national definition of "local," "locally grown," or "locally produced" for farm products, such as fruits, vegetables, milk, and cheese. As a result, farm products that are grown and/or produced some significant distance away can still be labeled and marketed in New Jersey as "local" with no other information about the origin of the farm products.

To better inform New Jersey consumers and furnish assistance to the public with reference to buying farm products, the Department is proposing a classification standard of "local" or variations of the word "local." The identification of "local" farm products will help to avoid consumer confusion about the source of "local" farm products they find available in the Garden State. In addition, the proposed new rules will allow farmers to compete effectively in the Garden State's "local" market. In accordance with this proposal, to be labeled, marketed, or identified for sale in New Jersey as local, farm products must be grown or produced in New Jersey or must be clearly identified as grown or produced in another locality and another state when that other state is not New Jersey (local to Anytown, Anystate.) The proposed new rules do not exclude any producers, growers, or marketers of farm products from offering their products for sale in New Jersey. The proposed new rules only affect the use of the classification standard "local," "locally grown," and "locally produced" to describe farm products sold in New Jersey.

This proposal was published for comment in the New Jersey Register on May 4 and the comment period will close on July 3, 2015. The Department is required to maintain and publish in the adoption package a complete administrative record of all comments received and it will also include responses to the comments (and any questions asked). Therefore, please send comments to the proposed rule to one of the following:

By email to: proposedrulesMarkets@ag.state.nj.us

By regular mail to: Alfred W. Murray, Assistant Secretary/Division Director
Dept. of Agriculture
P.O. Box 330
Trenton, NJ 08625-0330

By overnight carrier to: Alfred W. Murray, Assistant Secretary/Division Director
Dept. of Agriculture
369 South Warren Street
Trenton, NJ 08608

After all of the comments are received and reviewed there may be further changes based on the comments and those changes would be published for comment. Alternatively, if there are no changes identified in the comments or if there are no changes accepted for inclusion in the proposed rules, the adoption will be published in the New Jersey Record and on our Web site. Any questions received during the comment period will be answered and will appear with the report of comments and Agency responses. Web: www.state.nj.us/agriculture/rule/locally_grown.pdf

Secretary Vilsack Announces Additional 800,000 Acres Dedicated to Conservation Reserve Program for Wildlife Habitat and Wetlands

Agriculture Secretary Tom Vilsack announced today that an additional 800,000 acres of highly environmentally sensitive land may be enrolled in Conservation Reserve Program (CRP) under certain wetland and wildlife initiatives that provide multiple benefits on the same land.

The U.S. Department of Agriculture (USDA) will accept new offers to participate in CRP under a general sign-up to be held Dec. 1, 2015, through Feb. 26, 2016. Eligible existing program participants with contracts expiring Sept. 30, 2015, will be granted an option for one-year extensions. Farmers and ranchers interested in removing sensitive land from agricultural production and planting grasses or trees to reduce soil erosion, improve water quality and restore wildlife habitat are encouraged to enroll.

The voluntary Conservation Reserve Program allows USDA to contract with agricultural producers so that environmentally sensitive land is conserved. Participants establish long-term, resource-conserving plant species to control soil erosion, improve water quality and develop wildlife habitat. In return, USDA's Farm Service Agency (FSA) provides participants with rental payments and cost-share assistance. Contract duration is between 10 and 15 years.

"CRP protects water quality and restores significant habitat for ducks, pheasants, turkey, quail, deer and other important wildlife. That spurs economic development like hunting and fishing, outdoor recreation and tourism all over rural America," said Vilsack. "Today we're allowing an additional 800,000 acres for duck nesting habitat and other wetland and wildlife habitat initiatives to be enrolled in the program."

In addition to Ducks Unlimited's partnership with the Conservation Reserve Program, other longtime partners include Pheasants Forever, Quail Forever, Association of Fish and Wildlife Agencies, National Association of State Foresters, National Wild Turkey Federation, Audubon Society, National Bobwhite Technical Committee, Quality Deer Management Association, National Rural Water Association, Playa Lakes Joint Venture, Longleaf Alliance, state soil and water conservation districts, and state forestry, agriculture and natural resource agencies.

"I encourage all farmers and ranchers to consider the various CRP continuous sign-up initiatives that may help target specific resource concerns," said Vilsack. "Financial assistance is offered for many practices including conservation buffers and pollinator habitat plantings, and initiatives such as the highly erodible lands, bottomland hardwood tree and longleaf pine, all of which are extremely important."

For more information about CRP, visit www.fsa.usda.gov/conservation, or contact your local USDA Farm Service Agency office. The Atlantic, Cape May and Cumberland Farm Service Agency Office is located at 1318 South Main Rd. Bldg. 5, Suite A, Vineland, NJ. Telephone – 856-205-1225.

Food Business Basics Seminar

If you're thinking of starting a food business this is a seminar that is a must attend for you and your company.

This 1-day seminar, conducted in a classroom/lecture format at the state-of-the-art FIC facility in Bridgeton, NJ or the Rutgers EcoComplex facility in Bordentown, NJ. This is a unique opportunity for food entrepreneurs to learn critical aspects of entering the prepared food business industry.

The sessions are relaxed, yet well structured. Attendees will have plenty of great opportunities for Q & A and Networking with fellow attendees and presenters.

Date: June 17, 2015

Time: 10:00 am—3:00 pm (lunch provided)

Place: 1200 Florence Columbus Road, Bordentown, NJ 08505

Cost: $149 per person

Topics Covered will Include:

1. How the Food Innovation Center can help you grow your business
2. Food Entrepreneurship—is it right for you?
3. Trends in the Marketplace
4. Business and Marketing Planning
5. Food Law
6. Food Technology Toolbox and Product Development
7. Quality Assurance, Food Safety and government Regulations
8. Sales and Marketing Strategy

To learn more about the seminar, contact Sho Islam, Client Services Specialist at the Rutgers Food Innovation Center at 856-459-1900 x4511 or by email: sho@rutgers.edu

Crown Rot Phase of Phytophthora Blight in Pepper: Early season Control

Andy Wyenandt, May 10th Plant & Pest Advisory

Phytophthora blight typically develops in low-lying areas of fields after a heavy rain and can spread quickly throughout the entire field.

Cultural Recommendations

Planting on a ridge or raised, dome-shaped bed will help provide better soil drainage. Use a minimum 3-year crop rotation with crops other than pepper, cucurbit, lima and snap beans, eggplant, or tomato. In fields with low-lying or wet areas, plant only Phytophthora-resistant/tolerant bell pepper cultivars such as 'Paladin', 'Aristotle', '1819', 'Intruder', 'Archimedes', or 'Revolution'. In heavily-infested fields with a known history of Phytophthora blight, plant only tolerant cultivars to help reduce plant losses. If mefenoxam-insensitivity is known to exist in a field/farm, plant only tolerant cultivars. Do not apply mefenoxam or metalaxyl in fields where insensitivity is known to exist.

Chemical Recommendations

For control of the crown rot phase of Phytophthora blight, apply:

mefenoxam–1.0 pt Ridomil Gold 4SL/A or 1.0 qt Ultra Flourish 2E/A or metalaxyl (MetaStar)–4.0-8.0 pt 2E/A at transplanting and 30 days later, or

Presidio (fluopicolide, 43) at 3.0-4.0 fl. oz 4SC/A at transplanting and/or 14 days later (between two mefenoxam applications),

Ranman (cyazofamid, 21) at 2.75 fl oz 400SC at transplanting (Ranman may be added to transplant water, see label for restrictions) and/or 14 days later (between two mefenoxam applications) Phosphite materials (FRAC code 33) such as Rampart, ProPhyt, K-Khite may also be tank mixed with one of the above to help suppress Phytophthora blight.

Growers with a known history of mefenoxam-insensitivity on their farm should use Presidio or Ranman plus a Phosphite fungicide in rotation. If mefenoxam has not been used in particular fields on any crop for a number of years (more than 5+) the fungus may revert back to being mefenoxam-sensitive.

Recommendations for Organic Practices

Organic bell pepper growers with a history of the Phytophthora blight should plant cultivars that have resistance or tolerance to the disease. Long non-host crop rotations are critically important for organic production. Regular applications of Double Nickel (*Bacillus amyloliquefaciens*) or Regalia (Extract of *Reynoutria sachalinensis*) as drenches or via the drip system prior to the onset of disease may help suppress Phytophthora blight development.

Organic Certification Cost Assistance

Lynne Richmond, NJ Department of Agriculture

The New Jersey Department of Agriculture announced a partnership with the federal government to reduce organic certification costs as part of the Christie Administration's ongoing efforts to promote New Jersey-grown and marketed organic food products.

Through the United States Department of Agriculture (USDA) National Organic Certification Cost Share Program and Agricultural Management Assistance Organic Certification Cost Share Program, each qualified producer or handler of organic products is eligible for a reimbursement of up to 75 percent of its costs of certification not to exceed $750. Certification costs include fees and charges levied by the certifying agent for certification activities.

To qualify for reimbursement under this program, an organic producer or handler must have been certified or incurred expenses for the continuation of certification during the period of October 1, 2014 and September 30, 2015. Certification must be through a USDA-accredited certifying agent.

In the event that demand exceeds the amount of funds allocated to New Jersey, applications will be processed on a first come, first served basis. Operations may receive one reimbursement per certification or category of certification per year.

Applications must be received by the New Jersey Department of Agriculture no later than **November 19, 2015**. Applications and more information about the program are available online at: www.nj.gov/agriculture/grants/organiccostshare.html.

For more information, please contact John Denlinger at 609-984-2225 or email: John.Denlinger@ag.state.nj.us.

Tracability

Meredith Melendez, Plant & Pest Advisory May 27

Audit Ready: Is Your Traceability Program Complete? Traceability, which we often talk about as one step forward and one step backwards, is an important part of your food safety plan. Expect the auditor to spend time discussing and looking at examples of your traceability program. Here is what should be included in your traceability program:

One step forward:

1. Reconciliation of product that has been delivered to recipients. This includes auction houses, co-op's, repackers, retail establishments, etc.

One step backward:

1. If the produce was grown at the farm
– Seed source or transplant source (this should also be indicated on your raw materials supplier list)
– Pesticide applications
– Fertilizer applications
– Field location
– Soil amendments

2. If the produce was purchased and not grown at the farm
– Source of the produce
– Source of raw materials and supplies used with this produce
– Items and date of receipt
– Lot numbers, quantities, and transporter

Mock trace back:
A trace back and trace forward exercise is required annually to verify that your traceability program is effective. 100% of product involved in the trace back and trace forward exercise must be reconciled within four hours to be considered effective. If there are no records of this mock trace back exercise the auditor will require it be completed during the audit.

Bacterial Leaf Spot in Peppers

Dr. Andy Wyenandt, May 17 Plant & Pest Advisory

Symptoms of bacterial leaf 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 or may help suppress spread. Quintec (quinoxyfen, 13) at 6.0 fl. oz/A is now labeled for the suppression of bacterial leaf spot in pepper in the mid-Atlantic region. Please see the 2015 New Jersey Commercial Vegetable Production Recommendations Guide for more information.

Potato

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. Do any cultivating when plants are dry, cultivating in the presence of dew or wet plants may help to spread the bacterium around.

Strawberry

Leather rot can infect fruit at any stage. On green fruit, infected areas turn a dark-brown and develop a rough 'leathery' appearance. On fully mature (red) fruit little or no color change may occur on infected fruit however, fruit will have an unpleasant smell and taste. The pathogen (*Phytophthora cactorum*) overwinters in the soil in low-lying spots and becomes active during wet weather. Conditions that favor leather rot development also favor grey mold (*Botrytis*) development. However, fungicides for Grey mold control are not effective for leather rot control. Applications of a FRAC group 4 fungicide, such as Ridomil Gold SL (mefenoxam) at 1.0 pt/A 4SL or MetaStar (metalaxyl), or phosphite fungicide (FRAC code 33 fungicide), such as K-Phite, Rampart, or ProPhyt, prior to or at harvesting will help suppress leather rot. For more information on controlling leather rot and other important diseases of strawberry please see the 2015 New Jersey Commercial Vegetable Production Recommendations Guide.

Angular leaf spot – Bacterial leaf spot can cause spots on the leaves causing them to die. Infections can also become systemic killing the whole plant. Importantly, the calyx can become infected causing them it prematurely turn brown and reduce marketability of fruit. Fixed coppers applications will help suppress the spread as long as the weather remains dry. Discontinue copper applications in plant injury begins to occur, usually after 4 to 5 applications. Avoid overhead irrigation which will only make problem worse.

Tomato

Bacterial spot and speck – Tomato transplants with suspected symptoms can be treated with streptomycin (Agri-Mycin 17, Agri-Strep, 25) at 1 lb/100 gallons, or 1.25 teaspoon per gallon every 4 to 5 days prior to transplanting. Additionally, Kocide 3000 (copper hydroxide, FRAC code M1) has a greenhouse label for speck and spot control in the greenhouse. Apply ½ to 1.5 TBSP per 1000 sq ft. every 5 to 10 days. Remember, phytotoxicity is an important issue when apply copper in enclosed structures, see label for cautions, restrictions and liabilities. After transplanting, apply Actigard at 0.33 oz 50WG/A (see label for use), or fixed copper (M1) at 1 lb a.i./A *plus* a mancozeb (Dithane, Manzate, M3) at 1.5 lb 75DF or OLF, or ManKocide (M1 + M3) at 2.5 to 5.0 lb 61WP/A on a 7 day schedule.

Grower's Guide: Understanding DMI or SBI fungicides (FRAC code 3)

Dr. Andy Wyenandt, May 4th Plant & Pest Advisory

The DMI (**D**e**M**ethylation **I**nhibitors) or Sterol Biosynthesis Inhibiting (SBI's) fungicides belong to FRAC code 3 which include the triazoles and imidazoles. Some of these fungicides are commonly known as Tilt (propiconazole), Rally (myclobutanil), Folicur (tebuconazole), and Procure (triflumizole) and are widely-used in agriculture.

DMI's work by inhibiting the biosynthesis of ergosterol which is a major component of the plasma membrane of certain fungi and needed for fungal growth. Resistance by fungi to the DMI fungicides has been characterized and is generally known to be controlled by the accumulation of several independent mutations, or what is known as 'continuous selection' or 'shifting', in the fungus.

In any given field population, the sensitivity to the DMI fungicide by the fungus may range from extremely high (highly sensitive, and will be controlled by fungicide) to moderate (partially sensitive to the fungicide) or low (mostly resistant to fungicide).

This type of resistance is also known as quantitative resistance. With quantitative resistance, as stated above, there are different levels of resistance to the fungicide due to independent mutations, which, is unlike the target mutations that occur in qualitative resistance associated with the QoI (FRAC code 11) fungicides. Because different levels of resistance to the DMI fungicide may exist in the field, control of fungal population may widely vary based on the rate of the DMI fungicide being applied. It is suggested that using a higher rate of a DMI fungicide, may improve control when lower rates have failed.

For example, let's say that a cucurbit powdery mildew population on pumpkin consists of 25% highly sensitive, 50% moderately sensitive, and a 25% low sensitive (resistant) population to a DMI fungicide. If fungicide is applied at the low rate, only 25% of the population (highly sensitive) may be controlled. Where, if the high rate was used, 75% (the 25% highly sensitive + 50% moderately sensitive) of population would have been controlled. The main point is that if low rates of DMI fungicides have been used and control seems to be weakening, increasing to a higher rate may improve control.

Unfortunately, it is difficult to determine what proportion of the powdery mildew population is sensitive or not sensitive by just looking at the field until you have begun a proper spray program. The best advice, if you are using low rates and think those rates are not working, is to increase to the high rate the next time the fungicide is sprayed, and if the high rate still doesn't work it may be safe to assume the fungal population has grown mostly resistant. Importantly, if the high rate fails, whether you bumped up to a high rate or started with one, and control does not seem adequate, DO NOT continue to use the DMI fungicide.

Recognizing if and when fungicide chemistries are failing and when fungicide resistance is developing is critically important to producing successful crops and why scouting on a regular basis, at least before and after each fungicide application, is important. Regular scouting can help reduce unwarranted and ineffective fungicide applications and help reduce wasted costs.
Remember to always tank mix DMI fungicides with protectant (M) fungicides (i.e., chlorothalonil, manzate) to help reduce the chances for fungicide resistance developing. Always apply DMI fungicides according to label rates and resistant management recommendations and always be aware of the fungicide rate you are applying.

Vegetable Disease Update

Dr. Andy Wyenandt, May 10 Plant & Pest Advisory

Cole crops

Downy Mildew and Alternaria – Symptoms of downy mildew include purple to yellowish-brown spots on upper leaf surfaces. A grayish-white spore mass will develop and cover the underside of leaves under ideal temperatures (night temperatures of 46 to 61°F and day temperatures below 75° F. Downy mildew can kill young plants. Heavily infected leaves may drop providing entry points for bacterial infections (black rot and soft rot). Symptoms of Alternaria on infected leaves include small, expanding circular lesions with concentric rings that may have a 'shot-hole' appearance as lesions age. Heavily infected seedlings may result in damping-off. Control of Downy mildew and Alternaria begin with preventative fungicide applications. Please refer to pages F34-35 of the 2015 NJ Commercial Vegetable Production Recommendations to determine which fungicides are labeled for each specific crop and disease.

Lettuce

Bacterial leaf blight – Symptoms include numerous black, irregular 'greasy' lesions on leaves and can be problematic when overhead irrigation has been used extensively. The bacterium can survive on weeds and infected debris left in the field. Abandoned plantings should be thoroughly worked back into the soil to allow decomposition of infected plants. Copper fungicide applied on a regular basis may help to suppress the spread of the disease.

Spinach

Anthracnose – Symptoms in spinach are small, circular, water□soaked lesions on both young and old leaves. Lesions later enlarge, turn brown to tan in color, and become thin and papery. In severe cases, lesions coalesce and result in severe blighting of foliage. Avoid excessive overhead irrigation if possible.

Alternate the following fungicides:
Fontelis (penthiopyrad, 7) at 24.0 fl oz 1.67SC/A with
Cabrio (pyraclostrobin, 11) at 12.0 to 16.0 oz 20EG/A

If more than 2 applications are needed apply:
Merivon (fluxapyroxad + pyraclostrobin, 7 + 11) at 4.0 to 11.0 fl oz 2.09SC/A
Pristine (boscalid + pyraclostrobin, 7 +11) at 18.5 oz 38EG/A

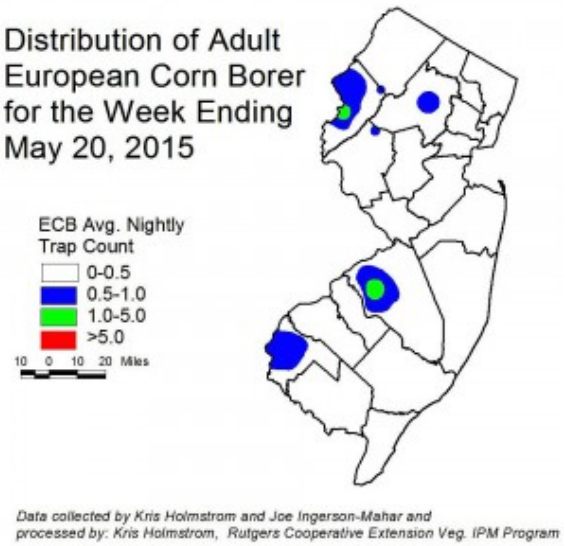
Vegetable IPM Update

Kris Holmstrom & Joe Ingerson-Mahar
May 20, Plant & Pest Advisory

Sweet Corn

European corn borer (ECB) adults are being captured with increasing frequency now. At the present, areas of highest activity include Burlington and Warren counties (see ECB map). Cooler nights for later this week may suppress catches for the next several days.

Most early sweet corn plantings are too young to support ECB larval infestations. However, over the next two weeks we should begin to see feeding in the most advanced plantings. Be sure to begin monitoring the earliest plantings for ECB feeding while they are still in the whorl stage.



Data collected by Kris Holmstrom and Joe Ingerson-Mahar and processed by: Kris Holmstrom, Rutgers Cooperative Extension Veg. IPM Program

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

Belvidere 2	Allamuchy 1	Port Colden 1
Blairstown 2	Califon 1	Sergeantsville 1
Denville 2	Centerton 1	Tabernacle 1
Medford 2	Pedricktown 1	Woodstown 1

Two **corn earworm moths (CEW)** were captured in blacklight traps this past week. These individuals were at Centerton and East Vineland.

Cole Crops

Infestations of **imported cabbage worm (ICW)** are occurring at this time. Scout plantings weekly. Check 5 consecutive plants each in 10 random locations throughout the planting, paying particular attention to the innermost leaves where ICW often feed. Consider treating if caterpillars are found on 10% or more plants that are in the 0-9 true leaf stage. From 9-leaf to the early head stage (in broccoli, cauliflower and cabbage) infestations up to 20% may be tolerated. Once heads begin to form, a 5% threshold should be observed to protect the marketable portion of the plant. For leafy greens such as collards and kale, 10% plants infested is the threshold throughout.

Although none have been discovered yet, it is not too soon to begin preparing for infestations of **diamondback moth (DBM)** larvae. Some populations of DBM are resistant to carbamate and synthetic pyrethroid insecticides. The lack of DBM control with these insecticides has been noted in NJ previously. It is important to distinguish between common cole crop pests for this reason. DBM larvae grow to a length of approximately 0.5", and taper toward both ends. These caterpillars thrash violently when disturbed. ICW grow to a length of approximately 1.25" and are covered with short hairs. Newer chemistries that specifically target caterpillar pests are effective against DBM as well as all other caterpillar pests of cole crops. These materials include (active ingredient – trade name (IRAC* code)):

- Spinosad/Spinetoram – Entrust/ Radiant (5)
- Chlorantraniliprole – Coragen (28)
- Cyantraniliprole – Exirel (28)
- Flubendiamide – Synapse (28)

The IRAC group 5 insecticide, Entrust, is OMRI approved for organic production. Insecticides based on the soil inhabiting bacterium Bacilllus thuriengensis (B.t.) may also be effective on caterpillar pests of cole crops. Examples include Xentari and Javelin. These materials are also OMRI approved. If B.t. materials are used, they must target smaller larvae. Do not wait until large larvae are dominant the field, as results may be unsatisfactory. An added benefit of all the aforementioned chemicals is that they have minimal impact on non-target species, including many insect predators and parasites. Spinosad materials should be used in a way that avoids contact with bees.

Tomatoes

Many early tomato plantings are now in the field. Pruning and tying of plants is on-going. Remember that any event that results in contact with the plant causes numerous injuries to them. While these injuries heal, they serve as avenues of entry for bacterial pathogens that may be present either on the plants or in the field. Serious bacterial pathogens of tomato include bacterial leaf spot and bacterial canker. Both can result in unmarketable fruit, and canker can kill plants prior to the production of fruit if the infection occurs early enough. Timing and rates for applications of copper and/or the plant defense activator Actigard are detailed in the 2015 Commercial Vegetable Production Recommendations. These products provide some suppression of bacterial pathogens. It is critical, however, that spread of bacterial organisms be limited as much as possible. Avoid working in fields when plants are wet. When work is to be done in more than one planting, always work from youngest to oldest plants. This prevents workers from transporting bacteria to younger plants, where infections can result in increased crop loss. Remember that the earlier a plant is infected by a bacterial pathogen, the more likely it is to produce unmarketable fruit.

Two-spotted spider mite (TSSM) infestations have recently been discovered in a high tunnel in Middlesex County. TSSM feeding results in small white pin-spots on the upper leaf surface. Mites are actually underneath leaves. These pests can increase dramatically in the warm, dry environment of the tunnel. Check 5 plants each in 5 separate locations in the tunnel. Inspect the entire plant, and be sure to check the underside of leaves that display the whitish mite feeding. If mites are found, it is best to immediately treat. TSSM is much more easily managed, when the problem is addressed at low levels. If allowed to spread throughout the tunnel, TSSM will be much more difficult to control. See the 2015 Commercial Vegetable Production Recommendations for materials that are labeled for use in greenhouse structures. It may be possible to deploy predatory mites such as *Neoseiuilus falacis* or *Neoseiulus californicus* in the tunnel to limit TSSM populations. This and other TSSM predators may be purchased from bio-control suppliers such as Koppert. The main drawback of this strategy is that predatory mites generally have much lower tolerance for heat than TSSM. Therefore, if outside weather is routinely exceeding 80° F, and the tunnel temperature is exceeding 85°F during the day, it is unlikely that predatory mites will survive long enough to have a significant impact on TSSM.

Aphid populations have also begun to appear in high tunnel tomatoes. These pests often form colonies beneath the surface of leaves and near growing points on the plant. While the plants consist primarily of vegetative growth without fruit, aphids are largely an insignificant pest. If no broad spectrum insecticides are used on the plants, the aphids generally are decimated by predators and parasites before becoming an economic problem. Should aphid populations increase to a degree that their droppings are accumulating on the surface of developing fruit, an insecticide that specifically targets these pests may be necessary. See the 2015 Commercial Vegetable Production Recommendations for materials that are labeled for aphid control in tomatoes. Avoid broad spectrum insecticide classes such as synthetic pyrethroids as much as possible.

Brown Marmorated Stink Bug (BMSB): To date, only a few scattered BMSB individuals have been captured in the blacklight network. As levels in any area rise to an average of above 1/night, a population map of this insect's activity will appear in this publication.

Pepper Weevil

Joe Ingerson-Mahar reports that, although pepper weevil catches in the southern NJ weevil trap network are generally lower than in previous seasons, there was a recent spike in activity in the Hammonton area (see pepper weevil map). Reports on this insect's activity will appear in the Plant and Pest Advisory on a weekly basis, with relevant control information.

Understanding Strobilurin Fungicides (FRAC group 11) in 2015

Dr. Andy Wyenandt, May 14, 2015 Plant & Pest Advisory

The strobilurin, or QoI fungicides (FRAC group 11) are extremely useful in controlling a broad spectrum of common vegetable pathogens. You may know some of older strobilurins as azoxystrobin (Quadris), trifloxystrobin (Flint), pyraclostrobin (Cabrio), or Pristine (pyraclostrobin + boscalid, 11 + 7). For example, FRAC group 11 active ingredients such as azoxystrobin are also now available in combination products as Quadris Top (azoxystrobin + difenoconazole, 11 + 3), Quilt (azoxystrobin + propiconazole, 11 + 3), or Quadris Opti (azoxystrobin + chlorothalonil, 11 + M5).

All strobilurin fungicides inhibit fungal respiration by binding to the cytochrome b complex III at the Q_0 site in mitochondrial respiration. Simply said, the fungicide works by inhibiting the fungi's ability undergo normal respiration. The strobilurin chemistries have a very specific target site, or mode-of-action (MOA).

Although highly effective, fungicide chemistries like those in FRAC group 11, with a very specific MOA, are susceptible to fungicide resistance development by some fungi. Why is that? In the strobilurin's, a single nucleotide polymorphism of the cytochrome b gene leads to an amino acid substitution of glycine with alanine at position 143 of the cytochrome b protein.

For us, knowing the specifics on the technical jargon isn't so important, it's understanding what is at stake. So, if we hear someone speak about G143A resistance development to the QoI fungicides (where resistance is already known in cucurbit Powdery mildew and Downy mildew), we know what they are talking about and how important it is! So much so, if cucurbit powdery mildew develops resistance to one strobilurin compound it may develop what is known as cross resistance and become resistant to all chemistries in FRAC group 11, even if only one chemistry has been used!

How do we avoid the chances for fungicide resistance like this to develop? It's simple, don't let the fungus 'figure out' what it is being sprayed with and do this by rotating different fungicide chemistries (i.e., FRAC groups). Proper fungicides rotations are necessary when fungicides with specific MOA's are used in fungicide programs for controlling important diseases. That's why it is important to follow a fungicides label precisely and be certain that some fungicide chemistries aren't overused.

All strobilurin fungicides should be tank mixed with a protectant fungicide, when possible. Remember tank-mixing high-risk fungicides (i.e., FRAC group 11) with low-risk, protectant fungicides (FRAC groups M1-M9) helps reduce (and/or delay) the chances for fungicide resistance development. Never tank mix strobilurins together and never apply any strobilurin fungicide (either the same chemistry or different chemistry) in consecutive applications if stated by the label. Remember, azoxystrobin acts against the fungus the same way as trifloxystrobin does and so on. Even though you are spraying two different fungicides, each has the similar MOA and is acting against the fungus in the same exact way.

Azoxystrobin (i.e., Quadris 2.08F) used heavily in vegetable production is coming off patent and should soon be available in generic forms from a number of companies looking to sell azoxystrobin. In the 2015 Vegetable Crops Recommendations Guide you will see that most references to Quadris have been replaced with azoxystrobin, much like we did the chlorothalonil (i.e., Bravo Weatherstik) a few years ago. Over the next couple years other FRAC code 11 fungicides will also be coming off patent and similar changes in the recommendations guide will occur. Resistance to FRAC group 11 fungicides has been reported in multiple pathogens in multiple crops worldwide. Resistance to FRAC group 11 fungicides in our region have been reported in cucurbit powdery mildew and gummy stem blight. Importantly, in recent years the lack of efficacy in strobilurin fungicides in crops, such as parsley, where azoxystrobin was one of the few fungicides available for septoria leaf spot control is showing up in the Vineland area.

The threat for resistance development in important pathogens to FRAC group 11 fungicides is always present, and it will become even more important to monitor as generic products with azoyxstrobin and other group 11 fungicides as active ingredients begin to emerge in the future.

Calendar of Important Events

Indicates the newly added event since last calendar

June 2015

June 8
Subsurface Investigation, Rutgers Continuing Education, 102 Ryder Lane, New Brunswick; $185 Course Code EW0205CA15. For more information call 732-932-9271 or visit: www.cpe.rutgers.edu

June 9-10
Air Quality Permitting, Rutgers Continuing Education, 102 Ryder Lane, New Brunswick; $445; $465 after 5/26, Course Code EN0203CA15. For information call 732-932-9271 or visit: www.cpe.rutgers.edu

June 15
3D Laser Scanning, Rutgers Continuing Education, 102 Ryder Lane, New Brunswick; $185 Course Code EW0206CA15. For more information call 732-932-9271 or visit: www.cpe.rutgers.edu

June 22
Freshwater Wetlands, Rutgers Continuing Education, 102 Ryder Lane, New Brunswick; $275; $295 after 6/8; Course Code EN0401CA15. For information call 732-932-9271 or visit: www.cpe.rutgers.edu

June 22-23
Stormwater Management Rules, Rutgers Continuing Ed, 102 Ryder Lane, New Brunswick; $465; $495 after 7/8, Course Code EW0317CA16. For info call 732-932-9271 or visit: www.cpe.rutgers.edu

July 2015

July 13-14
Radon Measurement Proficiency, Rutgers Continuing Ed, 102 Ryder Lane, New Brunswick; $425 by 6/29; $450 after, Course Code EA0201CA16. For info call 732-932-9271 or visit: www.cpe.rutgers.edu

July 15-17
Radon Mitigation Proficiency, Rutgers Continuing Ed, 102 Ryder Lane, New Brunswick; $715 by 6/29; $745 after, Course Code EA0301CA16. For info call 732-932-9271 or visit: www.cpe.rutgers.edu

July 15-18
IFTA study tour, Washington State, www.ifruittree.org

August 2015

August 8-11
10th Annual NAFDMA Advanced Learning Retreat, Alstede Farms, Chester, NJ. For more information visit: www.farmersinspired.com

August 11-12
North American Strawberry Growers Association Summer Tour, Maryland. For more information visit: www.nasga.org

August 17-21
Introduction to Food Science, Rutgers Continuing Education, 102 Ryders Lane, New Brunswick; $1,495 by 8/3. For more information visit: www.cpe.rutgers.edu or call 732-932-9271

August 19-21
Agricultural Plastics Recycling Conference & Trade Show, San Diego, California, Private $497; Farmers/Government/non-profit $397 and students $127. For more information visit: agplasticconference.com

August 20-21
Apple Crop Outlook & Marketing Conference, The Ritz-Carlton, Chicago. For more information visit: www.usapple.org

August 20
68th Annual Clinic, Tradeshow and Clambake, Rutgers Cont. Ed., 102 Ryders Lane, New Brunswick. For registration and pesticide recertification credits call Claudine Oleskin 732-932-9271 x614 or email: coleskin@rci.rutgers.edu

September 2015

September 23-24
Sensory Evaluation, Rutgers Continuing Education, 102 Ryders Lane, New Brunswick; $845 by 9/9; $895 after. For more information visit: www.cpe.rutgers.edu/food or call 732-932-9271

September 25
Statistics for Food Scientists, Rutgers Continuing Education, 102 Ryders Lane, New Brunswick; $395 by 9/11; $425 after. For more information visit: www.cpe.rutgers.edu or call 732-932-9271.

November 2015

November 4-6
HACCP Plan Development for Food Processors, Rutgers Cont. Ed, 102 Ryders Lane, New Brunswick; $945 by 10/21; $995 after. For more information visit: www.cpe.rutgers.edu/food or call 732-932-9271

November 9-13
2015 Irrigation Show & Education Conference, Long Beach, California. For more information visit: www.irrigation.org

November 11-13
Better Process Control School, Rutgers Continuing Education, 102 Ryders Lane, New Brunswick; $995 by 10/28; $1,095 after. For more information visit: www.cpe.rutgers.edu/food or call 732-932-9271

November 16-18
Southeast Strawberry Expo, Charlotte, N.C. For more information visit: www.ncstrawberry.com

November 18-19
Pacific Northwest Vegetable Association Conference & Trade Show, Three Rivers Convention Center, Kennewick, Wash. For more information call 509-585-5460 or visit: www.pnva.org

December 2015

December 1-2
30th Annual Southeast Vegetable & Fruit Expo, Myrtle Beach, South Carolina. For more information visit: www.ncvga.com

December 3-4
Practical Food Microbiology, Rutgers Cont. Ed, 102 Ryders Lane, New Brunswick; $795 by 11/19; $825 after. For more information visit: www.cpe.rutgers.edu/food or call 732-932-9271

December 7-9
Washington State Tree Fruit Association Annual Meeting, Yakima, Washington. For more information visit: www.wahort.org

December 8-10
Great Lakes Fruit, Vegetable and Farm Market EXPO, Grand Rapids, Mich. For more information visit: www.glexpo.com

January 2016

January 4-5
Kentucky Fruit and Vegetable Conference, Embassy Suites Hotel, Lexington, Ky. For more information call John Strang 859-257-5685 or email: jstrang@uky.edu

January 6-8
Illinois Specialty Crops, Agritourism and Organic Conference, Crowne Plaza Hotel, Springfield, Ill. For more information call 309-557-2107 or email: cblary@ilfb.org

January 18-20
2016 OPGMA Congress, Kalahari Resort & Convention Center, Sandusky, Ohio. For more information visit: www.opgma.org

January 19-21
Indiana Hort Congress, Wyndham Indianapolis West, Indianapolis. For more information visit: www.inhortcongress.org

January 19-21
Empire State Producers Expo, Syracuse, N.Y. For more information visit: www.hort.cornell.edu/expo

January 24-26
Wisconsin Fresh Fruit & Vegetable Conference, Wisconsin Dells, Wisconsin. For more information visit: www.wiberries.org

January 27-30
Practical Tools and Solutions for Sustaining Family Farms Conference, Lexington, Ky. Southern Sustainable Agriculture Working Group. For more information visit: www.ssawg.org

January 28-29
Iowa Fruit and Vegetable Growers Annual Conference, Ankeny, Iowa. For more information call Adam Hohl 319-316-2650 or email: info@ifvga.org

February 2016

February 2-4
Mid-Atlantic Fruit & Vegetable Convention, Hershey, PA. For more information visit: www.mafvc.org

February 6-12
IFTA 59th Annual Conference, Michigan. For more information visit: www.ifruittree.org

February 9-11
New Jersey Agricultural Convention & Trade Show, Harrah's Convention Center, Atlantic City, NJ. For more information visit: www.njveggies.org

February 25-27
MOSES Organic Farming Conference, La Crosse, Wis. For more info visit: www.mosesorganic.org

REGULARLY SCHEDULED MEETINGS

✔ Indicates meeting will be held at RCE of Cumberland County

✔	✔	✔
Pesticide Certification Exam Schedule—Cumberland County **291 Morton Avenue** **Millville, NJ 08332** **(Between Rosenhayn & Carmel)**	**Cumberland County Agriculture Development Board** **Soil Conservation Office** **1516 Highway 77** **Deerfield Street, NJ 08332**	**Cumberland County Board Of Agriculture** **291 Morton Avenue** **Millville, NJ 08332** **(Between Rosenhayn & Carmel)** **7 pm meetings**
2015	2015	2015
Oct 1	Jun 10 July 8 Aug 12 Sep 9 Oct 7 Nov 18 Dec 9	Sep 17 Oct 15 Nov 19 Dec 17
To Register call 609-984-6614 **For directions call 856-451-2800** **********	**Reg. Meetings start at 7 p.m.** **Call DeAnn at 856-453-2211** **********	**For info call Hillary Barile,** **President 856-453-1192** **********

Cumberland County Improvement Authority (CCIA)
Pesticide Container Recycling
9:00 a.m. to 12 Noon
Cumberland County Solid Waste Complex
169 Jesse's Bridge Rd. (located off Route 55 Exit 29)
Deerfield Township, New Jersey
Questions? Call Division of Ag & Natural Resources, NJ Dept. of Ag 609-292-5532

Jun 19 Jul 17 Aug 21
Sep 18 Oct 16 Nov 20

Sincerely,

James R. Johnson
Agricultural Agent
Nursery Management Commercial
Internet: jjohnson@njaes.rutgers.edu

Wesley L. Kline, Ph.D.
Agricultural Agent
Vegetable & Herb Production
Internet: wkline@njaes.rutgers.edu

Have you visited the Cumberland County website for the Present and/or past issues of “Cultivating Cumberland”? It’s a great resource for information and dates……...

http://Cumberland.njaes.rutgers.edu/

RUTGERS
New Jersey Agricultural Experiment Station

Cooperative Extension of Cumberland County
Extension Education Center
291 Morton Avenue
Millville, NJ 08332-9791

NONPROFIT ORGANIZATION
U.S. POSTAGE PAID
VINELAND, NJ
PERMIT NO. 186