Preventing Your Farm Food Safety Plan  
Part 1 - Developing Your Farm  
Food Safety Mission Statement  

Meredith Melendez, Mercer County Senior Program Coordinator, Agriculture and Wesley Kline, Ph.D., Cumberland County Agricultural Agent

Having a farm food safety plan that is specific to your operation makes good business sense. Publicity about illness outbreaks traced back to the farm has created a public that pays much more attention to food safety than they used to. Developing your own farm food safety plan can help to reassure your customers about food safety on your farm and potentially increase your market opportunities. A farm food safety plan will help prove to your customers dedication to on-farm food safety and show them the measures you've taken to ensure a safe quality product.

The first step in writing a farm food safety plan is to create a food safety mission statement for the farm. This statement should be brief, consisting of several paragraphs and explain your company's commitment to food safety, food quality, food sanitation and worker hygiene. This mission statement is specific to food safety only, and is separate from the mission statement of your farm business plan.

The first paragraph of your mission statement should focus on the general philosophy of the farm in regards to food safety and indicate who at the farm is responsible for the food safety program. This first paragraph should include the following statements:

1. The most important mission of the farm is food safety.
2. Management and employees at the farm are committed to producing and marketing safe product through good agriculture and handling practices that focus on principles of food safety and quality.
3. Indicate who on the farm oversees the food safety program.
4. Indicate, when possible, what food safety training the supervisor has had.

The second paragraph of your mission statement should describe through broad statements how food safety is ensured. Statements should show that the following are priorities:

1. Making sure there is no immediate safety risk present in areas where the produce is grown, processed and packed.

See Mission Statement on page 2
2. Making sure there is no immediate risk of contamination of the product.
3. Making sure product is not at risk for contamination by insects, rodents, birds and pets.
4. That employees are appropriately following heath and hygiene practices.
5. That all information and paperwork is documented in an efficient and truthful manner.
And that:
6. Maps are available in the food safety plan of the farm and water movement.

The third paragraph should focus on documentation, the organization of this documentation and the annual review of the food safety plan. Statements can include:
1. The food safety plan will be reviewed annually and updated as needed.
2. All documentation referenced in the food safety plan will be kept on file for a minimum of two years.
3. Employees will be familiar with the food safety plan and will be trained annually and as the farm food safety plan is updated.

Next week: Farm Maps.

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**Potential New Insect Pests of New Jersey Crops**

*Joseph Ingerson-Mahar, Vegetable IPM Program Coordinator*

**✔ Western Bean Cutworm (WBCW)** - This insect is a native species originally found in the western US but since about 2000 has rapidly expanded its range eastward being found in eastern Pennsylvania in 2009. In 2011, several specimens of the moth were caught in pheromone traps in Bucks and Berks Counties, Pennsylvania, just across the Delaware River from northern New Jersey. In 2011, the Vegetable IPM Program set out 4 pheromone traps, two in northern New Jersey and two in southern New Jersey to detect the presence or not of WBCW. No specimens were caught, but we will continue to monitor for it in 2012.

Despite its name it is primarily a pest of field corn, sweet corn and popcorn. Dry beans in the mid-west are also fed upon. There is only one generation a year with the adult flight occurring in mid-summer. Eggs are laid on late whorl corn. The larvae are distinctive with the head brownish orange and two black triangular areas just behind the head. The body is smooth without hairs or spines. The larvae of the western bean cutworm feed externally on the tassel, leaves and ears of the corn plant, but will also tunnel into ears either through the silk or through the side of the ear. Their damage is exacerbated by secondary mold and other pests. A loose threshold used in some Midwestern states is 5 to 8% of the stand infested.

Management will probably depend mostly on insecticide applications. It is possible that the cutworm may not be a significant pest of sweet corn because of the regular spray schedule already being used to control corn earworm in post-whorl sweet corn. The caterpillar is susceptible to Bt corn expressing the Cry 1F protein. All other Bt strains are ineffective in controlling WBCW.

For more photos of the adult moth and additional information go to the website [http://ento.psu.edu/extension/field-crops/corn/western-bean-cutworm](http://ento.psu.edu/extension/field-crops/corn/western-bean-cutworm).

**✔ European Pepper Moth (EPM)** - This is an invasive insect originally from Europe. In recent years the moth has been found in the western US and has been found in Florida and Georgia. The EPM is largely a greenhouse pest although it will feed on host plants in the field. It is a member of the grass feeding moths, Crambidae, but feeds on peppers, tomatoes and other vegetable crops, as well as flowers and many ornamental species. The eggs, whitish green turning red as they mature, are laid on plants or in the soil. The eggs are laid either singly or in masses of 3 to 10 in the same overlapping manner as European corn borer eggs. The larvae feed externally on leaves, flowers, and buds and bore into stems and fruit. The EPM is spread primarily by being transported in produce and potted material. The life cycle can be completed in about six weeks.

In general it would appear similar to a European corn borer moth except that it is darker with white wavy lines in the wings. The distinctive feature is the finger-like projection in the 2nd wavy line in the forewing.

More photos of the moth, eggs and larvae, as well as damage to plants and more information can be found at [http://ucanr.org/blogs/blog-core/postdetail.cfm?postnum=5848](http://ucanr.org/blogs/blog-core/postdetail.cfm?postnum=5848).
Vegetable Disease Update

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

✔ 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. Use one of the following at the first sign of disease and continue every 7 to 10 days (Please refer to the pesticide table on page F26 of the 2012 NJ Commercial Vegetable Production Recommendations to determine which fungicide is labeled for each specific crop.):
- Quadris (azoxystrobin, 11) at 6.0 to 15.5 fl oz 2.08SC/A, or chlorothalonil (M5) at 1.5 pt 6F/A or OLF, or Cabrio (pyraclostrobin, 11) at 12.0 to 16.0 oz 20EG/A, or Endura (boscalid, 7) at 6.0 to 9.0 oz 70WG/A, or Ridomil Gold Bravo (mefenoxam + chlorothalonil, 4 + M5) at 1.5 lb 76.5WP/A (14-day schedule), Manzate Pro-Stick (mancozeb, M3) at 1.6 to 2.1 lb 75DF/A, or Switch (cyprodinil, 9) at 11.0 to 14.0 oz 62.5WG/A (Alternaria only).
- For downy mildew only, apply Actigard (acibenzolar-S-methyl, P) at 1.0 oz 50WG/A (begin applications 7-10 days after thinning and re-apply every 7 days for a total of 4 applications per season.), or Aliette (fosetyl Al, 33) at 3.0 to 5.0 lb 80WDG/A (on 14-day schedule). For more information please see 2012 New Jersey Commercial Vegetable Production Recommendations Guide.

✔ Leeks (overwintered, spring transplanted) - Purple blotch – Purple blotch may survive on infected plant material in overwinter plantings and may cause problems in spring transplanted fields and seedbeds. As the weather begins to warm up and spring showers arrive Purple blotch may become problematic in some fields. Symptoms of Purple blotch include tannish-brown, elongated, concentric, circular lesions with chlorotic margins with lesions running parallel with leaf veins. Control of Purple blotch begins with preventative fungicide applications.
- Alternate and/or tank mix chlorothalonil (M5) at 1.5 to 3.0 pt 6F/A the following fungicides on a 7 to 10 day interval:
  - Quadris (azoxystrobin, FRAC code 11) at 6.0-12.0 fl oz 2.08SC/A, or Endura (boscalid, 7) at 6.8 oz 70WP/A, or
  - Pristine (pyraclostrobin + boscalid, 11 + 7) at 10.5 to 18.5 oz 38WP/A, or
  - Folicur (tebuconazole, 3) at 4.0 to 5.0 fl oz 3.6F/A, or
  - Inspire Super (difenoconazole + cyprodinil, 3 + 9) at 16.0 to 20.0 fl oz. 2.82SC/A.

✔ Lettuce – Bottom Rot/Drop – Spring lettuce season is beginning and growers should take precautions to help control Bottom rot (Rhizoctonia) and Lettuce drop (Sclerotinia) which may cause potential problems. For Bottom rot, apply Endura 70W (boscalid, FRAC code 7) at 8.0 to 11.0 oz 70W/A, or iprodione (FRAC code 2) at 1.5 to 2.0 lb 50WP/A or OLF should be applied one week after transplanting or thinning and 10 and 20 days later. For Lettuce drop, apply Endura (FRAC code 7) at 8.0 to 11.0 oz 70WG/A or iprodione (FRAC code 2) at 1.5 to 2.0 lb/A, or Quadris (azoxystrobin, 11) at 0.40 - 0.80 fl oz/1000 row ft. 2.08SC beginning one week after transplanting or thinning and again at 10 and 20 days later. For more information on control of Bottom rot and Lettuce drop and other important diseases of lettuce please see the 2012 New Jersey Commercial Vegetable Production Recommendations Guide.

✔ 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 in the center of lesions. Septoria blight is spread 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) scouting 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. Rotate applications of Quadris (azoxystrobin, 11) at 6.0 to 15.5 fl oz 2.08SC/A or Cabrio (pyraclostrobin, 11) at 12.0 - 16.0 20WG/A with Tilt (propiconazole, 3) at 3.0 to 4.0 fl oz. 3.6F/A every 7 days. A fixed copper at labeled rates can also be included if bacterial leaf spot is an issue. Bacterial leaf spot (Pseudomonas syringae) of parsley can also show up at the same time as Septoria blight. Leaf spots caused by Bacterial blight appear as small brown to black spots on the leaves. The pathogen can be soil or seed borne and develops during cool, moist weather. The disease spreads during cool, rainy weather or with overhead irrigation; and is exacerbated by high plant density. The same control measures listed for Septoria will assist in preventing the spread of Bacterial leaf spot as long as...
**Disease Update from page 3**

the fixed copper is included with azoxystrobin and the fungicides are applied preventatively. If Oxidate is used, follow the label carefully.

**✔ Strawberry – Anthracnose fruit rot** - Strawberry anthracnose can be extremely destructive during warm, wet weather causing significant fruit rot. Symptoms of Anthracnose include blackish-brown circular spots on maturing green fruit and soft, sunken (flat) circular lesions on ripe fruit. On ripe fruit, lesions can expand rapidly and are often covered with a pinkish-orange spore mass. Spores are spread from infected to healthy fruit with splashing water. Control of Anthracnose always begins with a 7 to 10 day preventative spray program no later than 10% bloom and/or prior to disease development. For control apply the following combinations:

1. captan (M3) at 4.0 lb 50WP/A plus Pristine (pyraclostrobin + boscalid, 11 + 7) at 18.5 to 23.0 oz 38WG/A
2. captan (M3) at 4.0 lb 50WP/A plus Abound (azoxystrobin, 11) at 6.0 to 15.5 fl oz 2.08SC/A or Cabrio (pyraclostrobin, 11) at 12.0 to 14.0 oz 20EG/A
3. Captevate (captan + fenhexamid, M3 + 17) at 3.5 to 5.25 lb 68WDG/A

For subsequent applications, alternate:
- captan (M3) at 4.0 lb 50WP/A plus Abound (azoxystrobin, 11) at 6.0 to 15.5 fl oz 2.08SC/A, or
- Cabrio (pyraclostrobin, 11) at 12.0 to 14.0 oz 20EG/A plus captan (M3) at 4.0 lb 50WP/A, or
- Captevate (captan + fenhexamid, M3 + 17) at 3.5 to 5.25 lb 68WDG/A

To help manage fungicide resistance development, do not make more than 2 consecutive applications of either: Pristine (pyraclostrobin + boscalid, 11 + 7), Cabrio (pyraclostrobin, 11) or Abound (azoxystrobin, 11) before switching to another fungicide chemistry.

**✔ Strawberry – Botrytis (Gray Mold) and Blossom blight** – can cause serious losses in strawberry plantings in high tunnels and the field if not controlled properly. Development is favored by moderate temperatures (59 to 77 °F) with prolonged periods of high relative humidity and surface wetness. Control of Gray mold begins with preventative fungicide applications. Apply at 5 to 10 percent bloom and every 10 days until harvest. During periods of excessive moisture, spray intervals of 5 to 7 days may be necessary. Rotate fungicide chemistries to aid fungicide resistance management.

**Application #1:** Pristine (pyraclostrobin + boscalid, 11 + 7) at 18.5 to 23.0 oz 38WG/A
**Application #2:** captan (M3) at 4.0 lb 50WP/A, Captevate (captan + fenhexamid, M3 + 17) at 3.5 to 5.25 lb 68WDG/A, or Switch (cyprodinil, 9) at 11.0 to 14.0 oz. 62.5WG/A
**Application #3:** Pristine (pyraclostrobin + boscalid, 11 + 7) at 18.5 to 23.0 oz 38WG/A

For subsequent applications, rotate between two or more of the following fungicides:
- Captan (M3) at 4.0 lb 50WP/A, or Cabrio (pyraclostrobin, 11) at 12.0 - 14.0 oz 20EG/A,
- or Switch (cyprodinil + fludioxonil, 9 + 12) at 11.0 to 14.0 oz. 62.5WG/A, or
- Pristine (pyraclostrobin + boscalid, 11 + 7) at 18.5 to 23.0 oz 38 WG/A, or
- Switch (cyprodinil + fludioxonil, 9 + 12) at 11.0 - 14.0 oz 62.5WG + Abound (azoxystrobin, 11), or
- Switch (cyprodinil + fludioxonil, 9 + 12) at 11.0 - 14.0 oz 62.5WG + Cabrio (pyraclostrobin, 11) at 12.0 - 14.0 oz 20EG/A.

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**Early-Season Pythium and Phytophthora Control in Pepper and Tomato Crops**

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

With the dry spring we’ve had thus far, it’s easy to forget about Pythium and Phytophthora! The same question always comes up about this time of year when growers begin to start thinking about transplanting their tomato and pepper crops. “What should I do to help prevent Pythium and Phytophthora?”.

In years past, the answer was simple, apply mefenoxam (Ridomil Gold SL, Ultra Flourish, 4) or metalaxyl (MetaStar, 4). Problem solved, right? In the past, that answer was right, but with resistance development in Phytophthora (*P. capsici*) to both mefenoxam and metalaxyl, the correct answer isn’t so simple anymore. It’s important to remember that both chemistries will work very well as long as resistance hasn’t been detected on your farm.

How do you know if you have resistance? The easiest way is to follow efficacy. If the chemistries no longer provide the control they once did, then there is a good chance you have mefenoxam-insensitive Phytophthora populations present on your farm. There are also lab services which also test for resistance.

Remember, once resistance develops it can linger around for a very long time. Therefore, proper crop rotation and resistance management is critical before resistance has the chance to develop. Our options for pre-transplant applications include a Ranman (cyazofamid, 21) drench one week before transplanting for Pythium in tomatoes as well as Previcur Flex (propamocarb HCL, 28) for the suppression of Pythium and Phytophthora in tomatoes and peppers. Phosphite fungicides, such as ProPhyt and K-Phite (FRAC 159, Disease Update from page 3 See Control on page 5
code (cyazofamid, 21) in the transplant water or through drip irrigation for Pythium control. There is a section 2ee for the use of Previcur Flex (propamocarb HCL, 28) + Admire Pro (imidacloprid) in transplanting water for Pythium control. Presidio (fluopicolide, 43) now has a label for drip application for Phytophthora control when conditions are favorable for disease development. Additionally, phosphite fungicides, Pro-Phyt and K-Phite (FRAC code 33) can also be applied through drip irrigation at transplanting to help suppress Phytophthora blight. Unlike in the past, there are a number of good options for early season control of these pathogens, it just takes a little bit more planning ahead of time. For further details on use and crop labeled please refer to the specific fungicide label. Remember the label is the law.

Sustainable Opportunities Through Soil Conference
Healthy Soils: Helping Local Communities Move from Grey to Green Infrastructure
May 30, 2012
Ocean County Community College Arts Center, Toms River, NJ

Sponsored by New Jersey Association of Conservation Districts, Barnegat Bay Partnership, Ocean County Soil Conservation District & Members of the Planning Committee

CONFERENCE AGENDA:
Key Note 1: What Goes on Underground? Soil is a functioning ecosystem! A Healthy Soil is a Living Soil
Dr. Elaine Ingham – Soil Biologist, Chief Scientist, Rodale Institute – Pioneering Organic Farming through Research and Outreach
Key Note 2: Returning to our Roots – Opportunities in Urban Soil Husbandry as a Core Element of Land Transformation.
Dr. Stuart Schwartz – Senior Research Scientist, University of Maryland, CUERE- Center for Urban Environmental Research and Education
Healthy Soils Provide Opportunities for Sustainability: Lessons Learned

Concurrent Break-Out Sessions:
Stormwater
2. Restoring Soil Function in Basins & Lessons Learned – Surface Water & Groundwater – Quality and Quantity
   1. Planning for Rain - Looking at the Whole Landscape & Assessing the Function of Soil - Marilyn Mroz, Soil Scientist & P.E.
   2. Why Soil Health Matters to Recharge Quantity and Quality - Soil Health in the Landscape –
      1. Soil Health Practices in the Landscape – Salvatore Mangiafico, Resource

On the Ground - SOIL HEALTH Assessment & Demonstrations
Stations*
1. Amoozemeter - NRCS staff
2. *Amoozemeter – OCSCD staff
3. Infiltrometer – Measuring Water Flow through Natural/Native Soil
4. Verti-Quake – Georgian Court Staff – Demonstrate on Athletic Field
5. Spader – Loosening the Soil for Improved Infiltration (OCRD)
6. Soil Health Kit – Assessing the Soil Health – Biological, Chemical and Physical (NRCS)
7. *Soil Health Kit – Assessing the Soil Health – Biological, Chemical and Physical (NRCS)
8. Soil Assessment – Penetrometer & the 3 Rod System – Chris Smith
Steps :Sustaining Local Communities from the Ground Up-
*Pending Professional Development Credit & CEU Approvals
Please contact Christine Raabe at craabe@ocscd.org if you have specific requests/requirements.
For more information: http://www.ocscd.org/soil-health.shtml
Weekly Weather Summary
Keith Arnesen, Ph.D., Agricultural Meteorologist

Temperatures averaged much above normal, averaging 52 degrees north, 54 degrees central, and 55 degrees south. Extremes were 83 degrees at Hammonton and Seabrook on the 16th and 29 degrees at Belvidere on the 13th. Weekly rainfall averaged 0.03 inches north, 0.01 inches central, and 0.01 inches south. The heaviest 24 hour total reported was 0.05 inches at Belvidere on the 14th to 15th. Estimated soil moisture, in percent of field capacity; this past week averaged 89 percent north, 79 percent central and 76 percent south. Four inch soil temperatures averaged 49 degrees north, 52 degrees central and 49 degrees south.

Weather Summary for the Week Ending 8 am Monday 4/16/12

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<td>NA</td>
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WES KLINE -- GDD BASE 40 PINEY HOLLOW
LAST WEEK (69 Ending 4/9/12)
THIS WEEK (97 Ending 4/16/12)
*FEBRUARY GROWING DEGREE DAY TOTALS 59
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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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For back issues of the Plant & Pest Advisory: www.rce.rutgers.edu/pubs/plantandpestadvisory