VegNet

THE OHIO STATE UNIVERSITY EXTENSION OARDC

Vol. 17, No. 3. March 12, 2010 The Ohio State University Extension Vegetable Crops On the WEB at: http://vegnet.osu.edu

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Follow Up to the Produce Safety Project Stakeholders Discussion Series Meeting held on March 11. For those who attended this meeting, don't forget the docket is open for you to send in your comments or complete them. If you were unable to attend this important meeting, the Food and Drug Administration is going to establish a nation-wide produce safety standard for the growing, harvesting and packing of fresh fruits and vegetables. Help make certain FDA has all the facts it needs. There was excellent discussion at the meeting in four topic areas:1. Compost. 2. Wildlife/Environmental Concerns. 3. Water Quality. 4. Worker Health & Hygiene. Go to: www.producesafetyproject.org for background information, summary reports and complete reports in these four topic areas. FDA and USDA officials came away from the meeting with an understanding of the diversity of farm types and sizes in our region. A summary of the comments and discussion at the meeting will be available in the future and we will notify you when it is available. In the meantime, don't forget to send in your comments and suggestions.

How to tell the Food and Drug Administration the best way to develop safety standards for the growing, harvesting and packing of fresh fruits and vegetables

The Food and Drug Administration (FDA) will propose later this year new safety standards for the growing, harvesting, and packing of fresh fruits and vegetables. When a federal agency proposes a new regulation it seeks comments from the public about the best way to write the rule and implement it. For the fresh produce rule, the FDA has already opened the "docket" where these comments can be sent.

You can submit your comments either online or by mail.
Mailed comments should be sent to:
The Division of Dockets
Management (HFA-305)
Food and Drug Administration
5630 Fishers Lane, Room 1061
Rockville, MD 20852

Electronic comments can be submitted http://www.regulations.gov/search/Regs/home.html#documentDetail?R=0900006480aab8f1

Below is some guidance on filling out the electronic form.
You will need to click on the "Submit Comment" button (which is written in blue on the top right side of the Web page).
When the new page opens, provide your contact information (name and address) in the boxes on the left. There is a box on the right where you can write your comments about questions such as those listed below (There is a limit of 2000 characters).

You can also submit comments by writing them in a separate document you can then attach to this form. To attach a document you have written, click on the orange "Browse" button. Be sure to include the docket number at the top of the pages you submit (The docket number is FDA-2010-N-0085).

Below is an abbreviated list of produce safety rule questions on which FDA is seeking comments. (A complete list can be found by viewing the Federal Register Notice on line. http://edocket.access.gpo.gov/2010/pdf/2010-3409.pdf

- What role should FDA's GAP guidelines play? (Good agricultural practice guidelines entitled "Guide to Minimize Microbial Food Safety Hazards for Fresh Fruits and Vegetables")available at http://www.fda.gov/Food/GuidanceComplianceRegulatoryInformation/GuidanceDocuments/ProduceandPlanProducts/ucm064574.htm

- How should risk factors be identified and prioritized?

- What environmental assessments of hazards and possible pathways of contamination need to be completed?

- How should food safety practices for fresh fruits and vegetables and sustainable and/or organic production methods be coordinated?

- How should food safety practices for fresh fruits and vegetables and environmental and/or conservation goals or practices be coordinated?

- How should food safety practices for fresh fruits and vegetables and Federal, State, local and tribal government statutes and regulations be coordinated?

- What role should microbial testing play in produce safety?

- What records and documentation would be useful to both industry and regulators in ensuring the safety of fresh produce?
- What strategies should be used to enhance compliance?

- What are possible approaches to tailoring preventive controls to the scale of an operation so that the controls achieve an appropriate level of food safety protection and are feasible for a wide range of large and small operations?

- Any other issues or concerns you may have?

For Further information on the docket contact:
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Treatments to Eradicate Bacterial Plant Pathogens from Vegetable Seeds used for Transplants

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Many commercial and home garden vegetables are produced from seedlings raised in greenhouses and transplanted into the field. The greenhouse environment can be highly favorable for the multiplication and spread of certain bacterial plant pathogens on seedlings. Therefore it is very important that such pathogens are not introduced into the greenhouse in soil, water or seed. There are a number of seed treatments for vegetables, each of which serve different purposes. For example, seed coating is applied to enhance germination and improve seeding uniformity, while fungicide treatments are used to reduce the incidence of damping-off caused by a number of fungal pathogens. Neither of these treatments has any effect on bacterial plant pathogens. **Sanitizing treatments** are specifically designed to kill plant pathogens on the surface of, or inside, vegetable seeds. These treatments are generally recommended for bacterial pathogens such as bacterial spot, bacterial speck and canker of tomatoes and bacterial spot and Pseudomonas leaf spot of pepper, but will also significantly reduce or eliminate fungal pathogens infesting seeds.

Bacterial leaf spot of pepper Bacterial canker of tomato

Bacterial spot on tomato fruit Bacterial spot on tomato seedling

Ideally, the seed producer provides seed free of bacterial plant pathogens. Samples from seed lots are tested for some important plant pathogens, and seed lots testing positive are either treated to kill the pathogens or destroyed. However, low numbers of pathogenic bacteria on seed may escape detection. Although contamination of seed with bacterial plant pathogens is relatively uncommon, some diseases are so damaging that seed treatment is warranted to reduce risk of significant crop loss. Seed of many cabbage cultivars are hot water-treated by the seed producer to reduce the incidence of black rot, caused by *Xanthomonas campestris* pv. *campestris*, a bacterial pathogen. However, such seed treatments are not routinely done for other vegetables. Hot water treatment is permitted for certified organic production.

We recommend dilute Clorox treatment for pepper seeds since bacterial spot and other seed-borne pathogens of peppers are on the *outside* of seeds and can be effectively removed with this treatment. It is easy to do and does not require the special equipment (water baths, thermometers) needed for hot water treatment. For seeds of tomato, cabbage and other cole crops, and lettuce, for example, the principle pathogens can be *inside* the seed (bacterial canker for tomatoes, black rot for cole crops, and bacterial leaf spot for lettuce) and aren't completely eliminated using Clorox. In these cases we recommend hot water treatment.

Caution: Old or poor quality seed can be severely injured by these treatments. It is recommended that a small sample be treated and tested for germination (see below) prior to treating the entire seed lot. **These treatments should be done on raw seed.** The treatment will wash off fungicide applied before treating. It will also destroy any seed pelleting. If fungicide-treated seeds are hot water- or Clorox-treated, the fungicide washed off must be disposed of properly.

Seeds may be treated commercially with a fungicide(s) to prevent damping-off after sanitizing treatment if they are to be used for conventional vegetable production. This will help to control damping-off fungi in field soil or that may contaminate planting mixes. Seeds may not be treated with fungicide if they are to be used in organic production. However, damping-off can be avoided or reduced in by following several key steps:

1) Keep the greenhouse CLEAN and don't allow seedlings, planting mix or plants to come into contact with outside soil; use only well or city water to water plants.
2) Use a pathogen-free planting mix. Mixes containing high quality compost can be suppressive to *Pythium* and some other damping-off organisms
3) Maintain environmental conditions that are optimal for seed germination but not for pathogen development. Do not over water. Do not overheat or allow soil to become cool.

How to Treat Seeds to Eliminate Pathogens

Clorox seed treatment

Agitate seeds in a solution of 25 oz Clorox plus 100 oz water with one teaspoon surfactant (such as Activator 90 or Silwet) for 1 minute. Use 1 gallon

of disinfectant solution per pound of seed (see conversions) and prepare a fresh solution for each batch.
Rinse seed thoroughly in running tap water for 5 minutes; then spread out seed to dry.
Dust seed with Thiram 75 WP (1 teaspoon/lb seed) for conventional production only.

Hot water seed treatment

********** Properly used, hot water treatment kills most disease-causing organisms on or within seed. This treatment is suggested for seeds of eggplant, pepper, tomato, carrot, spinach, lettuce, celery, cabbage, turnip, radish and other crucifers. Improper treatment can cause seed injury. Seeds of cucurbits (squash, gourds, pumpkins, watermelons, etc.) can be severely damaged by hot water and thus should NOT be treated.

***It is critical to follow instructions EXACTLY**, as seeds may be damaged by temperatures that are too high or treatment times that are too long. Alternatively, pathogens may not be eliminated if temperatures are not high enough or treatment times too short. The pre-warming step is used to prevent heat shock of the seeds. Be sure to check the scale of your thermometer (Fahrenheit (F) or Centigrade/Celsius (C) and use the correct column (see table).*

********** Pre-warm seed in a loosely woven cotton (such as cheesecloth) bag (not over one-half full) for 10 minutes in 100F (37C) water. Place pre-warmed seed in a water bath that will constantly hold the water at the recommended temperature (see table). Length of treatment and temperature of water must be exact. After treatment, dip bags in cold water to stop heating action. Spread seed out to dry.

Seed	Water temperature		Minutes
	F	C	
Brussels sprouts, eggplant, spinach, cabbage, tomato	122	50	25
Broccoli, cauliflower, carrot, collard, kale, kohlrabi, rutabaga, turnip	122	50	20
Mustard, cress, radish	122	50	15
Pepper	125	51	30
Lettuce, celery, celeriac	118	47	30

Equipment and Supplies Needed for Hot Water Treatment

Water bath (preferably two: one for pre-warming and one for treatment)
Sources: Fisher Scientific Co., Thomas Scientific, VWR Scientific
Thermometer (usually purchase with water bath)
Cotton cloth or bags
Screen for seed drying

How to Test for Seed Germination After Hot Water or Clorox Treatment

Mix seeds in each seed lot and count out 50-100 seeds per seed lot.
Hot water-treat 1/2 of the seeds exactly as described above.
After treated seeds have dried, plant the two groups of seeds separately in flats containing planting mix according to standard practice. Label the groups as treated and untreated.
Allow the seeds to germinate and grow until the first true leaf appears (to allow for differences in germination rate).
Count seedlings in each group separately.
Determine the % germination in each group:
seedlings emerged x 100
********** # seeds planted
Compare % germination in each group: they should be within 5% of each other.

Conversions : 8 oz = 1 cup
 16 oz = 1 pint
 32 oz = 1 quart
 128 oz = 1 gallon

The Cucurbit Downy Mildew (CDM) ipmPIPE website is happy to announce that the CDM alert system is now live and ready for use.

Users can customize the alerts to their own needs by using distance and location as qualifiers for when to receive alerts.
Users can set up an alert for multiple locations.
An option to receive all outbreaks reported to the website is also available.
Both email and text alerts and/or both are available.

Follow the link below to sign up for an account. Click on the **CDM Alert System** link on the left hand side of the page.

http://cdm.ipmpipe.org/

This new alert system will be used for CDM outbreak notification in lieu of the reports that were sent out by Wendy Britton in the past, so please sign up soon!

There is a short, quick survey that you will need to complete prior to setting up the locations for the alerts and we thank you in advance for your input. The survey will help us make the website even more helpful than we hope it already is.

Questions? Please contact Wendy Britton, Project Coordinator, Cucurbit Downy Mildew ipmPIPE Project, Plant Pathology Department, NC State University, 3403 Gardner Hall / Campus Box 7616, Raleigh, NC 27695-7616; Email: wbritto@ncsu.edu; Phone: 919-513-0672; Fax: 919-515-7716; Downy Mildew forecasting: http://cdm.ipmpipe.org