Vegetable Crops Hotline

A newsletter for commercial vegetable growers prepared by the Purdue University Cooperative Extension Service

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No. 533
March 18, 2011

<http://www.btny.purdue.edu/pubs/vegcrop>

IN THIS ISSUE

What's New for 2011 in The Midwest Vegetable Production Guide for Commercial Growers (ID-56):

New and Revised Sections:

- Pesticides that are considered bio-pesticides by the U.S. Environmental Protection Agency (EPA) have been identified throughout the guide. See pages 23-24 of the ID-56 for details.
- Variety information has been updated in the cucurbit section.
- A section has been added on pesticide use in high tunnels and greenhouses on page 12 in the ID-56

Disease Management:

- Information about managing angular leaf spot and bacterial leaf spot of pumpkin has been added. See Table 24, *Summary of Cultural Management Strategies of Disease* on page 45, and the cucurbit section in the guide.
- A section of Southern blight of tomato has been added to the fruiting vegetable section.
- Host resistance information for diploid watermelon pollenizer varieties has been added to the cucurbit section.
- Inspire Super® has an expanded label. See the cucurbit and fruiting vegetable sections.
- Quadris Top® is labeled for use on tomato. See fruiting vegetable section.
- The labels for the products Dithane® and Manzate® (active ingredient mancozeb) have been expanded to include pumpkins. See the cucurbit vegetable section.

Figure 1: Bacterial spot causes lesions on the surface of pumpkins. See "What's New" article in this issue as well as the "Bacterial Spot of Pumpkin Update" for more information. *(Photo by Dan Egel)*

Weed Management:

- Brawl® (s-metolachlor) has been added for pre-emergence control of weeds between rows in pumpkins.
- Capreno® (thiencarbazone and tembotrione) has been added for post-emergence control of grasses and broadleaves in sweet corn up through the V5 growth stage.
- Prowl H2O® (pendimethalin) has been added for pre-emergence control of grasses and small-seeded broadleaves in established asparagus.
- Spartan Charge® (sulfentrazone and carfentrazone) has been added for control of broadleaves in transplanted cabbage.
- A number of new corn and soybean herbicides with rotation restrictions for planting to vegetables have been added to Table 20 on page 38 of the ID-56.
- Additional brand names have been listed for many herbicide active ingredients in Table 23 on page 42.

Insect Management:

- A photograph of the brown marmorated stink bug, an emerging new pest in the Midwest, has been added to the photos on page 166.
- Hero® has been labeled for several crops including brassicas and leafy greens, cucurbit vegetables, fruiting vegetables, and potatoes.
- Radiant SC® has been labeled on several crops including asparagus, brassicas and leafy greens, cucurbit vegetables, legumes, and dry bulb and green bunching onions.
- Voliam Flexi® has been labeled on several crops including brassicas and leafy greens, cucurbit vegetables, fruiting vegetables, and potatoes.
- Voliam Express® has been labeled for several crops including brassicas and leafy greens, cucurbit vegetables, fruiting vegetables, legumes and sweet corn.

Changes to the ID-56 since printing (changes available at **http://www.btny.purdue.edu/Pubs/ID/ID-56**

- In Table 5: *Fungicide Labeling for Greenhouse Use* (page 13) and Table 26: *Common Names of Registered Fungicides* (page 48) and in the Cucurbits section on pages 74-75, and 78-79; references of Inspire Super MP® were replaced with Inspire Super®.
- In the Cucurbits section, "Tanos® for suppression of Phytophthora root rot and foliar blight" was added on page 79.

Bacterial Spot of Pumpkin Update - *(Dan Egel)* - Bacterial spot continues to be a problem for pumpkin producers. This article will review disease symptoms, biology and management plus some information on a newly labeled product and how it might be used to combat bacterial spot.

Bacterial spot of pumpkin reduces yield by causing lesions on the surface of pumpkins that may result in the produce becoming unmarketable (Figure 1, previous page). These lesions, often raised and white to light brown, may become infected by secondary organisms that cause large, rotten areas. In addition, bacterial spot of pumpkin causes lesions on leaves. These lesions do not cause economic damage to the pumpkin plant, but are an important source of the bacterium that cause this disease. Lesions on leaves can also be used to diagnose bacterial spot before the disease becomes established on the fruit.

Bacterial spot of pumpkin is caused by a bacterium (*Xanthomonas campsetris* pv. *cucurbitae*) that may survive on crop residue or on seed in between seasons. (The bacterium that causes bacterial spot of pumpkin does not affect tomatoes or pepper and vice versa.) Once the pumpkin plant begins to grow, the bacterium survives and causes lesions on pumpkin leaves. When the bacterium splashes on the fruit during warm, rainy weather, lesions may be caused. The small pores or stomates on the surface of the pumpkin where the bacterium enters become plugged with a waxy buildup as the fruit ages. The pumpkin fruit are susceptible to the bacterium that causes pumpkin fruit spot from about 2 to 5 weeks post pollination.

Crop rotations of 2-3 years will help to reduce the amount of bacterial spot that occurs in a field. Avoid saving seed from a field where bacterial spot has been identified. Monitor seed sources and inspect seedlings and transplants for symptoms of bacterial spot. Applications of fixed copper products should begin when fruit are about softball size and continue until all fruit that will be harvested are well beyond softball size. However, growers should begin copper applications if lesions of bacterial spot are observed on leaves, regardless of the presence of fruit. If a particular field has a history of bacterial spot of pumpkin, the field should be left out of production or fixed copper applications should continue regularly. Application intervals of a fixed copper product should range from every 7 days during warm, rainy weather to every 14 days during relatively dry weather.

In 2010, select fungicide products with the active ingredient mancozeb became labeled for use on pumpkins. Some Dithane® and Manzate® products now have supplemental labels for use on pumpkins. Ask your fungicide dealer for a label or ask me for more information. The supplemental label for mancozeb products includes the diseases downy mildew and black rot/gummy stem blight. The presence of mancozeb products allows more copper to be released from copper products on plant surfaces, thus helping to manage bacterial diseases. Therefore, growers who use mancozeb products for fungal diseases as labeled may also reduce the severity of bacterial spot of pumpkin. To gain such a benefit, fixed copper and mancozeb products should be applied together.

Pheromones and Pheromone Traps - *(Rick Foster)* - One way insects communicate with individuals of the same species is with pheromones. Pheromones are volatile chemicals released by an insect that usually can be detected only by individuals of the same species. There are a number of different types of pheromones, but the most common type is the sex pheromone. Usually the females will emit a tiny amount of a chemical that attracts the male to her and increases the likelihood of mating. Because the chemical is volatile, air currents carry it. The male detects the pheromone in the air with receptors on his antennae. He then flies upwind to find the source of the pheromone, a prospective mate. The chemical compositions of pheromones for a number of pest species have been identified and synthetic

copies can be produced in the laboratory. Synthetic pheromones can be used in conjunction with traps to catch male insects.

Listed below are some, but certainly not all, of the suppliers of pheromones and traps.

Gempler's; P. O. Box 270; 100 Countryside Dr.; Belleville, WI 53508; 800-382-8473; **http://www.gemplers.com**
Great Lakes IPM; 10220 Church Rd., NE; Vestaburg, MI 48891; 517-268-5693; **http://www.greatlakesipm.com**
Insects Limited Inc.; 16950 Westfield Park Rd.; Westfield IN 46074-9374; 317-896-9300; **http://www.insectslimited.com**
Pacific Biocontrol Corporation; 620 E. Bird Lane, Litchfield Park, AZ 85340; 623-935-0512 or 800-999-8805; **http://www.pacificbiocontrol.com**
Scentry Biologicals Inc.; 610 Central Ave.: Billings MT 59102; 800-735-5323; **http://www.scentry.com**
Trece Incorporated; P. O. Box 129; Adair, OK 74330; 866-785-1313; **http://www.trece.com**.

You can buy most pheromone traps from these suppliers, but for corn earworm/tomato fruitworm, I recommend that you use the wire mesh trap, which is available from:
Bob Poppe's Service; 25738 N. 3200 Road; Lexington, IL 61753; 309-723-3201.
The wire traps catch more moths and last longer than the nylon traps.

To get the most from your pheromone traps, they must be used properly:

• Place the traps and the pheromones out before you would normally expect the insect pest to be active. That way you can monitor the adult activity, which will warn you that damage from the larvae may be coming soon.
• Be careful how you store pheromones. Ideally, they should be frozen until ready for use. At the very least, they should be refrigerated. If you keep them on the dashboard of your truck, they won't work well when you place them in the trap.
• When handling pheromone lures, do not touch them with your hands. Use a pair of forceps or wear latex gloves. This is especially important when you are using pheromones for more than one pest. Contamination of a lure with another pheromone will likely reduce the effectiveness.
• Lures usually should be changed every 3-4 weeks, although this will vary for individual lures.
• Check traps regularly, at least weekly. Daily would be better.

Seed and Root Maggots - *(Rick Foster)* - Three species of seed and root maggots attack vegetables in Indiana. The seedcorn maggot feeds on seeds and seedlings of sweet corn, cucurbits, lima and snap beans, peas, and other crops. Cabbage maggots can cause serious damage to transplants of cabbage, broccoli, cauliflower, and brussel sprouts and make the fleshy roots of radishes, turnips, and rutabagas unmarketable. Onion maggots are pests of seedling onions, developing bulbs and onions intended for storage.

Seedcorn maggot flies emerge in April and May and lay eggs preferentially in areas with decaying organic matter. Fields that are heavily manured or planted to a cover crop are more likely to have seedcorn maggot injury. Maggots burrow into the seed and feed within, often destroying the germ. The seeds fail to germinate and plants do not emerge from the soil, leaving gaps in the stand. When infested seeds germinate, the seedlings are weak and may die. Maggots also will feed within the stems of transplants.

Any condition that delays germination may increase damage from this pest. Damage can be reduced by planting into a well-prepared seedbed, sufficiently late, to get rapid germination. The slower the rate of growth, the greater the likelihood of seedcorn maggot injury. For any type of early season transplant, soil temperatures should reach at least 70° F or more for 4-5 days in a row to avoid maggot injury. Anything that raises soil temperature (black or clear plastic mulch) will increase soil warming and decrease the possibility of seedcorn maggot injury. Once damage is observed, the only management strategy available is the decision to replant or not. If you decide to replant, be sure to use treated seed. When resetting transplants be sure to wait 5 days from the first evidence of wilted plants before you reset. Unfortunately, we don't have any insecticides that can be applied at planting time that will provide good control of seedcorn maggots. Admire Pro® and Platinum®, which both provide several weeks of excellent systemic control of striped cucumber beetles when applied at planting, are not labeled for seedcorn maggots and the control is marginal at best. Capture LFR® is labeled for control of wireworms, grubs, and other soil insects on cucurbits but not for seedcorn maggots. I have one year of data with Capture® that showed fairly promising results, but more data is needed.

Cabbage maggot injury is also favored by cool, wet conditions. The flies, slightly smaller than a housefly, emerge in late April or early May and lay white eggs at the base of newly set plants. Larvae from this first generation tunnel in the roots of small plants, causing the plants to appear sickly, off color or stunted, and may cause them to die. Early cabbage and turnips are particularly vulnerable to damage. Control of first generation maggots can be achieved using soil insecticides such as Capture LFR®, Lorsban® or diazinon at planting or transplanting. For short season crops such as radishes and turnips, long-residual insecticides cannot be used.

Cabbage maggots usually do not affect later planted crucifers.

Onion maggot flies emerge throughout May and lay eggs at the base of onion plants. The maggots attack the underground portions of the onion plants and cause plants to wilt and die. Seeded onions are more susceptible than transplanted onions. Do not overseed to compensate for losses to onion maggots. The flies do not space their eggs evenly, so you may end up with smaller bulbs because the plant spacing is too close. The second-generation flies emerge during July and the third generation emerges during late August and early September. Each generation will damage onions.

Removing cull onions after harvest and planting as far as possible from fields planted to onion the previous year can reduce damage. Soil drenches of Lorsban® (dry bulb only) or diazinon at planting will effectively control first generation maggots and provide some control of the second generation. As the onions begin to mature, they become physically resistant to attack from onion maggots, unless they have been injured in some way. Be careful during field operations not to damage the growing plants in any way. A nick in an onion bulb allows the maggots to enter and begin feeding. Also, the flies are attracted to damaged onions to lay eggs. Reducing the amount of physical damage to the onions at harvest as much as possible will also reduce the amount of injury from the third generation. Do not apply foliar sprays to kill flies before they lay eggs.

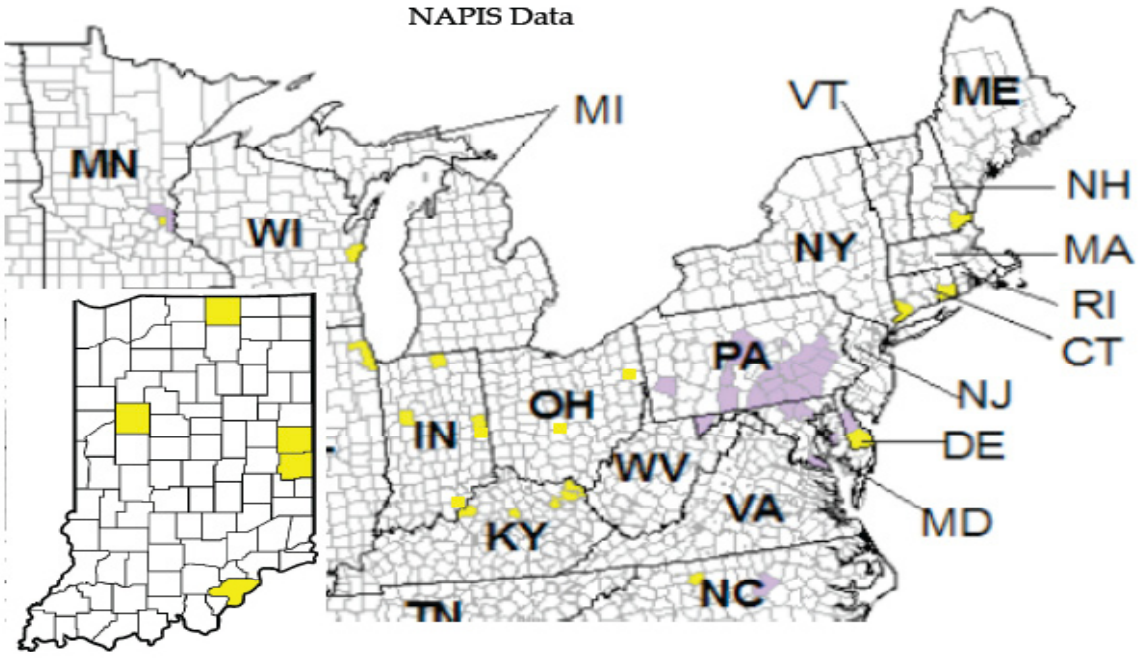
Brown Marmorated Stink Bug: A New Threat to Indiana Vegetables - *(Rick Foster)* - The brown marmorated stink bug was found for the first time in Indiana last November. It has now been positively identified in 5 counties but is likely to be found throughout the state. This stink bug is a serious pest of vegetables, including tomatoes, peppers, beans, peas, and sweet corn. It is also a pest of fruit crops, field crops, and ornamentals, and likes to overwinter inside houses and other structures. It can occur in extremely large numbers and is difficult to control. It has become established as a serious pest on the East Coast (Figure 1). Some of my colleagues there describe the brown marmorated stink bug as the worst pest they have ever seen.

So far, we have not seen this insect causing problems in fields. Some unconfirmed reports are that growers saw them in their vegetable fields last year but didn't realize what they were. It is unlikely that we will see large populations in vegetable fields this year, but it is possible. I encourage you to be on the lookout for this stink bug, especially on the crops mentioned previously (Figure 2, next page). If you find them, please collect a few and contact your local county Extension educator or let me know. If they start to appear in damaging numbers, we will prepare articles for this newsletter that give the latest information on insecticides that may provide control.

If you would like to learn more about the brown marmorated stink bug, I encourage you to watch this video of a presentation given by one of my colleagues in West Virginia.

http://stream.ucanr.org/fps_stinkbug/index.html

Figure 1: The spread of the brown marmorated stink bug throughout the eastern U.S. Areas that are colored purple are where this pest is established; areas in yellow are where this pest has recently been reported.



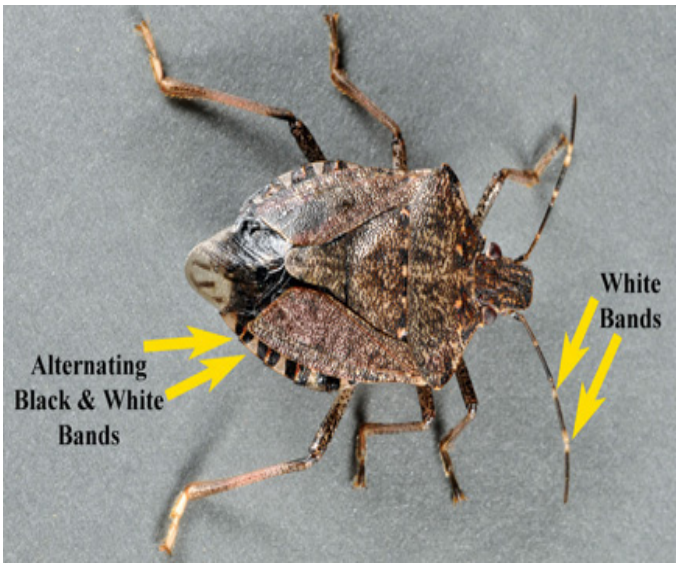


Figure 2: Photograph of the brown marmorated stink bug labeled to highlight distinguishing characteristics. *(Photo by John Obermeyer)*

Pathogen Resistance to Pesticides - *(Nathan Kleczewski)* - We use numerous chemicals to control pathogens. However, we often see that over time these chemicals stop working on a particular pathogen or do not function as well as they did previously. Why does this occur?

Many pesticides are designed to target certain aspects of the way pathogens grow and develop. A chemical may disrupt several sites of pathogen metabolism, meaning that it can disrupt several aspects of pathogen function simultaneously; others have a single target or mode of action. It is easier for a pathogen to overcome chemicals with single site modes of action (e.g. azoxystrobin) than multiple site modes of action (e.g. chlorothalonil). One way of explaining pathogen resistance to chemicals is to use an example of a security checkpoint at the airport.

Picture a group of smugglers. These shady guys are trying to smuggle in exotic pickles from Asia. For fun, let's pretend that these exotic pickles are regulated for containing pickelocin, an imaginary chemical that is used as a steroid in professional sports. In order to get the pickles onto the planes, the smugglers can either (a) carry the pickle in a metal can located in their coat (b) place the pickle in their carryon luggage or (c) place the pickle in a hidden pocket sewn into their shirt. The smugglers of course symbolize a fungal pathogen and their various means of smuggling pickles represent their genetic diversity. Now envision three different airports. Airport 1 has only a metal detector. Airport 2 has a metal detector and an X-ray machine, and Airport 3 has a metal detector, an X-ray machine, and specially trained, pickle-sniffing dogs. These airport security checkpoints represent fungicides that differ in their modes of action and the airplanes symbolize your plants.

If all can-carrying smugglers try to get onto planes at Airport 1 they are easily detected by security. However, the few smugglers that placed the pickles in their carryon luggage made it through. This detail was spread to the next group of smugglers. This second batch of smugglers can get through Airport 1, but are caught at Airport 2. A clever smuggler puts his exotic pickle in a secret pocket in his shirt. He made it onto planes at Airports 1 and 2. Again, he spreads the word and the third generation of smugglers starts putting their exotic pickles into secret pockets in their shirts. They can get through security at Airports 1 and 2 but are stopped by the special pickle-sniffing dogs at Airport 3. Luckily the pickle smuggling operation ceases after this and no further examples are required.

Think about this situation and plant pathogens. If we apply a chemical with a single target, it is easier for the pathogen to develop mechanisms that allow for that chemical to be ineffective (e.g. bag and metal detector for the aforementioned example). Resistance to these fungicides can occur for several reasons, but often are a result of a chance genetic change that can either detoxify the chemical, decrease the ability of the chemical to bind to the specific target, a shift in metabolism that allows the particular target to be synthesized using a different pathway (similar to taking two routes to get to the store), and compensating for the reduction of the target compound. When we apply these fungicides alone and over large areas for multiple years, we increase the chance that we miss the small number that may have genetic modifications that make them resistant to the chemical. Just like the smugglers, who told all their friends about how they made it through security, pathogens containing resistance reproduce, and produce new generations of chemically resistant pathogens. This occurs frequently with pathogen controlling chemicals and is one reason that pesticide companies remain in business.

For example, back in the 1960's we only used protectant fungicides (e.g. captan, thiram, maneb) for most of our crops. These fungicides have multiple targets and require numerous genetic changes by the fungus to overcome their activities. Consequently, resistance issues were almost nonexistent. However, these fungicides have broad activities and can have serious impacts on the environment and human health. As a result fungicides with greater specificity were designed. These chemicals often have a single target, and therefore if applied alone repeatedly, can result in resistant populations of pathogens in relatively short periods of time. It took only two years to start seeing resistance to the fungicide benomyl once it made it onto the market.

The Fungicide Resistance Action Committee (FRAC) has developed a system of classifying fungicides by grouping chemicals based on their target. This is important because pathogens that are resistant to one fungicide are often also resistant to other closely-related fungicides, even when they have not been treated with

these fungicides, because all fungicides in a FRAC group have similar modes of action (like having different brands of metal detectors in the aforementioned example). This phenomenon is called cross-resistance. The fungicide group codes are often on the front of labels or in the resistance management section of the label.

We try to minimize the risk of pathogens developing resistance to chemicals through various means. Mixing two chemicals that differ in their mode of action (and therefore group code) is one way this can be achieved (see illustration below). Another method is to apply one fungicide for half of the season, and a second fungicide, usually one with multiple site activity, the second half of the season. This way any pathogens resistant to the primary fungicide are likely to be killed off by the second fungicide. It is important to realize that resistance risk for a new fungicide can be difficult to predict. Pathogens are tricky and risk cannot always be predicted solely from the mode of action of a chemical. Also, resistance is not always a "yes or no" situation. Often times we see a gradation in pathogen resistance levels to a chemical. This adds an additional layer of complexity to determining how to choose the most appropriate chemical treatments.

A comprehensive list of recommended chemicals for use on vegetables can be obtained in the *Midwest Vegetable Production Guide for Commercial Growers 2011* (ID-56) online at **http://www.btny.purdue.edu/Pubs/ID/ID-56** or can be obtained by contacting your local county extension office. An updated list of FRAC groupings and chemical risk levels can be found at **http://www.frac.info/frac/index.htm**. As always, any questions regarding chemical applications should be directed to your local or state extension specialists. Please see *Vegetable Crops Hotline* issue #518 for more information on how fungicides work **http://www.btny.purdue.edu/pubs/vegcrop/VCH2010/VCH518.pdf**.

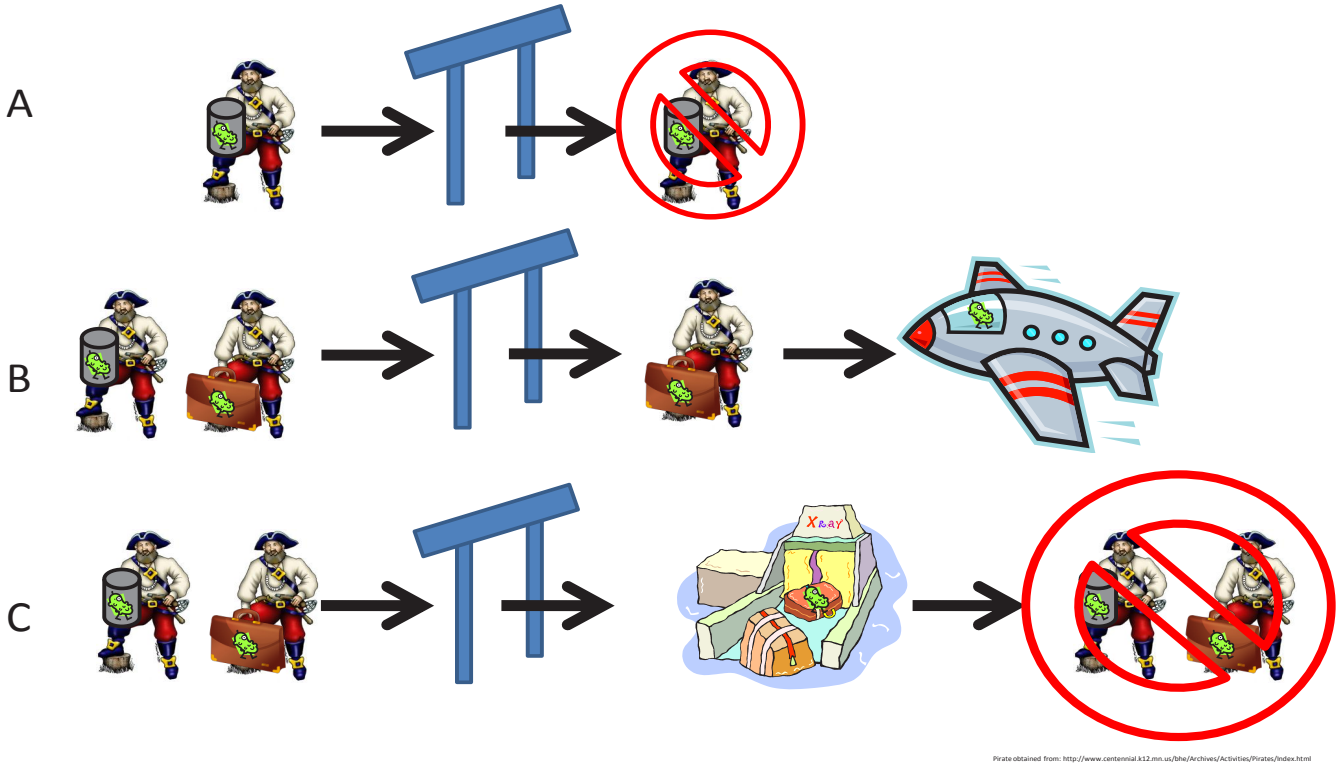


FIGURE 1: Cartoon depicting the activities of chemicals of differing modes of action (security devices) on pathogens (smuggler) of differing genetic makeup (metal can vs suitcase). A) The chemical targets the pathogen and the pathogen is removed. B) Pathogens that by chance were not removed increase in numbers. They become resistant to the chemical (i.e. the smuggler can pass through the metal detector and make it onto the plane). C) By combining chemicals of different modes of action, pathogen resistance can be reduced (i.e. using metal detectors and X-ray machines prevent the smuggler from boarding the plane. By combining chemicals with differing modes of action we can reduce the risk of pathogen populations developing resistance (and exotic pickles making it into the United States!).

Indiana Vegetable Growers Association

Membership Renewal Application for 2011

Benefits of IVGA Membership:

- Midwest Vegetable Production Guide for Commercial Growers (ID-56) (new edition usually available in January)
- Subscription to Purdue's Vegetable Crops Hotline newsletter
- Listing in IVGA Directory of Wholesale Vegetable Production (optional)
- Your web site linked on www.ivga.org
- Cooperate members only: free ad on www.ivga.org
- Networking with other vegetable growers

To renew or join, correct or fill out the form below and send in with your check payable to ***IVGA***.
If you have already renewed for the current year, but haven't provided the information requested below, please check here _____, complete this form and return it to the address below.

The information below will be printed in the membership directory that is sent to members only. It will also be used to mail you the Vegetable Crops Hotline, to fax or e-mail the Hotline Bulletins, and for IVGA correspondence. Please complete or correct, if necessary, the following information. If you would like anything omitted from the directory, please indicate so below.

Membership expires on Dec. 31 of every year

First_____ Last_____

Company_____

Address 1_____

Address 2_____

City, State, Zip_____

Phone _____ Fax_____

E-mail_____

Website_____

ID-56 Delivery: Please indicate whether you will pick up your copy of the ID-56 at one of the following meetings: IHC (Indiana Hort Congress), IVGS (Illiana Veg Growers' School), or SW In. Melon Mtg. If you do not pick it up, it will be mailed to you in March.

☐ IHC ☐ IVGS ☐ SW ☐ Mail ☐ Other

Would you like to receive **free subscriptions** to trade magazines that may be offered to IVGA members?

☐ yes ☐ no

How would you like to receive the Vegetable Crops Hotline?

US Mail only ☐ US Mail AND Email ☐

Email only ☐ Choose one:

Membership Type

☐ **Regular, $35/year**

☐ Industry/Corporate, $75/year

Make check payable to: Indiana Vegetable Growers' Association (IVGA).
Return to:
Indiana Vegetable Growers' Association
c/o Liz Maynard
600 Vale Park Rd.
Valparaiso, IN 46383

Office Use Only

Check No. Date Rec'd
Check Date Rec'd by

The **Indiana Vegetable Growers' Association Directory of Wholesale Vegetable Producers** will be updated yearly. To be included, please review your information below and make any necessary changes or additions. The wholesale directory is available to anyone who requests it and will be posted on the web. Indicate quantity of each item as follows: S=small quantities, X=wholesale quantities, T=semi truckload quantities. For certified organic, mark as 'O'.
Contact information for Wholesale Directory if different from elsewhere on this form:

Contacts_____

Phone 1_____ Phone 2_____

Fax_____ Phone 3_____

Business Address_____

_____

E-mail_____

Website_____

Apples	☐	Peaches	☐
Asparagus	☐	Peppers, bell	☐
Beet	☐	Peppers, hot	☐
Blackberries/Raspberries	☐	Potatoes	☐
Broccoli	☐	Pumpkin	☐
Cabbage	☐	Pumpkin, mini	☐
Cantaloupe/Muskmelon	☐	Radishes	☐
Cauliflower	☐	Snap bean	☐
Chrysanthemums	☐	Spinach	☐
Collards/Mustard/Turnip Greens	☐	Squash, summer	☐
Corn Stalks	☐	Squash, winter	☐
Corn, ornamental	☐	Straw	☐
Cucumber	☐	Strawberries	☐
Daylilies	☐	Sweet corn, bicolor	☐
Eggplant	☐	Sweet corn, yellow	☐
Gourds, ornamental	☐	Sweet corn, white	☐
Herbs	☐	Tomatillo	☐
Kale	☐	Tomato	☐
Lettuce	☐	Turnips	☐
Onions, bulb	☐	Watermelon	☐
Onions, green	☐	Other crops	☐

Please list _____

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Choose from the following locations and times, or view from your own broadband connection at any time:

***March 15, 22, 29 & April 5, 2011, 1:00 – 3:00 p.m. Eastern/12:00 – 2:00 p.m. Central**
Purdue Extension, Jefferson County, 315 East Second Street, Madison, IN 47250
Purdue North Central-Porter County, 600 Vale Park Rd., Valparaiso, IN 46383

March 18, 28, April 1 & 8, 2011, 10:00 – 12:00 p.m. Eastern
Purdue Extension, Hendricks County, POB 7, 1900 East Main St., Danville, IN 46122

April 5, 12, 19, 26, 2011, 6:30 – 8:30 p.m. Eastern
Purdue Extension, Hancock County, 802 North Apple St. Greenfield, IN 46140

***April 6, 13, 20, 27, 2011, 7:30 – 9:30 p.m. Eastern/6:30 – 8:30 p.m. Central**
University of Illinois Extension, Will County, 100 Manhattan Rd., Joliet, IL 60433

** Live question and answer period will be available at these times.*

Farm Food Safety Plan Writing Workshop

March 30, 2011, 9:00 a.m. – 4:00 p.m., Eastern

Purdue Extension, Hendricks County Office, 1900 East Main Street, Danville, IN 46122

At this workshop we will review Good Agricultural Practices and participants will begin to write a food safety plan for their own farm. Some knowledge about GAPs is recommended, but not required. This workshop is recommended for fruit and vegetable farmers thinking about getting a 3rd party GAPs audit in the next year, as well as for any farmer wanting to improve farm practices for food safety. $30.00, lunch included.

Registration required. Register online at www.hort.purdue.edu/fruitveg/fs.shtml or complete and send in the form below. Online registration is required for viewing at home. Register by Mar. 14, or 4 days before later programs.

Name: _____ **Email** _____

Street, City, State, Zip: _____

Indicate which webinar sessions you plan to attend with an 'X'---->	1	2	3	4	Reg. Fee	$ Encl.
Webinar Series, Mar. 15, 22, 29, & April 5, Jefferson Co.					$20 for all, $10 for 1	
Webinar Series, Mar. 15, 22, 29, & April 5, PNC-Porter Co.					$20 for all, $10 for 1	
Webinar Series, Mar. 18, 28, April 1 and 8, Hendricks Co.					$20 for all, $10 for 1	
Webinar Series, April 5, 12, 19, 26, Hancock Co.					$20 for all, $10 for 1	
Webinar Series, April 6, 13, 20, 27, Will Co.					$20 for all, $10 for 1	
Farm Food Safety Plan Writing Workshop, Mar. 30, Hendricks Co.					$30.00	

Mark events you plan to attend. Mail registration to the location where you plan to attend, Attn: GAPs Program. Enclose a check payable to Purdue University or University of Illinois, or bring to event.
Questions? Contact location where you plan to attend, or emaynard@purdue.edu, 219-531-4200 X4206

Funded in part by a USDA Specialty Crops Block Grant from the Indiana State Department of Agriculture