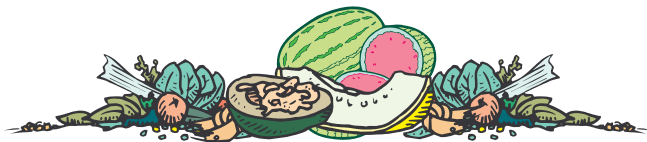


VEGETABLE CROPS HOTLINE

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

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SPRAY INJURY - (Liz Maynard) - Ever had a crop injured from your own spray application? It's not an uncommon problem. Perhaps avoiding spray injury entirely is an unrealistic goal, but aiming for that goal makes sense. Here are some 'rules' for avoiding injury - add your own and remind yourself of them from time to time.

Use only pesticides labeled for the crop (and cultivar, if appropriate), and use rates on the label. Read the entire label! Often remarks about weather conditions (such as hot weather) which may promote crop injury are on the label, but not next to specific directions for your crop. Follow label instructions regarding spray additives such as crop oil or spreader-sticker.

Clean the sprayer between applications. (Yes, that 'little bit' in the bottom CAN injure the next crop if you just mix it in.) Flush out the tank, the lines, the pump, the nozzles, anywhere a bit of solution may collect.

Check what is downwind of your sprayer: are you drifting herbicide onto your own crop?

Mix foliar fertilizers according to label directions. If applying nitrogen, apply no more than 10 lbs. actual N/A at a time. Ten lbs. N is about 22 lb. urea, or 3-1/4 gallons 28% N solution.

Spray a test strip, or even better, two test strips. When spraying a material new to you, or an old material on a new crop or cultivar, test on a small section of the crop. If it seems necessary to apply to most of the crop, leave some plants unsprayed (in at least two different locations), so you can observe effects of the spray.

Sometimes spray injury is mild, and the crop quickly grows out of it. But serious spray damage is no fun for anyone: the applicator, the grower, the consultant or extension person.

ACTIGARD - (Dan Egel) - Actigard is a new type of pesticide designed to help the plant ward off diseases. Instead of acting as a toxin for the fungus or bacterium, Actigard works by boosting the plants resistance to all diseases.

There has been some concern that Actigard may cause some phytotoxicity or yield drag. This article talks about two studies directed at these subjects.

In a paper recently published, a group out of North Carolina studied the effects of Actigard on bacterial spot of bell peppers. Rates of Actigard ranged from 1/4 to 1/2 oz. per acre. Application of Actigard on a two-week schedule was equal to standard treatments of copper plus maneb for disease control. However, when Actigard was applied on a 7-day schedule, yields were lowered. Therefore, growers producing peppers should be aware of the overuse of Actigard.

A study carried out at the Southwest Purdue Ag Center last year looked at the effects of Actigard on bacterial spot of processing tomato. The low rate of Actigard started at 1/3 oz. Actigard per acre and ended up at 3/4 oz. per acre. The high rate started at 1/2 oz. per acre and ended up at 3/4 oz. per acre. Unfortunately, no bacterial spot appeared on the tomatoes grown at the Southwest Purdue Ag Center last year. Therefore, no information could be gathered on the effects of Actigard on bacterial spot of processing tomatoes. However, yield data was gathered. Actigard did not lower yields of processing tomatoes in any treatment.

A new study on Actigard of processing tomatoes will be carried out again this year at the Southwest Purdue Ag Center. Stay tuned for further information.

A "WORKING LUNCH" WORKSHOP entitled "Growing Your Community with Farmers' Markets" will be held Monday April 30 from 11AM-1:30 PM at the New Albany Floyd Co. School Adm. Building at 2813 Grant Line Rd., New Albany, Indiana. Fee is \$7.00 per person. Please contact Roy Ballard at 812-948-5470 for more information.

DISEASE RESISTANCE IN MELONS - (Dan Egel) - Along with crop rotation and tillage, disease resistance is critical in the management of several diseases of muskmelon and watermelon.

Most muskmelons carry a disease resistance package that includes Fusarium resistance. There are at least 4 races of Fusarium on muskmelon. Although I do not know what races of Fusarium occur in Indiana, I can say that I have not observed Fusarium wilt on Athena (race 0,1,2), Eclipse (race 0, 2) and Superstar (race 2).

Powdery mildew is a perennial problem for muskmelon growers who select susceptible varieties. Athena (race 1,2) and Eclipse (Powdery Mildew tolerant-no races given) show no signs of powdery mildew in Indiana, whereas Superstar must have systemic fungicides applied to control powdery mildew.

Fusarium wilt of watermelon is one of the biggest disease problems growers in Indiana face. There are no varieties completely resistant to Fusarium wilt. However, there are several varieties that have partial resistance or tolerance. Some of the varieties with partial resistance to Fusarium wilt of watermelon are listed in the Midwest Vegetable Production Guide for Commercial Growers (ID-56) <<http://www.entm.purdue.edu/entomology/ext/targets/ID/index.htm>>. If you are searching the seed catalogs for Fusarium resistance of watermelon, look for varieties resistant to races 0 and 1. Long crop rotations are important in managing Fusarium wilt of watermelons.

Many seed catalogs list watermelon varieties with resistance to race 1 of anthracnose. While this may be technically true, most watermelon growers will find that this type of resistance does little good against anthracnose in Indiana. The reason for this is that there are two races of anthracnose. Race one attacks primarily cucumber and race two attacks primarily watermelon. Most modern hybrids of watermelon are resistant to race 1. Field experiments at the Southwest Purdue Ag Center in Vincennes show that there are few differences between varieties in resistance to race 2. Therefore, do not pick watermelon varieties with race 1 resistance to anthracnose and expect that your anthracnose problems are over.



HERBICIDE UPDATE: NEW PRODUCTS WITH FAMILIAR INGREDIENTS - (*Liz Maynard*) - Several existing active ingredients have recently been registered under new trade names.

Outlook (dimethenamid-p) for sweet corn and dry beans: Outlook from BASF contains the more effective form of dimethenamid, which is the active ingredient in Frontier. Like Frontier, Outlook is a pre-emergence herbicide labeled for use in sweet corn (and other corn) and dry beans. It may be applied before planting, before crop emergence, or early post-emergence. It kills weeds as they emerge, but does not affect emerged weeds. Recommended use rates range from 10 to 21 fl. oz. per acre depending on soil texture and organic matter content. The active ingredient is in the chloroacetamide chemical family, making it similar to Dual Magnum. These materials kill weeds by inhibiting cell growth. Crops can be injured if material is over-applied or unfavorable growing conditions occur during emergence and early crop growth. Weeds controlled include annual grasses, nutsedge, and some small-seeded broadleaf weeds such as pigweed.

Boa (paraquat) label includes post-emergence directed spray in cucurbits, in addition to previously labeled uses: Boa from Griffin contains paraquat, the non-selective contact herbicide. This active ingredient has been labeled for a number of years for preplant or pre-emergence application to control emerged weeds in many vegetable crops. More recently, the label was expanded to include post-emergence directed and/or shielded sprays in tomato, peppers, and eggplant. Now the label for Boa also includes post-emergence directed and/or shielded sprays in melon, squash, pumpkin, cabbage, and lettuce. Paraquat kills plants by disrupting cell membranes. It will kill annual weeds, burn back the top growth of perennials, and injure any crop leaves it contacts. The material does not move in the plant so only plant tissue contacted by the herbicide will be affected. Paraquat has no soil activity and will not kill weeds before they emerge. The material is highly toxic to people and animals and therefore is classified as a restricted use pesticide.

Galigan (oxyfluorfen) for cole crops, onions: Galigan from Makhteshim / Agan contains oxyfluorfen, the same active ingredient as Goal. It is labeled for use on broccoli, cabbage, and cauliflower before transplanting; on horseradish prior to emergence; and on bulb onions after emergence or transplanting. Use rates range from 0.5 to 2 pt. per acre. Oxyfluorfen is in the diphenylether chemical family, the same family as Blazer, Cobra, and Reflex herbicides used on soybeans. These materials kill plants on contact by disrupting cell membranes. Similar to paraquat, the material moves little in the plant so only plant tissue contacted by the herbicide will be affected. Unlike paraquat, oxyfluorfen does have soil

activity: susceptible weeds that emerge through soil treated with oxyfluorfen will not survive. Weeds controlled include pigweed, purslane, smartweed, and nightshade, depending on rate and timing of application.

Labels and MSDS sheets for these products (and many others) are available on-line from various sources, including Crop Data Management Systems at www.cdms.net. Read the label before using the product and follow all label directions.



LOOKING FOR DISEASE RESISTANCE - (*Dan Egel*) - In trying to manage vegetable diseases, it is always a good strategy to use, when possible, varieties that are resistant to plant disease. So how does one go about choosing a good variety from a seed catalog? Let's go over some terms.

Resistance: Resistance or complete resistance is the human equivalent to being immune to a disease. That is, you will observe no symptoms on a plant host even in the presence of the fungus, bacteria or virus under the proper environmental conditions. This is the type of resistance you would prefer to have in all your varieties. However, not all varieties have complete resistance. And even some varieties that do have complete resistance may someday become susceptible to a disease. This is because bacteria and fungi can mutate and overcome the disease resistance in a plant. Therefore plant breeders constantly have to breed for resistance. This is the case with bacterial spot of peppers. There are varieties of peppers resistant to bacterial spot; however, there are several races of the bacterial spot pathogen. It is important to know what race of the pathogen you have in your area.

Partial resistance: In many situations, a variety may be susceptible to a disease, but the disease progresses much slower than in other varieties. Such varieties have partial resistance. A variety with partial resistance may not require any further disease management strategies. But in most cases, crop rotation, tillage and even fungicide applications will be important in managing a disease. Some tomato varieties have partial resistance to Alternaria stem canker or bacterial speck. It will probably still be necessary to apply fungicides and bactericides, but such varieties will likely have much better yields in the presence of disease.

Tolerance: The term tolerance and incomplete resistance are sometimes incorrectly used interchangeably. A variety with tolerance to a specific disease has the same amount of disease as a similar variety, but less yield loss. This phenomenon has been observed in grain crops but not in vegetables.

Look closely at your seed catalog for varieties with resistance to those diseases that have caused you problems. If you are unsure about a variety, ask your seed representative.

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