

# VEGETABLE CROPS HOTLINE

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

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### IT'S NOT TOO LATE TO DO SOMETHING ABOUT WEEDS...

– (Liz Maynard) - There have been a few questions recently about controlling weeds after vegetables are planted. If weeds have escaped early season control and crops are still weeks away from harvest control measures now will probably pay off in terms of higher yield. If crops are near harvest, controlling weeds may not improve yield, but preventing weed seed production this year will reduce weed pressure in the future - and that can be worth a lot.

Timely cultivation with well-adjusted implements by skilled operators provides effective control in many cases. Likewise, hand hoeing and hand weeding can be effective and appropriate when people know how to do it. Those options may not be available due to wet weather, lack of equipment or personnel, or use of reduced tillage systems. High fuel costs may also encourage use of other methods. In these situations, growers often look for a postemergence herbicide.

If grasses are a major problem, consider the post grass herbicides Poast® and Select®. They may be sprayed over the top of many (but not all) vegetable crops.

If broadleaf weeds are the major problem, a nonselective or broadleaf herbicides applied between rows only may be the best choice.

Certain glyphosate products are labeled for use between rows of many vegetables with a hooded or shielded sprayer; read label closely to determine requirements and preharvest interval for your crop. Take care to prevent contacting the crop with the spray; it will injure the crop. Also, take care to avoid spraying glyphosate on

plastic mulch. If it is not washed off by rain or irrigation, crop leaves that later contact the mulch can absorb the glyphosate and significant injury may occur.

Aim® (carfentrazone) kills small broadleaf weeds and may be used with a hooded sprayer between rows of many vegetables.

Scythe® (pelargonic acid), a nonselective contact herbicide, may also be used between crop rows as a directed or shielded spray. It will kill small weeds when applied in a high spray volume of 75 to 200 gallons per acre. Thorough coverage of leaves is essential for good control.

Selective postemergence broadleaf herbicides are available for some crops, including sweet corn, tomatoes, and some cucurbits. Refer to the *Midwest Vegetable Production Guide* <[www.btny.purdue.edu/Pubs/ID/ID-56/](http://www.btny.purdue.edu/Pubs/ID/ID-56/)> and product labels for additional information.



**DOWNY MILDEW OF CUCURBITS** - (Dan Egel) - This disease has been confirmed in Michigan, Ohio and New York as well as several other states. All cucurbit growers (the cucurbit family includes cucumbers, muskmelon, squash, pumpkin and zucchini) should be vigilant.

These outbreaks and others can be found at the downy mildew forecast center <[www.ces.ncsu.edu/depts/pp/cucurbit/](http://www.ces.ncsu.edu/depts/pp/cucurbit/)>. Growers in northern Indiana should begin a downy mildew spray program (see below). Growers in the rest of Indiana should monitor the progress of the epidemic and be prepared to manage the disease.

**Symptoms** - Downy mildew is primarily a leaf disease. Often, the first symptoms one observes are yellow, angular or square looking spots on leaves. The underside of the leaves may be covered with a black fuzzy looking growth--this is the fungus that causes the disease. Leaves may eventually turn brown and crinkle. The leaves may turn upwards as they dry. Severe outbreaks may result in the rapid death of vines.

**Disease cycle** - The fungus that causes downy mildew has not been reported to over winter in Indiana; it "blows" in from southern states (or in this case, from greenhouses in Canada). Thus, we do not usually observe downy mildew until August or September.

Downy mildew requires a period of leaf wetness for successful infection. Heavy dews can provide adequate moisture to get this disease going. The optimum temperature for downy mildew is 59-68 °F.

**Control** - Consult the *Midwest Vegetable Production Guide for Commercial Growers* <[www.btny.purdue.edu/Pubs/ID/ID-56/](http://www.btny.purdue.edu/Pubs/ID/ID-56/)> for control measures. Growers may also want to consult *Downy Mildew of Pumpkin* (BP-140-W) <[www.btny.purdue.edu/Pubs/#vegetables](http://www.btny.purdue.edu/Pubs/#vegetables)> Briefly, contact fungicides such as chlorothalonil (e.g., Bravo®, Echo®, Equus®) or mancozeb (e.g., Dithane®, Penncozeb®) can be used against downy mildews. There have been reports of some downy mildew resistance to strobilurin products; it is recommended to tank mix these products with a contact fungicide if downy mildew threatens. Recent data indicates that Previcur Flex®, Ranman®, Tanos® and Curzate® have been effective systemic fungicides against downy mildew. Please consult the label for important application and resistance management instructions. The weather-based disease-forecasting program MELCAST was not designed for downy mildew. Therefore, if downy mildew threatens, apply fungicides on a regular 5 to 7-day schedule.



**CORN EARWORM UPDATE** - (Rick Foster) - We are continuing to catch low numbers of corn earworm moths in pheromone traps around the state. To access the latest catch numbers, please go to <<http://extension.entm.purdue.edu/cornearworm/index.php>>. We now have a pretty extensive network of pheromone traps established around the state and I want to thank all the cooperators who are checking the traps. There have been several reports of significant amounts of earworm damage in early sweet corn in several parts of the state. In at least one of those occurrences, it appears that the grower was using an appropriate pyrethroid insecticide at the right times and still had quite a bit of loss. This could signal more evidence that earworms are developing resistance to the pyrethroids. If you have what you think is more earworm damage on your pyrethroid treated sweet corn than you would expect, please let me know. At this point, the pyrethroid insecticides are still the best option (Capture®/Brigade®, Warrior®, Mustang Max®). In the last edition of the Vegetable Crops Hotline (issue number 494), I suggested ignoring the 10-earworm moth/night threshold and treating if any moths were being caught in your area if your sweet corn was silking, because of the lack of attractive egg-laying sites for the moths. As the season progresses, there are more choices for the moths to lay eggs and so I think that now we can go back to the old threshold of 10 moths per night.



**ONION THRIPS** - (Rick Foster) - This is the time of year when we start to see onions and cabbage damaged by onion thrips. These thrips build up to large numbers on small grains, such as wheat, and when the grains start to dry down or are harvested, the thrips will fly in large numbers looking for alternative hosts. If you have

onions or cabbage planted close to small grains, you could see problems develop almost overnight. It's important to scout those crops and look for the first signs of infestation. On onions, you will likely have to pull the leaves apart slightly to see the thrips (Figures 1 and 2). On cabbage, thrips may feed several layers down into the head, making it unusable in many markets. Some cabbage varieties are more susceptible to thrips damage than others. Control is best achieved if the infestation is caught early, rather than trying to clean up a problem. There are a number of effective insecticides listed for thrips control in the *Midwest Vegetable Production Guide* <[www.btny.purdue.edu/Pubs/ID/ID-56/](http://www.btny.purdue.edu/Pubs/ID/ID-56/)> for cabbage and a smaller number for onions.



**Figure 1:** Onion thrips in neck of onion. (Photo by Whitney Cranshaw)



**Figure 2:** Onion thrips injury to onions. (Photo by Whitney Cranshaw)



**SQUASH VINE BORER** - (Rick Foster) - Squash vine borer moths are currently flying and laying their eggs at the base of squash and pumpkin plants (Figures 1 and 2). The eggs hatch in 7-10 days and the larvae bore into the stem of the plant. An early sign of squash vine borer feeding is the frass (insect poop) coming from a hole in the stem. Later, the stem or entire plant will wilt and die. Growers should look for the frass to know if treatment is necessary. Your sprays will not control the larvae that are already inside the stem, but it will kill any additional

larvae that hatch from eggs. Two insecticide applications spaced 5-7 days apart directed at the base of the plant will control the majority of the newly hatching larvae before they enter the vines. Pyrethroid insecticides including Asana®, Capture®, Brigade®, Mustang Max®, Pounce® and Ambush® will provide good control.



**Figure 1:** Squash vine borer adult laying eggs on squash. (Photo by Cliff Sadof)



**Figure 2:** Close up of squash vine borer adult. (Photo by Cliff Sadof)

**POWDERY MILDEW OF MUSKMELON** - (Dan Egel) - This disease has been reported from Gibson County on a variety that previously had excellent resistance. Several growers reported powdery mildew on resistant varieties late last year. Muskmelon growers should scout their fields for powdery mildew. This disease can be recognized by the talc-like white growth on both the upper and lower surfaces of the leaf. The stems and fruit are not directly affected, however severe infections can lower the quality and yield of muskmelon. Systemic fungicides applied prior to the appearance of powdery mildew will be more effective than applications made after the disease has become severe. Systemic fungicides that are likely to be effective against powdery mildew include Pristine®, Procure®, Nova® and Quintec®.

Note that Quintec® is not labeled for pumpkins. Be sure to alternate fungicide groups and as always, follow the label.



**SALMONELLA OUTBREAK ON TOMATOES** - (Announcement) - Individuals who have questions about the recently reported outbreak of *Salmonella saintpaul* on tomatoes can refer to the link below for more information. This site will be updated as more information becomes available. <[www.foodsci.purdue.edu/news/showarticle.cfm?id=94](http://www.foodsci.purdue.edu/news/showarticle.cfm?id=94)>.



**CURLING TOMATO LEAVES** - (Liz Maynard) - Some tomato cultivars are prone to a disorder named 'physiological leaf roll'. The tomato leaflets curl upward. Sometimes they curl so tightly only the undersides of the leaflets are visible. Often people wonder if the plant is suffering drought stress.

The curling does resemble the way corn leaves roll up when there is not enough water, but this symptom is not due to lack of water. Nor is it an infectious disease. It is a physiological disorder. It appears to be more severe when growing conditions are good and the plant does not have many actively growing branches or developing fruit. Plants that have been heavily pruned (had suckers removed) often have more pronounced symptoms as shown (Figure 1). The curled leaves typically remain curled, but new growth develops normally.



**Figure 1:** Pruned 'Mt. Spring' tomato in foreground showing physiological leaf roll. (Photo by E. Maynard)



**GROWER ALERT: CHRYSANTHEMUM WHITE RUST** - (Announcement) - Editors note: Although the following article does not pertain to vegetables, many vegetable growers also produce flowers and so may be affected. It is not too early to begin thinking about your fall chrysanthemum crop - in fact, now, as you are getting your new cuttings started, is the perfect time to focus on protecting yourself, and helping protect the North American industry, against Chrysanthemum White Rust (CWR).

This disease has occurred in a limited number of growing operations in the Northeast, the Pacific Northwest, California, and Canada over the past few years, causing economic harm to those few growers who were impacted.

Because it is considered a quarantine significant pest by both the United States and Canada, it is particularly important for all growers to be aware of steps they can take to avoid having the disease in their mum crops. Federal and state governments are working with the major propagation and breeding companies to try to better understand and prevent these kinds of outbreaks - but participation of commercial growers in that effort is essential. You need to be aware of this quarantine disease and how to prevent it.

**Exclusion and prevention are the first lines of defense.** Since CWR has never been traced back to reputable cutting producers, make sure you are buying your cuttings only from a reputable commercial source.

Never allow imported flowers or bouquet production in mum-growing greenhouses or headhouses. If you do allow imported flowers on your premises during mum-growing season, you must maintain strict separation from your production facilities, and must be sure that workers are not moving between the two areas and potentially carrying the disease on their hands, clothing, or equipment.

Scout your crops often. Maintain low humidity and dry foliage. Maintain clean growing practices.

**Early detection and eradication are the second lines of defense.** If you do see this disease, because it is a quarantine-significant pest, you will need to inform your USDA, state, or county officials who will supervise the eradication and treatment process. Nonetheless, early detection and eradication will be much less costly for you than an unanticipated detection during the fall shipping season!

SAF and ANLA have joined together to design a free training session on CWR. The session is a "webinar"

(a seminar conducted entirely online, from your computer). The seminar is approximately 30 minutes, has excellent photographs of CWR symptoms, and offers important advice on how to avoid it in your 2008 chrysanthemum crop.

The Webinar is available on SAF's website <[www.safnow.org](http://www.safnow.org)> on the top right hand corner under Grower Alert and on ANLA website <[www.anla.org](http://www.anla.org)>.



**SECURING THE LOAD: A GUIDE TO SAFE AND LEGAL TRANSPORTATION OF CARGO AND EQUIPMENT - (Fred Whitford)** - Losing cargo on the road is serious business. Unfortunately, cargo falling on highways results in material loss, destruction of personal property, and, sometimes, environmental impacts. Flying and falling cargo can also injure drivers and bystanders.

There are times when cargo spills are pesticides, and wind up in a nearby creek or other body of water. If there is not adequate pollution insurance and adequate liability insurance to cover the remediation of the property or water body contaminated by the chemical, the business would be required to use "out-of-pocket" revenues to pay for cleanup and restoration.

Properly loading, positioning, and securing pesticide-related cargo within the truck or on a trailer prevents highway accidents and reduces transportation liabilities. The proper selection and use of tie downs can make a significant impact in keeping the roads safe from falling cargo.

For more information, see PPP-75, Securing the Load: A Guide to Safe and Legal Transportation of Cargo and Equipment. It can be found on-line <[www.btny.purdue.edu/ppp/PPP\\_pubs.html](http://www.btny.purdue.edu/ppp/PPP_pubs.html)> and can be ordered from media distribution, 1-888-EXT-INFO.

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