

VEGETABLE CROPS HOTLINE

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

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COOL TEMPERATURES - (Liz Maynard) – The following article was written as a Vegetable Crops Hotline - BULLETIN, August 23, 2004. Unseasonably cool temperatures of the past few weeks will have slowed growth of vegetable crops. Maturation and /or ripening of the harvested portion of sweet corn, tomatoes, peppers, eggplant, cucurbits, and okra slows under cool temperature. When temperatures stay below 55°F for a period of time, green tomatoes suffer chilling injury. They become more susceptible to *Alternaria* fruit rot. When they ripen, they may not develop good color or flavor. Ripe tomatoes tolerate cooler temperatures, but when chilled will show increased water-soaking, softening, and decay. Other crops that may show chilling injury on the harvested portion if temperatures remain below 45°F or 50°F for a period of time include: snap beans, cucumbers, eggplant, melons, okra, peppers, pumpkins, and squash. Symptoms of chilling include water-soaked spots, pitting, decay, and russetting. Chilling injury is cumulative: the lower the temperature and the longer the time period of low temperature, the greater the injury. If chilling injury occurs in the field, there is no way to reverse it. To prevent further injury, storage at the proper temperature after harvest is especially important. The Midwest Vegetable Production Guide (ID-56) includes recommendations for storage temperatures <www.entm.purdue.edu/entomology/ext/targets/ID/index.htm>. As fall approaches there may come a time when temperatures are predicted to stay below 55°F for extended periods of time and tomato plants still have many mature green tomatoes. Under those conditions, consider harvesting the mature green tomatoes and ripening them inside under warmer temperatures.

THE GREAT "COVER-UP" IN SOUTHERN INDIANA AGRICULTURE - (Roy Ballard) - Often reserved for some clandestine wrong-doing the term "cover-up" actually has a positive meaning when associated with the agricultural practice of using a so called cover crop in fields and gardens which would otherwise be devoid of crops at some point of the year. Cover crops are selections of plants, which are sown at such a time as to provide a dense vegetative cover to the soil.

Cover crops have long been used to reduce soil erosion, add organic matter to improve the soil. With the development of no-till cropping systems, cover crops were recognized for their ability to provide moisture-conserving residues as well as nitrogen for the succeeding crop. Increased recent concern for water quality has provided additional reasons to use cover crops which can take up and hold nutrients, especially nitrogen, that were not used by the previous crop. Because they remove water from the soil, they may reduce the risk of nutrients and pesticides moving through the soil. Cover crops may reduce weed problems and the need for herbicides by competing with them for space and nutrients and by providing a mulch to cover the soil surface. Some also release chemicals that suppress weed growth and may reduce populations of soil-borne plant pathogens. While not all cover crops provide all of these benefits, choosing the right cover crop or mixture of cover crop species can offer a somewhat predictable set of benefits to meet a variety of needs in the home garden or farm field.

The following describes those cover crops suitable for use in Southern Indiana and how they should be managed to provide good winter cover.

Small Grains: Wheat, rye, barley, and oats are very effective winter cover crops. They also can be harvested as forage, straw, or grain, or left in the field to provide mulch and organic matter. When planted early enough in the fall, they provide good winter cover and act like a sponge to take up nutrients left in the soil from the summer crop. Each small grain crop has its own strengths and weaknesses.

Wheat, rye and barley are all fast growing grasses, which germinate well in the late summer months and provide a good dense cover for the soil. Wheat and rye are probably the hardiest of the three to winter conditions though their rank growth in the spring can

make them a challenge for the home gardener to turn them under before planting. Wheat and rye residue create weed-suppressing compounds, which in the right situation may give some crops a running start and achieve some size before the weeds can begin to grow. These grains germinate and become established in the fall, slow their growth in the winter and resume growth quickly in the early spring. Two- three pounds of seed per 1000 square feet or 2-2.5 bushels per acre should be a sufficient seeding rate.

Oats are not as effective as the other small grains. Overall biomass or mulch produced is generally lower than with rye or wheat and they are more subject to winter-kill and start growing later in the spring. If planting in the fall, be sure to use a winter variety. Spring oats may be used as a cover crop by planting in early March or they can also be planted in early fall and allowed to grow until killed by cold weather. The residue will continue to protect the soil until spring, but nutrients may be lost and weed suppression will be reduced.

Small grains are usually drilled or broadcast on clean-tilled soil and covered to about one inch. A corrugated roller (culti-packer) or other device can be used to firm the soil and press the seed in. Small grains can be planted without tillage with a no-till drill or simply broadcast on the soil surface when there is sufficient cover or residue from a previous crop. A rye cover crop should be killed-by a herbicide or tillage-by mid-April to prevent excessive top growth. If small grains grow too tall in the spring, it may be helpful to mow them before tilling or no-till planting.

Grasses: Annual ryegrass can be used as a winter cover crop, although it may winterkill in some years. When planted in August or September, it usually produces good top growth before cold weather which will help it survive better, but even if it does winter-kill, it will still protect the soil. Annual ryegrass has the advantage of a dense, leafy growth that provides good cover, which can be tilled easily if not allowed to mature in the spring. Perennial ryegrass is very effective in suppressing weeds and can also be used as a winter cover crop. It can survive over winter and will need to be killed in the spring. One pound per 1000 square feet or approximately 25 pounds per acre is a recommended seeding rate for either grass.

Legumes: Legumes, such as clovers and vetches, have the added advantage of being able to capture or "fix" nitrogen in nodules on their roots from the air for themselves and for following crops. When the roots die, this stored nitrogen is released and becomes available to other plants. Legume seed should be inoculated with the proper nitrogen-fixing bacteria. If nitrogen is available in the soil, legumes will take it up rather than fixing their own; thus, they are best when used on soils low in nitrogen.

Hairy vetch is probably the most reliable and most productive winter legume cover crop adapted to Indiana. It is easy to establish and is winter hardy. To provide good winter cover, plant hairy vetch in late

August or early September, using 20 to 30 pounds of seed per acre (1 pound per 1000 square feet), and cover about 1-inch deep. Hairy vetch should be allowed to grow until May to obtain optimum nitrogen fixation. Killing the plant before seed matures reduces the chance of problems with volunteer plants. Hairy vetch has been used for no-till planting of fresh market tomatoes with excellent results.

Other leguminous winter cover crops include Big flower vetch, Crimson clover (may winter kill), and Austrian winter pea. Austrian winter pea can be planted quite late, even into October while the others should be sown August through mid September.

Mixtures: All legumes can be seeded with a small grain, if desired. This improves the soil cover, which is especially important on highly erodible fields and sloped garden sites, and improves the chances for winter survival of at least one crop. When using a mixture a reduction in the seeding rate by one-half is recommended.

Potential Problems Linked to Cover Crops: Cover crops, for all their potential benefits, are not without their problems. Some plant diseases and a few insects can actually be increased through the use of a cover crop. Some cover crops can suppress not only weeds in the spring following their use but also the growth of smaller crop seeds. Where this is expected, planting larger seeded crops or transplants or killing the cover crop several weeks ahead of planting may be in order.

Where cover crops can really be a challenge is in those years when we experience a cool wet spring that delays tillage and planting. In those situations the cover may well continue to grow and make a huge amount of top growth, which will be very challenging to till in and then may release toxins or tie up nutrients needed for the new crop. In these cases all that one can do is wait until conditions improve for tillage and then wait longer to allow the biomass to decompose before planting. Some cover crops can also produce seeds, which may grow into weeds in the next crop.

Despite these potential problems a carefully selected cover crop for a specific situation can yield huge benefits to farmers and gardeners. One should always use high quality seed to ensure good stands and reduce the risk of introducing weeds and check the susceptibility of cover crops to herbicides that may have been used on the preceding crop. This is one "cover-up" that will yield substantial benefits to area growers and maintain or improve the soil productivity and water quality for future growing seasons and generations to come.

THE FINAL FUNGICIDE APPLICATION ON PUMPKINS - (Dan Egel) - There are many aspects to disease management in pumpkins. The big factors are crop rotation, fall tillage and variety selection. However, most growers find it necessary to apply fungicides over the course of a season to keep the foliage healthy. Good yields and high fruit quality are linked to healthy foliage.

How important is it to protect foliage now that we are into September? There are many factors to consider.

Once a disease-causing organism (pathogen) comes into contact with susceptible foliage under the proper conditions, there is a period of time, an incubation period, before significant disease symptoms are observed. This period is often 7 to 14 days on pumpkins this time of year. So it does not make sense to apply fungicides to foliage 7 to 14 days before harvest. Plus, foliage is necessary only to support fruit growth. If a crop is made or close to it, fungicide application is not economical.

Ask yourself if it is necessary to keep the foliage healthy for 2 to 3 more weeks to make a crop. Remember that good pumpkin yields are often obtained from fields where the foliage has died down. Sometimes having less foliage facilitates harvest.

Those growers who have U-pick operations over a period of days or weeks should be especially aware of the re-entry intervals of the pesticides they apply.

What about fungicide applications to protect fruit from those diseases that directly affect fruit? Let's list the common diseases that fall into category in Indiana: bacterial fruit spot, Plectosporium blight (Microdochium blight), Phytophthora blight and black rot. All season protection is the best way to manage all of these diseases. If the incidence of these diseases has been light up to this point, it is unlikely that there will be a late season surge in any of these diseases. If any of these diseases have been a major problem all year long, one or two more applications of a fungicide are probably not going to help much.

Downy and powdery mildew do not affect fruit directly. Powdery mildew may affect the "handles" or stems of pumpkin fruit, but only in severe cases. To

prevent powdery mildew from affecting handles, concentrate on early and mid-season management practices.

Below are some questions pumpkins producers might want to ask themselves to determine when to apply the final fungicide.

1) When will the final pumpkins be harvested? The longer the grower expects the vines to support pumpkin growth, the more likely some kind of fungicide application will be needed. In most cases, it does not make sense to apply fungicides to fields that consist of fruit with very little foliage.

2) What is the smallest pumpkin fruit that can reasonably be expected to mature in time to be sold? How many pumpkin fruit of this size are present in a given field? Part of the answer to this question is a time from pollination to maturity question (See page 11 in the Midwest Vegetable Production Guide for Commercial Growers 2004, (ID-56), <www.entm.purdue.edu/entomology/ext/targets/ID/index.htm>). Another factor in this question is the amount of healthy foliage that remains to support fruit maturity. Remember, the best fungicide is designed to protect healthy foliage and will not bring back already diseased foliage. And limited re-growth can be expected to occur this time of year.

3) If one believes a fungicide application is warranted, how much will such an application cost? Will this cost likely be offset by the amount of fruit likely to be harvested (see #2)?

INDIANA CLEAN SWEEP PROJECT - (*Announcement*) - An Indiana Pesticide Clean Sweep Project designed to collect and dispose of suspended, canceled, banned,



November 14-16, 2004
Naples Beach Hotel and Golf Club
Naples, FL, USA

This conference attracts prominent Capsicum scientists, researchers, breeders, horticulturists, pathologists, entomologists, geneticists, physiologists, virologists, seed and chemical companies, processors, growers and chile aficionados from around the world. All pepper types including bell, long green/red chile, high color paprika, ancho, pimiento, cayenne, Tabasco, jalapeno, yellow pickling, Serrano, and cherry will be a focus of the conference.

Topics will focus on:

- Breeding and Genetics
- Horticultural Management and Production
- Post Harvest Issues
- Integrated Pest Management

For More Information Contact:

Conference Organizer:

Mr. Gene McAvoy
1-863-674-4092, gmavoy@ifas.ufl.edu

Conference Coordinator:

Ms. Beth Miller-Tipton
1-352-392-5930, bmt@ulf.edu

Conference Website:

<<http://conference.ifas.ufl.edu/Pepper/>>

unusable, opened, unopened or just unwanted pesticides (weed killers, insecticides, rodenticides, fungicides, miticides, etc.) is being sponsored by the Office of Indiana State Chemist (OISC). This disposal service is free of charge up to 200 pounds per participant. Over 200 pounds there will be a \$2.00 per pound charge. This is a great opportunity for you to legally dispose of unwanted products at little or no cost.

All public and private schools, golf courses, nurseries, cities, towns, municipalities and county units of government or others receiving this notice are eligible to participate.

The date for the Clean Sweep is September 15, 2004, 9:00 a.m. to 2:00 p.m. Kosciusko County Solid Waste Management District located at: 220 S. Union Street, Warsaw, Indiana.

For more information on this event please contact Kevin Neal at (765) 494-4331 or nealk@purdue.edu no later than Wednesday, September 8, 2004. Then bring your labeled, leak free and safe to transport containers to the collection site. DO NOT mix materials. In case of an emergency, you should bring with you a list of products you are carrying and a contact phone number. Please note the OISC reserves the right to cancel this Pesticide Clean Sweep Project if there is not adequate demand.

UPCOMING EVENTS - Tuesday, September 14, 2004.

Pumpkin Variety Plot tours in NE Indiana.

2:00 - 4:00 p.m. Hilger Farm.

5:00 - 8:00 p.m. Kurtz Farm.

See over 20 varieties of pumpkins at the two locations.

Purdue specialists will be at both sites. Dinner will be served following the tour at Kurtz Farm, courtesy of Rupp Seeds.

Directions to Hilger Pumpkin Trial: From US 30 west of Columbia City, go south on Wolf Rd. At the first two T's turn right and then immediately left to stay on Wolf Rd. The field is on the NW corner of Wolf and Keiser Roads, about 8 mi. south of US 30. OR From SR 14, turn north on Whitley CR 200 W. Turn right on Keiser Rd. Pumpkin field will be on your left.

Directions to Kurtz Farm: Take I-69 to I-469 east; take exit #25 to SR 37; north about 3 miles.

Thursday, September 16, 5:00 to 8:00 p.m. Apple, Grape and Pumpkin Trials at Meigs Farm, Throckmorton Purdue Ag Center.

Dinner (optional) will be served following the plot tours. There will be a \$5 charge for the meal.

Pumpkins: over 20 jack-o-lantern varieties; Grapes: over 50 varieties, herbicide injury symptoms, training systems; Apples: over 20 varieties, dwarf apple pruning and training

Come out and see the latest varieties, find out what's hot and what's not and talk with Purdue specialists.

Directions to Meigs Farm: From Lafayette take US 231 S to CR 800 S intersection (flashing lights), turn left on CR 800 go 1 mile and turn right on CR 100 E. Farm is 1 mile on left. From Crawfordsville take US 231 N to CR 800 S (approx. 3 miles north of Romney) and follow above directions. From Indy take I 65 north to SR 28 exit and turn left and stay on SR 28 until you reach US 231 (Romney). Turn right onto US 231 and go 3 miles to CR 800 S intersection. Turn right on CR 800 and then right again onto CR 100E, go 1 mile and farm is on left. Watch for signs.

For more information, please call Liz Maynard (219) 785-5673.

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