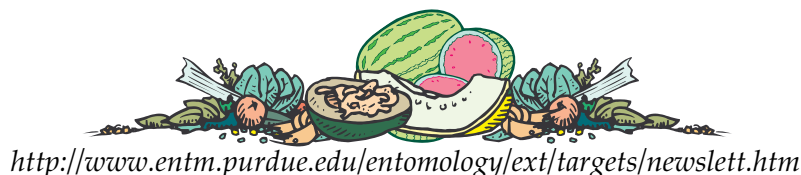


VEGETABLE CROPS HOTLINE

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

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UPDATE ON THE SOUTHWEST PURDUE AG PROGRAM – (Randy Woodson, Director of Agricultural Research Programs) - In late 1989, Purdue Agriculture implemented the Southwest Purdue Ag Program through funding from the State of Indiana. This program includes regional extension specialists in Horticulture, Entomology, Agronomy and Plant Pathology. The program was a response to the needs of commercial vegetable and agronomic crop production. Our goals have always been to bring the front door of Purdue closer to the commercial agriculture clientele in the southwest part of the State of Indiana. By many accounts this has been very successful and we are committed to maintaining a very strong Southwest Purdue Ag Program. Unfortunately, we have experienced significant staff turnover in the past few years and currently have openings in both the Entomology and Horticulture positions. Please know that we are committed to ensuring that these areas remain covered. To that end, the Department of Horticulture and Landscape Architecture is actively engaged in a search for a new regional horticulture specialist. The Department of Entomology will soon begin the process of recruiting for a specialist in this area as well. During the interim period, staff in the Departments of Horticulture and Landscape Architecture and Entomology will be working with Dan Egel and Chuck Mansfield at SWPAC in an effort to address the issues of concern to the commercial vegetable and crop producers in southwestern Indiana.



BACTERIAL FRUIT BLOTCH OF WATERMELON - (Rick Latin) - During the last four weeks, bacterial fruit blotch has been identified in the southeastern U.S. Outbreaks have been associated with a certain seed lot of an Abbott and Cobb seedless watermelon variety number 5244. We believe that industry representatives have already contacted farmers who purchased seed of the contaminated lot. If you have any questions about

the health of seed that you purchased, we suggest you call your local representative. If you are concerned about unusual symptoms on your watermelon seedlings, you may submit samples for identification to the Plant and Pest Diagnostic Laboratory, 1155 Lilly Hall, Purdue University, West Lafayette, IN 47907-1155.

Overnight delivery is recommended so that samples are received intact. For more information about submitting samples, you may call 765-494-7071.

Perhaps a brief review of the disease is in order, since we have not needed to address the disease for several years. Bacterial fruit blotch is a seed transmitted disease of watermelon that caused severe losses in Indiana in 1989. Several outbreaks have occurred since the initial introduction with contaminated watermelon seed. Only a few of the post-1989 outbreaks in Indiana resulted in serious losses, mostly because the disease was identified early while seedlings were being raised in transplant production facilities. Symptoms on fruit are obvious and include an olive-green stain or blotch on the upper surface of watermelon. The blotch expands rapidly, often resulting in a rotten brown color, cracks in the rind, and oozing of bacteria filled fluid.

Symptoms on seedlings are not as easily recognized. Initial symptoms appear as watersoaked areas on the underside of infected cotyledons. As cotyledons expand, lesions become dark brown and often extend along the length of the midrib. Lesions on young true leaves are small, dark brown, and often are surrounded by a band of yellow tissue. Unlike other fruit and foliage diseases of melons, the fruit blotch-infected seedlings usually do not collapse and die in the greenhouse, but foliar lesions will increase slowly under favorable environmental conditions.

As with all infectious seedling disorders, we recommend that after the disease has been identified, all contaminated plants and plant materials should be discarded. One should also consider discarding plants in the same facility as those with fruit blotch, or at least isolating and observing them in disease favorable conditions before deciding how to proceed.



WHEN TO APPLY COPPER- (Dan Egel) - Compounds containing copper have been applied since 1882 when copper sulfate and lime were applied to grape vines to stop passers-by from taking grapes. It was observed that the vines with the copper compound had less grape downy mildew. The grape industry in France was saved and the world of fungicides was born.

Today an almost bewildering array of fungicides exists. Fungicides are applied on a regular basis to control diseases such as gummy stem blight of watermelon and early blight of tomato. Is there still a place for copper compounds?

Both observations and experiments done at Purdue University indicate that copper compounds are better bactericides than fungicides. Some readers may remember from biology that bacteria and fungi have many differences. Scientists place bacteria and fungi in different kingdoms. It only makes sense that pesticides affect bacteria and fungi differently. Copper compounds should be applied to protect plants from a bacterial disease. Other synthetic fungicides do a better job of protecting plants from fungi.

Bacterial speck and bacterial spot often threaten tomato plants. Copper compounds can lessen the impact of these diseases, both caused by bacteria. If tomato growers expect these two diseases to be a problem, copper compounds should be included as a part of a regular pesticide program.

In contrast, few bacterial diseases threaten watermelons. The only disease that watermelon growers in Indiana should apply copper compounds for is watermelon fruit blotch. This disease does not generally threaten Indiana growers except where watermelon fruit blotch was brought in on seeds. In fields where fruit blotch has been identified, applications of copper may reduce extent of losses due to that disease.

If you still have questions about whether to apply copper for your situation, check the *Midwest Vegetable Production Guide for Commercial Growers* (ID-56), web site: <http://www.entm.purdue.edu/entomology/ext/targets/ID/index.htm>. This yearly updated publication has pesticide information for individual crop/disease combinations. Direct additional questions to Purdue Specialists.



BACK ISSUES OF HOTLINE - (Dan Egel) - Due to a bookkeeping error, some members who signed up recently for

the *Vegetable Crops Hotline* may have missed back issues. If you are signed up for the *Hotline* and have not received back issues, please contact Dan Egel at the phone number or e-mail address listed at the top of this newsletter.



IVGA DIRECTORY OF WHOLESALE VEGETABLE PRODUCERS – (*Liz Maynard*) – For the past two years, the Indiana Vegetable Growers Association has published and distributed a directory of members who sell to wholesale markets. The directory will be updated for 2000. A letter and information form was sent to all IVGA members last week. Remember to return the form by May 1 in order to be included in the directory. If you are an IVGA member and did not receive the form, call 219-785-5673 to request a copy.



DRY WEATHER – (*Liz Maynard*) – One doesn't have to drive far in northern Indiana to notice that something is different this Spring. Evergreen trees of all sizes are turning brown as their needles die from drought stress. According to the long term Palmer Drought Severity Index, northern Indiana is experiencing a severe drought, and parts of north central and south central Indiana are in a moderate drought. Top soil moisture is short or very short in half of Indiana fields, while subsoil moisture is short or very short in 70% of our fields. These measurements reflect the dry conditions since last summer. The Crop Moisture Index, which reflects recent weather conditions over a period of two weeks, indicates that Indiana is at or above normal moisture levels. The forecast for May through July predicts slightly below normal rainfall for Indiana.

What does this mean for vegetable growers? First (and this hardly needs repeating), predictions are not guarantees. Although the forecast is for slightly dry weather, we may get wet weather. The meteorologists agree that the likelihood of dry weather is greater than normal, but it is not 100%. It makes sense to be prepared for any kind of weather, and perhaps worth a little extra care to be prepared for dry weather.

The second point is that starting out with dry soil is different than starting with wet soil and having a dry growing season. Subsoil moisture is especially important for deep-rooted crops like asparagus and watermelon which can tolerate periods without rain because they can access subsoil moisture. If subsoil moisture is not replenished, these crops will rely more heavily on moisture in the surface soil. If rainfall is low, that moisture will need to come from irrigation. Shallow-rooted crops will need irrigation as usual during periods of low rainfall.

Suggestions for preparing for dry weather follow. Most are common sense and will already have been completed by many growers.

Prepare equipment. Make sure irrigation pumps are in good working order. Check all pipe, sprinklers, travelers, and other equipment and make it ready to use. Evaluate the need for back-up equipment, and for having spare parts on-hand. Plan for in-season maintenance of the system.

Evaluate water supply. Surface water levels may be low already, and with low rainfall will go lower. If you use a stream or a pond, will it be able to supply enough water in a drought? Can you make arrangements for an alternate supply if it runs low? Is your well likely to dry up if rain is sparse?

Review crop needs and irrigation scheduling basics. At what stages of crop growth is adequate water most critical? How will you decide when to irrigate? If you plan to use tensiometers or moisture blocks to measure soil moisture, check that the equipment is in proper working order. How much water should be applied at each irrigation, and how long will that take? The *Midwest Vegetable Production Guide for Commercial Growers* (ID-56) has information on crop needs, critical stages of growth, and irrigation scheduling. The publications listed below have more detailed information on these topics.

Train employees, if necessary. While some training may have to wait until it is time to irrigate, training in advance could put you a step ahead if dry weather comes at an especially busy time.

Use practices which conserve soil moisture. Limit tillage; consider no-till or minimum till for a crop such as pumpkins. Control weeds early in the season and keep them controlled so they do not compete for moisture.

Think about how drought could affect your marketing plan. If produce quality is reduced due to drought, will the buyer accept it, or would you need to find an alternative market? If your yields are low and you can't deliver what you promised, can you arrange to get it supplied from somewhere else?

Don't forget the bright side of dry weather: it usually means less disease pressure. Vegetables can perform very well in dry years when irrigation is managed properly.

For more information, consult the following publications and web sites. If you would like one of the following publications and can not access it via the web, call 219-785-5673 to request a copy.

Drought Monitor – Current Conditions, US Dept. Commerce and USDA <http://enso.unl.edu/monitor/current.html>

Vegetable Crop Irrigation, by D.C. Sanders <http://www.ces.ncsu.edu/depts/hort/hil/hil-33-e.html>

Drip or Trickle Irrigation Systems: An Operation and Troubleshooting Checklist, by D. C. Sanders <http://www.ces.ncsu.edu/depts/hort/hil/hil-33-b.html>

Drip or Trickle Systems: An Outline of Components <http://www.ces.ncsu.edu/depts/hort/hil/hil-33-a.html>

Drip Irrigation for Vegetables, by C.W. Marr and D. Rogers <http://www.oznet.ksu.edu/library/hort2/mf1090.pdf>

Maintaining Drip Irrigation Systems, by G.A. Clark, W. Lamont, C.W. Marr, and D. Rogers <http://www.oznet.ksu.edu/library/hort2/MF2178.pdf>

Drought Advisory for Vegetable Production, by E. Kee, W. Cook, D. Cranberry, H. Hohlt, and D. Sanders <http://www.ces.ncsu.edu/drought/dro-13.html>

Disclaimer

Reference to products in this publication is not intended to be an endorsement to the exclusion of others which may have similar uses. Any person using products listed in this publication assumes full responsibility for their use in accordance with current directions of the manufacturer. Purdue University is an equal opportunity/affirmative action institution

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