

VEGETABLE CROPS HOTLINE

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

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COVER CROPS AND DISEASE MANAGEMENT – (*Dan Egel*) – Winter cover crops are usually planted after the primary crop is harvested in the fall and germinate and grow into the fall. Some become dormant in winter, and others die if temperatures are cold enough. Those that survive begin growing again in the spring. If not killed by cold temperatures, a cover crop is usually killed in the spring mechanically or with herbicides. A dead cover crop may be left on the soil surface as mulch, or may be cultivated into the soil.

Vegetable growers may use a cover crop for many reasons, including to reduce soil erosion and to add organic matter and nutrients to the soil. This article, however, is about the possible uses of a cover crop for disease management. Cover crops may help in disease management by releasing compounds that kill soil dwelling pathogens (e.g., fungi and bacteria). Cover crops used for this purpose are often known as biofumigants. An additional use of cover crops may be to protect the crop from pathogens that may be splashed onto the foliage or fruit.

Cover crops most often used as biofumigants are in the Brassica family and include canola and rape. Brassica plants contain compounds known as glucosinolates (GSL) that are general biocides. Under the appropriate conditions they kill microorganisms in the soil, including pathogens.

The effectiveness of Brassica plants for disease management has been inconsistent. Southern blight, Rhizoctonia diseases and Pythium diseases have been reported to be reduced when Brassica cover crops were used. On the other hand, rape or canola did not control Fusarium wilt or Pythium of watermelon in South Carolina.

Hairy vetch is another potential cover crop. It is planted in the fall and either killed and left on the sur-

face, or disked into the soil in the spring (see Figure 1). If left to grow long enough in the spring, a main benefit is the addition of nitrogen to the soil. Recently, hairy vetch has been used for biofumigation as well. The mode of action appears to be the release of ammonia by hairy vetch when it is disked into the soil.

In studies in South Carolina and Maryland, hairy vetch was used to manage Fusarium wilt, anthracnose and gummy stem blight of watermelon. Plots that used hairy vetch as a cover crop had reduced Fusarium wilt and increased biomass comparable to the methyl bromide or Telone® fumigation treatments. When watermelon was planted into a killed hairy vetch cover crop that was left on the surface of the soil (see Figures 2 and 3), anthracnose and gummy stem blight were reduced to a level comparable to conventional fungicides. It is thought that hairy vetch protected against anthracnose and gummy stem blight by reducing splashing of inoculum onto the watermelon vines.

In a similar way, it has been shown that planting pumpkins into a dead rye or wheat crop protects the pumpkin fruit from diseases. In particular, planting into a dead cover crop left on the soil as mulch has been shown to reduce the amount of Fusarium fruit rot of pumpkin.

Although cover crops are usually used for erosion management and improved soil fertility, many of these same crops can also be used to help disease management.



Figure 1: Canola incorporated into the soil as a biofumigant. (Photo by *Dan Egel*)



Figure 2: Hairy vetch being crimped to kill it. (Photo by Dennis Nowaskie)



Figure 3: Crimped Hairy vetch ready to be planted into. (Photo by Dennis Nowaskie)



MEET THE (BENEFICIAL) BEETLES: *HARPALUS PENNSYLVANICUS*, WEED SEED PREDATOR – (Carmen Blubaugh, Ph.D. student, Purdue Dept. of Entomology) - Fall is a wonderful time of year, with great weather, ripening apples and pumpkins, and most importantly, lots of activity by the ground beetle *Harpalus pennsylvanicus*. *Harpalus* is the most common ground beetle in both organic and conventional market vegetable systems, and the most unappreciated beneficial insect you may encounter on the farm (see Figure 4). It's a dark brown beetle about $\frac{3}{4}$ of an inch long with orange legs. If you have never noticed one before, it is likely because it is nocturnal and hides under rocks and in soil cracks until after dusk. *Harpalus* is omnivorous. It occasionally eats small caterpillars and other crop pests, but primarily feeds on weed seeds. Its mandibles are uniquely suited to crack the seed coat of smaller seeds, like those of grasses, pigweed and lambsquarters. In fact, its fall breeding period is almost perfectly synchronized with weed seed rain in September, and a single beetle can consume hundreds of seeds each day. Since weeds are a vegetable producer's

ultimate nemeses, I have a special place in my heart in for all the little weed seed predators out there.

I trap ground beetles in a variety of crop environments at Purdue's Meigs research farm. I find the most *Harpalus* foraging in living mulch cover crops (like clover), in no-till systems, and in crop areas where a few non-senescent weeds are tolerated at the end of the season. I hardly ever catch beetles in recently cultivated crops, so if you'd like to take advantage of the free weed seed predation services ground beetles provide, it would be best to minimize tillage as much as you can afford to.

If you're interested in becoming familiar with the beneficial insects that live and forage on the soil surface at your farm, try setting a pitfall trap. It's not very fancy; just dig a cup-shaped hole in the ground (a posthole digger works pretty well), drop in a 32 oz. yogurt cup, make the top flush with the soil surface, and check on it over the next couple mornings. You'll almost surely catch a few *Harpalus*, maybe a cricket or tiger beetle as well.



Figure 4: *Harpalus pennsylvanicus* (Photo by Carmen Blubaugh)



SARE GRANTS OFFER OPPORTUNITY FOR FARMERS AND YOUTH EDUCATORS - (Roy Ballard) - Have you ever found yourself thinking... "If I had a few dollars to spend...I would sure like to try something new on the farm next year." Whether you are considering ways to reduce the environmental impact of some farming system, test a production or marketing system that will make you more profitable over time or to improve the impact of your farm on the people involved and the community as a whole these all fall under the term farm "sustainability".

Sustainability is nothing new to agriculture. The term "sustainable" simply stated refers to the farmer's continued efforts to find ways to farm that will provide for profitability, good stewardship of resources, and better quality of life for farm employees and the larger community. Sustainability is a journey. The goal is to identify how practices can be improved, test new solutions, and implement those that move us forward on the journey.

The goal of Sustainable Agriculture Research and Education (SARE) – a program of the National Institute of Food and Agriculture (a part of the USDA) – is to provide farmers and others access to information and funding that will help them become even more sustainable.

One such program of special interest to farmers is the 2013 NCR-SARE Farmer/Rancher Grant program (FRG). In 2013 this program has two Calls for Proposals serving distinctly different audiences: The Farmer/Rancher Grant and the Youth Educator Grant.

Farmer/ Rancher Grant

This grant program is for farmers and ranchers to carry out sustainable agriculture research, demonstration, and education projects on their farms. Farmers and ranchers in the North Central Region are invited to submit grant proposals to explore sustainable agriculture solutions to problems on the farm or ranch. Proposals should show how farmers and ranchers plan to use their own innovative ideas to explore sustainable agriculture options and how they will share project results.

Projects should emphasize research or education/demonstration. There are three types of competitive grants: individual grants (\$7,500 maximum), partner grants for two farmers/ranchers from separate operations who are working together (\$15,000 maximum), and group grants for three or more farmers/ranchers from separate operations who are working together (\$22,500 maximum). Farmers may apply as an individual, as part of a team proposal, or both. Grant recipients have 25 months to complete their projects. For the purposes of this grant the term “farmer” refers to “one who is raising crops or livestock, especially as a business” and can include those who farm in rural or urban areas. Proposals are due on Thursday, November 29, 2012, at 4:30 p.m. at the NC-SARE office in Saint Paul, MN.

Youth Educator Grant

These grants are a part of the larger Farmer Rancher Grant Program. Youth Educator Grant projects provide opportunities for youth in the North Central Region to learn more about sustainable agriculture. Educators use the grants to encourage young people and their parents to try sustainable practices and see sustainable agriculture as a viable career option. Grants are awarded up to \$2,000 and grant recipients have 25 months to complete projects. Proposals are due by 4:30 pm, Thursday, November 15, 2012 at the NC-SARE office in Saint Paul, MN. Please note that this is a different date the Farmer Rancher Grant above. The term “educator” can be used to describe anyone who educates youth, including but not limited to certified teachers and Extension educators.

Important Details

Slight revisions are made each year to SARE calls for proposals, which means it is crucial to use the most recent call for proposals and to follow carefully the directions provided. Interested applicants can find the call for proposals as well as useful information for completing a proposal at <http://www.northcentralsare.org/Grants/Types-of-Grants/Farmer-Rancher-Grant-Pro->

<http://www.northcentralsare.org/Grants/Our-Grant-Programs/Youth-Educator-Grant-Program>. Applications and tips for success can be found at the Purdue Extension office website <http://www3.ag.purdue.edu/counties/hancock/>. To receive a hard copy of the grant application, to view recordings of grant training sessions or for additional information about NC-SARE you may contact Roy Ballard, Purdue Extension Educator, ANR, in Hancock County and IN SARE Coordinator at 317-462-1113 or by e-mail at rballard@purdue.edu.



USDA VALUE-ADDED PRODUCER GRANTS - (*Liz Maynard*) - The Value-Added Producer Grant from USDA offers up to \$100,000 for planning and up to \$300,000 for working capital expenses. The program funds projects that will generate new products, create and expand marketing opportunities, and increase producer income. Economic planning activities that can be funded include conducting feasibility studies and developing business plans for processing and marketing of a value-added product. Eligible working capital expenses include processing costs, marketing and advertising expenses, and some inventory and salary expenses directly related to the value-added project. You cannot use grant funds to purchase property or construct facilities, or to purchase equipment. Grant proposals are due October 15, 2012. For more information visit http://www.rurdev.usda.gov/BCP_VAPG.html.



PURDUE HORTICULTURE & LA OFFERS JOB POSTING SITE - (*Mike Dana and Robin Tribbett*) - Best wishes from Purdue Horticulture & Landscape Architecture. We hope you are having a productive, lucrative, interesting and challenging year. We are about to begin our 2012-13 academic cycle and we wanted to be sure you were aware that we provide an employment opportunity posting site to help you access Purdue students and alums for potential employment. You are invited to review it at: <https://ag.purdue.edu/hla/Hort/Pages/hlacareeropportunities.aspx>

If you are trying to hire a Purdue-educated horticulture person, this is a terrific way to communicate with them. So, if you have a permanent position or an internship to fill, please send your announcement to us so we can help in your search. Send it to: hlacareers@purdue.edu. All for now. Please keep in touch. Mike and Robin.



CANTALOUPE FOOD SAFETY EDUCATION ADVISORY GROUP - (*Liz Maynard*) - Purdue Extension is working to address food safety education needs specifically related to cantaloupe. Input from cantaloupe growers around the state and from various sizes and kinds of cantaloupe farms is important. Growers interested in providing input to the ad-hoc Cantaloupe Food Safety Education Advisory Group may contact Liz Maynard at 219-531-4200 ext. 4206 or emaynard@purdue.edu. The first conference call of the group is scheduled for Tuesday, September 18, 2012, 12:00 to 1:30 p.m. Eastern Time. During the call we will discuss needs for education, ideas for how to meet those needs, and what format will work best. We will use what we learn from the discussion to plan programs for the coming winter and spring, and beyond.



UPCOMING EVENTS

WEBINAR: USDA'S GOOD AGRICULTURAL PRACTICES & GOOD HANDLING PRACTICES (GAP&GHP) PROGRAM & THE PRODUCE GAPs HARMONIZED STANDARD. Thursday, September 20, 2012 2:00 to 3:00 pm. This webinar will introduce you to USDA's GAP&GHP audit program. The session will include a practical discussion of the various elements of an audit, including: verification of water testing, field sanitation practices, and traceability and recall procedures. We also will discuss the Produce GAPs Harmonized Food Safety audit. The webinar will conclude with a live, interactive questions and answer session. Registration is required, and space is limited. Find a link to registration at <http://bit.ly/MZsbbb> For more information, contact Christopher.Purdy@ams.usda.gov, 202-720-3209.

WEBINAR: TOP FAQs ABOUT PRODUCE WASH WATER MANAGEMENT FOR SMALL-SCALE AND DIRECT MARKET FARMS. Friday, September 21, 2012 1:00 p.m. to 2:15 p.m.

EDT. Sponsored by the Produce Marketing Association.

Recent recalls and outbreaks involving fresh produce, and evolving risk management expectations at all farming and marketing scales, are driving attention to water quality management during pre-shipment washing and cooling. This webinar will focus on the most common Frequently Asked Questions from small-scale and direct marketing farm operations seeking to install or improve their wash system. Participants will hear "plain-language" science-based responses to these FAQs, as well as peer-to-peer experiences of growers working through the challenges of designing and managing a wash system that fits their resources and meets their food safety goals. Following brief informational presentations a question and answer session will provide the opportunity to further explore system management and monitoring options and focus on key needs in this important aspect of an overall farm safety plan. Speaker: Trevor V. Suslow, Ph.D., University of California, Davis. Moderator: Robert Whitaker, Produce Marketing Association. Register at <http://bit.ly/OdEkf1>

Southwest Indiana Melon and Vegetable Growers Association Meeting. Thursday, December 6, 2012, 6:00 p.m. Southwest Purdue Agricultural Center, 4369 N. Purdue Rd., Vincennes, IN. The meeting will start with dinner, which is free with your paid SWIMVGA membership. Nonmembers may join at the door.

Members will receive a postcard in the mail in November reminding them to RSVP. For more information contact Dan Egel at 812-886-0198 or egel@purdue.edu.

ILLIANA VEGETABLE GROWERS SYMPOSIUM. Thursday, January 3, 2013. Teibel's Restaurant, Schererville, IN. Program will be available in early December and posted at <https://www2.ag.purdue.edu/hla/fruitveg/Pages/Events.aspx>. Contact: Liz Maynard at 219-531-4200 ext. 4206 or emaynard@purdue.edu.

Indiana Horticultural Congress. January 22 – 24, 2013. Wyndham Indianapolis West, Indianapolis, IN. www.inhortgress.org. Register online at <http://www.regonline.com/Register/Checkin.aspx?EventID=1127338>. Contact: Tammy Goodale at 765-494-1296 or tgoodale@purdue.edu.



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