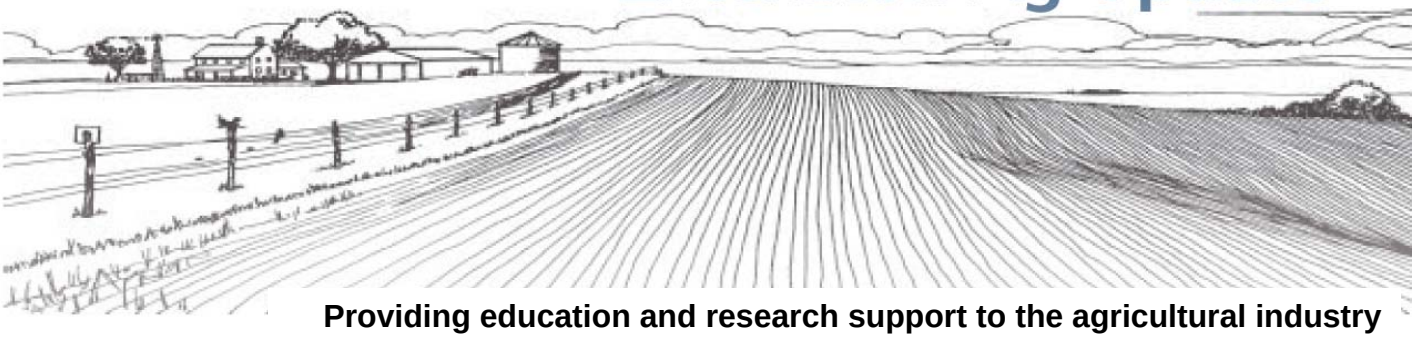
Extension Ag Update



**Providing education and research support to the agricultural industry**
**March / April 2009**

## Welcome to Dr. Vince Davis, Soybean Extension Specialist

The newest member of our Extension team is Dr. Vince Davis. You can learn more about Vince in the paragraphs that follow, as well as at his Crop Sciences Web site (www.cropsci.illinois.edu/faculty/davisv).

Hello, everyone--my name is Vince Davis, and I am a new soybean cropping systems and extension specialist at the University of Illinois. I'd like to let you know a bit about my background and what I hope to accomplish during the coming months and years.

I was born in Galesburg, Illinois, and grew up in rural Knox County. I developed a love for agriculture on my grandparents' diversified corn, soybean, and farrow-to-finish swine farm. I was an active member in 4-H and FFA. I earned an AAS in agribusiness from Black Hawk College East Campus in 1997, a BS in agronomy from Western Illinois University in 2003, and an MS (2006) and PhD (2009) in weed science from Purdue University.

I have been involved with applied agricultural field research in some capacity for the last 13 years. I have had various part-time, internship, and personal consulting research experiences for Monsanto working in Illinois, Iowa, and Puerto Rico. I also conducted corn hybrid development and evaluation work throughout Illinois and Iowa as a research technician for Wyffels Hybrids in Geneseo, Illinois, for four years. While I studied at WIU, I conducted various research projects at the university agronomy farm with Dr. Win Phippen and Dr. Gordon Roskamp. My graduate research at Purdue University investigated biological, ecological, and crop management aspects regarding the evolution of glyphosate resistance in horseweed, aka marestail. I studied under the direction of Dr. Bill Johnson, and I also managed Dr. Johnson's herbicide evaluation program throughout Indiana for half of my time there. I have been a member of the tri-societies (ASA-CSSA-SSSA) and the north-central and national weed science societies since 2002.

I've been very fortunate to have experienced such rich opportunities thus far in life. As you can imagine, many of these experiences have involved soybean production. However, I am still quite new as a "specialist" and I have a lot to learn. I will conduct limited field research this year testing potential impacts of future biotechnologies and management-factor effects on soybean yield. However, my primary objective this year is to learn as much as I can about the current trends and challenges facing Illinois soybean producers across the state. If you are surveyed about your attitudes and/or

challenges regarding soybean production in the coming year, please complete the survey the best you can. I plan to travel throughout the state and meet as many producers and industry stakeholders as possible. I am social and don't bite (often, anyway), so feel free to introduce yourself if you see me at a field day or meeting. If I can be of any assistance to you, you can contact me in the University of Illinois Department of Crop Sciences at 217-244-7497 or by e-mail at davisv@illinois.edu. I look forward to serving Illinois agriculture for years to come.--*Vince M. Davis*

## ***RESEARCH RESULTS***

### Study suggests link between agricultural chemicals and frog decline

*Jeff Mulhollem, 814-863-2719, Chuck Gill, 814-863-2713, Pennsylvania State University*

Around the world, amphibian populations are in decline, and scientists have not been able to figure out why. Now a study of leopard frogs in Pennsylvania has identified a possible culprit, and the ramifications are troubling, according to a Penn State ecologist. Research conducted primarily at Penn State's Russell E. Larson Agricultural Research Center at Rock Springs in the summer of 2007 -- described in a recently published article in the journal Nature -- suggests that chemical pollution can increase often-deadly trematode (parasitic flatworm) infections in a declining amphibian species.

"Like canaries used to gauge the safety of air in coal mines, amphibians are thought to be the 'canaries' in our freshwater environments, and reductions in their health can warn that subsequent species declines might be in store," says Hunter Carrick, associate professor of aquatic ecology in Penn State's College of Agricultural Sciences, who was one of the lead investigators in the study. "The scientific findings point to worrisome synergisms between two commonly used agro-chemicals that, when combined, can produce a lethal effect to frog populations at concentrations that are often observed in wetland ecosystems."

The study looked at atrazine, a widely used herbicide, and phosphate, a primary ingredient in fertilizers. "When combined, they accounted for 74 percent of the variation in larval trematode abundance in the frogs," says Carrick. These agrochemicals increase trematode infections by augmenting snail intermediate hosts (phosphorus) -- the source of trematodes that infect amphibians -- and suppressing amphibian immune responses (atrazine), explains Jason Rohr, assistant professor of integrative biology at the University of South Florida, who was the principal investigator in the research. Rohr was a postdoctoral fellow in Penn State's College of Agricultural Sciences during much of the project, which was funded by grants from the National Science Foundation, the U.S. Department of Agriculture and the Environmental Protection Agency.

According to Rohr, identifying the main risk factors and predictors for disease in amphibians is important. The study showed that atrazine and phosphate concentrations in wetlands they investigated were the best of more than 240 plausible predictors of trematode abundance in frogs. In a manipulative experiment conducted with 300-gallon tanks outdoors at Penn State's Larson Agricultural Research Center, Rohr and colleagues verified that atrazine and phosphate increased snail abundance, caused amphibian immuno-suppression and elevated amphibian trematode loads.

"At concentrations commonly occurring in freshwater ecosystems, atrazine and phosphate can be drivers of amphibian trematode infections, raising concerns about the

role of these chemicals in amphibian declines," concludes Rohr. "Reducing atrazine and phosphate inputs to wetlands might remediate these often-debilitating amphibian trematode infections." Atrazine and phosphate might not be the only chemicals affecting disease risk, notes Carrick. "Many chemicals can be immuno-suppressive, and standard toxicity tests used to register chemicals in the United States and Europe are conducted on isolated individual organisms, often ignoring interactions with other species, such as their parasites," he says. "Thus, our findings are likely the tip of the iceberg for pollution-induced disease emergence in both humans and wildlife."

Leopard frogs are a species of concern in Pennsylvania because of the marked decline in their population, Carrick points out. Scientists had been unable to explain their shrinking numbers, suspecting growth in predator populations, habitat degradation or climate change. "Now we have shown that these chemicals combine to increase infections in amphibians, and this is a plausible explanation for their decline," he says.

"The scope of this research is unique," explains Carrick. "We used 72 cattle tanks to create experimental wetland environments for the frogs, and we administered 18 different chemical treatments using off-the-shelf pesticides -- four replicate tanks each. They were surrogates for small ponds, and we seeded each with a food web representative of those that naturally occur in wetlands here in the mid-Atlantic region."

The study results should be an eye-opener for society, Carrick contends, because atrazine and phosphate are common, widely used ingredients in off-the-shelf pesticides and fertilizers, respectively. And phosphorus can be prevalent in animal and human waste. "We need to be asking, are we are putting things into the environment that work together to make big ecological differences?" he says. "Chemicals in nonlethal doses may not be dangerous alone, but we could be underestimating the threat that common compounds pose when combined."

## ***RESOURCES TO CONSIDER***

Publications Plus –*University of Illinois Agricultural and Horticultural Publications*
*Call 1-800-345-6087 or order on the web www.PublicationsPlus.uiuc.edu*
It's a one-stop shop for a current catalog of research-based information (Mastercard and VISA accepted)

**Anhydrous Ammonia Safety Video** (12 minutes)
http://www.agr.state.il.us/newsrels/r0327091.html
Because of the potentially hazardous nature of anhydrous ammonia, the Illinois Fertilizer and Chemical Association (IFCA) and Illinois Department of Agriculture (IDOA) have produced a 12-minute video outlining the proper safety procedures that famers should take each and every time they handle the product. The video highlights the most common safety errors that can lead to an anhydrous ammonia accident or release and is intended to supplement the training that the IFCA provides each year to over 1,000 commercial ag retail employees who handle ammonia at retail facilities. The Fertilizer Research & Education Council (FREC) paid for the video with proceeds from a 12.5 cent fee on each ton of agricultural fertilizer sold in Illinois. FREC's purpose is to fund projects that improve fertilizer efficiency as well as promote proper use of fertilizers. "While preparing for spring planting, I encourage farmers to review proper ammonia

handling and safety procedures," Illinois Agriculture Director Tom Jennings said. "Thanks to FREC and the Fertilizer and Chemical Association, all it takes is 12 minutes, which is a small investment of time to prevent potentially costly errors."

The high-resolution video can be accessed at the IFCA website at www.ifca.com It also is available free of charge if other organizations would like to embed it on their websites. For more information, contact the IFCA at (309) 827-2774.

**New Ag Network List serve**

The purpose of the mail list is to provide a means for easy communication among farmers, educators, researchers, and others involved in organic and sustainable farming in the Great Lakes Region. Once you join the list, you may send and receive messages, and view the message archive.

To join the mail list, fill out the online form at:
<https://lists.purdue.edu/mailman/listinfo/new-ag-network>

Or, join the list by sending an email. Send a message containing the single word 'subscribe' (without quotes) to: new-ag-network-request at lists.purdue.edu

Once you sign-up, you will receive an email from new-ag-network-request at lists.purdue.edu asking you to confirm your sign-up by replying to the email. You will know you have successfully confirmed and joined the list when you receive a welcome message.

**Frost Seeding Red Clover in Winter Wheat**

http://ipcm.wisc.edu/LinkClick.aspx?fileticket=1VfUX6zy43A%3D&tabid=114&mid=669
If you plant winter wheat, you have an opportunity to "grow" your own nitrogen (N) to help manage input costs and accrue soil quality benefits. The age-old practice of green manuring, especially in conjunction with wheat, can produce significant creditable N for corn the next year. It also protects the soil and may be eligible for cost share under local and Federal conservation programs.

**The Hiring Process: Recruiting, Interviewing and Selecting the Best Employees**

http://www.btny.purdue.edu/Pubs/PPP/PPP-69.pdf

*Fred Whitford, Coordinator, Purdue Pesticide Programs, Mark Hanna, Senior Corporate Counsel, The Eastridge Group of Staffing Companies, Cindy Gerber, Human Resources Manager, JFNew , Mark Wade, Manager of Human Resources, Evans Properties, Inc. , Arlene Blessing, Developmental Editor and Designer, Purdue Pesticide Programs*
"This publication provides you with the tools you need to increase your efficiency in hiring and retaining employees. We will discuss writing a detailed job description, provide a guide for developing an employment application form tailored to the pesticide application industry, and list essential interview questions. Taking the steps outlined here will help increase your odds of attracting, hiring, and retaining good employees; and it will reduce the likelihood of low morale, low productivity, and staff turnover." To order a copy contact: Ag Communication, Media Distribution Center, Purdue University, 231 S. University Street, West Lafayette, IN 47907-2094, 1-888-398-4636

## ***INTERNET RESOURCES***

**eXtension: Organic Production**
http://www.extension.org/organic%20production
The eXtension website has added a new resource area on Organic Agriculture to its extensive online information offerings. This resource, created by the eOrganic Community of Practice, is designed for farmers, ranchers, agricultural professionals, certifiers, researchers and educators seeking reliable information on organic agriculture, published research results, farmer experiences, and certification. Current content is focused on general organic agriculture, dairy production, and vegetable production. The content is collaboratively authored and reviewed by a community of University researchers and Extension personnel, agricultural professionals, farmers, and certifiers with experience and expertise in organic agriculture. Site features include a calendar, news, expert answers to queries, and published resources on specific topics.

**Nutrient Deficiencies and Application Injuries in Field Crops**
***http://www.extension.iastate.edu/Publications/IPM42.pdf***
*John Sawyer, Department of Agronomy, Iowa State University*
Numerous pictures and descriptions of deficiency symptoms and fertilizer applications injuries on corn, soybean, alfalfa and wheat.

**Alberta Irrigation Energy Calculator**
http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/irr12448
The Alberta Irrigation Energy Calculator was developed to enable irrigation producers to estimate and/or compare the cost of energy for irrigation operations. Comparisons can be made between electricity, natural gas, diesel and propane energy sources. User input is required for the crop grown, type of irrigation system, physical setup of irrigation system and the typical seasonal operation. Comparisons between energy sources is calculated and displayed in various forms, including: dollars per season, dollars per acre, dollars per inch of water applied and more.

**Remote Pasture Water Systems for Livestock**
http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/agdex11857#Options
No matter the size of a livestock watering system, proper planning and design play an important role in its effectiveness. Good installation cannot compensate for an inadequate water source. Good quality water and sufficient quantity are both vital to livestock. Dugout and off-stream livestock watering systems are an important tool in protecting water sources, riparian areas and livestock.

**The Corn and Climate Report**
http://www.gpisd.net/
The Great Plains Institute and the National Oceanic and Atmospheric Administration, Iowa State University, and the North Central Bioeconomy Consortium. The report is a collection of essays transcribed from presentations given by climatologists at the 2008 ISU Biobased Industry Outlook Conference's Corn and Climate Post Conference Workshop. These essays combine basic climate science that underscores the reality of human-caused global warming with practical advice that farmers can use to help mitigate their greenhouse gas emissions, prepare for a cap and trade system, and adapt to the greenhouse gases already in the atmosphere.

**Extending Grazing and Reducing Stored Feed Needs**
http://www.uky.edu/Ag/Forage/Extending%20Grazing%20And%20Reducing%20Stored%20Feed%20Needs.pdf

*Don Ball, Auburn University; Ed Ballard, retired from the University of Illinois; Mark Kennedy, Natural Resources Conservation Service in Missouri; Garry Lacefield, University of Kentucky, and Dan Undersander, University of Wisconsin*

While the best techniques to reduce stored feed needs vary with geographic region, type of farming operation, and other factors, this publication outlines strategies that can be used to extend grazing and to increase profit.

## ***EDUCATIONAL OPPORTUNITIES***

**University of Illinois Agriculture Events**
New programs are being confirmed every day. Keep in touch with your Extension Office for programs addressing the topics that interest you and are offered in your County. To find your counties website go to: http://web.extension.uiuc.edu/state/findoffice.html

**Statewide University of Illinois Extension Calendar Website**
http://web.extension.uiuc.edu/state/calendar.cfm
To search for programs throughout the state, check out Extension's searchable calendar. Search by location, topic or date to find a program of you interest.

## ***AG FACTS***

USDA 2007 Census of Agriculture - The number of farms in the U.S. has grown 4 percent and the operators of those farms have become more diverse in the past five years, according to results of the 2007 Census of Agriculture released today by the USDA.

*SOURCE: USDA National Agriculture Statistics Service (NASS)*
http://www.agcensus.usda.gov/Publications/2007/index.asp

## About the Ag Update Newsletter

The Ag Update Newsletter is a bi-monthly newsletter providing education and research support to the agricultural industry. Current and past issues may be found at the following website http://www.urbanext.illinois.edu/agupdate/index.html

Contact your county Extension office and request to be put on their agricultural mailing list to receive the local agricultural newsletter and notices about upcoming agricultural events near you. To find your counties location, phone and website go to: http://web.extension.uiuc.edu/state/findoffice.html

For further information about this newsletter, please contact:

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