

Look What's Out There

in

Integrated Pest Management

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<http://www.wvu.edu/~agexten>

Deregulation of Swede Midge (*Contarinia nasturtii*) as a Quarantine Pest – United States

Animal and Plant Health Inspection Service (APHIS) is removing regulations for and changing the status of swede midge, *Contarinia nasturtii* (Kieffer), from a reportable/actionable pest to a non-reportable/non-actionable pest effective April 1, 2009. It is unlikely that swede midge can be eradicated from the North American continent. Regulating movement of host material using compliance agreements or other regulatory measures is impractical because the pest is difficult to detect until damage is evident and would create undue burden on the regulated industries. Pest management will be required to slow the natural spread of swede midge to all areas and regions that predictions suggest it may spread. Good management practices minimize the impact of swede midge damage on *Brassica* crops. These include: crop rotation so that *Brassica* crops are grown one year out of four for a given field, removal of end-of-season crop residues so that populations cannot build up on lateral buds and suckers, cleaning of equipment prior to moving out of infested areas so no soil or crop residue is moved, removal of weedy *Brassica* hosts in fields especially in fence rows and protected areas, use of crop-protective netting with a mesh size that prevents oviposition by females midges, insecticide management timed to kill ovipositing female midges in areas of potential population

buildup, and systems approaches for crop harvest that eliminate swede midge from the packing houses along with risk of spreading the pest to non-infested regions. In September 2004, the first detection of swede midge occurred in the United States in Niagara County, New York. Subsequent detection efforts for swede midge in New York have resulted in additional finds every year from 2004 to 2007. Swede midge was subsequently positively confirmed in portions of Connecticut, New York, and Vermont. Under IPPC standards, *Contarinia nasturtii* is considered to be a pest that is **present, but managed** in the United States.

(APHIS March 6, 2009)

Discovery May Solve Devastating Rust Fungus Issue for Bean Growers

The detection of 3,000 proteins produced in plants of common beans could help breeders develop resistance against the bean rust fungus, *Uromyces appendiculatus*, a major concern for domestic dry bean and snap bean growers. This rust is prevalent throughout the continental United States, according to research by Agricultural Research Service (ARS) scientists and cooperators. Plant pathologist Bret Cooper, at the ARS Soybean Genomics and Improvement Laboratory (SGIL) in Beltsville, Md., leads the research, which could help scientists determine which proteins produced in bean plants are involved in providing resistance to rust fungus.

The symptoms of this rust initially appear as small white flecks on the upper leaf surface, then develop into reddish-brown pustules (small eruptions on the leaf surface). When severe infections occur, the leaves curl upward, dry, turn brown, and drop prematurely, and pod set, pod fill and seed size are reduced. To make matters worse, in 2004, a separate rust fungus that causes Asian soybean rust—which infects soybeans, but not common beans—arrived in the United States. Domestic soybean cultivars have little resistance to soybean rust, and now America's second largest crop is severely threatened by this new disease. It is hoped that the discovery of the dry bean rust disease resistance proteins will help identify similar proteins in soybeans and advance soybean breeding efforts as well. Until recently, disease resistance genes and the proteins they produce were studied one at a time, but Cooper and his team used a process called high-throughput mass spectrometry to identify, at a much faster rate, proteins by their unique molecular mass. With this technology, they evaluated more than 3,000 rust resistance proteins in bean over the course of two-and-a-half years, and measured how protein levels change in plants, and which ones provide disease resistance. This study revealed more than 1,500 “molecular battles”—interactions between the fungus and the plant—and led to the identification of a potential set of proteins thought to be master regulators of a strong resistance response in the plant. This new information may help breeders improve bean varieties that are currently threatened by rust. The scientific team also includes molecular biologist Mark Tucker, plant physiologist Kimberly Campbell, and bean breeder Talo Pastor-Corrales at SGIL, as well as molecular biologist Brian Scheffler at the Mid South Area Genomics Laboratory in Stoneville, Miss. Other collaborators include scientists at Johns Hopkins University in Baltimore and the University of Missouri in Columbia. The research was published recently in *Molecular and Cellular Proteomics*. ARS is the principal intramural scientific research agency in the U.S. Department of Agriculture.

(By Alfredo Flores, Agricultural Research Service February 27, 2009)

Longer Marketing Time Increases the Risk of Naturalization by Horticultural Plants

Plants that are mainstays of horticulture also carry lots of risk, a new Agricultural Research Service (ARS) study has found. Naturalization rates of non-native horticultural plants increase the longer a plant is grown and sold. Non-native horticultural plants, including most edible and landscape plants, bring enormous benefit to the United States, but they are also a source of invasive plants that harm our natural environments. Naturalized horticultural plants are non-native plants that escape gardens and farms and are able to survive independent of cultivation. Invasive plants are naturalized species that invade natural areas, displace native plants and alter ecosystem functions. Entomologist Bob Pemberton, with the ARS Invasive Plant Research Laboratory in Ft. Lauderdale, Fla., and his colleague Hong Liu, formerly with the University of Florida, analyzed a unique set of data from the detailed sales catalogs of an early Florida plant nursery to detect naturalization patterns of horticultural plants in the state. The data, which starts from the year 1887, accounts for more than 40 years of plant sales and examines more than 1,900 horticultural plants. Unlike previous studies on the invasiveness of horticultural plants, the research team found that the marketing period—the number of years a plant was sold—has profound influence on naturalization and invasion. Seventy percent of plants sold in Florida for 30 years or longer naturalized, according to Pemberton, indicating that length of time sold is the most important factor contributing to naturalization. Non-native plants will continue to naturalize and invade as long as they are sold. Therefore, according to Pemberton, risk assessments need to be developed for screening non-native horticultural plants to identify non-invasive forms and less-invasive alternatives. Details of this study were recently published in the scientific journal *Ecology*. ARS

is the principal intramural scientific research agency of the U.S. Department of Agriculture.

(By Stephanie Yao, Agricultural Research Service February 24, 2009)

Plant pathologists work toward improved soybean disease resistance

Each year, soybean producers spend countless hours preventing and combating diseases that annually result in a 14 percent yield loss to the crop in the United States. Trying to help farmers in their efforts, plant pathologists in the University of Kentucky College of Agriculture are studying ways to strengthen soybean disease resistance. By turning a foe into a friend, a UK research group led by plant pathologist Said Ghabrial has developed a bean pod mottle virus vector that identifies potential beneficial proteins in soybeans. They believe it could play a big role in increased disease resistance to important plant pathogens. The researchers continue to explore the vector's possibilities through grants funded by the Kentucky Soybean Board, the United Soybean Board and the North Central Soybean Research Program. "We are targeting a large number of disease pathogens," Ghabrial said. "With the vector there's no limit to which genes we can test, and we can quickly get results." While the vector's name may concern some, only a mild strain of the bean pod mottle virus is used in these studies. Therefore, only mild symptoms are produced, and the virus causes little or no apparent damage to the crop. "At the stage of identifying proteins of interest, there should not be any concern of virus infection among the growers," Ghabrial said. The vector works by quickly moving through the plant. As it goes through the plant, it produces proteins of interest that may help to enhance the plant's resistance to particular diseases. Plant virus-based vectors, like the bean pod mottle virus vector, have several benefits. Since they move quickly through the plant and generate high levels of potential beneficial proteins, they can produce results faster than traditional methods. This means less time and money spent by researchers in identifying proteins. With the vector, UK

researchers will conduct studies to determine which candidate proteins are critical to helping the plant stay healthy and fight diseases and which hinder its ability. Once researchers identify the proteins to target, they can look for ways to increase the valuable ones in a cost-effective manner. In future research, Ghabrial hopes to develop new varieties of soybeans that are resistant to troublesome diseases, such as soybean rust and soybean cyst nematode. "We hope to use the bean pod mottle virus vector to screen proteins that have antifungal and anti-nematode characteristics," he said. "We may be able to over express those proteins to defend against the diseases." For more information contact Said Ghabrial: Phone: 859-257-5969 <http://www.uky.edu/Ag/IPM/ipm.htm>

(By Katie Pratt, Southern IPM Center, March, 2009)

Petition to Revoke all Tolerances and Cancel all Registrations for the Pesticide 2, 4-Dichlorophenoxyacetic Acid (2, 4-D); Docket Number: EPAHQOPP20080877

(Beyond Pesticides, February 23, 2009) You have the opportunity to comment on the petition to revoke all tolerances and cancel all registrations for the pesticide 2, 4-dichlorophenoxyacetic acid (2,4-D), filed November 6, 2008 by the Natural Resources Defense Council (NRDC). Beyond Pesticides would like to formally support the petition submitted by NRDC requesting the cancellation of all 2, 4-D product registrations and the revocation of all tolerances. Beyond Pesticides, and the 41 groups that commented on the agency's Reregistration Eligibility Decision (RED) in 2004, believe that the environmental and human health risks associated with exposures to 2,4-D far outweigh any agricultural or economic benefit that its continued registration may provide, especially since more effective and least toxic alternatives are currently available. Even though the EPA concluded in its RED, published in 2005, that 2,4-D was eligible for reregistration and that levels of concern were not exceeded, significant risks to human health and exposure to 2, 4-D and

its products continue to plague homeowners, their children and pets. These concerns are significant enough to warrant a finding of “unreasonable risks to human health and the environment,” and the cancellation of 2,4-D’s registration and tolerances. For information contact: Office of Pesticide Programs (OPP) Regulatory Public Docket (7502P), Environmental Protection Agency, 1200 Pennsylvania Ave., NW., Washington, DC 20460-0001

Researchers Say New Class of Fungicide Is Safer

(*Beyond Pesticides*, March 25, 2009) Canadian researchers have discovered a new class of fungicides that can bolster a plant’s natural defenses against fungal attack. Unlike conventional fungicides, researchers say these new anti fungal agents, called paldoxins and based on natural plant chemicals, may prove to be safer, more selective and less likely to fall victim to pests becoming resistant. In a report presented at the 237th National Meeting of the American Chemical Society on March 23 in Salt Lake City, Utah, researchers at the University of Saskatchewan, Canada, describe their development of six synthetic versions of the new anti-fungal agent, which works to block fungal enzymes that overwhelm plants’ natural defenses. Plant chemicals, called phytoalexins, are responsible for the defense mechanism exhibited by many plants to kill disease-causing fungi. However, many fungi release enzymes that detoxify, or destroy the phytoalexin, leaving the plant vulnerable to the fungi’s attack. The researchers took advantage of this counterattack strategy by developing anti-fungal agents to block the fungi’s destruction of phytoalexins. Paldoxins are short for phytoalexin detoxification inhibitors. Lead researcher, Soledade Pedras, PhD, and her colleagues discovered these agents after screening broccoli, cauliflower, mustard greens and other plants in the so-called “crucifer family” of leafy vegetables. They discovered the most powerful phytoalexin in a flowering plant called camelina or “false flax.” In laboratory tests, camelina’s phytoalexins blocked

detoxifying enzymes produced by a wide variety of fungi. “We found that many fungi couldn’t degrade this chemical,” says Dr. Pedras. “So that’s what we used to design synthetic versions that were even stronger than the original.” Six different synthetic versions of the paldoxins have been created. The synthetic paldoxins have been successful in laboratory tests on several crucifer plants, including rapeseed plants and mustard greens. Field tests have been planned for other important crop varieties. In the future, a similar strategy will be applied to grasses such as wheat, rye, and oat. These grassy plants tend to be more difficult to protect with fungicides than broccoli and related veggies, the researchers say. These new fungicides could possibly replace toxic conventional fungicides without the threat of resistance, loss of beneficial organisms or other adverse environmental impacts. Since they work in a unique way, disrupting a key chemical signaling pathway that fungi use to breakdown a plant’s normal defenses, these new materials are more selective, stopping fungi that cause plant diseases without harming other organisms. “Our products only attack the fungus when it’s misbehaving or attacking the plant. And for that reason, they’re much safer,” said Dr. Pedras. A number of different fungicides have been shown to cause cases of occupational asthma among workers, including the fungicides chlorothalonil, fluazinam, and captafol. Researchers found that these fungicides cause hypersensitivity responses in workers, causing their airways to be highly sensitive and reactive to the inhaled fungicides resulting in wheezing and breathlessness. Others, like ziram and maneb have been linked to Parkinson’s disease and non-Hodgkin’s lymphoma.

(*Source: Science Daily*)

EPA Releases Database on Environmental Chemicals, Exposes Data Gaps

(*Beyond Pesticides*, March 18, 2009) The U.S. Environmental Protection Agency (EPA) has released a new online database that collects information on more than 500,000 synthetic chemicals from over 200 public sources. The

Aggregated Computational Toxicology Resource (ACToR) database provides access to hundreds of data sources in one place, enabling easy access for environmental researchers, scientific journalists and the public. However, more than half of these chemicals do not have any detailed testing data. ACToR, which is actually a collection of databases, was developed to support the ToxCast program of the EPA National Center for Computational Toxicology (NCCT). ToxCast was designed to develop faster methods to evaluate the potential toxicity for thousands of chemicals using computer modeling and advanced molecular biology techniques. More than 200 sources of publicly available data on environmental chemicals have been brought together on ACToR and made searchable by chemical name and other identifiers, and by chemical structure. Data includes chemical structure, physico-chemical values, *in vitro* assay data and *in vivo* toxicology data. Chemicals include, but are not limited to, high and medium production volume industrial chemicals, pesticides (active and inert ingredients), and potential ground and drinking water contaminants. Sources of information include EPA, U.S. Food and Drug Administration, U.S. National Institutes of Health, U.S. Centers for Disease Control and other federal agencies; state databases, Health and Environment Canada, the European Union, the World Health Organization and other international groups; and non-governmental organizations, private companies and universities. ACToR was used to analyze toxicity information on almost 10,000 chemicals regulated by EPA and identify data gaps to be addressed by ToxCast, to help EPA prioritize future testing of chemicals. While acute toxicity data is available for 59 percent of the surveyed chemicals, detailed testing information is much more limited. Only 26 percent of the 10,000 chemicals have carcinogenicity testing data, 29 percent have developmental toxicity testing data, and 11 percent have complete reproductive toxicity test results. The lack of toxicological data on more than half of the 10,000 chemicals overseen by the EPA means that there are numerous data gaps and thus, a lack of adequate safety tests which continues to undermine the

integrity of EPA's risk assessment process. With little to no data on chemicals that are allowed to enter the consumer market place, the agency is failing to protect human and environmental health. A recent GAO report found that the EPA does not have sufficient chemical assessment information to determine whether it should establish controls to limit public exposure to many chemicals that may pose substantial health risks. The report went on to state that EPA has not responded to recommendations made to reduce agency shortcomings and has "not sufficiently improved the scientific information available to support critical decisions regarding whether and how to protect human health from toxic chemicals."

(EPA February 2009)

Funding Opportunity

- Pesticide Regulatory Education Program (PREP). The Office of Pesticide Programs (OPP), in coordination with the Office of Enforcement and Compliance Assurance (OECA)/Office of Compliance (OC), is soliciting applications to implement the Pesticide Regulatory Education Program (PREP) from eligible States, federally recognized Indian tribes, Alaska Native Villages, Inter-tribal consortia and State and tribal institutions for fiscal year (FY) 2010 through 2014. Under this program OPP/OC will provide financial assistance on an annual basis to carry out a pesticide education training program. This pesticide-related training is intended for senior management, senior scientists, and supervisors and managers of pesticide regulatory programs from state/tribes and U.S. territories working under FIFRA Cooperative Agreements with EPA throughout the U.S. The estimated amount of funding for the cooperative agreement for the five year period is \$2,615,000. For any courses held at EPA offices, there will be an additional \$10,000 in-kind contribution for the use of EPA conference rooms and AV equipment for the five year period. Approximately \$515,000 is

expected to be available in FY2010. At the conclusion of the first year period of performance, incremental funding of approximately \$525,000 may be made available for subsequent years depending on funding availability, satisfactory performance and other applicable considerations allowing the project to continue for a total of five years. Deadline: April 20, 2009. For more information visit: http://northeastipm.org/ipm_funding_popover.cfm?id=1356

- Pesticide Registration Improvement Renewal Act (PRIA 2). Partnership Grants Office of Pesticide Programs (OPP) is soliciting initial proposals to advance partnerships that focus on pesticide risk management issues with a special focus on integrated pest management (IPM) approaches. Awards are intended to support a diverse set of project types, including, but not limited to demonstrations, transfer of innovative IPM technologies, outreach, and education. This announcement provides qualification and application requirements to those interested in submitting initial proposals for fiscal year 2009. The total amount of funding available for award is expected to be \$1 million which is authorized by the Pesticide Registration Improvement Renewal Act and from the Science and Technology appropriation from the Office of the Science Advisor. The number of awards to be made under this announcement will depend on individual proposal costs, the availability of funds, and the quality of proposals received. This competition begins with a call for initial proposals from which candidates will be selected and offered an invitation to submit full applications. This announcement contains information on the format and content for the initial proposals as well as criteria for the evaluation of invited applications. The maximum funding level is \$250,000 per project. The project period of performance is limited to two years from the award date. Deadline: April 15, 2009 Links to the announcement are available at: <http://www.epa.gov/pesticides/grants/> <http://epa.gov/pesp/> Grants.gov posting is forthcoming

- OFRF Education and Outreach Grants. Organic Farming Research Foundation (OFRF) will fund the development of educational opportunities and materials that are: pertinent to organic agricultural production or marketing; and aimed at organic producers and/or those considering making the transition to organic certification. OFRF will also accept proposals to fund activities that promote information sharing among organic agricultural researchers and organic farmers and ranchers. Proposals are due May 15, 2009. Learn more at: http://ofrf.org/grants/apply_education&outreach.html
- Critical Issues: Emerging and New Plant and Animal Pests and Diseases. The program is designed to provide one-time seed funding to help initiate work requiring immediate attention until other longer-term resources can be secured to address the issue. CSREES will be soliciting proposals on an as-needed basis during the year to address specific new or emerging issues. **For this particular solicitation CSREES is requesting proposals that address specific aspects of the following issues:** Red bay ambrosia beetle and Laurel wilt in avocados, 1000 cankers disease in walnut, and Uganda (Ug99) strain of Wheat Stem Rust. Deadline: April 3, 2009. For more information visit: <http://www.csrees.usda.gov/fo/criticalissuesplanandanimalpestsanddiseases.cfm>
- Special Research Grants Program: Pest Management Alternatives Research Program (PMAP). The purpose of Pest Management Alternatives Program (PMAP) is to provide support for and encourage the development and implementation of integrated pest management (IPM) practices, tactics, and systems for specific pest problems while reducing human and environmental risks. This purpose addresses the broad goals outlined in the "National Roadmap for Integrated Pest Management," developed by federal and non-federal IPM experts, practitioners, and stakeholders in 2004. The successful management of pest problems in commercial production is facing severe challenges due to

regulatory changes, emergence of new pest problems, and the development of pest resistance to present management technologies. The greatest impact on current management technologies is in the production of specialty crops; however, other crops, including grain, forage and fiber, as well as animal health, are also being impacted by these changes.

Deadline: April 7, 2009. For more information visit:

<http://www.csrees.usda.gov/fo/pestmanagementalternatives.cfm>

- Agriculture and Food Research Initiative Competitive Grants (general program announcement). This is a Program Announcement (PA) for the Agriculture and Food Research Initiative (AFRI). AFRI combines elements of the former National Research Initiative (NRI) and Initiative for Future Agriculture and Food Systems (IFAFS) programs and is the new core competitive grant program for research, education, and extension. It is anticipated that the complete Request for Applications, which will contain the application submission instructions and be accompanied by required application forms, will be made available in early 2009 on the CSREES Web site and the Grants.gov Web site. This AFRI PA contains opportunities for support of research, education, and extension priorities. This PA is being released prior to the passage of the Fiscal Year (FY) 2009 Agricultural Appropriations Act. The release of this PA is to inform the applicant community of upcoming research, education, and extension opportunities through the AFRI program to fund issues critical to agriculture. The enactment of the FY 2009 Appropriations Act may impact the overall level of funding for the AFRI program. Hence, the Cooperative State Research, Education, and Extension Service (CSREES) reserves the right to amend, delete, or otherwise alter any programs. Depending on the FY 2009 Appropriations Act, CSREES may be issuing a supplemental RFA to address topics already identified in this PA. Deadline: ?????? Updated information about the AFRI program will be made available on the AFRI Web site:

<http://www.csrees.usda.gov/funding/afri/afri.html> and the CSREES funding

page <http://www.csrees.usda.gov/fo/funding.cfm>

- Arthropod and Nematode Biology and Management: Suborganismal Biology. The Suborganismal Biology element of the Arthropod and Nematode Biology and Management program supports hypothesis-driven research at the cellular and molecular levels to address the problem of managing arthropod and nematode pests and the Nation's over-dependence on harmful pesticide applications. Advances in the molecular genetics, physiology, biochemistry, and genomics of arthropods and nematodes are poised to provide novel solutions to these problems that threaten the Nation's food supply and natural resources. This program makes single function research awards. Deadline: April 1, 2009. For more information visit: <http://www.csrees.usda.gov/fo/arthropodnematodesuborganismalbiologyafri.cfm>
- Biology of Weedy and Invasive Species in Agroecosystems. It has been estimated that approximately 50,000 species of plants and animals have been introduced into the United States resulting in more than \$100 billion in losses and damage each year. Invasive species threaten biodiversity, habitat quality, and ecosystem function. It is estimated that invasive species have contributed to the decline of 42 percent of the endangered and threatened species in the United States. Non-indigenous weeds alone cost U.S. agriculture \$7-27 billion per year. Exotic, invasive species are a particularly prevalent feature of agroecosystems and a major threat to food and fiber production. Increased globalization and climate change will likely increase the introduction, spread, and impact of invasive species. Deadline: April 20, 2009. For more information visit: <http://www.csrees.usda.gov/fo/weedyandinvasivespeciesafri.cfm>

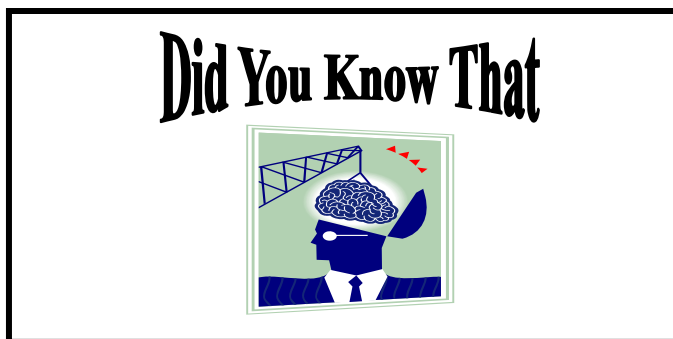
Don't Forget to Take Advantage of Online First Detector Training

The National Plant Diagnostic Network (NPDN) is pleased to announce that the Online First Detector Training modules are up and running and can be found at: <http://cbc.at.ufl.edu/>. The site allows anyone to participate in the First Detector Program. The course is composed of several modules, and includes topics such as:

- The NPDN Mission
- Agricultural Biosecurity
- Purpose of a First Detector
- Monitoring for Exotic Pests
- How to Submit a Suspicious Sample
- The Art and Science of Plant Pest Diagnostics
- And more....

Each module takes anywhere from 40 to 60 minutes and the course can be completed at your own pace. To get started, first register for the First Detector Training Workshops to get your user name and password.

The general goal of the program is to get the public involved in protecting our plant related industries and our natural plant resources from being impacted by exotic and potentially damaging plant pests be they insects, weeds or pathogens. Upon completion of the training, First Detectors receive a certificate of training completion. Trained First Detectors are also provided with the opportunity to receive the national NPDN First Detector newsletter as well as pest alerts via e-mail through the National First Detector registry. For more information, go to <http://cbc.at.ufl.edu/> or contact Dr. John Baniecki at: John.Baniecki@mail.wvu.edu.



No Action May be the Best Action

When planning pest management activities economics is an important, often the most important, factor to consider. As strange as it may seem not implementing management may not be the most cost effective decision. Pest populations fluctuate with numerous factors and may or may not exceed levels necessary to inflict damage beyond the economic injury level (EIL) that is acceptable for a given plant. When the EIL is surpassed more damage is being done to the host than can be tolerated to retrieve a desired profit and management may be needed. If the EIL is not approached then applying management may be more costly to the bottom line of profit than doing nothing at all. Of course, the EIL varies with crop and each grower must make an individual decision on where his/her priorities lie in reference to the EIL for a given crop.



The 27th National Pesticide Forum April 3-4, 2009

Century Center in Carrboro, NC
Call 202-543-5450 or register online at:
<http://www.beyondpesticides.org/forum/brochures/index.htm>

**5th National Small Farm Conference
September 15-17 Springfield, Illinois**

For information contact: Deborah Cavanaugh-Grant, Conference Chair Extension Specialist, Small Farm and Sustainable Agriculture University of Illinois Extension SARE Coordinator
P.O. Box 410
Greenview, IL 62642
217-968-5512
cvnghgrn@illinois.edu

**National School Plant Management
Association Conference**

April 6-8 Atlantic City, NJ

For information contact:

NSPMA, P.O. Box 8010, Lexington, KY 40533
Phone: 877-833-0610 or 859-296-1343 Fax: 859-296-1333

**Soil and Water Conservation Society 2009
Annual Conference**

July 11-15 Dearborn, MI

For information:

http://www.swcs.org/en/conferences/2009_annual_conference/program_committee/

Questions?

If you have any comments or questions regarding any of the material presented, please let us know by sending an e-mail to:

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