



CROPS, SOILS, AGRONOMY

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CSA NEWS

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SOILS

the
Good

the
Bad

and the
Beautiful

INSIDE:

2008–2009
Theses and
Dissertations



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SOILS: The good, the bad, and the beautiful. Plus, research shows contemporary evidence of soil carbon loss in the U.S. Corn Belt, groundwater seeps regulate stream nitrogen concentrations, and sensing corn for nitrogen fertilizer need makes sense.

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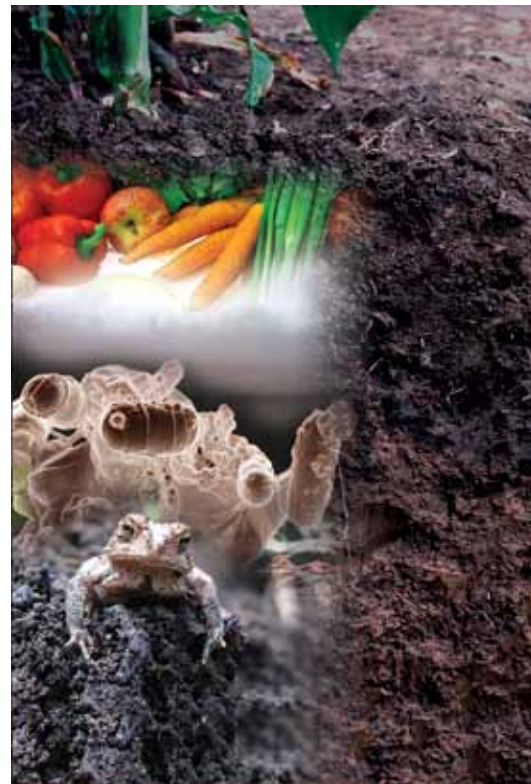
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COVER: Besides providing for the basic functions of food crop production and forestry, soils have yielded important antibiotics, serve as a living filter for water, and are a source of beneficial soil microbes that enhance plant growth for human consumption. Soils, however, do have a dark side. They are a source for indigenous pathogens and contribute to a variety of adverse health effects. During the 2009 Annual Meetings, Dr. Ian Pepper, from the University of Arizona, analyzed the good and bad aspects of soils. See story on page 4. COVER DESIGN: PAT SCULLION.



Background soils photo and *E. coli* photo courtesy of USDA.

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Mary Savin, chair of the 2007 ASA Education Task Force and current chair-elect of Division A-1, reviews some of the recent discussions taking place in science education today that could lead to enhancement of learning. See page 48. Photo by Scott Bauer (USDA-ARS).

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Sustainable Forest Education Program Seeks to Reach the Next Generation of Forest Stewards

The forces shaping private forest management in the U.S. have changed dramatically in recent years. For one, urban sprawl has increased substantially and is not expected to slow anytime soon. At the same time, up to half of the nation's private forests are expected to be transferred to a new generation of owners. As a result of sprawl and transfers, a sizeable amount of private forests have been converted for other non-forest uses while those that remain have frequently been broken into smaller parcels and sold or bequeathed to multiple individuals. Compounding the situation is the fact that harvesting on private forests in the U.S. has risen steadily and is expected to continue in the coming decades.

All of this makes for a challenging outreach situation. How can forest management educators reach a rapidly expanding base of younger and newer private stewards in a timely fashion? And how can advocates of sound, sustainable forest practices engage the next generation of owners and opinion leaders? Efforts are underway on many fronts to develop and test innovative methods for doing both. It was with this mind that members of the Forestry Committee at James Madison's Montpelier in Orange County, Virginia sought to contribute to national efforts by developing an outdoor sustainable forestry classroom. The goal was to leverage the historical appeal of the estate and build upon Madison's progressive land management vision as a way to reach new and important private forest stewardship audiences.

The 2,650-acre Montpelier estate is perhaps James Madison's most celebrated natural contribution. It houses more than 1,500 acres of forestland, 200 of which include a relatively undisturbed old-growth deciduous

forest designated by the U.S. Department of Interior as the James Madison Landmark Forest. A well-maintained trail system and a series of educational signs traverse the Landmark Forest and are important aspects of the Montpelier educational mission and experience.

To further Montpelier's outdoor educational capacity and work toward enhancing sustainable forest management awareness and outreach among new private forest stewardship audiences, Forestry Committee members and Montpelier staff identified a 28-acre section of second-growth forest abutting the Landmark Forest where sustainable forestry practices could be demonstrated. Targeted sustainable practices include timber stand improvement, mid-rotation thinning, invasive plant control, desirable species regeneration, stand rehabilitation, habitat management, and best management practices for water quality. These sustainably managed areas are to be serviced by an integrated trail and sign system, periodically monitored for changes in health and productivity, and made available for discretionary visitation and coordinated technical programs.

Michael C. Quinn, president of the Montpelier Foundation, promotes the initiative as an opportunity to "use Montpelier's remarkable natural resources to showcase innovative techniques of sustainable forestry that are in keeping with Madison's advanced ideas of conservation." Today, the outdoor classroom is nearly complete and offers an opportunity for exploring the nature of and potential for engaging new stewardship audiences. Research described in the 2009 issue of the *Journal of Natural Resources and Life Sciences Education* highlights the extent to which Montpelier's sustainable forest education program could reach younger owners of smaller, suburban parcels and the general public more broadly. The authors of the report used established guidelines to conduct a formative program evaluation as a way to look closely at potential visitor participation in outdoor sustainable forestry education at Montpelier.

The authors found that a sizeable number of key constituents are inclined to participate in outdoor forestry

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LEFT: Canopy opening in Montpelier's outdoor sustainable forestry classroom. MIDDLE: Montpelier trees flagged for crop tree release. RIGHT: Montpelier skid trail seeded with native grasses. Photo by Kevin Riedel.



Scholarships *(continued from page 46)*

of work leading to an M.S. or Ph.D. degree within any divisional areas of CSSA and who has outstanding potential for leadership. The scholarship is in the amount of \$2,500. Funds are made available by the ASF Mott Fund.

The **Francis and Evelyn Clark Soil Biology Scholarship** is awarded to a student enrolling in graduate study in soil biology, biochemistry, or microbial ecology. One \$1,000 scholarship is offered per year. Funds are made available through ASF.

2010 National Student Recognition Program

The National Student Recognition Program recognizes outstanding seniors in agronomy, crop, soil, and environmental sciences. Those eligible for the award must be seniors at a four-year institution or a second-year student at a two-year institution in 2010; belong to an active chapter of the Students of Agronomy, Soils, and Environmental Sciences (SASES); and be members of ASA, CSSA, and/or SSSA in 2010. Students are selected by their departments based on their scholarship, leadership activities, and personal qualifications. ***The deadline to apply is 9 Feb. 2010.***

The program is supported by ASA, CSSA, and SSSA, and recipients receive a laser-engraved, wooden plaque and recognition in the April issue of *CSA News* magazine. For more information and how to apply, go to www.agronomy.org/students, www.crops.org/students, or www.soils.org/students.

2010 Gerald O. Mott Award

The Gerald O. Mott Meritorious Graduate Student Award in Crop Science recognizes top-notch graduate students pursuing advanced degrees in crop science disciplines. Departments select students based on academic achievements, research, and teaching contributions; leadership accomplishments; service activities; and personal qualifications.

Candidates for this award must have completed at least one year of graduate work leading to an M.S. or Ph.D. degree in a field of emphasis within any crop science-related discipline. Students must be enrolled in a U.S. college or university and be 2010 members of CSSA or ASA.

The award is offered by CSSA, and recipients receive a certificate and are recognized in *CSA News* magazine. ***The deadline to apply is 9 Feb. 2010.*** For more information and how to apply, go to www.crops.org.

Forest Education *(continued from page 47)*

education at the Montpelier estate. To test for demographic differences between potential Montpelier attendees and participants in existing forest management education programs elsewhere in Virginia, the authors studied audiences at forestry bus tour programs offered by Virginia Cooperative Extension. Compared with bus tour participants, Montpelier visitors own smaller acreage and are younger, more often from the suburbs, and less likely to have participated in forest management education before.

"The outdoor classroom at James Madison's Montpelier provides an excellent setting to introduce sustainable forest management to both forest landowners and Montpelier visitors more generally," says Jennifer Gagnon, coordinator of the Virginia Forest Landowner Education Program. "The future health and productivity of forests in Virginia and other states depends on both of these audiences understanding the importance of sustainable forestry. The Montpelier classroom is a valuable tool for promoting this understanding."

Adapted from Munsell, J.F., R. Hamilton, and A.K. Downing. 2009. Prospective scope of forest management education at James Madison's Montpelier. J. Nat. Resour. Life Sci. Educ. 38:198-203. View the article online at www.jnrlse.org/issues.

Science Education *(continued from page 49)*

Education is a good example. It is multi-societal publication, yet I spoke with representatives from other biological societies that were unfamiliar with it.

Opportunities for change abound. Above are only some potential avenues for scientific societies to support improvements in undergraduate science education and scientific literacy in general. A document with a "blueprint for change" is forthcoming. In the meantime, for more information, please check out the Vision and Change in Undergraduate Biology Education website for information and updates: www.visionandchange.org.

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