



# Annual Report 2008 | A Year of Collaboration

## ASA: Agronomy 101



This first year in the second century of ASA was a time for reflection on where we are and where we are going as a Society. We are engaged in the most important issues facing humankind: food and energy security, climate change, environmental quality—our science is vital to solving these global problems.

This year, the Society appointed three task forces to study and make recommendations for improving our service to international agronomy, our service to professional agronomy, and our division structure. The International Agronomy Task Force led to the creation of ASA Global, a program to bring cohesion to our international activities and develop our international strategy. The Professional Agronomy Task Force is developing approaches to better serve professional agronomists. And our Division Alignment Task Force is looking at an alternative division structure to better align with the interests and activities of our members. Other key achievements of the year include the creation of two new provisional divisions: A10 Bioenergy and Agroindustrial Systems; and A11 Biometry.

The future of ASA will be built upon the success of our members in meeting today's challenges. Looking forward we need to make certain that the services and programs we provide are relevant and supportive to achieving these goals.

Kenneth J. Moore | 2008 ASA President | [kjmoore@iastate.edu](mailto:kjmoore@iastate.edu)

## CSSA: Science, Scholarship, Service, Community



CSSA continued progress in 2008 toward its Big Audacious Goal of becoming the the global resource for integrated plant science knowledge.

We selected a wonderful group of 14 undergraduates to be our 2008 class of Golden Opportunity Scholars. They represent the future of CSSA and we are thankful they are interested in the crop science profession. We also thank those CSSA members who mentored these scholars. Please look for ways to be a part of this great program by contributing time as mentors or funds to grow our endowment.

Like the rest of the world, our investment earnings have been affected by the economy. We continue to look for ways to enhance our efficient use of funds provided by members, and are also looking into new business models.

*The Plant Genome* and the *Journal of Plant Registrations* are now open-access—helping to disseminate our sciences and give us a fit with our core values. We also launched a provisional division, C08 Biomedical, Health-Beneficial, and Nutritionally Enhanced Plants, to reach out to a growing area of interest for members.

We express gratitude to the more than 5,087 members of CSSA. We are also humbled by the efforts that were expended by the more than 700 member volunteers. Thank you to all those involved through board, committee, editorial, and/or task force service in 2008.

William J. Wiebold | 2008 CSSA President | [wieboldw@missouri.edu](mailto:wieboldw@missouri.edu)

## SSSA: What a Remarkable Year



SSSA had a remarkable 2008. A major event was the opening of *Dig It! The Secrets of Soil* at the Smithsonian's Natural History Museum, Washington, DC. This remarkable soils exhibition is the result of the sustained tenacity and teamwork of many people over an eight-year period. A heartfelt thank you to all involved. A second major accomplishment was SSSA's publication of the children's book, *SOIL! Get the Inside Scoop* from our K-12 Committee and lead author David Lindbo, North Carolina State University. This colorful book is full of photographs and interesting facts about soil—a great first step in our educational efforts about soils and the necessity for treating them well. A third major achievement was our successful joint Annual Meeting with the Geological Society of America, Oct. 5-9 in Houston, TX.

All of these successes can be traced back to following the "road map" of our 2006 Strategic Plan. We continue to focus on our mission, "To advance soils as fundamental to life," and moving toward our goal, "To bring SOILS and soil science to the forefront of global consciousness to sustain life."

Our newest challenge is supporting the traveling tour for the soils exhibition. Following its completion in Washington DC in 2010, our plan is for *Dig It!* to reach people in 10 regions of the United States over a four-year period. Just think of the thousands of people we can reach with our message of soils when *Dig It!* goes on tour!

Gary A. Peterson | 2008 SSSA President | [gary.peterson@colostate.edu](mailto:gary.peterson@colostate.edu)

## 2008: A Year of Collaboration

This year's Annual Report focuses on Collaboration, and woven throughout, you will see this theme in our success stories of 2008.

We began 2008 by formally incorporating the Alliance of Crop, Soil and Environmental Science Societies (ACSESS)—to enhance our opportunities to collaborate with other, similar organizations. In July, with the opening of *Dig It! The Secrets of Soil*, our many years of collaboration with the Smithsonian's Natural History Museum and our sponsors and volunteers, brought the soils exhibition to fruition. Then in October, we partnered with the Geological Society of America and Gulf Coast Association of Geological Societies to host a successful Joint Annual Meeting attended by more than 9,000 people. Another opportunity came in November when leaders from ASA, CSSA, and SSSA met with other agricultural science societies to explore opportunities for collaboration. Throughout the year, our Science Policy Office worked with several other organizations, including co-sponsoring educational briefings. And, we have been exploring opportunities to expand our certification programs internationally.

Finally, we continue to collaborate and partner with you, our members, as we help you in your professional endeavors: a home for your research through our publications and meetings, a network of colleagues in your divisions of interest, and a source for your next job or new hire. We hope you will continue your collaboration with us.



Ellen Bergfeld

## Information Technology

In 2008 members saw more functionality to their "My Account" feature, including more personal preferences that can be updated. We completely redesigned our Career Placement Service to give employers and prospective employees a more robust system with added features. Websites were created for each Society's Board of Directors to post meeting agendas and any documents needed for their conference calls. A self-reported CEU system was developed that inputs directly into our database the information entered, saving staff time by eliminating the need to hand-key the data.

### 2008 Website Statistics

	Visits	Page Views
<a href="http://agronomy.org">agronomy.org</a>	278,242	1,707,329
<a href="http://crops.org">crops.org</a>	102,232	464,981
<a href="http://soils.org">soils.org</a>	299,899	1,296,849

employees a more robust system with added features. Websites were created for each Society's Board of Directors to post meeting agendas and any documents needed

## Publications

Redesign and moving to in-house composition are now complete for all journals, yielding cost savings to keep subscription prices at current levels and also to improve design control.

Whether as a result of easier to read design, subscriptions are generally up. We have also improved subscription revenue from China and Brazil. A number of books were published this year. The popular children's book *SOIL! Get the Inside Scoop*, followed by other titles including: *Methods of Soil Analysis, Part 5; Mineralogical Methods; Nitrogen in Agricultural Systems; Soil Science: Step-by-Step Field Analysis; Soils of Florida; Sulfur: A Missing Link between Soils, Crops, and Nutrition; and Response of Crops to Limited Water: Understanding and Modeling Water Stress Effects on Plant Growth Processes* from our new book series, *New Advances in Agricultural Systems Modeling*. Total pages published in books this year: 2,364.



2008 SSSA President Gary A. Peterson shows off our new children's book.



### ASA-CSSA-SSSA Journals

	Papers Published	Pages Published
2008	1,262	10,560
2007	1,245	9,779

This year *Crop Science* won second place in the Most Improved Scientific Journal category of the 2008 Society of National Association Publications competition. Also this year, *Vadoze Zone Journal* achieved a positive bottom line, joining the ranks of journals that help to support other Society activities. Our two open-access journals, *Plant Genome* and *Journal of Plant Registrations*, are nearly self supporting. The new authors guide for the *Journal of Plant Registrations* has provided good scientific papers that should provide a positive impact factor when we are ready to measure this. Impact factors are generally up—all are over 1.0 with *Soil Science Society of America Journal* and *Journal of Environmental Quality* over 2.0.

"After touring the soils exhibit, I was impressed by the beautiful and creative way that the exhibit takes the complexities of what I study as a soil scientist and makes it relevant and accessible to a broad audience. It was encouraging to see so many—both young and old—spending their time in this exhibit and to watch them reaching out to interact and explore it in their own way."

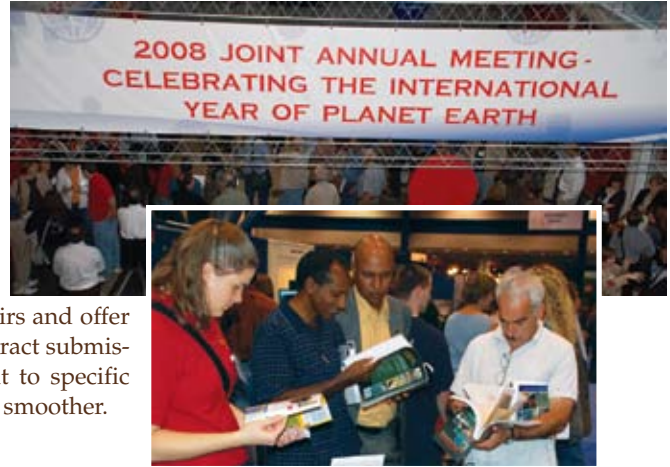
—Yvonne Lawley, University of Maryland



## Meetings

As part of our year of collaboration, the Societies joined the Geological Society of America and the Gulf Coast Association of Geological Societies for a Joint Annual Meeting, October 1–5, 2008, in Houston, TX. More than 9,900 people attended the meetings with almost 6,000 poster and oral presentations offered. Attendees enjoyed the opportunity to attend cross-discipline sessions and learn about research in other disciplines.

New this year is a Society Annual Meeting Program Planning Officer position for each Society. Jeff Volenec, ASA; Mike Strauss, CSSA; and Mike Singer, SSSA; serve their respective Society in this new position. They provide assistance to the Society Program Chairs and offer insight on long range planning for the meetings. An improved abstract submission system featuring topical sessions allows members to submit to specific sessions thus making the submission and scheduling process even smoother.



## Certification

Our certification programs continue to expand and with a renewed interest. The number of people taking the International Certified Crop Adviser Exam grew by 10 in 2008 over 2007. Likewise, the number of people taking the soils exams in 2008 showed a 25% increase over 2007. The total number of Certified Crop Advisers is down slightly, less than 1% from 2007.

An effort is underway to work with university departments to use the ICCA and/or Soils Exams for two purposes: first, as an assessment tool; and second getting students started in their professional certification. In 2008, both the University of Arkansas and University of Tennessee began using the soils fundamentals exam while North Carolina State University continues to use it.

The Council of Soil Science Examiners administers the fundamentals and professional practice soil science exams used by both the Certified Professional Soil Scientist and Classifier programs and several licensing states. The Council has done some reorganizing in 2008 and reevaluated the exam performance objectives.

Our first online course, “Basics in Applied Agronomy,” was offered by ASA last fall. The interest and participation were so positive that a repeat class is slated for 2009.

Finally, extensive discussions were held with India and Argentina stakeholders about expanding our certification programs into those countries. The ASA and ICCA Executive Committees have agreed that any country interested would join the existing program to ensure that the standards and name would be consistent across boundaries.

### 2008 Certified Professionals

#### ASA Certifications

CCA–Certified Crop Adviser–12,950

CPAg–Certified Professional Agronomist–652

#### SSSA Certifications

CPSS–Certified Professional Soil Scientist–984

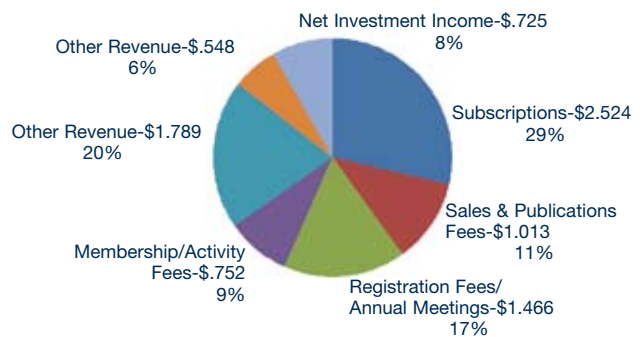
CPSC–Certified Professional Soil Classifier–185



## Financial Services

The consolidated 2007 audit report was issued in June 2008 with Clifton Gunderson LLP issuing an unqualified opinion to the three Societies and the Agronomic Science Foundation. The Societies and Foundation were audited and reported on as a single consolidated entity producing consolidated financial statements. For the year ending December 31, 2007, the consolidated financial results achieved a small loss (\$124,032) compared to the 2006 results when the Societies produced income of \$1,902,324. The combined net loss from all sources for December 31, 2007 included a onetime adjustment of \$56,837 to apply a new accounting standard for the defined benefit pension plan. The net assets (“net worth”) of the combined organizations finished the year 2007 at \$15,385,230 with \$13,568,085 of the combined “net worth” invested at Smith Barney in various stocks, bonds and other investment assets. For a breakdown of the 2007 combined revenue sources and dollar totals, please view the chart at right.

### 2007 Combined Revenue Sources | ASA–CSSA–SSSA



## Member Services

ASA, CSSA, and SSSA membership remained stable for 2008 with 11,069 members (down just 80 from 2007).

In 2008, after work by a joint task force, member dues were restructured for flexibility so that each Society may pursue different programs to meet their member needs.

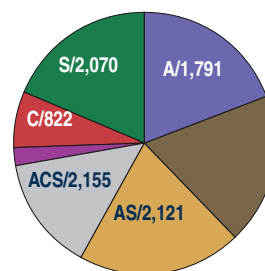
Our Career Placement Center was enhanced to strengthen career resources online and at the Annual Meetings, including automated employer and job seeker services and improved resume submission and job searches. More than 575 jobs were posted in 2008.

The Early Career Members Committee sponsored four popular professional development programs at the Annual Meetings: grant writing, manuscript preparation, managing people and team building, and entrepreneurship.

The Students of Agronomy, Soils, and Environmental Sciences (SASES) meeting included tours in southeast Texas, Speech and Research Symposium Contests, Quiz Bowl, and more. The President's Trophy Award for best chapter was presented to University of Illinois Field and Furrow Club.

Other activities included: SSSA K-12 Committee outreach with publishing the children's book and related [www.soils.org/digdeeper](http://www.soils.org/digdeeper) site and outreach to teachers via the National Science Teachers Association; conducting three surveys to gauge the state of the soils profession; and the North American Proficiency Testing (NAPT) program served more than 160 soil testing labs.

### Membership by Multiple Society



	ASA	CSSA	SSSA
2008	8,134	5,087	6,389
2007	8,088	4,750	6,164

## Science Policy



Rep. Cliff Stearns (R-6th Florida), left, SSSA President-elect Nick Comerford and CSSA President Ken Quesenberry discuss federal support for crop and soil sciences at a recent "Hill Visit" organized by the Science Policy Office.

In 2008, the Science Policy Office continued to work closely with members to successfully build federal support for our sciences with the National Science Foundation; USDA Agricultural Research Service and Cooperative State Research, Education, and Extension Service; and the Department of Energy Office of Science.

In 2008, our Congressional Soils Caucus membership reached 49 representatives! Educational briefings covered two topics: post-wildfire management of soil, and biofortification of crops. To learn more about the Congressional Soils Caucus, visit: [www.soils.org/sciencepolicy](http://www.soils.org/sciencepolicy).

The Science Policy Office provided the Obama presidential transition team a document, "Food, Feed, Fuel, and Fiber Productivity for the United States: Sustainability with Agronomic, Crop, and Soil Sciences," which makes recommendations for presidential science appointments and committee structure and lays out priorities focused on food security, ecosystem services, renewable energy, climate change, environmental and human health, science education, and workforce development.

## Science Communications

In 2008, a new Science Communications Department was created for the circulation, dissemination, and development of scientific information that supports the strategic needs of the Societies.

This department is responsible for both magazines, *CSA News* and *Crops & Soils*, as well as the content on the websites. A major objective is to leverage web and print communications to make the Societies a major source for information and expertise in agronomy, crop, and soil sciences.

A primary activity of the department in 2008 was the successful public relations efforts surrounding the July opening of the Smithsonian soils exhibition. Press releases were distributed to media that resulted in numerous inquiries and significant media coverage for *Dig It!*, conservatively estimated at 40,000,000–50,000,000 impressions.

In an effort to promote research from our publications and presented at our meetings, at least one research summary is highlighted as a press release each week. These summaries are posted to our websites and also distributed to the media.

*"The Golden Opportunity Institute will help open many doors that otherwise would not have been available. I am excited to take part in this experience and cannot wait to return to the Annual Meetings next year!"*  
 —Ashley Sollman, Golden Opportunity Scholar, University of Wisconsin–River Falls



## 2009: A Look Forward

Looking to 2009 and beyond, our Societies will expand our message of collaboration to the international arena—from publications to certification programs and membership.

Another area of focus for us is the economy. As we financially close out 2008 and begin 2009, we're actively engaging in achieving budgeted revenue, seeking additional revenue and managing expenses. The Societies are fiscally strong and have the resources to build new programs and services for the future.

Our missions are to educate the world about the importance and relevance of our sciences. How can we better collaborate to ensure we fulfill our missions? Please let us know.



Ellen Bergfeld

### Publications

In the Publications Department, we will continue to look for cost-savings through technology and skill enhancement in 2009. In addition, the ASA-CSSA-SSSA Book Committee will be introducing new book titles this year, including: *Grasslands: Quietness and Strength for a New American Agriculture*; *Soil Carbon Sequestration and the Greenhouse Effect*, 2nd Ed.; *North American Agroforestry: An Integrated Science and Practice*, 2nd Ed.; *Modification of Seed Composition to Promote Health and Nutrition*; and *Nitrogen Fixation in Crop Production*.

### Meetings and Conventions

Our Annual Meetings, November 1–5, 2009, Pittsburgh, PA will be our “greenest” meeting to date. We are looking at opportunities to reduce our meeting footprint, in keeping with the theme, “Footprints in the Landscape: Sustainability through Plant and Soil Sciences.” We aim to keep expenses low without sacrificing the quality of the program developed by our Division and Society Chairs. Also new this year: topical sessions developed by members! To learn more, visit [www.acsmeetings.org](http://www.acsmeetings.org).

### Membership

With an uncertain economy, membership recruitment will be challenging in 2009. Therefore, we are asking for your help—encourage a colleague or student to become a member this year and together we will be stronger.

The SSSA K–12 Committee will be proactively seeking grant opportunities to fund curriculum development and outreach activities for teachers. They will also launch an “Ask A Soil Scientist” feature on our website to encourage questions and interactions with teachers, students, and the general public. Additional initiatives include ASA Global activities, the revitalization of the thesis publication, more technology driven interactions with students, and educational initiatives.

### Certification

With groundwork developed in recent years, there is a growing interest in developing state licensing programs and in 2009, Washington and Tennessee will have bills before their state legislatures during their sessions. In addition, watch for the inaugural series of monthly webinars featuring timely agronomic topics, including opportunities to earn Continuing Education Units (CEUs), to debut in the first quarter of 2009.

Finally, extensive work in 2009 will be our expansion into India and Argentina. If start up funding can be arranged, 2009 will be the training and planning year with the first exams offered in June 2010.

### Science Communications & IT

The most visible change website visitors will notice in 2009 is an updated navigation and design for each of the three Societies—scheduled to launch in the first half of 2009. With the redesigns, we anticipate an increase in traffic among our member and associated audiences. Internally, we will be using tools to post new and repurposed content, including search engine optimization to reach a larger audience.

Also in 2009 will be an increase in publication frequency for *Crops & Soils* magazine from four to six times per year. Our public relations efforts will continue to expand, as well as the development of milestones to measure progress.

### Science Policy

In 2009, the Science Policy Office will be actively engaged in a variety of initiatives to continue the advocacy of our sciences. We will further engage the Obama administration and Congress to increase awareness and support (funding) for the agricultural, natural resource, and environmental sciences; working with the Congressional Soils Caucus to provide educational briefings on and develop legislation addressing greenhouse gas emissions and mitigation from agriculture, the Clean Water Act and land use management; and developing Core Constituent Scientist Teams to engage our members in grassroots advocacy activities focused on building support for our sciences.



*“I enjoyed meeting with GSA. I attended some outstanding papers including the ones about the moon and sea level raising on the east coast. I went out to dinner with a group of pedologists and we all agreed that this was one of the best meetings we have attended.”*

—Mary Collins, University of Florida

## ASA: A Progressive and Enduring Scientific and Professional Institution



Our world is facing turbulent economic, environmental, and social conditions. Most of our institutions are facing major challenges. Our predecessors at ASA also faced difficult times during its first 100 years and built a strong, viable scientific and professional Society.

As we look to 2009, our efforts will be to continue to add value to ASA membership. For example, the impact of our Annual Meeting will improve through new topical sessions, adding focus to issues put forward by members. With the change in the administration, our Science Policy Office and the ASA Board will be commenting on science issues relevant to our members, i.e. climate change. Internationally, the Global Task Force is defining areas of need and methods to solve problems in regions of the world desperately in need of increased food production. ASA is also finalizing the details to expand our CCA program to India and Argentina.

We are committed to continue building on our solid reputation of being able to make rapid improvements in professional agronomy, and to be able to enhance scientific advancements through our meetings and publications. ASA is positioned to take advantage of opportunities in a time of turbulence. We have more than 1,200 members in volunteer positions to deliver the high-quality programs desired and deserved by our members.

We can look forward to 2009 as a year of strengthening our programs to continue to add value to ASA membership. ASA is both a progressive and enduring institution because of its members, and that legacy will continue in 2009.

Marcus M. Alley | 2009 ASA President | malley@vt.edu

## CSSA: Reaching for Our Goals



The CSSA Strategic Plan sets a roadmap for our activities, including our Big Audacious Goal: "CSSA will be recognized as the global resource for integrated plant science knowledge." To reach this goal, in 2009 we will focus on enhancing the worldwide impact of our science. Collectively, we will do this by reaching out to our international members, the International Agricultural Research Centers, and various governmental agencies that need our members' input into critical policy decisions. We are also focusing on the economic constraints to ensure CSSA's financial stability.

We are also proactively addressing member needs with our new provisional division C09 Biomedical, Health-Beneficial, and Nutritionally Enhanced Plants. CSSA is focused on a redesigned website to enhance member services, and we are looking at new technologies for member communications—especially during the Annual Meetings. On the science policy front CSSA and our sister societies are actively working to strengthen our voice with the new congress and new administration, supporting increased funding for the Agriculture and Food Research Initiative.

Thank you to all of the members who have willingly served on our committees—that are truly the lifeblood of our Society. I encourage all members to volunteer to help guide CSSA into the future.

I will borrow a portion of a quote from our new President to help phrase my vision: Starting today, we must pick ourselves up, dust ourselves off, and begin again the work of remaking CSSA to achieve our stated purpose of Plant Science for a Better World.

Kenneth H. Quesenberry | 2009 CSSA President | clover@ufl.edu

## SSSA: Unparalleled Momentum



SSSA enters 2009 with unparalleled momentum towards fulfilling our mission "to advance soils as fundamental to life." This year, a major goal of SSSA leadership is to continue to build upon the opportunity to reach millions through the Smithsonian's *Dig it!* exhibition and by supporting its traveling tour to reach even more individuals. Specifically, our K-12 committee is developing programs to build upon the exhibit and the *SOIL! Get the Inside Scoop* book to introduce students and teachers to the wonders of soil.

SSSA leadership is focused on establishing a soil science ambassadors program with a goal of developing recruitment strategies and materials for attracting high school and first-year college students to the soil science discipline.

Another key objective is to build on the world-wide recognition of the importance of soil as a resource. We will reach out and partner with other scientific societies to develop strategies for advancing global sustainability, while also seizing the opportunity to expand our international membership.

The enhancement of programs and services to members is also an important strategic goal of SSSA. Strategies are currently being implemented to enhance and improve the Annual Meetings. There are additional strategies being developed to keep SSSA financially secure into the future.

By remaining focused on our mission and guided by our strategic goals and objectives, SSSA is making unprecedented advancement towards our vision: SOIL and soil science will be at the forefront of global consciousness to sustain life!

Paul M. Bertsch | 2009 SSSA President | paul.bertsch@uky.edu

## Agronomic Science Foundation

While 2008 was undoubtedly a difficult economic year, it was a historic year in other respects. Most notably, the *Dig It! The Secrets of Soil* exhibition opened to great acclaim at the Smithsonian's Natural History Museum in Washington, DC on July 19, 2008. From a fundraising standpoint, this was the largest project ever undertaken by ASF and SSSA. It encompassed six years, more than 1,200 donors, and \$2+ million in funding. Thank you members for your commitment to see this project through to completion! Since opening in July, more than 300,000 visitors have experienced the story of soils through the 5,000 square foot exhibition hall. The soils exhibition website at [forces.si.edu/soils](http://forces.si.edu/soils) receives 25,000 hits a month.

The Golden Opportunity Institute, in its third year, matched 14 student scholars with mentors at the Joint Annual Meeting. Activities included one-on-one mentoring and attending lectureships and symposia from high-profile scientists. New for 2008 was a debate on biofuels during their luncheon program.

Expectations for the Agronomic Science Foundation in 2009 include:

- The large-scale visibility of *Dig It!* will continue in 2009 as the exhibit closes in Washington, DC on January 3, 2010. In 2009, the Smithsonian looks forward to booking the first of 10 major venues (large museums and science centers) for the national traveling tour, scheduled for 2010–2013. With more than \$600,000 already raised for this tour, ASF hopes to secure additional national sponsors to reach the \$1 million goal. To learn more, visit [www.soils.org/smithsonian](http://www.soils.org/smithsonian).
- As a result of successful funding efforts, a new, interactive computer program will be added to the soils exhibit in April 2009. Tentatively titled the "Greenhouse Gas Calculator," it will allow museum visitors to learn more about wise soil management choices by explaining the



Photo: John Steiner © National Museum of Natural History

Top: 2008 Golden Opportunity Scholars and Mentors.  
Bottom: Children at the *Dig It! The Secrets of Soil* exhibition.

connections between soils, atmospheric gas concentrations, and Earth's climate. This new component will also be including as part of the exhibition's traveling tour.

- With your additional contributions to sustain the Golden Opportunity Scholars Institute in 2009, we expect another full class of scholars and mentors at our Annual Meetings in Pittsburgh this November.

Your contributions to these and other ASF-supported projects help inform and educate the next generation of scientists as well as heighten public awareness of the role agronomy, crops, and soils play in our world. Please contact Development Officer Paul Kamps at 608-268-4975 or [pkamps@agronomy.org](mailto:pkamps@agronomy.org) or mail your gift, payable to ASF, to 677 S. Segoe Rd., Madison, WI 53711-1086.

### 2008 ASA, CSSA, SSSA Boards of Directors

#### ASA

Kenneth J. Moore, Marcus M. Alley, Jerry L. Hatfield, Thomas W. Bruulsema, Roland J. Buresh, John G. Graveel, Newell R. Kitchen, Robert N. Klein, Robert M. Lacey, Robert B. Mitchell, T. Scott Murrell, Deanna L. Osmond, Steven E. Petrie, Wallace W. Wilhelm\*, Kathleen M. Yeater, Kenneth A. Barbarick, Calvin O. Qualset, Ellen Bergfeld

\*Deceased

#### CSSA

William J. Wiebold, Kenneth H. Quesenberry, Henry L. Shands, Thomas E. Carter, Thomas J. Gerik, C. Corley Holbrook, Anthony J. Koski, Gary J. Muehlbauer, Emerson D. Nafziger, Lynn E. Sollenberger, Gregory E. Welbaum, Craig A. Roberts, Calvin O. Qualset, Ellen Bergfeld

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American Society of Agronomy | Crop Science Society of America | Soil Science Society of America

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