



# Technology News

**December 2004 Issue**

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United States Department of  
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Conservation Service  
Science and Technology

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Lawrence E. Clark and Maurice J. Mausbach

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## MESSAGE FROM THE DEPUTY CHIEFS

Lawrence E. Clark and Maurice J. Mausbach

*The deputy chiefs extended an invitation to **Chief Bruce Knight** to share his views on **Reducing Agricultural Greenhouse Gas Emissions through Voluntary Action** with *Technology News* readers. The following excerpts are from Chief Knight's remarks delivered at the United Nations Framework Convention on Climate Change, Tenth Session of the Conference of Parties, U.S. Government Side Event, in Buenos Aires, Argentina, on December 8, 2004*

The agriculture industry is responsible for a small but significant portion of the greenhouse gas emissions in the United States – about nine percent of the total.

As part of the problem of greenhouse gas emissions, agriculture has an obligation to be part of the solution. But, beyond the trade-off between problem and solution, American agriculture stands to benefit greatly from the overall commitment of our country and others to sequester carbon and reduce greenhouse gas emissions -- regardless of the rate and timing of climate change.

### **Reducing Emissions / Maintaining Profitability**

Agricultural systems are vulnerable to changes in growing season, precipitation, and water availability. The concerns for agriculture are best summarized as mitigating the impact of change on farmers and identifying the role of farmers in mitigating greenhouse gases.

The focus on our working lands must remain the production of food and fiber. The technologies and systems for reducing emissions or sequestering carbon must be compatible with agricultural production systems.

### **Climate Change Activities at USDA**

Over the last 70 years, the U.S. Department of Agriculture has developed a partnership approach to conservation on agricultural lands.

When President Bush announced his Climate Change Strategy, he challenged USDA to recommend targeted incentives for greenhouse gas offsets from agriculture and forests.

The 2002 farm bill provides USDA with the authority and a record level of resources to build partnerships -- including partnerships that target greenhouse gases. The 2002 farm bill includes an increase of more than \$17 billion for conservation, which opens up many more options for many more producers. The bill also places more emphasis on livestock and poultry operations, which is good news in the climate change arena.

In 2003, Secretary Veneman announced a series of actions that USDA will take to increase carbon sequestration and reduce greenhouse gas emissions from forests and agriculture. Coupled with the increases in overall conservation spending, these actions are expected to increase the carbon sequestration and greenhouse gas emissions

reductions from the conservation programs by over 12 million tons of carbon equivalent in 2012.

That reduction represents approximately 12 percent of President Bush's goal to reduce greenhouse gas intensity of the American economy by 18 percent in the next decade.

USDA is harnessing a portfolio of conservation programs to build carbon back into the soil and vegetation, integrating greenhouse gas considerations in our conservation efforts, including such programs as the Environmental Quality Incentives Program, the Conservation Reserve Program, the Wetlands Reserve Program, the new Grassland Reserve Program (GRP), the joint USDA, Department of Energy Biomass Research and Development Initiative, Conservation Innovation Grants, the Conservation Security Program (CSP) and a variety of International Partnerships

### **Market-Based Solutions**

Although the costs of reducing agricultural greenhouse gas emissions fall on the landowner, many of the benefits go to the public. So, to keep agriculture strong, we must find ways for landowners to recoup many of the costs. That means finding ways to place a value on the benefits our farmers and ranchers produce and creating a market for those benefits.

Fortunately, with growing cooperation between Federal agencies and the passage of the 2002 farm bill, we are beginning to make it more economical for domestic producers to do their job and meet regulatory requirements. Through these approaches and with a lot of hard work, we can bring economics and conservation into the proper alignment.



### **CONSERVATIONIST'S CORNER**

Leonard Jordan, State Conservationist, Georgia

Providing better information and products to our customers is the reason Georgia places an emphasis on innovative Science and Technology. It is our challenge to use better technology to enhance all our business activities. In many cases, our Field Offices are leading the way.

Historically, Georgia NRCS has been progressive in its use of science and technology through its partnership with the Georgia GIS Clearinghouse and the Information Technology Outreach Services of the University of Georgia. The partnership effort provided statewide coverage of Digital Orthographic Quad (1993 DOQ imagery), digital topographic images (DRGs) and other base GIS layers including, roads, streams, water bodies and county boundaries. This framework laid the foundation for the early implementation of GIS in NRCS Field Offices. Working with Soil and Water Conservation Districts, we were able to acquire the ArcView GIS software and Global Positioning System Units (GPS) to incorporate the

data with the new Customer Service Toolkit data enhancing deliverable products. As NRCS proceeded with the national rollout of ArcView GIS, Georgia NRCS employees were trained and prepared to fully utilize the new tools on a statewide basis.

Building on our expertise, Georgia NRCS has entered into other areas of technical leadership. We have worked with the University of South Carolina, building upon their work with South Carolina NRCS to extend their web based ranking system to provide a ranking process for EQIP, GRP, and WHIP. This process provides an effective and efficient means to manage the many applications for Farm Bill programs.

A recent activity was to utilize EQIP in an innovative approach to water conservation. Partnering with the UGA-National Environmentally Sound Production Agriculture Lab (NESPAL), The Nature Conservancy, and the Flint River Conservation District, the Georgia NRCS utilized EQIP-Ground and Surface Water Conservation Funds to implement precision agriculture technology with our customer's pivot irrigation systems. Known as a Variable Rate Irrigation, the system utilizes GPS to control sprinklers to vary the water application rate depending upon field conditions. Recent work by the University of Georgia, has demonstrated up to 20 percent water savings by utilizing this technology.

Recent activities in our soil mapping program now provides over 65 counties with SSURGO certified soils, enhancing field use of GIS and meets a well established need of our partners.

Another area of enhanced our science and technology is the effort with both public and private organizations is in measuring soil quality on Georgia's crop fields. The Georgia Soil Management Team, as they are known evaluate both conservation and conventional tillage systems using the Soil Quality Test Kit. The farm level data is used to educate farmers and agriculture professionals on the effects of management on both soil and water quality.

Georgia will continue to focus on ways to utilize new technology to effectively and efficiently meet the needs of our customers and partners. Georgia has many examples of past success, but our best examples are yet to come.

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## **NEW AND FUTURE RELEASES**

### **#1 Conservation Innovation Grants**

Conservation Innovation Grants (CIG) is a voluntary program intended to stimulate the development and adoption of innovative conservation approaches and technologies while leveraging Federal investment in environmental enhancement and protection, in conjunction with agricultural production. CIG was authorized as a discretionary component of the Environmental Quality Incentives Program (EQIP) in the 2002 Farm

Bill. Entities eligible for CIG include State and local agencies, non-governmental organizations, Tribes, and individuals.

The inaugural Conservation Innovation Grants (CIG) awards were announced by USDA Secretary Ann Veneman on September 15, 2004. Forty-one projects in 29 States were awarded a total of \$14.25 million. Grant recipients include 13 universities, 10 governmental organizations, eight agribusinesses, four state governments, two resource conservation and development councils, two conservation districts, and two individuals. Awarded projects are addressing a diverse set of technologies, approaches, and natural resource concerns.

The NRCS Science and Technology community is playing a key role in the success of CIG. A number of NRCS employees participated as peer review panelists, subject matter experts who scored and ranked the proposals (nearly 150 were submitted in fiscal year 2004) based on technical merit. Twenty-five NRCS employees, distributed among the new National Technology Support Centers, existing centers, and National Headquarters, have been designated as Federal Grant Representatives (FGRs). Each of the 41 awarded projects is assigned an FGR who is responsible for technical oversight of the project. At the conclusion of CIG projects, FGRs will play a critical role in transferring successful results into the NRCS technical infrastructure.

As we look to the future of CIG, we are busy preparing for the fiscal year 2005 grant cycle. Primary activities include publishing a final rule and the next request for proposals (RFP). More information about CIG, including detailed information about the 41 awards announced in September, can be found on the CIG webpage: [www.nrcs.usda.gov/programs/cig](http://www.nrcs.usda.gov/programs/cig).

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## #2 Secretary Appoints Members to the Agricultural Air Quality Task Force

On October 22, 2004, Secretary Ann M. Veneman announced the selection of individuals to serve as members of the Agricultural Air Quality Task Force (AAQTF). The current members will serve through September 17, 2006.

Members appointed to the Task Force represent the various regions of NRCS and the country. The immediate past Task Force assisted the NRCS by reviewing its practice standards and developing educational materials for supplementing existing NRCS outreach materials. The Task Force also provided input into assisting the USDA and the Environmental Protection Agency in prioritizing the research agenda for agricultural related air quality concerns.

The Task Force was established under the 1996 Farm Bill and provides recommendations and guidance on the development and implementation of air quality policy. The Task Force is charged to:

1. Review research on agricultural air quality supported by Federal agencies;
2. Provide recommendations to the Secretary of Agriculture regarding air quality and its relation to agriculture, based upon sound scientific findings;
3. Work to ensure intergovernmental (Federal, state, local, and tribal) coordination in establishing policy for agricultural air quality and to avoid duplication of efforts.
4. Assist to the extent possible, Federal agencies in correcting their erroneous data with respect to agricultural air quality; and
5. Ensure that air quality research related to agriculture receives adequate peer review and considers economic feasibility.

Additional information about the AAQTF and a listing of the current Task Force members and the states represented is available at the following Website:

<http://aaqtf.tamu.edu> .

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### #3 National Wetlands Mitigation Action Plan

In 2001, the National Academy of Sciences issued a publication entitled *Mitigating for Wetland Losses under the Clean Water Act*. The report cited mitigation projects required to offset impacts to wetlands for Clean Water Act purposes were often undone or have not met permit conditions.

Several agencies released the National Wetlands Mitigation Action Plan (MAP) to address the issues outlined in the report. The agencies include: NRCS, the Environmental Protection Agency, Army Corps of Engineers, the National Oceanic & Atmospheric Administration Fisheries, U.S. Fish and Wildlife Service and Federal Highway Administration in December 2002. The MAP identifies 17 tasks that are being completed to help address mitigation failures.

Six of these 17 tasks are of interest to NRCS. They fall into three areas: Integrating Mitigation into a Watershed Context, Improving Accountability, and Clarifying Performance Standards. The six tasks include development of the following mitigation guidance documents: on-site/off-site and in-kind/out-of-kind, incorporating vegetated buffers in mitigation, preservation as mitigation, permitting/mitigating in a watershed context, guidance on difficult-to-replace aquatic resources, and performance measures for mitigation. The mitigation action plan does not apply to swampbuster, but could affect our technical assistance policy as it relates to wetland protection. The MAP will

provide us with guidance to bring out TA wetland protection in line with Clean Water Act implementation. These guidance documents will be released over the next year or so. Those interested in providing input on the MAP guidance documents should use the contact information below.

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#### #4 Underway to Evaluate the National Benchmark Soils List

The MLRA Soil Survey Regional Offices, National Soil Survey Center, and the newly established National Geospatial Development Center will be working together to evaluate and update the national list of benchmark soils. The current list, which is a compilation of individual states' preferences, contains 1215 soil series and was last updated in the 1980s. This was well before the completion of many soil surveys in the United States.

One objective is that the revised national benchmark soil list has adequate geographic representation, such as by Major Land Resource Area or Land Resource Region. Another objective is to evaluate the list for "data completeness", which will be useful in formulating plans for future soil survey investigations.

A benchmark soil is one of large extent, one that holds a key position in the soil classification system, one for which there are a large amount of data, or one that has special significance to farming, engineering, forestry, ranching, recreational development, urban development, wetland restoration, or other uses.

The benchmark soil list helps the research community to focus their investigative effort on key soils that have the greatest potential for applying new technology across a large area, and also for transferring new technologies to similar soils, thereby optimizing cost-benefit ratios. Benchmark soils are useful in planning many kinds of studies, including the assessment of conservation effects on soil erosion, dynamic soil properties, soil quality, studies of soil erodibility factors, crop and range plant adaptation and yield, and fertility.

For more information, contact:

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## #5 Information Technology Conference continues

Last month, John Surina, the Assistant Secretary for Administration, approved the reorganization proposal (DR-1010) for converging the information technology (IT) infrastructure staffs of the Natural Resources Conservation Service, Rural Development mission area and the Farm Service Agency into one IT organization within the Office of the Chief Information Officer (OCIO). The effective date for implementation of the reorganization was November 28, 2004. OCIO has sent placement notices by email to all personnel identified for transfer. The email contained information as to where the employee would be placed in the new organization, his/her supervisor, and his/her timekeeper. Employees will have the same pay, grade, promotion potential and duty station as they currently do. The agencies have begun employee close out procedures (e.g. leave audits and transfer of official personnel folders) for the transfer to the Bureau of Public Debt, the OCIO human resources management provider.

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## TRAINING

### #6 Sage Grouse Workshops Planned



*Photo courtesy NRCS*

Sage grouse are found within the sage brush habitats of the intermountain west. Over the last century sage brush habitat and sage grouse populations have declined significantly. This bird is often referred to as an umbrella species, meaning as their numbers decline other sage brush habitat dependent species are probably declining. The U.S. Fish and Wildlife Service is considering a petition to list the sage grouse under the Endangered Species Act.

NRCS developed an Action Plan in 2004 to work with private landowners to protect and enhance habitat for this bird. In 2004, the Grassland Reserve Program targeted this species as did the Wildlife Habitat Incentive Program. Congress has encouraged NRCS to dedicate additional funds in 2005 toward the conservation of sage grouse. NRCS is sponsoring three sage grouse conservation workshops in Montana, Nevada, and Wyoming in the spring of 2005 to train field staff on the habitat requirements of this species.

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## #7 National Employee Development Center Courses and Workshops

The National Employee Development Center (NEDC) provides training and education services to the employees of the Natural Resources Conservation Service and to employees of the agency's partners. During FY 04 the center's staff along with numerous employees from states, centers, institutes and national headquarters formed design teams and instructor cadres that delivered a significant workload of class presentations. FY 05 will be no less challenging as the Employee Development Board has approved the following training proposals for design, development, marketing, delivery and evaluation:

- \*Unsteady Flow
- \*Introduction to Water Surface Profiles
- \*Introduction to Aerial Photography
- \*Riparian Management
- \*Rangeland Soil Quality and Health and Soil Quality Assessment
- \*Wildlife Habitat

The following workshops have been approved for design and implementation in FY 05:

- \*Farm Bill Programs Contracting Workshop
- \*American Indian Program Delivery Initiative Workshop

In addition to the above initiatives, the NEDC in an effort to array all existing courses under SWAPA+H will engage in the re-design of a number of courses in order to fulfill the requirements necessary to offer Continuing Education Units (CEU) and college credits from coop universities.

The NEDC staff encourages all employees to access the NEDC Homepage to review its FY 04 Annual Accomplishment Report at <http://www.nedc.nrcs.usda.gov>.

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## TECHNOLOGY TRANSFER

### #8 National Plant Data Center Visits NRCS Arizona State Office



*Jim Briggs, Mike Somerville, Rebecca Noricks, and Bruce Munda (L to R) meet in Arizona.*

In early November 2004, National Plant Data Center (NPDC) staff had the opportunity to meet with the NRCS Arizona State Office and Tucson Plant Materials Center to discuss the role of the PLANTS Database in Arizona. The NPDC received valuable feedback on current usage of the Database and additional ways to improve services in Arizona and the southwest.

Meeting highlights included a discussion with state conservationist Mike Somerville, stressing the importance of the NPDC's work in ethnoecology. He encouraged the NPDC to continue their work in this area and to expand it in the future.

Additionally, participants also discussed plant data currently under development on topics like carbon sequestration, phytoremediation, and carbon fixation. The NPDC took note of specific recommendations on how the data could be used and applied in the southwest. These recommendations will be extremely helpful in the future development of interactive data tools in the PLANTS Database.

The National Plant Data Center hopes to meet and connect with other states in the same way. If you are interested in providing feedback on how the PLANTS Database is used in your state or ways the Center could serve you better, please call the number below.

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## NRCS TECHNOLOGY NEWS

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