

“USDA NRCS Technology News” ~ January/February 2001

United States Department of Agriculture
Natural Resources Conservation Service
Science and Technology

“USDA NRCS *Technology News*” is a monthly electronic information piece provided by Science and Technology. It is designed to deliver pertinent information to our customers about new technology, products, and services available from the Soil Survey and Resource Assessment and the Science and Technology deputy areas. “USDA NRCS *Technology News*” is in a format that is available to all NRCS field staff.

Features in this issue include:

MESSAGE FROM THE DEPUTY CHIEFS

Lawrence E. Clark and Maurice J. Mausbach

CONSERVATIONIST’S CORNER

[James Ford, State Conservationist, Tennessee](#)

NEW PRODUCTS AND SERVICES

[WEND Swine Module Completed](#)

[New Products Released by the Social Sciences Institute](#)

[Alternative Enterprises and Agritourism Tool Kit Distributed](#)

[NRCS Working with Native Americans to Preserve Past](#)

TECHNOLOGY TRANSFER

[GLTI Provides Technical Assistance Following Wildfires](#)

[Geophysical Tools Utilized by NSSC to Help States](#)

[NRCS and Los Alamos National Laboratory Collaborate](#)

TECHNOLOGICAL ADVANCES

[Grass Varieties for Revegetation and Forage in Southeast Idaho Evaluated](#)

[Improved Erosion Prediction Technologies Being Tested](#)

[FOTG Being “Retooled”](#)

WEB BASED TECHNOLOGY

[Profits and Costs Version 1.1 Under Development](#)

[“Soil Survey Photography- Principles and Techniques” Now on the Web](#)

[Assistance in Growing and Managing Conservation Plants Offered](#)

[Join Water Quality and Animal Waste Discussions Online](#)

[Plant Materials Information Available on the Internet](#)

HONORS

[PLANTS Receives "Best Feds on the Web" Award](#)

[NRCS Economist Wins Award](#)

MESSAGE FROM THE DEPUTY CHIEFS

Lawrence E. Clark and Maurice J. Mausbach

A noted authority on corporate and institutional management has urged us all to "learn to love change" if our organizations are to survive in the 21st Century. Learning to love change is not easy for us. As human beings, we tend to cling to the status quo and those patterns and habits that have become an integral part of our lives over the years. Most of us have a tendency to "race headlong into the future while looking in the rearview mirror." (1)

President John F. Kennedy once said, "Change is the law of life, and those who look only to the past or the present are certain to miss the future." Since change is inevitable, why not be sure that its impacts are productive? By being open and receptive to the forces around us, we have many opportunities to make change work for us. In order to do this, however, we must understand the significant trends that are likely to be important to our mission. Some of these include changes in technology, changes in the nature of work, population and workforce changes, and changes in the structure of agriculture.

An area where many Americans appear to have embraced change is technology. One has only to drive down a busy highway to see how enamored we have become of our cell phones! Computers, once considered luxuries, are widely found in the offices, schools and homes of the nation. They are already an integral part of our everyday work, but we have yet to maximize their effectiveness. Our challenges are to find ways to make better use of computers for natural resources conservation and to stay current and competitive with the computing power of farmers and ranchers, other scientific and technical organizations, and our natural resource conservation partners.

Technology has had a significant impact on the workplace. Portable laptop computers, cell phones, pagers, and wireless Internet connections allow people to work anywhere any time, so they have more control over their schedules. The traditional 8 to 5 office schedule and the office itself have become far less necessary for employees to carry out their responsibilities. Our challenge is to identify which new work patterns will be relevant to our work. The ability for a conservationist to take his or her work to the field provides a tremendous opportunity to provide timely, essential, and relevant data and information to our customers on a real time basis.

By 2020, one in six Americans will be 65 or older. By 2005, approximately half the federal government's 1.6 million employees will be eligible to retire. (2) Current information tells us that the "young-old", are not ready to sit in their rocking chairs, or even retire to the golf course full-time. They are looking for interesting, fulfilling

volunteer and part-time employment activities. We can capitalize on this trend by seeking out retirees to serve as volunteers or part-time workers, perhaps as mentors to new employees. Retired federal employees might be attracted to these activities as well. With foresight and planning, these "young-old" citizens can provide an abundant source of expertise and institutional knowledge.

Agriculture has also been affected dramatically by the scientific, technical and structural changes of the late 20th Century. We all are familiar with the trend toward fewer, larger farms and the vertical integration of farm markets. At the same time there has been a surge in small farms, primarily operated by people with off-farm incomes. The traditional "family" farm as we knew it in the 1950's and 1960's is thus rapidly changing.

Farmers, also, are adopting technology to improve their operations. Nearly half of farms have computers, and one-third had access to the Internet in 1999. A growing number of farms utilize computers to aid field operations, retrieve agricultural information, conduct financial analyses, make better management decisions and support sustainable agriculture activities. A small percentage is also utilizing global positioning systems to aid field operations. (3) An increasing number are adopting genetically engineered crops (GMO's), using about 67 million acres of U.S. farmland in 1998. (4)

Changes in the structure of agriculture have led to a wide range of farmers and ranchers--from the full time farmer utilizing the most recent technology to the farmer who works in a local factory and farms on the weekends, to the low-input farmer. It has led to a varied ethnic mix that includes African-American, Asian and Hispanic farmers. Opportunities for using technology to transmit information to farmers, develop conservation plans, and assess resource concerns are enormous, but the assistance must be tailored to the needs of these groups if it is to be successful.

NRCS Science and Technology is dealing with these changes by initiating some new activities designed to meet the needs of these diverse groups of farmers and ranchers. One such activity is the development of "low-input conservation practices" that are appropriate for limited resource farmers. These practices do not cost as much to implement or install as other practices, but they are still consistent with the standards set by the NRCS Field Office Technical Guide.

In another initiative, Science and Technology is providing a sabbatical to two authorities in the field of animal nutrition. These scientists will spend the coming year working with NRCS specialists to identify ways to take an integrated approach to nutrient management. This approach combines a strategy for reducing the output of manure with the traditional methods of manure management.

The change in the structure of agriculture is probably the most significant change that NRCS and NACD will be called upon to address more completely in the 21st Century. The diversity of farming systems and client needs will require a greater variety of approaches to technical assistance than has been utilized during the past thirty years. We must be able to use and understand the technologies that our customers are using, and be

aware of the implications for resource conservation. We must be able to adapt our approaches to a variety of customers, including corporate farmers, small farmers, and minority farmers, and we must strengthen our traditional partnerships as well.

The changes that we have discussed can become obstacles, or they can be exciting challenges for us as we enter the 21st Century. Change and the uncertainty that comes with it do not have to mean the end of life as we know it. ---But success does not naturally evolve along with change. Success requires recognition of the forces at work, good planning, and the willingness to try innovative approaches. As Machiavelli wrote: "There is nothing more difficult than to take the lead in the introduction of a new order of things."

1. Ashley, William C. and James L. Morrison, "Anticipatory Management Tools for the 21st Century", Futures Research Quarterly, Summer, 1996
2. Light, Paul C., "Cupcakes of Reform", Government Executive, July, 2000
3. U.S. Department of Agriculture, Economic Research Service, "Rural Conditions and Trends", Vol. 10, No. 2, 2000
4. U.S. Department of Agriculture, Economic Research Service, "Update: Impacts of Adopting Genetically Engineered Crops in the United States", September 6, 2000

CONSERVATIONIST'S CORNER

James Ford, State Conservationist, Tennessee

Very often, an insurmountable problem is an opportunity in disguise. The Tennessee Valley Authority (TVA) was in need of specialized training for their newly formed River Action Teams. This new aspect of their organization emphasized working with local groups to discern needs, and the development of plans for providing services. TVA found a telephone number for the NRCS Social Sciences Institute (SSI) and called to see if there was anything the Institute could do to help them obtain training that would emphasize working with communities. SSI, in turn, contacted the state conservationist and a cadre member of the National Employee Development Center on the NRCS staff in Tennessee and the solution began to develop.

SSI provided teaching materials to the NRCS cadre member, who then drew materials from the National Association of Conservation District's course "Marketing for Conservation Success." SSI played an important role as facilitator of this effort to meet a unique training need. The result was a training course for the TVA River Action Teams, members of the U.S. Forest Service, the Smoky Mountain RC&D, and NRCS field personnel. A potential unmet need was turned into a positive for all agencies involved in the training. The success of the training for the TVA teams has resulted in plans to extend the training across the 7-state TVA power production region.

The Social Sciences Institute's efforts in support of this multiagency effort demonstrated the mutual benefits of personnel from various agencies experiencing the interchange of information and experiences in a classroom setting. The success of the course was due to

the flexibility of the Social Sciences Institute in gathering materials from various sources to "custom build" a course to meet the specific needs of the participants.

In a similar example, the Soil Quality Institute (SQI) worked with the state soil scientist in Tennessee to develop a course on soil quality that will be used nationwide. The Institutes are in a unique position to view the broader aspects of technical support and demonstrate the capability to focus the skills, materials, and time on a problem beyond the ability of an individual state.

These kinds of experiences have broadened the concept of Agency training to focus on common skills needed by NRCS and a significant number of our conservation partners. The benefits of the interagency cooperation are ongoing and have positive impacts in other areas of joint endeavor by the member agencies. The real value of the Institutes goes beyond the production of products. SSI, SQI, and all other NRCS Institutes have demonstrated that they can serve as catalysts to bring the right people and the right materials together to meet training needs.

NEW PRODUCTS & SERVICES

WEND Swine Module Completed

The Watershed Science Institute has completed work on the Watershed Ecosystem Nutrient Dynamics (WEND) module for swine. The WEND Swine module looks at phosphorus fluxes in swine dominated watersheds. Phosphorus movement between a swine sector, cropland sector, urban sector, and drainage sector is considered. Included in the swine sector is breeding and farrowing, nursery, and grower/finisher operations. The model was developed using information from the Little Cobb River watershed in Minnesota. Interested parties may request the module from the contact below.

For more information, contact:

David Anderson
Watershed Science Institute
(402) 437-5178 x46
danderso@unlserve.unl.edu

New Products Released by the Social Sciences Institute

The Social Sciences Institute (SSI) has published a technical report and is releasing two fact sheets in its People, Partnerships, and Communities (PPC) series in February. In addition, the winter 2001 updated versions of the ***Social Sciences Institute Product Catalog*** and "The Leader in You Training Tapes Available" flyer have been published.

“Voluntary and Regulatory Approaches: What is Necessary in Conservation Today?” has been released. This technical report written by Gail Brant, SSI sociologist, focuses on the major issues surrounding the value of the regulatory and voluntary approaches in natural resources conservation. Environmental, social, and economic costs of the two approaches are compared as well.

The purpose of the People, Partnership, and Communities fact sheet series is to assist the conservation partnership build capacity by transferring information about social science related topics.

“Exhibiting: A tool to reach technology transfer goals” is a basic guide for the use of exhibits as communication tools. It is designed to help conservation partners at all levels highlight their products and services in an attractive format while promoting public awareness.

“The Interaction of Social and Physical Aspects of Meetings and Conferences” was developed to help anyone planning a special event, such as a conference or a local organization hosting a meeting.

For more information, contact:

Barbara Wallace
Social Science Institute
(616) 942-1503
Barbara.Wallace@usda.gov

Alternative Enterprises and Agritourism Tool Kit Distributed

An 850-page tool kit, *Alternative Enterprises and Agritourism: Farming for Sustainability and Profit*, was distributed during December 2000 to all RC&D coordinators and the state and regional liaisons. The tool kit was developed by the Resource Economics and Social Sciences Division and the Resource Conservation and Community Development Division. It contains 18 chapters that address alternative enterprises, natural resource assessment, conservation/agritourism opportunities, tourism development, business management/marketing/planning, heritage tourism, nature-based tourism, resource people, and resource web sites. NRCS developed the brochure, information sheets, technical notes, and success stories that address alternative enterprises and agritourism that are included in the tool kit. This information and more is posted on the RESSD web site at <http://www.nhq.nrcs.usda.gov/RESS/econ/ressd.htm>

For more information, contact:

Jim Maetzold
Resources Economics and Social Sciences
(202) 720-0132
jim.maetzold@usda.gov.

NRCS Working with Native Americans to Preserve Past

A study, on the “Native American Resource Use, Harvesting, and Management of California’s Oak Communities” has been initiated by Kat Anderson, National Plant Data Center ethnoecologist, and funded by the University of California Integrated Hardwood Range Management Program. This will be a 3-year project to record ancient land uses and management practices emphasizing four oak species critical to the Central Valley of California. The timing of this effort is important because the Native Americans who grew up on traditional foods and still speak the language are passing away.

For more information, contact:

Kat Anderson
National Plant Data Center
(530) 752-8439
mkanderson@ucdavis.edu

TECHNOLOGY TRANSFER

GLTI Provides Technical Assistance Following Wildfires

The year 2000 may set a new record for unplanned wildfires. There have been 90,674 fires burning 7,259,159 acres as of November 15, 2000. These fires have affected all regions of the country, with every state except Iowa reporting wildfires this year.

NRCS employees spent thousands of hours providing technical assistance to landowners and State and Federal agencies. NRCS grazing lands specialists provide technical assistance in balancing remaining forage supplies with livestock and/or wildlife demand. This requires assessing the quality and quantity of forage remaining on an operating unit, helping the client balance the livestock and wildlife demand for that forage, and appraising economic, ecological, and livestock considerations.

Other technical assistance relates to land rehabilitation and soil stabilization. When considering revegetation, NRCS experts assess the degree of damage to the existing vegetation, the need for soil stabilization prior to recovery by existing vegetation, and the suitability of available plant materials for soil stabilization, water retention, and production. Technology from the Plant Materials Program provided vital information on what to plant (i.e., species/cultivars), when and how to plant, and where to obtain the seed.

For more information, contact:

Patrick Shaver
Grazing Lands Technology Institute

(541) 737-7355
patrick.shaver@orst.edu

Geophysical Tools Utilized by NSSC to Help States

The National Soil Survey Center (NSSC) is now using ground penetrating radar (GPR) and electromagnetic (EMI) methods to help states document soil survey activities, evaluate potential environmental hazards, and preserve cultural resources. GPR and EMI are noninvasive geophysical tools that offer the advantages of portability, speed of operation, flexibility of observation depths, and moderate resolution of subsurface features.

Assistance was recently provided to soil scientists in Maine to help determine depths to bedrock on several soils. These data help soil scientists design more accurate map units and in turn accurate interpretations for construction of roads, buildings, septic tank absorption fields, and other structures.

EMI has also been used to determine whether detectable patterns of seepage had developed in an animal waste holding facility in New York and to characterize soils on mine benches in Virginia.

GPR and EMI are helpful tools in improving soil surveys as well as assessing environmental issues.

For more information, contact:

Jim Doolittle
National Soil Survey Center
(610) 557-4233
jdoolittle@fs.fed.us

NRCS and Los Alamos National Laboratory Collaborate

Scientists from the Los Alamos National Laboratory recently visited the National Soil Survey Center to discuss future collaborative efforts. Los Alamos scientists have developed a laser technology that provides a fast method for measuring elements, such as carbon. The technology still needs to be tested to determine its utility for measuring carbon in soils. NRCS soil scientists will be helping in this effort

For more information, contact:

Bob Ahrens

National Soil Survey Center
(402) 437-5389
bob.ahrens@nssc.nrcs.usda.gov

TECHNOLOGICAL ADVANCES

Grass Varieties for Revegetation and Forage in Southeast Idaho Evaluated

A study examining the potential of grasses for revegetation and forage in areas with 8- to 12-inch annual precipitation has recently been completed in southeast Idaho. Twenty-six grass varieties were evaluated for a variety of performance characteristics including plant height, density, forage production, percent cover, and vigor. Annual evaluations from 1995 to 1999 found that Bannock thickspike wheatgrass, Sodar streambank wheatgrass, and Vavilov Siberian wheatgrass had the best overall plant density. Hycrest crested wheatgrass, Vavilov, and Syn-A Russian wildrye produced the greatest cover. The best forage producers were Hycrest, Vavilov, and P-27 Siberian wheatgrass. A summary report may be obtained from the Plant Materials Center. Plantings at the test site will be maintained at the test site for long-term evaluations and training purposes. A display nursery of 47 varieties of grasses, forbs, and shrubs has also been established at the site to allow the public to view released and promising plant materials adapted to the area.

For more information, contact:

Loren St. John
Aberdeen, ID, Plant Materials Center
(208) 397-4133
Loren.Stjohn@id.usda.gov

Improved Erosion Prediction Technologies Being Tested

NRCS is in the process of testing two new erosion prediction technologies: the Revised Universal Soil Loss Equation, Version 2 (RUSLE2), and the Wind Erosion Prediction System, Version 1 (WEPS 1.0). The Agricultural Research Service will make requested changes to the models as a result of this testing during the second quarter of FY 2001. Training for state specialists will occur between June and December 2001. During FY 2002, field office staff will be trained in the use of these models. They will be fully implemented at the field level by the end of calendar year 2002.

These models will provide state of the art erosion prediction tools in a Windows environment and will replace RUSLE1 and the Wind Erosion Equation, the current models. They will improve representation of farming systems compared to existing tools for use in conservation planning and program activities. A coordinated national implementation procedure will facilitate consistent use across all counties in the United States.

For more information, contact:

Dave Schertz
Ecological Sciences Division
(202) 720-3783
dave.schertz@usda.gov

FOTG Being “Retooled”

How can the NRCS Field Office Technical Guide (FOTG) become more useful and user friendly on the web? A SMARTTECH team is evaluating how to provide a dynamic “best science” technology transfer vehicle. The team will provide recommendations to the technical guide committee when they meet in February 2001. Implementation of selected recommendations could begin in spring 2001. Marc Safley, National Agroecologist, and Margo Wallace, State Conservationist in Connecticut, are providing leadership to the SMARTTECH initiative.

For more information, contact:

Marc Safely
Ecological Sciences Division
(202) 720-3921
marc.safley@usda.gov

WEB BASED TECHNOLOGY

Profits and Costs Version 1.1 Under Development

Profits and Costs (ProCosts) is an information product used to develop and deliver Internet-based economics services, including profit and cost estimations. Efforts are under way to combine these economic services with conservation science services to deliver Internet-based packages of conservation services. ProCosts 1.1, which includes on-line interactive profit and cost templates, is expected to be released in the second quarter of 2001.

For more information, contact:

Kevin Boyle
Social Sciences Institute
(608) 262-1516
kpboyle@facstaff.wisc.edu

“Soil Survey Photography- Principles and Techniques” Now on the Web

A Microsoft PowerPoint presentation entitled “Soil Survey Photography-Principles and Techniques” is now available at the National Soil Survey Center (NSSC) web site: <http://www.statlab.iastate.edu/soils/nssc/uduc/photography/index.htm>. The presentation is available for interactive viewing on the web site or downloading as a Microsoft PowerPoint presentation. Be cautioned that the download file is a whopping 28 megabytes!

This is the same presentation that the NSSC mailed to state soil scientists in June 2000 on CD along with soil profile tapes. If you prefer to have a CD, please contact your state soil scientist for local copies.

For more information, contact:

Tom Reedy
National Soil Survey Center
(402) 437-5870
tom.reedy@nssc.nrcs.usda.gov

Assistance in Growing and Managing Conservation Plants Offered

Plant fact sheets and plant guides provide useful information about conservation plants. In a cooperative effort between the National Plant Materials Center and the National Plant Data Center, the accessibility to fact sheets and guides has been expanded on the PLANTS web site. The documents are accessible as “pdf” and “doc” files, so they can be used in a formatted version or the text can be recycled into a document according to the needs of the user. Sheets/guides will soon be available for 400 plants. A facility for customizing lists so that the user does not have to scroll through all of the plants is also available.

For more information, contact:

Scott Peterson
National Plant Data Center
(225) 775-6280
speterson@npdc.usda.gov

Join Water Quality and Animal Waste Discussions Online

The NRCS National Science and Technology Consortium has established two online discussion groups to facilitate communication in the areas of water quality and animal waste.

WQ-NRCS is a new group with a focus on general water quality subjects including watershed planning, nutrient management, pest management, non-point source pollution, monitoring, water quality models, TMDL’s, agricultural chemicals, sedimentation, and bioassessment.

AWMIT (Animal Waste Management Improvement Team) was started several years ago in reaction to the lagoon failure in North Carolina. The list has been renewed with a focus on animal waste management issues including treatment and storage design, emerging technology, CNMPs, waste management policy and laws, and planning and design challenges at the field office level.

NRCS employees and their conservation partners are welcome to sign up for either one or both of these discussion groups.

WQ-NRCS is a restricted list to protect the privacy of members. To join WQ-NRCS, contact Bruce Newton at bnewton@wcc.nrcs.usda.gov.

To sign up for AWMIT, send a message to Majordomo@ftw.nrcs.usda.gov. In the body of the message, type "subscribe awmit" (without quotation marks). There is no need to include a subject line.

For more information, contact:

William Boyd
National Water Management Center
(501) 210-8917
william.boyd@ar.usda.gov.

Plant Materials Information Available on the Internet

Hundreds of new or updated plant fact sheets and plant guides can now be accessed on the web. The materials were assembled by the Plant Materials Program and the National Plant Data Center. The sheets cover a variety of native and introduced species in categories, such as conservation and culturally significant, noxious, and/or invasive plants. While plant fact sheets are 2-sided quick reference sheets, plant guides are generally longer documents. Fact sheets and guides can be downloaded in Word97 or PDF format for printing and distribution to landowners by going to the following web address: http://plants.usda.gov:80/plants/cgi_bin/topics.cgi?earl=fact_sheet.cgi

Plant materials publications addressing buffer issues are now available at an easily accessed location on the Plant Materials Program web site. With one mouse click, users can view a list of the most recent publications dealing with plant material selection and establishment, buffer types, and recently completed and current buffer projects. To access the buffer publications list, go to <http://www.nhq.nrcs.usda.gov/BCS/PMC/pubs/buffers.html>.

More information from the Plant Materials Program is available at <http://Plant-Materials.nrcs.usda.gov>.

For more information, contact:

John Englert
National Plant Materials Center
(301) 504-8175
John.Englert@md.usda.gov

HONORS

PLANTS Receives “Best Feds on the Web” Award

PLANTS, an online database featuring standardized information about plants, recently received the “Best Feds on the Web” award from GovExec.com. The award was provided to the 10 best Federal web sites of the year. In FY 2000, PLANTS received 17 million hits and had over three-quarters of a million user sessions. Those who have not yet visited the site can log onto PLANTS at <http://plants.usda.gov> to see what the buzz is about!

For more information, contact:

Scott Peterson
National Plant Data Center
(225) 775-6280
speterson@npdc.usda.gov

NRCS Economist Wins Award

David Buland, an economist with NRCS’s Natural Resources Inventory and Analysis Institute, received the USDA Economists’ Group 2000 Economist of the Year Award. David works at the Blackland Agricultural Experiment Station, a joint enterprise of the Agricultural Research Service and Texas A&M University, in Temple, Texas. His nomination was based on his sustained superior performance and major direct contributions to economic analysis and decision-making within NRCS.

For more information, contact:

Peter Smith, Director
Resource Economics and Social Sciences Division

USDA NRCS TECHNOLOGY NEWS

Please send information for *USDA NRCS Technology News* to:

Barbara Wallace
(616) 942-1503

Barbara.Wallace@usda.gov

and

Ingrid Milton

(202) 690-2010

ingrid.milton@usda.gov

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, sex, religion, age, disability, political beliefs, sexual orientation, or marital or family status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 1400 Independence Avenue, SW, Washington, D.C. 20250-9410 or call (202) 720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.