

“USDA NRCS Technology News” ~ April, 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.

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MESSAGE FROM THE DEPUTY CHIEFS

Lawrence E. Clark and Maurice J. Mausbach

A few years ago, Cuba Gooding, Jr., appearing in the movie "Jerry Maguire," succeeded in embedding the phrase "Show Me the Money" into our minds--probably forever. The phrase has become ubiquitous, repeated over and over in comedy acts, cartoons, book titles and even the titles of financial training sessions. It is possible that Cuba's mantra even contains a subtle message for NRCS as we go about developing new policy approaches for the 2002 Farm Bill.

A recent headline in The New York Times presented a variation on the theme of "Show Me the Money" with the title "Following the Money, but Also the Mind." (1) The point of the article was to highlight the growing prominence of a branch of economics known as "behavioral economics." Proponents of behavioral economics maintain that traditional rational choice theory does not adequately represent real behavior in a real world. As one writer explains, "While rational choice theory and the highly abstract mathematical models that are built upon it have served big business well since the late 1970's, as a dominant point of view it has done much damage to economics as a social science. Much of mainstream economic research is irrelevant for those of us who are interested in the relationship between economic behavior and, more broadly, economic growth and transformation, and the rest of social and political life." (2)

Behavioral economics challenges the traditional view that people act with rational, unemotional self-interest and asserts, instead, that the economy also responds to skewed reasoning, self-indulgence, self-destructive behavior, and many other human frailties and strengths. However, behavioral economists hasten to add that--

"Not all behavior in the new economics is ornery. Alongside self-interest, there are places in the human psyche for altruism, loyalty, fairness, and a willingness to reciprocate. Various experiments have demonstrated how common these qualities are. They help to explain the environmental movement and volunteer work...." (1)

This line of thought has led economists to coin the phrases "self-interest" and "others interest." Gary Lynne, Professor of Resource and Environmental Economics at the University of Nebraska, addresses this perspective when he writes:

"Perhaps it is not well known, for example, that we who study the behavior of farmers and ranchers in this country have demonstrated with robust empirical testing that they pursue both a self-interest and an "others-interest." On a practical and understandable level, we all experience the reality that the supermarkets are generally full of high-quality food provided at a reasonable cost, all of which attests to the scientific reality that farmers and ranchers (and the food channel generally) go well beyond self-interest in designing and operating their production operations." (3)

It is probably not too great a leap in logic to translate the "others interest" concept of behavioral economists to the stewardship concept of natural resources conservation. Stewardship has been a part of conservation policy and programs since the early 1930's. Programs, publications and even church services have urged farmers and ranchers to be "good stewards of the land."

With the advent of the 2002 Farm Bill and possible new policies and programs, there is an opportunity to re-examine the relevance of stewardship to contemporary farming and ranching. One who has done so is Craig Cox, Executive Vice President of the Soil and Water Conservation Society. In his presentation to the 2001 Agricultural Outlook Forum, Mr. Cox states that natural resource stewardship should be among the most important components of farm policy. He continues on to say:

“Farmers and ranchers control how most of our land is used and managed. They also control who has access to that land. They are, literally, the most important soil, water, fish, wildlife, and recreational managers in the U.S. That to me is what makes farming truly unique--and truly deserving of special attention in federal policy. I would argue that it is time to make conservation and natural resource stewardship a centerpiece of farm policy rather than an afterthought.” (4)

The dictionary definition of stewardship is "the individual's responsibility to manage his life and property with proper regard for the rights of others." It is a value that has been embraced by farmers and ranchers throughout the history of our country. Now behavioral economic theorists, with their concept of "others-interest," support that value. Perhaps the time has come for these two different, but similar, perspectives to form the basis for an approach to conservation that will both conserve the environment and benefit the farmer. As new policies and programs are developed for the 2002 Farm Bill, these ideas are worth consideration.

1. Uchitelle, Louis, "Following the Money, but Also the Mind," The New York Times, February 11, 2001.
2. Wells, Richard, Letter to the Editor, The New York Times, March 4, 2001.
3. Lynne, Gary, Letter to the Editor, The New York Times, March 4, 2001.
4. Cox, Craig A., "What Should be the Role of Resource Stewardship in Future Farm Policy?" Presented to the USDA Agricultural Outlook Forum, February 22, 2001.

CONSERVATIONIST'S CORNER

Henry C. Wyman, Interim State Conservationist, California

Most days, California's conservationists go about helping landowners to make good land management decisions, based on technical training, the field office technical guide, and good old-fashioned experience. But then there are special circumstances that strain the average set of experiences and challenge us to go beyond everyday solutions. That is

when the Centers and Institutes join us in California to help pull together the right expertise and references to push the conservation envelope.

For example, our engineering design team recently worked on an especially tricky Nevada project that had both an unusually high dam and some very unusual soil types. The combination presented a challenge to our usual design criteria, but the National Soil Mechanics Center (NSMC) helped analyze the conditions, adjust normal design criteria, and ultimately craft a solution to accommodate the unusual site. Similar analyses and recommendations have been done by the NSMC for both large and small projects in California.

In the soils arena, the Soil Quality Institute (SQI) and California conservationists are teaming up to test soil quality and track its correlation with integrated management techniques, such as cover crops, pest control, rotation and fertilization scenarios. This information will make a more holistic and convincing demonstration of how agricultural ecosystems and management techniques interact.

Using proven techniques in relatively new arenas, California is working with the SQI to test the plant material, Perla Koleagrass. Its growth habit and root system show great promise in both biomass energy production and air quality through carbon sequestration. Also in the plant materials area, NRCS works with California's tribes to build a bridge between the wisdom of native peoples and today's conservation systems.

Everyone knows that true wealth in the West is measured not so much in gold as in water. Measuring water supply is done in each Western State, but calculating forecasts and providing technical and computer support for the effort comes from the National Water and Climate Center (NWCC). The NWCC also leads the multiagency training for the Snow Survey program, which California hosts every third year, and fills in the important climate descriptions that are needed for California's soil survey narratives to reflect their unique set of conditions.

The Grazing Lands Technology Institute (GLTI) has been very helpful in pioneering a number of multiagency efforts to keep western livestock lands both productive and in top ecological condition. The new Nutbal system typifies this contribution and has earned California friends in both the conservation and production communities. The GLTI's Rangeland Health handbook provides leadership and uniformity in making objective ecological assessments on ranch sites.

There are other everyday examples of California's interaction with Institutes and Centers. Institute Specialists from the Wildlife Habitat Institute (WHI) and the Grazing Lands Technology Institute are helping with specialized training; sociologists have helped develop clear and useful surveys that deliver objective information; and socioeconomic information from the Social Sciences Institute helps round out reports and audience profiles. In addition, WHI's wildlife fact sheets have been popular with both conservationists and the public in California.

And the technical excellence flows both ways. As an affiliate scientist with the Watershed Science Institute, one of our California NRCS staff is producing technical notes on watershed analysis techniques for national distribution, and providing assistance to the Institute for the development and transfer of applied technology to other states.

Together these examples build a burgeoning base of good ties between NRCS in California and the specialized projects undertaken at our Centers and Institutes.

NEW PRODUCTS AND SERVICES

Guidelines for Assessing Soil Quality Published

Many publications describe how to assess and manage soil quality. The new “Guidelines for Soil Quality Assessment in Conservation Planning” helps pull together the information in other publications, choose which tools to use, and identify management practices to address a soil quality concern.

“Guidelines” is written in the context of the 9-step conservation planning process. The publication complements the material taught in the National Employee Development Center course “Soil Quality Assessment and Application for Field Staffs.” It illustrates the practical use of tools and information developed by the Soil Quality Institute (SQI). It also provides information relating specific practices in the Field Office Technical Guide to solving soil quality problems. The information, intended primarily for use in a planning process, is also useful in informal soil quality assessments or as an educational resource for teaching about soil quality. “Guidelines” is aimed at NRCS and Cooperative Extension personnel, crop consultants, and other agriculture professionals.

Each NRCS office has, or soon will receive, a copy of “Guidelines.” Additional reprints may be ordered from the National Production Services, Fort Worth, Texas. Copies may also be downloaded from the SQI web site at

<http://www.statlab.iastate.edu/survey/SQI/Assess.htm>

For more information or to make suggestions for an update of “Guidelines,” contact:

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Lavaca Germplasm Canada Wildrye Released for South Texas

The release of Lavaca Germplasm Canada wildrye has been announced by the Kika de la Garza Plant Materials Center (PMC) in Kingsville, Texas. The Lavaca Germplasm release is intended for use in south Texas.

Canada wildrye is a native, cool-season, perennial grass. Lavaca Germplasm is a selected release that can be used as a component in native seed mixtures for range restoration. It is also suitable for cool-season pastures, especially in wooded riparian areas. Plant material was originally collected from a stand near Hallettsville, Lavaca County, Texas.

Lavaca Germplasm was selected from a collection of 60 accessions for its vigorous vegetative growth, total biomass, persistence, drought resistance, heat tolerance, and good seed production. Foundation seed may be obtained by contacting the Kika de la Garza PMC.

For more information, contact:

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NRCS GIS CST ver.1.1 – Instructional Materials Now Available

It is widely believed that Geographic Information System (GIS) technology will increase NRCS Field Office efficiency and greatly improve the quality of service to our customers. Implementation of GIS into the Field Office is a major undertaking. It requires computer hardware, software, data, and - the most important component - people. Critical to success is how the people who are asked to embrace this "new" technology are instructed in its use.

On March 2, 2001, the National Cartography and Geospatial Center (NCGC) mailed the initial version of GIS instructional materials to NRCS State and Regional offices. Developed specifically for NRCS Field Office employees, it provides an introduction to basic GIS and digital mapping concepts to support the GIS functions of the Customer Service Toolkit. Consisting of three modules and contained on a single CD-ROM designed for use on a Common Computing Environment (CCE) computer, the material may be utilized as student-led self-training, or as instructor-led training sessions in classrooms or using net-meeting. Although not a comprehensive introduction to GIS, it will afford employees the opportunity to develop basic GIS skills using ArcView 3.2a prior to Toolkit training. States are encouraged to use this material in their CST/GIS deployment strategies.

This instructional material was developed using formal Environmental Systems Research Institute (ESRI) training course documents by the NCGC Training Team in Fort Worth,

Texas, with input from state and regional GIS coordinators and specialists. NRCS staff may use or modify this material, but ESRI should be credited as the originating source.

For more information, visit the web site at <http://www.ftw.nrcs.usda.gov/gistraining>, or contact:

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(817) 509-3358
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Planting Guides and Brochures Available for Midwestern Native Ecotypes

A number of native Iowa and Missouri plants for revegetation and restoration plantings have been released by the Plant Materials Center in Elsberry, Missouri. Releases include ecotypes of indiangrass, big bluestem, little bluestem, Virginia and Canada wildryes, purple prairieclover, roundhead lespedeza, oxeye false sunflower, stiff goldenrod, tulip poplar, and roughleaf dogwood. Release notices, brochures, and planting guides for these plants are now available on the Plant Materials Program web site at <http://www.nhq.nrcs.usda.gov/BCS/PMC/pubs/MOPMCPubs.html>.

For more information, contact:

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TECHNOLOGY RELATED TO AGENCY KEY DECISIONS

The Agency leadership has identified two key Agency decisions for emphasis in FY 2001. Conservation planning and nutrient management are at the top of the list of work for the Agency. Products and services that are most closely related to these two key Agency decisions will be identified in USDA NRCS Technology News from time to time in this section.

New Link Created to Agriculture and Environmental Conservation Web Sites

A list of "State Departments of Agriculture and Environmental Conservation Web Sites," which includes links to state laws, regulations, and financial incentives, has been compiled recently by the Resource Economics and Social Sciences Division. Done as background for the Cost and Capability Study, supporting agency decision-making on Comprehensive Nutrient Management Planning, this resource should be useful in

understanding how national Comprehensive Nutrient Management Planning policy compares with state policies. The links are available at <http://www.nhq.nrcs.usda.gov/RESS/econ/issues/info.htm>.

For more information, contact:

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TECHNOLOGICAL ADVANCES

Addressing Seed Harvest and Site Stabilization with Low Cost Technology

An increased interest in native plants has resulted in the need to make native seed collections. The basic method of hand harvesting from wild stands is time consuming and labor intensive. More efficient seed harvest from wild stands is possible by using a modified gas powered hedge trimmer. By attaching a plastic tub to the back of a hedge trimmer, the Big Flats, New York Plant Materials Center has created an efficient, highly maneuverable piece of equipment for collecting native plant seeds.

The Center has also devised a way to establish permanent vegetation sites where grass establishment from seed is difficult. Grass seed is sowed onto growing mix over coir fiber erosion control mats. Once the grass has formed a solid cover, the mats are transported to the planting site and secured in place. These vegetated mats have proved to be a viable erosion control system on highly erodible sites.

For more information, contact:

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Revegetating Slag Refuse Areas with Native Warm-season Grasses

Results are in from a study designed to determine how topsoil and fertilizer supplements affect the establishment of native warm-season grasses on a northwestern Indiana slag refuse site. Slag is discarded material from processing iron ore into steel.

A mix of five locally collected warm-season grass species - big bluestem, little bluestem, indiagrass, prairie sandreed, and switchgrass - was seeded on split plots, with and

without topsoil additions. Split plots were then either treated with a balanced fertilizer at 1,000 pounds per acre or left unfertilized. Compared to non-amended slag, slag with added topsoil had a significantly increased percentage of foliar cover, number of warm-season grass plants, percentage of warm-season grasses, and relative effectiveness rating for improving wildlife habitat and aesthetic value. No significant differences were found between fertilized and unfertilized plots. Based on comparisons between individual seeded warm-season grasses, little bluestem had the highest plant counts relative to its proportion in the mix, exceeding expectations across all seeded treatments.

For more information, contact:

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TECHNOLOGY TRANSFER

Collaboration on Study of Cold Soil Behavior

The National Soil Survey Center (NSSC) has been collaborating with scientists in New Zealand to determine the impact of fuel spills on soils in Antarctica. The study, initiated in 1999, places soil climate stations in three areas. One site is on Ross Island, near Scott Base. The second is on the Antarctic coast, and the third is in a dry valley (an area kept free from snow by high winds). Each site has two stations, one in a spill area and one nearby in a non-spill area for comparison. Hourly averages of soil water content, soil temperature, and atmospheric variables are recorded on dataloggers and retrieved annually.

Because permafrost-affected areas are believed to be the most sensitive to global climate change, the soil climate station data provide valuable information for models used to predict climate change and its effects. Modelers need soil climate information to calibrate and verify their models.

The project is scheduled to end in 2002, although the scientific community is urging the NRCS to continue maintaining the stations for long-term monitoring activities. The immediate use of the project information will be for Antarctica managers to decide whether to ameliorate oil-contaminated soils or let nature repair itself. NRCS will use information collected here to improve soil taxonomy, to classify soils for the proposed Southern Hemisphere Circumpolar Soils Map, and to better understand cold soil behavior. Plans are to make the data available via the Internet. The results of this study will be published in various formats, including a Soil Survey Investigations Report. These results will be combined with those from similar studies in Alaska and Tibet for a publication on cold soil behavior.

For more information contact:
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New Journal Addresses Native Plant Issues

The Native Plants Journal is a new publication designed to provide technical and practical information on growing and planting North American native plants - for restoration, conservation, reforestation, landscaping, roadsides, and other uses - in the United States, Canada, and Mexico. The Plant Materials Program has contributed several articles on native plant propagation and establishment .

The journal is the result of a cooperative effort between the USDA Forest Service and the University of Idaho, with assistance from the USDA Agricultural Research Service and NRCS. Recent articles and information about the publication are available at <http://nativeplants.for.uidaho.edu/>.

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Or

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TRAINING

“The Leader in You” 2001 Satellite Seminars Announced

A leader who has advised four United States presidents and a motivator who has been a trainer for Disney will be two of the four presenters in the 2001 “The Leader in You” satellite seminar series. The target audience is NRCS field staff, conservation district directors and staff, and state conservation agency personnel. There is no cost to view the training over satellite transmission, and taping rights are available. The lineup and broadcast dates are “Beyond Management to Dynamic Leadership”- April 12,

“Supercharger 2001 – Motivating the Motivators” - May 3, “On Leadership” - May 16, and “Stress Mastery” - June 14.

“Beyond Management to Dynamic Leadership” will be broadcast from 1 to 3 p.m. ET on April 12. The seminar is intended for those individuals and managers who want to build a solid foundation to help enhance leadership abilities. Satellite broadcast coordinates and information about the handouts will be provided to NRCS employees, districts, and state conservation agencies as soon as they are available.

“The Leader in You” seminar series is sponsored by the Social Sciences Institute in cooperation with the National Association of Conservation Districts, National Association of State Conservation Agencies, and the Federal Training Network. We are pleased to announce two new partners -- the National Conservation District Employees Association and the NRCS National Employee Development Center.

For more information, contact:

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HONORS

Publication Honors Memory of Laura Mazanti

A recent publication by The Society of Environmental Toxicology and Chemistry was dedicated to the memory of Dr. Laura Mazanti (1963-2000), a biologist with the Wetland Science Institute.

“Ecotoxicology of Amphibians and Reptiles” is part of a technical publication series designed to provide an in-depth review of the science related to understanding the impacts of chemicals and technology on the environment. It was in part prompted by an international concern for the decline of amphibian populations that has been building since the late 1980’s. This publication examines the possible role of contaminants in amphibian decline and provides an excellent assessment of the current state of the science. Laura, who died at her work location in July 2000, was instrumental in development of the publication and co-authored one of its articles.

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NRCS Historian Elected President of Agricultural History Society

NRCS historian, Douglas Helms, is the newly elected president of the Agricultural History Society, an 80-year-old organization dedicated to the study of agriculture and rural life. His presidential address, "Soil and Southern History," was published recently in [Agricultural History](#) 74 (Fall 2000): 723-758. The article examines the influence of soil properties on the history of southern agriculture and how patterns changed once fertilizers were available.

Helms benefited from having access to work of NRCS soil scientists and the soil survey program as the paper relied heavily on soil surveys and [Soil Taxonomy](#) in discussing historical developments.

For a reprint of the article or more information, contact:

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PLANTS Receives Star Award from Awesome Library

PLANTS <<http://plants.usda.gov>> was recently awarded the Star Rating from the Awesome Library <<http://www.awesomelibrary.org/>>. Sites included in the Awesome Library are among the top 5 percent of sites in the field of K-12 education. On rare occasions, a site within the top 2 percent stands out for a particular topic and is given a Star Rating. The Star Rating is given to a resource because it is the source for many other sources on the page, a very comprehensive source of information, unusually well organized, and/or contains essential information for the topic. The purpose of the rating is to allow visitors with very little time to identify one or two sources as starting points within a topic.

PLANTS has also received a Best Fed on the Web award, and recognition by MERLOT (Multimedia Educational Resource for Learning and Online Teaching) and Exploring Minds (encouraging an interest in science and in science related activities).

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