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Water Current Newsletter

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# Water Current

## Republican River irrigators seek to make every drop count

IMPERIAL, Neb. — When six Chase County irrigators cut their nitrogen applications on test corn plots, water use on those same plots also became less.



*Norm Klocke, water resources engineer at the NU West Central Research and Extension Center, North Platte, visits with tour participant Lloyd Young about NU research on water conservation. Photo — Cheryl Alberts*

That phenomenon was reported by southwest Nebraska farmer Mike Bauerle during a presentation to the 50 participants of the 25th annual Nebraska Water Resources Tour. The July 22-24 tour covered groundwa-

ter and surface water topics in the Republican River Basin in south-central and southwest Nebraska.

Bauerle is one of six local farmers in his third year of participating in the experiments, called the Maximum Economic Yield (MEY) program. Their experiments include three nitrogen and two population plots, along with examining production costs vs. profits for each producer. Each year, plots for all six producers undergo the same consistent inputs and processes. The Upper Republican Natural Resources District (URNRD) at Imperial provides financial assistance for all fertility tests and publishing costs.

URNRD irrigators also are concerned about the availability of water and how much water the crops really need. In 1977, the Upper Republican became the first of the state's 24 NRDs to allocate water usage, to help arrest declining groundwater levels. All irrigation wells within the NRD are metered, and the current irrigation allocation is 14.5 inches per year. Consequently, producers look for ways to make every water drop count.

Producers also are conscientious about the effect of residual nitrogen leaching down into the groundwater and subsequently, groundwater quality. Through deep soil testing, Bauerle and others have seen for themselves that crops don't necessarily use residual nitrogen, or that which is carried over from previous years and is from 24 to 36 inches deep.

What isn't used at that level leaches into the groundwater. In addition, he said, using the full amount of recommended fertilizer "didn't pay for itself."

It's better to have that extra nitrogen in a fertilizer tank, rather than in the soil, leaching away.

"We have the ability to control it in the tank," Bauerle said.

**See Tour.  
Continued on Page 3.**

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**3 SEMINAR SERIES TO ADDRESS CLIMATE CHANGE  
5 NRCS WORKS WITH LANDOWNERS  
7 NEBRASKA WATER NEWS**



# New school to be formed within IANR, UNL



Bob G. Volk

## from the DIRECTOR

Irv Omtvedt, interim UNL senior vice chancellor and vice chancellor of the Institute of Agriculture and Natural Resources, has decided to develop a School of Natural Resources within IANR.

Faculty members have written a number of reports and white papers over the past several years recommending the desirability of such a School of Natural Resources. The faculty of the departments of Ag Meteorology and Forestry, Fisheries and Wildlife along with the Conservation and Survey Division will be the initial core components of this new School.

It is anticipated that faculty from other departments at UNL will wish to also be associated with this new School. The Water Center/Environmental Programs unit will be a center within the School.

A committee now being formed will develop bylaws, policies and other guidance necessary for successful operation of the School. The committee will develop recommendations for deployment of human and financial resources and utilization of facilities. Dr. Darrell Nelson, as interim associate vice chancellor, will assume the liaison leadership from the IANR Vice Chancellor's Office with the committee. It is anticipated that this landmark

decision will become a reality on July 1, 1997.

Following the Nebraska Water Resources Tour in July, an evaluation showed that participants in the tour think that holding a tour every other year would be acceptable. We would join the Four States Irrigation Council's Tour on the years we would not sponsor a tour of our own. The objectives of both tours are very similar, and it appeared to us that we should not be duplicating that effort. We will work closely with the Four States Irrigation Council on planning efforts.

On another note, we are looking for nominations for two annual awards made at our Nebraska Water Conference. The Pioneer Award is presented to an individual and the Progress Award to a group or agency by the Nebraska Water Conference Council. The awards recognize individuals or groups that have shown excellence in the water area either by long-term commitments or by particular outstanding activities. Awards will be presented, along with The Groundwater Foundation's Maurice Kremer Award, at the conference's award banquet in March 1997. Please let us know if you'd like to nominate someone.

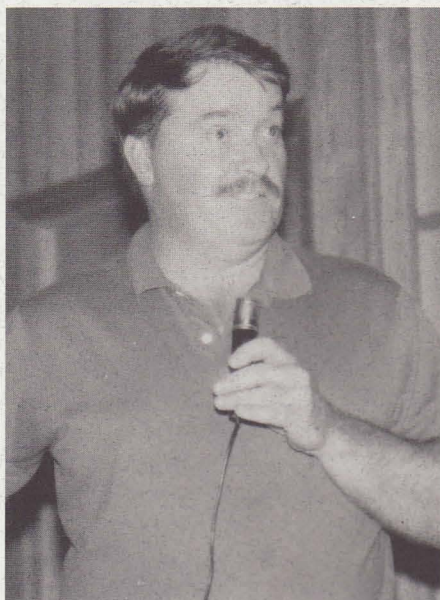
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*Mike Bauerle, southwest Nebraska farmer, explains how Chase County irrigators noticed that water use decreased with decreased nitrogen application. Photo — Cheryl Alberts*

#### **Tour. Continued from Front.**

And then, the oddity. The six MEY producers found that when they used less nitrogen fertilizer, there was more carryover water in the soil. Although Bauerle and University of Nebraska specialists can't explain the connection, it appeared that the producer can come out ahead from both standpoints.

Major presentations to tour members were made by Nebraska Gov. Ben Nelson; Priscilla Grew, UNL vice chancellor for research; and Scott Ross, Northwest Kansas Water Commissioner from Stockton.

Other speakers included ag producers and university, natural resources district, state and federal officials.

Stops on the tour included the Nebraska College of Technical

Agriculture at Curtis and Crane Meadows Nature Center near Alda.

Water tour members also visited dams, reservoirs, irrigation districts, special groundwater protection areas, pastures and terraced fields from Grand Island to Imperial.

"The tour delivered three days of education in water issues," said Bob Kuzelka, assistant to the director in the Water Center/Environmental Programs unit. "According to the tour evaluations, participants really enjoyed the opportunity to observe research in progress and to learn more about pressing water issues."

The tour was sponsored by the Water Center/Environmental Programs unit, the Nebraska Natural Resources Commission and other cosponsors.

— by Cheryl Alberts, IANR newswriter, UNL

## **1997 Water Resources Seminar Drought, Climate Change and Water Management**

Climate change is a vital consideration in managing soil and water in the next decades, according to organizers of the 1997 Water Resources Seminar.

Speakers will explore drought, climate change and water management in 14 weekly sessions. Beginning Jan. 11, 1997, the series will be offered from 3 p.m. to 3:50 p.m. in 116 L.W. Chase Hall on the University of Nebraska-Lincoln East Campus. It may also be viewed via satellite downlink throughout Nebraska and other states.

Lectures will address how to understand Nebraska's climate and conditions of drought and how water management in the state has responded to these phenomena.

They also will suggest future implications for both soil and water management when these phenomena occur in the future. The roles of drought and climate monitoring, drought mitigation and irrigation in the region will be discussed. A

special session will look at drought management in the Missouri River Basin from the perspective of upstream and downstream states.

**Lectures will address how to understand Nebraska's climate and conditions of drought and how water management in the state has responded to these phenomena.**

Speakers for the series will come from state agencies, Nebraska's natural resources districts, federal agencies, research organizations and UNL. Ken Dewey, professor in the UNL Department of Geography, will give the first seminar on "The Climate of Nebraska" Jan. 15. On Jan. 22, Don Wilhite and Mike Hayes of the National Drought Mitigation Center and the UNL Department of

Agricultural Meteorology will discuss "Drought: A Normal Part of Nebraska's Climate?"

Other topics will be "Monitoring and Detecting Drought: The High Plains Climate Center's Automated Weather Data Network" and "The Implications of Climate Change on Ecosystem Management in the Great Plains."

The seminar series is cosponsored by the UNL Water Center/Environmental Programs unit and the Department of Agricultural Meteorology, with partial funding provided by the Alan G. and Irene Williams Fund.

The series is offered as public lectures and as a one-hour credit course to UNL students. For information on these options call (402) 472-3305. Through satellite downlink the seminar may also be viewed outside of Lincoln or taken as a one-hour credit course. For information on these options please call 1-800-755-7765.



# Pesticide education reaches across state

Pesticide applicator education programs are planned across Nebraska in 1997. The Water Center/Environmental Programs unit continues to build a model pesticide education outreach program, said Larry Schulze, pesticide education specialist, UNL.

A total of about 4,000 private applicators and about 2,400 commer-

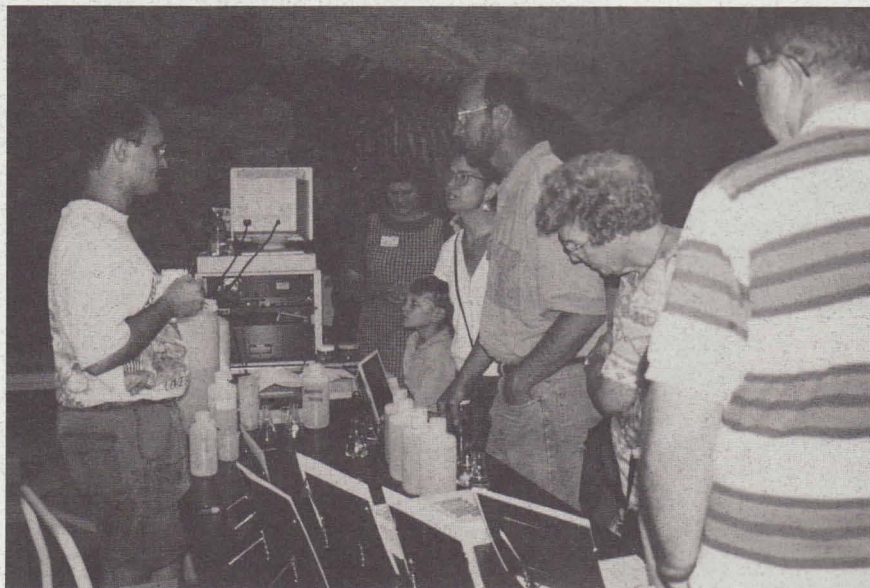
cial and noncommercial applicators are expected to attend recertification training. About 1,000 private applicators and about 1,800 commercial and noncommercial applicators will attend initial certification training.

Eight initial certification and 22 recertification commercial and noncommercial training sites will be offered.

Training originates from Lincoln and is presented by Extension specialists, educators and assistants. Personnel from the Nebraska Department of Agriculture administer and proctor pesticide certification examinations. In addition to those programs conducted by Water Center/Environmental Programs, several other pesticide recertification opportunities are supported by the unit.

Crop Protection Clinics will occur in at least a dozen Nebraska cities during January 1997. The Nebraska Turfgrass Conference, the Nebraska Crop Improvement Association Annual Meeting and the Urban Pest Management Conference are examples of other recertification opportunities that the Water Center/Environmental Programs unit also supports.

New educational materials for 1997 include commercial and noncommercial training manuals in the *Agricultural Plant* and *Fumigation* categories. Also new for 1997 is the *Private Applicator Certification Study Guide*, for use at both initial and recertification sessions. Many new videotapes will also be presented including initial commercial and noncommercial programs for the *Agricultural Plant* and the *Ornamental and Turf* categories.



Dan Snow, manager of the Water Sciences Laboratory, UNL, explains the results of pesticide analyses to individuals who brought in water samples. The free testing was part of the Sunday With A Scientist program sponsored by the UNL Museum Aug. 4. Several hundred people attended the program. Photo — Marian Langan

## New publication focuses on pesticide runoff

"Pesticide Runoff and Water Quality in Nebraska," a new Nebraska Cooperative Extension publication, is now available from the Water Center/Environmental Programs unit.

The Extension Circular 96-143 was written by S.D. Comfort, T.G. Franti and S.K. Smith, from the UNL Departments of Agronomy and Biological Systems Engineering.

The 20-page, 4-color publication discusses computer model simulations of pesticide runoff, factors influencing pesticide runoff and

suggestions for Best Management Practices.

The authors used the computer simulation model GLEAMS (Groundwater Loading Effects of Agricultural Management Systems) to provide examples on how properties, rainfall patterns and pesticide rate and method of application influence pesticide runoff. Because rainfall intensity and amounts can vary from year to year, multiple year simulations were conducted to provide a more accurate picture of long-term pesticide runoff trends.

A glossary of terms is also included. An appendix includes a ranking of pesticides according to adsorption-rates and a listing of the degradation half-life values for pesticides commonly used.

Support for this work was provided in part by the Water Center/Environmental Programs unit, the Department of Agronomy and the Department of Biological Systems Engineering, UNL. To obtain a copy, please contact the Water Center/Environmental Programs unit.



# NRCS works with landowners to protect water quality

*Editor's Note: The statistics in this article do not include the 1996 irrigation season.*

For more than 60 years, the USDA Natural Resources Conservation Service (formerly Soil Conservation Service) has been working with Nebraska landowners to manage soil and water. Today, the NRCS has four main water management targets. Those are controlling floods and flood plain management, basic land treatment, wetlands and participation in special water quality and/or water quantity projects.

## Groundwater Quality Priority Areas

The Nebraska Department of Environmental Quality has established Groundwater Quality Priority Areas. The NRCS and other agencies have targeted these priority areas to initiate special projects. There are now about 40 such projects in the state. These projects may include groundwater protection areas, special protection areas and others and are funded through the Agricultural Conservation Program.

## Cooperative Agreements

The NRCS has five cooperative agreements with natural resources districts and others, dedicating technical staff to these projects. These agreements also involve other partners, including Cooperative Extension.

In the Tri-Basin Natural Resources District (Holdrege), the intent is to improve on-farm irrigation water management that will enhance efficiency and protect groundwater quality. In the four years of this 5-year-project there have been 350 ultrasonic well delivery evaluations, over 36,000 acre inches less water pumped and nitrogen application reduced by nearly 220,000 tons.

In the Central Platte Natural Resources District (Grand Island), a 1-year-old project aims to improve irrigation water management including nutrient and pesticide management. In 1995, the first year, 30 producers received weekly technical assistance with their irrigation actions.

A project in the Middle Republican Natural Resources District seeks to reduce nutrient loading by 15 percent on 73,000 acres and to improve irrigation water management on 26,000 acres by 10 percent. At the sites in Red Willow and Hitchcock counties, nitrogen use is decreasing and water usage declining since the project began in 1994.

A project near Oshkosh in the North Platte Natural Resources District also aims to improve irrigation water management including pesticide and nutrient loading. Activities are focused on 13,000 acres. Irrigation systems are being converted; and nitrogen reduction and water savings are occurring.

The Mid-Nebraska Demonstration Project includes 17 south-central Nebraska counties. The objective is to reduce nutrient and pesticide loading of the soil and to improve irrigation water management. In four years, there has been an estimated savings of 1,900 tons less nitrogen applied. In addition, there has been a savings of 311,000 acre inches of water, enough for a city of 40,000 people for 10 years.

The primary purpose of the Central Blue Valley Hydrologic Unit Area Project is to protect and conserve groundwater. The project area includes the city of Beatrice and four townships in Gage, Saline and Jefferson counties. Accomplishments include changing crop rotations, less tillage, animal waste management and sealing decommissioned wells.

The Elm Creek Watershed Project in Webster County seeks to reduce nonpoint runoff and sedimentation. So far, conservation tillage has increased by 30 percent and sediment has been reduced by over 82,000 tons.

## Mailing List Update

We are updating our mailing list. If you have a change of title, name and/or address, or would like to have your name added or removed from the Water Current mailing list, please complete this form. If you know of individuals who might be interested in receiving our publications, please submit their names.

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# OCTOBER

**Oct. 21:** National NPS Education Conference, Chicago.

**Oct. 21-22:** "Priming the Pump. A Conference for Water Educators." Lied Conference Center, Nebraska City. Sponsored by The Groundwater Foundation. For more information, call 1-800-858-4844 or (402) 434-2740.

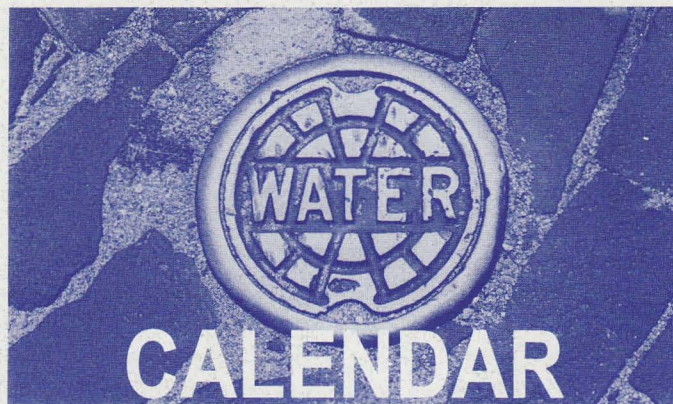
**Oct. 29-30:** "Bringing the River Back ... To The Future. Urban and Rural Watershed Management." The Seventh Annual South Platte Forum, Denver. Contact David Graf, Coordinator, Colorado Water Resources Research Institute, 410 University Services Building, CSU, Fort Collins, CO 80523, (970) 491-6308.

# NOVEMBER

**Nov. 8:** National Association of Lake Managers Conference, Minneapolis.

**Nov. 15:** Abstract Submittal Deadline for 1997 Nebraska Annual Water Conference/The Great Plains Symposium. See Page 8.

**Nov. 24-26:** "Citizens Make The Difference." Groundwater Guardian Conference. McDonald's Corporate Campus, Oak Brook, IL. Call The Groundwater Foundation, 1-800-858-4844, for more information.



## JANUARY

**Jan. 15:** Water Resources Seminar Series. "The Climate of Nebraska." Ken Dewey, UNL Department of Geography. 3 p.m., 116 L.W. Chase Hall, UNL, Lincoln, and via satellite. Call (402) 472-3305 for more information.

**Jan. 22:** Water Resources Seminar Series. "Drought: A Normal Part of Nebraska' Climate?" Don Wilhite and Mike Hayes, National Drought Mitigation Center and UNL Department of Agricultural Meteorology. 3 p.m., 116 L.W. Chase Hall, UNL, Lincoln, and via satellite.

**Jan. 29:** Water Resources Seminar Series. "Monitoring and Detecting Drought: The HPCC's Automated Weather Data Network." Ken Hubbard, High Plains Climate Center and UNL Department of Agricultural Meteorology. 3 p.m., 116 L.W. Chase Hall, UNL, Lincoln, and via satellite.

## FEBRUARY

**Feb. 5:** Water Resources Seminar Series. "Monitoring Drought From Space: The Role of Satellites." Don Rundquist, CALMIT, UNL. 3 p.m., 116 L.W. Chase Hall, UNL, Lincoln, and via satellite.

**Feb. 12:** Water Resources Seminar Series. "Climate Variability and Water Resources: Present and Future Risks." 3 p.m., 116 L.W. Chase Hall, UNL, Lincoln, and via satellite.

**Feb. 12:** North Platte River Basin Water Policy Conference.

**Feb. 19:** Water Resources Seminar Series. "Drought, Water, and Agricultural Development: The Expansion of Irrigation in Nebraska." Dean Eisenhower, UNL Department of Biological Systems Engineering, and Ray Supalla, UNL Department of Agricultural Economics. 3 p.m., 116 L.W. Chase Hall, UNL, Lincoln, and via satellite.

**Feb. 26:** Water Resources Seminar Series. "Crop Management: Challenges of Nebraska's Variable

Climate." 3 p.m., 116 L.W. Chase Hall, UNL, Lincoln, and via satellite.

# MARCH

**March 5:** Water Resources Seminar Series. "Drought Management on Range and Pastureland." Pat Reece, NU Panhandle Research and Extension Center. 3 p.m., 116 L.W. Chase Hall, UNL, Lincoln, and via satellite.

**March 10-12:** Annual Nebraska Water Conference and The Great Plains Symposium: The Ogallala Aquifer. "Managing for Drought and Climate Change." Lincoln, NE. Call (402) 472-3305 for more information.

**March 19:** Water Resources Seminar Series. "The Effects of Drought on the Management of Natural Resources." John Turnbull, Upper Big Blue Natural Resources District, and Dayle Williamson, Nebraska Natural Resources Commission. 3 p.m., 116 L.W. Chase Hall, UNL, Lincoln, and via satellite.

**March 25:** Children's Groundwater Festival, Grand Island. Sponsored by The Groundwater Foundation, Lincoln. Call 1-800-858-4844 for more information.

**March 27:** Earth Wellness Festival. Southeast Community College, Lincoln. Contact Arlene Hanna or Soni Erickson, (402) 441-7180.





# Water News Briefs

## Water Council members attend annual meeting

Members of the Nebraska Water Conference Council attended their annual fall meeting Sept. 28 in Lincoln.

Formed more than 25 years ago by then-University of Nebraska Chancellor D. B. "Woody" Varner, the 100-person council is a cross-section from water-related interest groups ranging from production to protection and private to public.

The council provides input and a sounding board for water-related actions at the university and in the state. It annually sponsors the Nebraska Water Conference and the Nebraska Water Resources Tour. These activities are self-supported by attendees. Staff support for the council is provided by the Water Center/Environmental Programs unit and Conservation and Survey Division, UNL.

On Sept. 28, the council heard presentations by Cathy D. Lange-Morrissey, State of Nebraska tax administrator; J. Michael Jess, director of the Nebraska Department of Water Resources; and Jack Daniel, administrator for Environmental Health Protection in the Nebraska Department of Health.

Jim Schepers, UNL professor of agronomy, is the current council chair; and Don Kraus, general manager of the Central Nebraska Public Power and Irrigation District, is vice chair.

## Colorado State creates The Water Center

Several departments and colleges have come together at Colorado State

University to form The Water Center. All of Colorado State University's water programs will be centralized under the umbrella of this center.

A five-member board of directors is composed of the deans from the Colleges of Agricultural Sciences, Engineering, and Natural Resources, and the directors of Cooperative Extension and the Experiment Station.

The long-range vision for the center includes eventually creating a facility that will incorporate classrooms and laboratories, a water museum and a media center. Construction and landscaping on the Water Plaza, a landscaped quadrangle with an elaborate water feature, will begin this summer.

*Source: Colorado State University Civil Engineering Newsletter*

## Nitrate program works despite level increase

The nitrate-nitrogen content in the groundwater underlying the high nitrate areas of the Central Platte Natural Resources District has increased for the second year in a row, but according to Milt Moravek, assistant manager, the NRD's groundwater quality management plan is still working well.

A high nitrate problem was discovered in the Platte valley before the NRDs were formed in 1972, and the nitrate levels in the NRD increased at the rate of about a half ppm (part per million) annually until the Groundwater Quality Management Program went into effect for the 1988 crop year.

An annual decline in groundwater nitrates was documented district-wide after the program went into effect. The decline in the NRD's high

nitrate areas was from 18.84 ppm in 1988 to 17.53 ppm for the 1993 crop year. Adverse weather during the 1993 crop year caused a dramatic increase in nitrogen use by farmers who attempted to improve their yield.

## Water data base updated

The most comprehensive data base on U.S. water utilities has a new name and updated information.

Formerly known as the Water Industry Data Base, WATERSTATS recently completed a survey of more than 3,200 utilities nationwide. Survey data will be made available in 1997.

The data base contains information on supply sources, treatment, water quality, distribution, metering, rates and customer service. Now in its seventh year, the data base is a project of the American Water Works Association and the AWWA Research Foundation.

Almost all WATERSTATS requests are by telephone, but plans include publishing the data base on CD-ROM and on electronic media.

For more information on WATERSTATS, contact Vern Achtermann at (303) 347-6220 or by fax at (303) 795-1440. The AWWA home page URL is <http://www.awwa.org/>.

*Source: Texas Water Savers*

## Groundwater Foundation on Web

The Groundwater Foundation, Lincoln, now has a page on the World Wide Web. The address is <http://www.groundwater.org>.



# 1997 conference to address sustainable management

The 1997 Nebraska Water Conference will focus on managing water for drought and climate change in the Ogallala Aquifer (High Plains) Region.

Proposals and perspectives will be offered for sustainable management to the years 2015 and 2035 in the eight-state area.

The conference will convene in Lincoln at the Cornhusker Hotel and Burnham Yates Convention Center the evening of March 10 and will conclude after lunch on March 12. It will be held in cooperation with The Great Plains Foundation of Overland Parks, Kan., as the third in a series of annual Great Plains Symposia on the Ogallala Aquifer. Attendance and participation from all states in the region is expected.

Major presentations will provide an overview of the aquifer, identify impacts on the aquifer and the region from drought and climate change and explore economic and social implications of these two phenomena.

Confirmed speakers include Jim Goeke, UNL research geologist; Don Wilhite, director of the International

Drought Information Center; Bill Easterling, director of the Great Plains Regional Center for Global Environmental Change and Dennis Fisher, economist from Texas A & M University.

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## 1997 Nebraska Water Conference presents

The Great Plains Symposium 1997:  
The Ogallala Aquifer  
*"Managing for Drought and Climate Change"*

March 10-12, 1997  
Lincoln, NE  
Abstract Submittal Deadline:  
Nov. 15, 1996

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Norman J. Rosenberg, former UNL professor of agricultural meteorology, will provide both an opening conference challenge and a closing summary for the conference. Rosenberg is now manager of Integrated Earth Studies at Batelle, Pacific Northwest Labs in Washington, D.C.

One conference session will be devoted to invited papers which address the aquifer's physical response and private and public management responses to drought and climate change.

Abstracts of proposed papers must be submitted by **November, 15, 1996**. Contact Bob Kuzelka for more information on submission at <rkuzelka@unlinfo.unl.edu> or (402) 472-7527.

The concluding conference session will present a variety of perspectives on regional sustainability in the face of drought and climate change. Presentations will be made by conference attendees, ag producers, manufacturers, food processors and the government.

A conference banquet will be held to present the Pioneer and Progress awards from the Nebraska Water Conference Council and the Maurice Kremer Groundwater Achievement Award from The Groundwater Foundation.

Detailed conference information and registration forms will be available in January 1997. For more information, call (402) 472-3305.

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