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## ARD News December 1996

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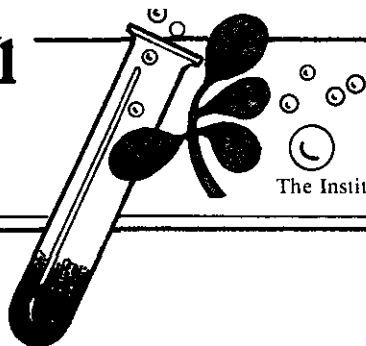


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December 1996

Volume 31, Number 3

## SEASON'S GREETINGS

The Agricultural Research Division extends to all faculty and staff our best wishes for a joyful holiday season and a productive new year.

Thanks to the dedicated efforts of our faculty and staff, 1996 has been another productive research year. As we prepare accomplishments reports each year to go to the U. S. Department of Agriculture and to publicize through the ARD publications, *Research Nebraska!* and *Endeavors*, we always are impressed in several ways that ARD faculty are involved in a broad scope of research efforts. Each year the reported output from those efforts is truly amazing. This output takes many forms and it is not just refereed journal articles and other publications. It includes patents, plant and animal germplasm releases, computer software, and well-trained graduate students. These outputs can immediately benefit Nebraskans and other clientele, as well as add to the foundation of

knowledge that may not have a direct impact until 10 or 20 years into the future.

While each year seems to bring changes and new challenges in terms of research support, mandated compliance programs, organizational changes, and emerging priority research needs, it seems each year that the ARD faculty and staff rise to the occasion and continue to make significant progress in the right directions.

The Agricultural Research Division just finished publication of the 110th Annual Report. We hope all of you read this and take some pride in the many accomplishments of not only the past year, but of the overall strength and productivity of the ARD in its 110th year of activity. Thank you to each of you for helping to make that happen. We look forward to working with you in 1997 to continue these very positive programs.

*Nelvie*

*Darrell*

*Mary Dale*

*Steve  
John*

*Scott*

*Dora*

*Steve*



## REVIEW PROCEDURES FOR NEW AND REVISED REGIONAL RESEARCH PROJECTS AND COMMITTEES

In the last issue of the ARD newsletter, we included an article discussing the importance and the status of the Regional Research system. Reference was made in that article to revisions in the project review process, including a new set of regional priorities to be used as part of the review criteria. It should be noted that the priorities are only a part of the review evaluation. The two groups that play the most critical role in the review process at the regional level are now the NCA committees, made up of unit administrative heads, or department heads, and the North Central Directors Regional Research Committee. The latter is a committee of the North Central Regional Directors Association which has oversight responsibility for the regional research program in the North Central Region.

Under the current review process, new or revised projects will be evaluated on their technical merit in terms of:

- sound scientific approach;
- achievable goals/objectives;
- appropriate scope of activity to accomplish objectives;
- potential for significant outputs (products) and outcomes (impacts).

Other criteria include the following:

1. problem solving;
2. high priority;
3. multi-disciplinary;
4. multi-state;
5. assure accountability (appropriate performance indicators and measures);
6. direct impact to society/people;
7. leverage;
8. information and technology transfer.

It is apparent from these criteria that regional research programs have shifted more to problem-solving type research with immediate impact. As you can see, the regional priority is only one part of the overall evaluation.

Since regional priority is still important in the process, however, a set of newly developed priorities now is available. Each ARD department head has been provided a copy of the new report that defines these priorities. It's titled *Establishing Priorities for Regional Research: the Process, Phase I, August, 1996. North Central Regional Association of State Agricultural Experiment Stations.*

Faculty may review this document at the departmental offices. The priorities are expressed in terms of seven unprioritized crosscutting research areas and objectives. These are:

- food production, processing and distribution;
- genetic resources development and manipulation;
- integrated pest management;

- natural resources and environment;
- economic development and policy;
- social change and development;
- food and nutrition.

Under each of these crosscutting areas there are lists of prioritized research objectives. Priorities were developed using input from the NCA committees and the North Central Directors. The report defines the process used to arrive at the priorities and describes the priority objectives. These will be used as part of the assessment criteria for review of the projects.

Regional projects and committees are still an important part of the research program of the State Agricultural Experiment Stations. Resources to support regional participation are becoming more limited, however. The new review processes are intended to help maintain a focused regional research program that will make the most effective use of the resources available. The Agricultural Research Division intends to carefully manage to ensure that UNL Regional Research funds are used to support the most productive and important projects consistent with this philosophy.

### CROP DIAGNOSTIC CLINIC WELL-RECEIVED BY AGRIBUSINESS PROFESSIONALS

Nebraska agribusiness professionals have an ongoing need for high quality, in-depth educational opportunities. The Nebraska Crop Management and Diagnostic Clinic was developed to meet these educational needs. Last July, over 130 Nebraska agricultural professionals attended the two-day workshop at the Agricultural Research and Development Center.

Certified crop advisors, independent crop consultants, seedsmen, chemical/fertilizer dealers, cooperative managers, farm managers and employees, crop producers and extension educators gained valuable insight from the clinic. Thirty-seven counties from Nebraska were represented, as well as participants from Iowa, Wyoming and South Dakota. Agribusinesses ranging from major corporations, companies, cooperatives and consultation firms to small operations were represented at the clinic.

Most of the presentations included hands-on activities or field demonstrations in small groups to encourage interaction between the presenter and participants. Individual presentations included:

- growth and development of corn and soybeans;
- herbicide injury symptoms;
- crop-weed competition;
- soil compaction management, the use of yield monitors and sampling; for variable rate fertilizer applications;
- irrigation systems management;
- proper adjustment of no-till planter equipment.

UNL Cooperative Extension specialists, teaching and research faculty, and USDA-ARS scientists conducted the clinic. Farmland Industries was an active partner in the establishment of this clinic, providing a grant to repair a solid set irrigation system needed for the clinic. Neal Christensen, regional agronomist of Farmland Industries, also lent his expertise as a presenter at the clinic.

The clinic was developed and organized by a team consisting of extension educators, Keith Glewen (Saunders County), Barb Ogg and Dave Varner (Lancaster County), and Dennis Ferraro (Douglas County), as well as Dan Duncan and Mark Schroeder of the ARDC. Dr. Dale Flowerday, professor emeritus at UNL, was hired to administer establishment of the field plots — an essential component of the clinic.

Conservatively, the clinic impacted over 10 percent of Nebraska's row crop acres, and 98 percent of the participants said the clinic improved their professional skills. Due to the continuing need for high level training by Nebraska's agricultural professionals, these clinics will continue to be a priority program for UNL Cooperative Extension and will be conducted on an annual basis. For more information, contact extension educators Keith Glewen (624-8030) or Barb Ogg (441-7180).

**Deloris Harder,**  
**Outreach Extension Programming Assistant**  
**University of Nebraska Agricultural Research**  
**Center — Ithaca, NE**

### **COMMUNITY GETS INVOLVED IN MANURE MANAGEMENT RESEARCH AT THE ARDC**

A newly developed project entitled "Development and Demonstration of a Sustainable Model for Nutrient Management on Beef Feedlots" has a tremendous local implication and possible national implications for the management of feedlot wastes. Designed to address the manure management and marketing issues of Mead Cattle Company and to allow exploration of a sustainable nutrient model for feedlot production of beef cattle, this project has the potential to be much more.

The objectives of this project are to:

1. determine the magnitude of nutrient imbalance on a large beef feedlot system and the role of marketing manure for improving that balance;
2. develop the nutrient management tools to support a successful manure marketing program by feedlots;
3. demonstrate those tools to potential customers of manure nutrients.

One of five activities planned to reach these objectives involves a Rural Development Grant proposal. A USDA Rural Development initiative designed to address rural issues that affect the local community, economy, and government may provide the opportunity for a broad effort in minimizing

water and air quality impacts and improving the nutrient sustainability of Mead Cattle operations. These processes have critical implications on the local economy, quality of life of local residents, and decisions of local governments.

Keith Glewen, UNL Cooperative Extension in Saunders County, is the project coordinator. Although this project is in the initial stages, Glewen is very excited about the collaboration between many different local interests and the University of Nebraska to provide a comprehensive research and education initiative that addresses a local issue with implications on a national scale. Project cooperators are Dan Walters, Agronomy; Gary Lesoing, Center for Sustainable Agriculture; Mark Kraeger, Mead Cattle; Rick Koelsch, Biological Systems Engineering; John Allen, Agricultural Economics; John Nienaber, USDA Ag Research Service MARC; John Miyoshi, Lower Platte North NRD; and Doug Gustafson, Mayor of Mead. Helping organize this project were Terry Klopfenstein, Animal Science, and Dan Duncan, Director of the ARDC. Funding for this project will come from Mead Cattle Company, in-kind University of Nebraska resources and other potential sources of grant funds.

According to Glewen, "This project is a fantastic example of how to extend the University of Nebraska's resources to help solve complex local issues in conjunction with local entities. With the people we have working on this project, those we plan to bring in, and the resources of the ARDC, we have put in place a project that can have tremendous national impact on how we manage feedlot wastes."

**Daniel J. Duncan**

### **RECOGNITION OF JUNIOR FACULTY FOR EXCELLENCE IN RESEARCH**

In 1991, the ARD Advisory Council established a program to recognize the research accomplishments made by junior faculty members. No more than two junior faculty are recognized each year. The recognition consists of a certificate, engraved plaque, and \$3,000 for use in professional development or research-related activities.

Criteria used to evaluate nominees include scientific publication record, especially those publications resulting from research at UNL, external grant funding, and recognition by peers. A subcommittee of the ARD Advisory Council evaluates the nominations and recommends recipients to the Dean for Agricultural Research.

The following faculty members were selected for recognition during the 1996-97 academic year:

**Dr. Steve Comfort, Assistant Professor, Agronomy  
Department,**  
**Dr. Mark Morrison, Assistant Professor, Animal  
Science Department.**

Congratulations to Drs. Comfort and Morrison! A call for nominations is issued each year on about June 1. We encourage faculty and administrators to nominate deserving junior faculty in their units.

## LAYMAN AWARDS

Eleven proposals for funding by the Layman Trust were received by ARD and forwarded to the Vice Chancellor for Research. The primary aim of the Layman Awards is to provide research support for various purposes: seed money to enhance the possibility of obtaining external support; funds for projects of high merit in areas of research unlikely to receive external support; mini-faculty development support for two to four weeks in length; and funds for research projects that have special importance to the teaching and public service mission of UNL. Five proposals submitted by ARD faculty were funded as follows:

### **Lori Allison — Biochemistry**

*Gene Expression in Higher Plant Chloroplasts: Does the Plant Nuclear Genome Encode Chloroplast Sigma Factors*

**Amount funded: \$7,500**

### **Kulvinder Gill — Agronomy**

*Molecular Characterization of a Male-Fertility Gene (ms) of Wheat*

**Amount funded: \$7,250**

### **Jess Minor — Animal Science**

*Quest for Lean — The Mechanism of Obesity*

**Amount funded: \$7,500**

### **Timothy Carr — Nutritional Sciences and Dietetics**

*Heart Disease — Leading Cause of Death and Disability in U.S.A.*

**Amount funded: \$7,180**

### **Todd Milton — Animal Science**

*Programmed Feeding of High-Grain Diets Followed by Ad Libitum Intake of Conventional Calf-fed Steers to Improved Production Efficiency*

**Amount funded: \$7,380**

## **INNOVATIVE AND HIGH RISK RESEARCH PROGRAM**

Five proposals were submitted for the Innovative and High Risk Research Program during the past six months. This program is designed to provide seed money for very innovative research projects. The objective is to obtain preliminary data that can be used to support requests for grants from federal agencies or companies. Funding will not be provided for projects that are a continuation of faculty member's current research program. The proposals may be submitted at any time during the year. The proposals are evaluated quarterly or on an as-needed basis by a subcommittee of the ARD Advisory Council.

The following proposals were funded by the Innovative and High Risk Research Program effective Dec. 1, 1996:

### **John Markwell, Biochemistry Department John Osterman, School of Biological Sciences**

*Methanol Stimulation of Plant Growth and Yield*

**Amount funded: \$15,000**

### **Walter Schacht, Agronomy Department**

### **Lowell Moser, Agronomy Department**

### **Lee Lauderback, Chemical Engineering**

*Predicting Chlorophyll Content, Crude Protein Content, Plant Structure, and Developmental State of Smooth Bromegrass and Bluestem*

**Amount funded: \$8,275**

## **NEW OR REVISED PROJECTS**

The following station projects were approved recently by the USDA Cooperative State Research Service:

### **NEB-11-107 (Biological Systems Engineering) Bovine Rumen Contents as a Source of Industrial Enzymes and Chemicals**

*Investigator:* L. Davis Clements

*Status:* New Hatch project effective July 1, 1996

### **NEB-13-130 (Animal Science) Physiological and Nutritional Aspects of Improving Reproduction in Dairy Cattle**

*Investigator:* Larry L. Larson

*Status:* New Hatch project effective July 1, 1996

### **NEB-12-253 (Agronomy) Characterizing Nitrogen Mineralization and Availability in Crop Systems to Protect Water Resources**

*Investigator(s):* D. T. Walters and D. H. Sander

*Status:* New Hatch project effective Oct. 1, 1995 that contributes to NC-218

### **NEB-13-105 (Animal Science) Nutrition of Prolific Sows**

*Investigator(s):* A. J. Lewis and P. S. Miller

*Status:* Revised Hatch project effective March 1, 1996

### **NEB-13-132 (Animal Science) Development of Flow-Sorted Chromosome Specific Pools for Mapping Disease and Production Genes in Pigs**

*Investigator(s):* D. Pomp, S. Jones and K. Arumuganathan

*Status:* New State project effective July 1, 1996

### **NEB-17-064 (Entomology) Host-Plant Resistance, Insect Genetics, and Biological Studies of Cereal Insects**

*Investigator:* J. F. Foster

*Status:* New Hatch project effective July 17, 1996

### **NEB-17-065 (Entomology) Selection for Resistance to Bacillus Thuringiensis in the European Corn Borer**

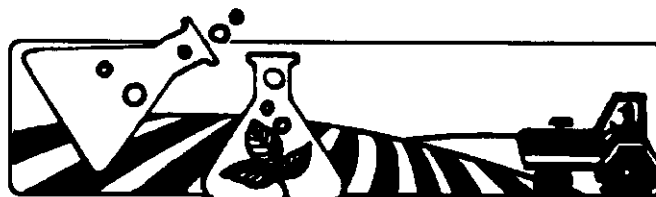
*Investigator(s):* B. D. Siegfried, A. J. Zera, K. Nickerson, L. Harshman and J. F. Witkowski

*Status:* New State project effective July 1, 1996

**NEB-44-051 (Panhandle Research and Extension Center)  
Agrichemical Control in Irrigation Runoff Water from  
Surface Irrigated Fields**

*Investigator(s):* C. D. Yonts and R. G. Wilson

*Status:* New Hatch project effective Dec. 1, 1995



**PROPOSALS SUBMITTED FOR FEDERAL GRANTS**

The following is a listing of proposals that were submitted after August, 1996 by faculty for federal grant programs. While not all grants will be funded, we are appreciative of each faculty member's effort in submitting proposals to the various agencies.

**Milford Hanna and Curtis Weller** — USDA/FAS/ICD/RSED — Soy Protein Solubility in Supercritical Ammonia-Water Mixtures — \$10,000

**Martin Dickman** — USDA/BARD — Regulation of Early Events in Hyphal Elongation, Branching and Differentiation of Filamentous Fungi — \$181,128

**David W. Stanley-Samuelson** — Pest Control by Manipulation of Insect Eicosanoid Mediated Immune Responses to Bacterial Infections — \$8,000

**George Meyer, Tom Franti and Dave Mortensen** — USGS — Advanced Assessment for Spot Spraying Plants to Reduce Chemical Input and Improve Water Quality — \$64,436

**Tom Franti** — USGS — Reducing Atrazine Contamination of Interstate Surface Water — \$60,000

**P. Stephen Baenziger** — USDA/ARS — Utilization of Beef Cattle Feedlot Manures — \$45,000

**Elton Aberle** — USDA/ARS — Detection and Evaluation of a Major Gene for Muscling in Sheep — \$8,000

**Gary Hergenrader** — USDA/FS — Tree-Based Buffer Systems — \$70,417

**GRANTS AND CONTRACTS  
RECEIVED  
OCTOBER AND NOVEMBER, 1996**

<b>Agricultural Economics</b>	
Perrin, R. — Center for Rural Affairs	15,000
<b>Agricultural Meteorology</b>	
Verma, S. B. — NASA	10,000
<b>Agronomy</b>	
Andrews, D. — USDA/Intsormil	87,600
Baenziger, P. S. — USDA/ARS	45,000
Maranville, J. W. — USDA/Intsormil	47,026
Mason, S. C. — USDA/Intsormil	45,900
Specht, J. E. — United Soybean Board/Smith, Bucklin and Associates	32,869
Miscellaneous grants under \$5,000 each	18,775
<b>Animal Science</b>	
Johnson, R. K. and Pomp, D. — National Pork Producers Council	17,000
Klopfenstein, T. — M. G. Waldbaum Co.	14,000
Mandigo, R. W. — National Pork Producers Council	16,000
Miller, P., Lewis, A. — Nebr. Pork Producers Association	10,380
Pomp, D. — Nebr. Pork Producers Association	11,380
Miscellaneous grants under \$5,000 each	29,608
<b>Biological Systems Engineering</b>	
Clements, L. D. — USDA/CSREES	25,000
Schulte, D., Koelsch, R. — National Pork Producers Association	29,760
Miscellaneous grants under \$5,000 each	10,540
<b>Biochemistry</b>	
Ragsdale, S. — Consortium for Plant Biotechnology Research, Inc.	48,589
Ragsdale, S. — USDA	9,700
<b>Entomology</b>	
Stanley-Samuelson, D. W. — USDA/ARS	8,000
Miscellaneous grants under \$5,000 each	55,977
<b>Food Science and Technology</b>	
Zeece, M. G., Hage, D. — USDA/NRI	35,910
Miscellaneous grants under \$5,000 each	16,284
<b>Forestry, Fisheries and Wildlife</b>	
Hergenrader, G. — USDA/NRCS	34,000
Peters, E. — Nebraska Game and Parks	170,010
<b>Horticulture</b>	
Miscellaneous grants under \$5,000 each	6,753
<b>Industrial Ag Products Center</b>	
Hanna, M. A. — NE State Recycling Association	9,358
<b>Northeast Research and Extension Center</b>	
Shelton, D. P. — Nebr. Pork Producers Association	10,339
Miscellaneous grants under \$5,000 each	8,325

<b>Panhandle Research and Extension Center</b>	
Lyon D. — Washington State University	17,000
Miscellaneous grants under \$5,000 each	39,500
<b>Plant Pathology</b>	
Dickman, M. B. — USDA/NRI	50,000
Vidaver, A. K. — USDA/ARS/SRA	16,000
Yuen, G. — USDA/NCIPM	71,700
Miscellaneous grants under \$5,000 each	8,400
<b>South Central Research and Extension Center</b>	
Ferguson, R. — Resource 21	30,150
Miscellaneous grants under \$5,000 each	15,250
<b>Veterinary and Biomedical Sciences</b>	
Osorio, F. A., Doster, A. — National Pork Producers	28,530
Srikumaran, S. — USDA/NRI	147,851
Miscellaneous grants under \$5,000 each	11,804
<b>Water Center</b>	
Franti, T., Barnes, P. — USGS	60,000
Meyer, G., Franti, T., Mortensen, D. — USGS	64,436
Spalding, R. — Central Platte NRD	91,000
Volk, B. — USDA/ARS	290,000
Zlotnik, V., Eisenhauer, D. — Water Resources Div. of USGS	40,000
Miscellaneous grants under \$5,000 each	5,000
<b>West Central Research and Extension Center</b>	
Wicks, G. A. — Washington State University	6,000
Miscellaneous grants under \$5,000 each	5,205
<b>Grand Total</b>	<b>1,876,909</b>

### *Diane Says*

Accuracy is better than speed.