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ARD News August 1996

Agricultural Research Division News

The Institute of Agriculture and Natural Resources

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COMMENTS FROM THE ASSOCIATE DEAN

Dear Colleagues,

As you know, shifts have occurred which have changed IANR and ARD administrative assignments for the next several months. As a result, I have the opportunity to greet you in the lead article of the ARD newsletter. Most of my recent articles in this publication have dealt with mundane things such as intellectual property, indirect costs, and publication authorship. They appeared in the later pages of the newsletter and may not always be the type of topic to inspire the reader to continue further. I've enjoyed writing them, however, and hopefully they've clarified the issues and policies for some of you in this regard.

For this newsletter, I'm taking a different approach, however. At a recent retreat of the IANR Administrative Council, I was asked to report on some current positive results or outcomes for the ARD. I reported on several of these, but one result that I want to repeat here is the enviable progress ARD faculty have made in obtaining external grants and contracts.

With the uncertainties in state and federal appropriations and given the fact that a large percentage of state funds are dedicated to salaries of faculty and staff, it follows that gift, grant, and contract (GGC) funds are critical in many programs to provide adequate operating support for state-of-the-art research. ARD faculty have made great progress in this regard. Just 10 years ago, in fiscal year 1986, the GGC expenditures for ARD were $6.9 million. New ARD financial records for fiscal year 1996 indicate GGC expenditures of $16.8 million. This is an increase of 8 percent over FY 1995 and continues a steady trend of increases of similar or higher amounts in recent years.

Another indicator, the number of USDA National Research Initiative Competitive Grants received by ARD faculty, was 16 for the FY 1995 cycle. This compares to eight that were received in the 1994 cycle and is the highest number received by ARD since the NRI began! New opportunities, such as the recently established USDA Fund for Rural America, provide more possibilities.

Recent information from the UNL Office of Grants and Sponsored Programs indicates that the UNL totals in terms of proposals submitted and awards received, including federal awards, decreased in FY 96. We don't know the numbers for ARD faculty as compared to the entire UNL campus, but GGC expenditures for ARD as mentioned above suggest you're all still doing well and are countering the UNL-wide trend. Keep up the good work!

Dale H. Vanderholm
Associate Dean and Director

ARDC SUPERFUND UPDATE

The timetable for the EPA Superfund remediation of contaminated soil and groundwater at the ARDC is becoming clearer. The most recent plan for the soil remediation calls for the incineration of approximately 13,000 cubic yards of soil to remove TNT, RDX and related breakdown products. A rotary-kiln incinerator will be located in the northeast corner of the ARDC to accomplish the incineration. A large pit will be excavated near the incinerator to provide fill soil for the remediation areas. The incinerated soil will be placed in the pit, covered with top soil and seeded to grass. This process should start and conclude in 1997.

The groundwater containment and remediation is scheduled to begin in late 1996 or early 1997. Two wells, designed to contain the contaminant plumes, will be linked to a treatment facility located approximately 1/4 mile east of the southeast corner of the ARDC on Air Force Reserve property. One of the wells is located in section 26 on the ARDC. The other well is on private property. Within three years additional wells, most of which will be on the ARDC, will be connected to the treatment facility. These wells will be designed to remediate the TNT, RDX and TCE contaminants in the groundwater.

At full capacity the wells will pump approximately 4,000,000 gallons of water per day for treatment. This process is expected to last approximately 130 years. A local group, organized by the LPNNRD, has contracted for a study to determine the feasibility of using the treated water as supply for a rural water district that would serve the eastern half of Saunders County.

In August, the USACE will conduct a sweep for unexploded ordnance in the old ordnance demolition area

near the current ARDC feedlot. This sweep will be to a depth of four feet. It should take approximately one week to conduct. In the past, live fuses were discovered in this area.

USACE also has agreed to perform a more in-depth study of all safety concerns relating to the unused portions of the former bomb load line areas. It is hoped this study will determine if the buildings pose potential risks to employees and the general public. Based on these risks, decisions will be made regarding how to dispose of these structures.

WIDAMAN TRUST DISTINGUISHED GRADUATE ASSISTANT AWARD

The Widaman Trust was established in 1975 through a generous gift provided to the University of Nebraska Foundation by Ms. Blanch Widaman. Ms. Widaman asked that the income from the trust be used by UNL for basic research in agriculture and the funds support people rather than purchase supplies and/or equipment. She suggested that the money be used for scholarships or fellowships for graduate students conducting basic research in agriculture.

The criteria established for the Widaman Trust Distinguished Graduate Assistant Award specifies that only 5 percent of the graduate students in a department can receive the recognition and that the awardees must demonstrate outstanding scholarship and excellence in research. We congratulate the following graduate students for receiving the Widaman Trust Distinguished Graduate Student Award for 1996-1997:

Name: **Litao Yang**
Thesis area: Plant Physiology
Department: Agronomy Department
Advisor: Tim Arkebauer

Name: **Jasbir Singh**
Thesis area: Soil and Water Science
Department: Agronomy Department
Advisors: Pat Shea and Steve Comfort

Name: **Timothy Schnell**
Thesis area: Meat Science
Department: Animal Science
Advisor: Roger Mandigo

Name: **Diane Moody**
Thesis area: Breeding and Genetics
Department: Animal Science
Advisor: Daniel Pomp

Name: **Jose Molin**
Thesis area: Engineering
Department: Biological Systems Engineering
Advisor: Leonard Bashford

Name: **Thomas Clark**
Thesis area: Insect/Biological Control
Department: Entomology Department
Advisors: John Foster and John Witkowski

Name: **Susanne Eidmann**
Thesis area: Vet Science
Department: Veterinary and Biomedical Sciences
Advisor: S. Srikumaran

Name: **Nancy Caceres**
Thesis area: Vet Science
Department: Veterinary and Biomedical Sciences
Advisor: Raul Barletta

HARDIN DISTINGUISHED GRADUATE FELLOWSHIP FOR 1996-1997

For the second year the recipient of the Hardin Distinguished Graduate Fellowship for 1996-1997 is **John LeRoy Lindquist** from the Agronomy Department. The fellowship is made possible by an endowment established at the University of Nebraska Foundation by former University of Nebraska Chancellor Clifford Hardin to support outstanding graduate students doing research in plant physiology.

John Lindquist is completing his Ph.D. in plant stress physiology associated with an ecophysiology approach to understanding maize tolerance and weed suppressive ability. John is modifying INTERCOM, an interplant competition model, to identify physiological and morphological traits having the greatest impact on simulated maize-weed interference. His research project focuses specifically on the physiology and morphology of maize that will allow it to be more tolerant or suppressive to weed competition, a major stress in crop production. Dr. Dave Mortensen is his advisor.

INNOVATIVE AND HIGH RISK RESEARCH PROGRAM

Nine 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 a 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 July 1, 1996:

Sharron Quisenberry $15,000
Entomology Department
Molecular interactions in aphid/wheat systems

Milford Hanna $13,125
Industrial Agricultural Products
Production of microcrystalline cellulose from soybean hulls and corn cobs

Andrew Benson $15,000
Food Science and Technology
Identification of low-temperature induced genes in *Listeria monocytogenes*

BURLINGTON NORTHERN ENDOWMENT

Six proposals were submitted for the Burlington Northern Endowment. This was established in the University of Nebraska Foundation in 1982 to support water and irrigation research projects related to the general areas of agriculture and natural resources including forest lands and wetlands. It is not intended to address water issues related to municipal, industrial, or domestic use, or to waste disposal sites.

The following proposals were funded for 1996-1997:

William L. Krantz, C. Shapiro, M. Brumm, B. Anderson, D. Schulte $12, 000
Northeast Research and Extension Center
Determining the environmental impact of irrigating alfalfa with swine effluent

Brian Benham, D. Eisenhauer, R. Hotchkiss $10,540
South Central Research and Extension Center
Improved application of ultrasonic water flow measurement in irrigation

Gary Hergert, R. Ferguson, B. Benham, C. Shapiro, W. Kranz $18,000
West Central Research and Extension Center
Site-specific management strategies for improving nitrogen use efficiency under furrow irrigation

NATIONAL RESEARCH INITIATIVE

The Agricultural Research Division recently received notification of the program areas for the National Research Initiative Competitive Grants Program. **There is a possibility that a program area may be removed for funding from the program area. The later part of September 1996, please access the World Wide Web as follows: http://www.rees.usda. The program description and program areas will be on the Web. If you have any questions, please contact the ARD Office.**

Proposals Due in ARD Office	Program Codes	Program Areas
Nov. 12, 1996 (Tuesday)	22.1	Plant Response to the Environment
	23.0	Forest/Range/Crop/Aquatic Ecosystems
	25.0	Soils and Soil Biology
	31.0	Improving Human Nutrition for Optimal Health
	51.4	Weed Science
Dec. 10, 1996 (Tuesday)	26.0	Water Resources Assessment and Protection
	52.1	Plant Genome
	52.2	Plant Genetic Mechanisms
	53.0	Plant Growth and Development
	54.1	Photosynthesis and Respiration
	61.0	Markets and Trade
	62.0	Rural Development
	71.1	Food Characterization/Process/Product Research
	71.2	Non-Food Characterization/ Process/Product Research
Jan. 10, 1997 (Friday)	32.0	Ensuring Food Safety
	41.0	Enhancing Animal Reproductive Efficiency
	44.0	Sustaining Animal Health and Well-Being
	51.1	Plant Pathology
	51.2	Entomology
	51.3	Nematology
	51.5	Biological Control Research
	51.6	Assessing Pest Control Strategies
	73.0	Improved Utilization of Wood and Wood Fiber
Feb. 11, 1997 (Tuesday)	42.0	Improving Animal Growth and Development
	43.0	Identifying Animal Genetic Mechanisms and Gene Mapping
	54.2	Nitrogen Fixation/Nitrogen Metabolism
	80.1	Research Career Enhancement Awards
	80.2	Equipment Grants
	80.3	Seed Grants
	100.0	Agricultural Systems

PROPOSALS SUBMITTED FOR FEDERAL GRANTS

The following is a listing of proposals that were submitted after May 27, 1996 by faculty for federal grant programs. While not all grants will be funded, we applaud the faculty member's effort in submitting proposals to the various agencies.

Wayne Woldt, Istvan Bogardi and Chunhua Dou — National Science Foundation — Fuzzy Rule-Based Approach to Describe Solute Transport in the Unsaturated Zone — $296,101

Robert Spreitzer — U. S. Department of Energy — Role of the Rubisco Small Subunit — $340,861

James L. Van Etten — National Institutes of Health — DNA Replication and Gene Expression of Chlorella Viruses — $215,140

Mark Morrison — United States Department of Energy — Molecular-based Analysis of Cellulase Complex Assembly and Adherence to Cellulose by *Ruminococcus albus* — $254,804

S. Madhavan — United States Department of Energy — Dynamics of Acetylcholine Metabolism in Guard Cells and Chloroplasts — $434,820

Donald P. Weeks — United States Department of Energy — Isolation and Characterization of Genes Involved in CO_2 Accumulation in *Chlamydomonas reinhardtii* — $465,403

Clinton Jones — National Institutes of Health — Analysis of an Alpha Herpesvirus LAT Protein — $656,625

David Stanley-Samuelson — National Science Foundation — Eicosanoid Mediation of an Immune Response in Moths — $373,713

Shashi B. Verma — NASA — Measurement and Analysis of Net Carbon Exchange in a Tallgrass Prairie Ecosystem — $443,140

Manoj Kumar — NSF — Mechanistic Enzymology of an Oxo-molybdenum Enzyme Involved in Carbon Monoxide Metabolism from Carboxydotrophic Bacteria — $661,510

Kulvinder S. Gill — NSF — Understanding the Mechanism of Chromosome Pairing in Polyploids — $366,925

NEW OR REVISED PROJECTS

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

NEB-10-135 (Agricultural Economics) Monitoring and Analysis of Farm Real Estate Market Developments in Nebraska
Investigator: B. B. Johnson
Status: New Hatch project effective May 1, 1996

NEB-12-149 (Agronomy) Breeding Sorghum and Pearl Millet for the USA and Developing Countries
Investigator: D. J. Andrews
Status: Revised State project effective April 1, 1996

NEB-12-254 (Agronomy) Community Structure and Functional Diversity of Soil Microbial Communities in Natural and Agroecosystems
Investigator: R. A. Drijber
Status: New Hatch project effective June 1, 1996

NEB-13-129 (Animal Science) Mapping the Pig Genome
Investigator: D. Pomp
Status: New Hatch project that contributes to NC-210 effective Oct. 1, 1995

NEB-14-090 (Veterinary and Biomedical Sciences) Development of a Mycobacterial Marker Vaccine
Investigator(s): R. G. Barletta and R. A. Moxley
Status: New State project effective July 1, 1996

NEB-17-063 (Entomology) Stress-Cereal Crop Interactions and Development of Resistant Cultivars
Investigator: S. Quisenberry
Status: New Hatch project effective June 1, 1996

NEB-19-005 (Food Processing Center) Development and Quality/Safety Enhancement of Specialty Food Products
Investigator: S. L. Taylor
Status: New Special Grant effective July 1, 1996

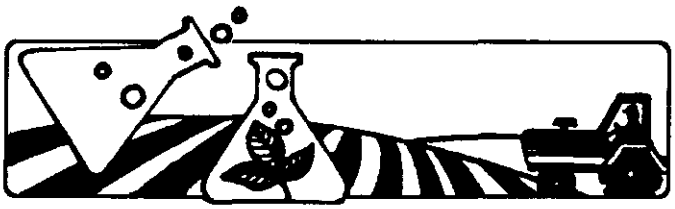
NEB-20-056 (Horticulture) Integrated Turfgrass Management Practices
Investigator: R. C. Shearman
Status: New Hatch project effective June 7, 1996

NEB-21-066 (Plant Pathology) Ultraviolet Dosimetry in Crop Canopies
Investigator(s): G. Y. Yuen, G. L. Horst, K. G. Hubbard, E. A. Walter Shea, T. A. Kokjohn, L. J. Giesler
Status: New State project effective July 1, 1996

NEB-21-067 (Plant Pathology) Molecular Analysis of Programmed Cell Death in Plants
Investigator: M. B. Dickman
Status: New State project effective July 1, 1996

NEB-27-007 (Agricultural Meteorology) Response and Policy Implications
Investigator(s): D. A. Wilhite and M. J. Hayes
Status: Revised Hatch project effective April 1, 1996

NEB-44-042 (Panhandle Research and Extension Center)
Agricultural Enhancement of Potato Production and Utilization
Investigator: A. D. Pavlista
Status: Revised Hatch project effective March 1, 1996



GRANTS AND CONTRACTS RECEIVED JUNE AND JULY, 1996

Agronomy	
Cassman, K. —Pioneer Hi-Bred International, Inc.	$25,000
Diestler, D. — ONR	69,978
Stubbendieck, J. —Nebraska Department of Agriculture	9,600
Miscellaneous grants under $5,000 each	16,650
Animal Science	
Miscellaneous grants under $5,000 each	12,853
Biochemistry	
Golbeck, J. —National Science Foundation	100,000
O'Leary, M. — National Institutes of Health	170,650
Biological Systems Engineering	
Miscellaneous grants under $5,000 each	1,208
Center for Rural Community Revitalization and Development	
Cordes, S., Allen, J., Van der Sluis, E. — USDA through Univ. of MO	40,000
Entomology	
Miscellaneous grants under $5,000 each	48,500
Horticulture	
Gaussoin, R. —USGA and GCSAA Foundation	20,000
Riordan, T. —USGA	69,458
Miscellaneous grants under $5,000 each	14,700
Northeast Research and Extension Center	
Miscellaneous grants under $5,000 each	53,183
Panhandle Research and Extension Center	
Baltensperger, D. — Anna Elliott Fund	9,500
Hein, G. — Anna Elliott Fund	7,420
Reece, P. — Anna Elliott Fund	14,998
Wilson, R. — Western Sugar Company	36,500
Miscellaneous grants under $5,000 each	42,025
Plant Pathology	
Miscellaneous grants under $5,000 each	10,600
South Central Research and Extension Center	
Miscellaneous grants under $5,000 each	44,150
Veterinary and Biomedical Sciences	
Lou, M. —Nebraska Department of Health	30,000
Miscellaneous grants under $5,000 each	19,733
West Central Research and Extension Center	
Miscellaneous grants under $5,000 each	6,232
Grand Total	**$872,938**

PROJECTS APPROVED BY THE COMMODITY BOARDS JULY 1, 1996 - JUNE 30, 1997

Nebraska Wheat Board

The following projects were approved by the Nebraska Wheat Board for July 1, 1996-June 30, 1997 funding:

David Shelton **Steve Baenziger** **C. James Peterson** **Robert A. Graybosch**	Selecting Nebraska Wheats for Processing Needs of Domestic and Foreign Markets	$51,218
Steve Baenziger **David Shelton** **David Baltensperger**	Improving Winter Wheat Varieties for Nebraska	43,000
C. James Peterson **Steve Baenziger** **David Shelton** **David Baltensperger** **Robert Graybosch**	Hard White Wheat Development for Nebraska	65,000
John Watkins **Steve Baenziger**	Lessening the Impact of Leaf and Stem Rust and Wheat Streak Mosaic Virus on Nebraska Wheat Varieties	16,000
Drew Lyon	Continuous Dryland Cropping System	7,000
Lenis Nelson	Variety Testing of Public Winter Wheat Varieties Developed Outside of Nebraska	12,000

Nebraska Grain Sorghum Board

The following projects were approved by the Nebraska Grain Sorghum Development, Utilization and Marketing Board for July 1, 1996-June 30, 1997:

Paul Nordquist	Breeding Sorghum for Nebraska Growing Conditions	$9,610
Max Clegg **Thomas Elthon** **Dave Andrews** **Jerry Eastin**	Sorghum Tolerance Mechanism to Suboptimal Temperatures	9,600

Jerry Eastin	Testing Medium-Large Seed Size Hybrids for Yield, Seed Size and Grain Fill Duration and Developing a Large-Seeded Population	19,070
David Andrews **Paul Nordquist** **Max Clegg**	Using New Genetic Diversity to Develop Grain Sorghum Germplasm with Good Adaptation to Eastern Nebraska	19,640
Charles Francis	Three-Year Grain Sorghum/Soybean/Corn Rotations	2,500

Nebraska Dry Bean Board

The following projects were approved by the Nebraska Dry Bean Development, Utilization and Marketing Board for July 1, 1996-June 30, 1997 funding:

David Nuland **Dale Lindgren** **James Steadman** **Dermot Coyne**	Evaluation of Dry Bean Cultivars for Disease Reaction and Performance in Western Nebraska	$5,400
Dermot Coyne **James Steadman** **Anne Vidaver** **David Nuland** **Dale Lindgren**	Breeding Great Northern and Pinto Dry Beans with Multiple Disease Resistance Combined with Improved Seed Quality, Yield and Plant Type	11,600
James Steadman **Eric Kerr** **Dale Lindgren** **Daniela O'Keefe**	Monitoring Pathogen Variation of Bean Rust in Western Nebraska for Stabilizing Rust Resistance	5,000
Jim Schild **Dave Nuland** **Greg Binford** **Eric Kerr**	Evaluation of Fertilizer Nitrogen and Foliar Fungicides on Regrowth and Yield Following Hail	3,200
Chuck Hibberd	Increasing the Production Efficiency and Market Value of Dry Edible Beans Through a Collaborative, Integrated Research and Extension Program at the Panhandle Research and Extension Center	20,000
C. Dean Yonts	Polyacrylamide (PAM) — A Method to Control Irrigation-Induced Soil Erosion	3,750
David Nuland **Jim Schild**	Commercial Evaluation of Pinto Breeding Line 94-4	2,000
Robert Wilson **John Smith**	Integrating Rotary Hoeing, In-Row Cultivation and Herbicides for Low Cost Weed Control in Dry Edible Beans	2,500

Nebraska Corn Board

The following projects were approved by the Nebraska Corn Development, Utilization and Marketing Board for July 1, 1996-June 30, 1997 funding:

Ken Frank **Blaine Johnson** **Steve Mason** **David Jackson**	Developing and Updating Prediction Equations for Total and Wet Milling Starch in Corn by the Infra Tech Model 1255 NIR-T Grain Analyzer	$7,400
Gerald Biby **Milford Hanna**	Small Business Innovative Research Grant Preparation	7,503
Gerald Biby **Milford Hanna**	Commercialization Research on Polylactic Acid (PLA) Thermoplastics	24,293
Milford Hanna **Viswas Ghorpade** **Gerald Biby**	Developing Industrial Uses Chapter for FFA Textbooks	1,500
Milford Hanna **Jay Fitzgerald**	Horticultural Uses of Polylactic Acid	18,300
Lois Hamilton **Milford Hanna**	Development of Polylactic Acid Fibers for Textile Fabrics	24,843
David Jackson	Assessing the Intrinsic Value of Commercial Hybrids Grown in Nebraska	10,020

Diane Says

Good intentions and good eggs soon spoil unless they soon hatch.