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Agricultural Research Division News

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Volume 36, Number 5

Comments from the Dean

Dear Colleagues:

During the past year, UNL has announced and celebrated a number of large external research grants from federal agencies, including one during the week in which this is being written. ARD faculty are highly involved in most of these grant-funded projects. We thank the principle investigators and collaborators for their hard work in preparing the proposals and congratulate them for their creativity and scientific expertise that resulted in the proposals being selected for funding in a very competitive environment. In recognizing the outstanding scientists who are successful in obtaining large grants, administrators run the risk of not properly acknowledging the efforts of other faculty and staff who carry out productive research each day with little fanfare.

It is important that ARD faculty and staff understand that IANR administrators value them and their research programs regardless of their involvement in very large federal grants. We encourage all faculty to aggressively seek external funding because resources in addition to those provided by the state of Nebraska are normally required if a research project is to have significant outcomes and impacts. Some faculty conduct research in areas that have opportunities for large federal grants, whereas very few competitive grant opportunities exist for other faculty conducting research in areas that are not federal priorities. There are, however, external grant opportunities for almost every faculty member if he/she is diligent in searching for opportunities and clever in aligning the project with the funding organization's goals. Faculty members need to become familiar with funding opportunities from private companies, state agencies, commodity organizations, non-profit foundations and federal agencies that do not have formal competitive grant

competitions. As I have stated before, "All money is green," and our focus should be on obtaining needed resources regardless of source.

I continue to be very pleased with the development of ARD research programs. Our research grant and contract income continues to increase each year and outputs from the projects also are increasing. In a real sense, our greatest limitation at present is a lack of laboratory space in several departments. This lack of space is constraining the growth of some research groups and discouraging faculty members from preparing additional grant proposals. In addition, some of our research facilities are outmoded and must be renovated or replaced within the next five years. Finding funds to construct new facilities and renovate existing buildings will be a terrific challenge given the state's budget situation. Vice Chancellor Paul, Vice Chancellor Owens and I are working to address some of the facility issues through federal appropriations and private gifts. We have yet to be successful in obtaining funds for building an addition to house the Nebraska Center for Virology, but private gifts will build an education and research building at the Gudmundsen Sandhills Laboratory.

*Darrell W. Nelson
Dean and Director*

IANR Programs of Excellence Pre-proposals

ARD faculty members are involved in the following pre-proposals that were submitted this month to the Programs of Excellence (POE) effort coordinated by the Office of the Senior Vice Chancellor for Academic Affairs:

Water Resources Research Initiative
Kyle D. Hoagland and Sherilyn C. Fritz



Sedimentary Geology and Meteorology/Climatology
Chris Fielding, Clint Rowe and Steve Hu

Veterinary Diagnostic Center
David Steffen

Previously approved and funded POE projects that have ARD faculty involvement include: Bioengineering; Food Safety; Bioinformatics and Biological Modeling; and Proteomics, Functional Genomics and Structural Biology. We are pleased that the Bioengineering project received funding that will allow the creation of two new laboratories for biomedical engineering faculty in the basement of L.W. Chase Hall. In addition, funds have been allocated to create a special pilot plant in the Food Industry Complex. It will house research on the effects of processing on foodborne pathogens and other hazards. The plant will be created when space becomes available in the building.

Mussehl Endowment

Four proposals were submitted for the Mussehl Endowment. This substantial endowment was established in the University of Nebraska Foundation by the Mussehl Estate to support UNL poultry research programs. Projects eligible for endowment support include poultry management, health, nutrition, physiology, waste management and utilization, and poultry product research. The following proposals were funded:

Randy Wehling and Glenn Froning, Food Science and Technology

"Development of a Rapid Method for Measuring Bone Fragments in Mechanically Deboned Poultry Meat Using Near Infrared Spectroscopy"

Funded: \$14,700 September 1, 2003 — August 31, 2004

Sheila Scheideler, Animal Science Department

"Development, Assessment and Feasibility of a Value Added Hatchery Waste Phosphorus Product (HWPP)"

Funded: \$15,400 September 1, 2003 — August 31, 2004

Sheila Scheideler and Mary Beck, Animal Science Department

"Effects of Step-Down Lighting Programs and Optimizing the Molt Diet for Non-Fasting Molting Regimes"

Funded: \$16,430 September 1, 2003 — August 31, 2004

Harshavardhan Thippareddi, Susan Cuppett and Glenn Froning, Food Science and Technology

"Effects of Dietary Linoleic Acid on the Sensory and Microbiological Quality of Fresh and Irradiated Broiler Meat: Extending the Shelf Life Through Antioxidant Supplementation"

Funded: \$15,000 September 1, 2003 — August 31, 2004

Multistate Research Activities Summarized

At the September 2003 meeting of the North Central Regional Association (NCRA), a proposal was approved to redesignate the acronyms for two multistate research activities. The new designations went into effect on Oct. 1, 2004. The following gives a short summary about the various types of multistate activities. Check at <http://www.wisc.edu/ncra/> for more information and required formats or contact Nancy Betts.

I. Multistate Research Projects (NC):

Activity: Traditional research projects that are cooperative, jointly planned and employ multidisciplinary approaches to solve problems that concern more than one state and usually more than one region

Membership (technical committee): State Agricultural Experiment Station (SAES) scientists, an Administrative Advisor (AA), CSREES representative, other public and private sector scientists and, as applicable, extension specialists and/or extension agents

Funding: Seed dollars to support Nebraska's contribution and travel dollars usually yearly for five years

II. Multistate Research Coordinating Committees (CC) and Information Exchange Groups (IEG):

Designation: currently NCR; adopted NCRIEG

Activity: An authorized group of research scientists, and in many cases extension specialists and extension agents, working on a topic area of shared interests, with coordinated activities and the exchange of outputs. (Note: This is not intended as a mechanism for preparing a multistate research project outline, although these can evolve into a research project.)

Membership: AA, CSREES representative, scientists and, as applicable, extension specialists and/or agents

Funding: Travel to meetings usually yearly for five years

III. Committee responsible for developing proposal for new/revised MRP

Designation: currently NCT; adopted NCDC (developmental committee)

Membership: SAES scientists and others who form a writing committee

Funding: Travel to meet with writing group yearly up to two years

IV. Other Multistate projects types

- *National Research Support Projects (NRSP):*

Activity: Activities that support research needs but are not research per se are authorized as NRSPs. These include development of enabling technologies, development of support activities (such as collecting, assembling, storing and distributing materials, resources and information), sharing of facilities needed to accomplish high priority research, but which is not of itself primarily research.

Membership: four AAs (one appointed from each SAES regional association), a CSREES representative and scientists from SAES and elsewhere, as appropriate

Funding: Determined by SAES Directors

- *Emergency or Rapid Response Research Activity (Region-500 series):*

Activity: Range of activities from formally organized research on targeted objectives to very informal research coordination or information exchange activity, depending on the circumstances. This activity is intended to provide a mechanism to assure responsiveness to acute crises, emergencies and opportunities using the multistate research approach.

Membership: AA, CSREES representative, research scientists, and, as applicable, extension specialists and/or extension agents

Creation and funding: Proposed by Regional Executive Director and approved by CSREES

- *Research Advisory Committees (NCA):*

Activity:

- Provide stakeholder linkages, technical advice and review to regional associations
- Identify potential participants in NC, NCR(IEG) and NCT(DC)
- Assist in developing multistate research partnerships
- Assist in identifying significant findings and impacts from multistate research

Membership: university department heads/chairs or other institutional managers, along with an AA and sometimes a CSREES representative

New or Revised Projects

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The following station projects were approved recently by the USDA Current Research Information System (CRIS):

NEB-12-268 (Agronomy/Horticulture) Sustainable Farms, Landscapes and Rural Communities in Nebraska: An Agricultural Systems Team Approach
Investigator: Charles A. Francis
Status: Revised Hatch project effective July 1, 2003

NEB-12-299 (Agronomy/Horticulture) Development of Stress Resistant/High Yield Sorghum Germplasm for Release and Use in Investigation of Contributing Physiological Mechanisms
Investigator: Jerry D. Eastin
Status: New Hatch project effective June 1, 2003

NEB-17-084 (Entomology) Host-Plant Resistance, Insect-Plant Interactions, and Insect Genetics
Investigator: John E. Foster
Status: New Hatch project effective July 1, 2003

NEB-27-003 (School of Natural Resources) Exchange of Carbon Dioxide and Other Atmospheric Trace Gases in Vegetated Ecosystems
Investigator: Shashi B. Verma
Status: Revised Hatch project effective April 1, 2003

NEB-32-011 (SARE OFFICE) North Central Region (NCR) Sustainable Agriculture Research and Education (SARE) Program
Investigator: W.F. Wilcke
Status: New Cooperative Agreement effective July 1, 2003

NEB-40-026 (School of Natural Resources) Landscape-Level Mechanisms Influencing Population Dynamics of Birds
Investigator: Larkin Powell
Status: New Hatch project effective April 1, 2003

NEB-40-027 (School of Natural Resources) Radiative Transfer in Vegetative Canopies with Emphasis on Canopy Structure
Investigator: Betty Walter-Shea
Status: New Hatch project effective August 1, 2003

NEB-92-038 (Family and Consumer Sciences) Great Marriages: A Qualitative Study
Investigator: John DeFrain
Status: New Hatch project effective July 1, 2003

FY 2004 Appropriation for USDA/CSREES

The House of Representatives and the Senate have passed slightly different versions of the CSREES appropriation for FY 2004. The Senate version of the appropriation provides \$180 million for the National Research Initiative (NRI), which is about \$14 million more than the FY 2003 level. Unfortunately, the House version provides only about \$149 million for the NRI. The House version provides a slight increase for formula-based programs, whereas the Senate version level funds formula programs. The House version provides \$16 million for Homeland Security issues (primarily enhancement of the plant and animal diagnostic laboratory network), whereas the Senate version does not provide funding for this purpose. Most of the other research and integrated programs are maintained at FY 2003 levels in both the House and Senate bills. We anticipate that a Conference Committee will meet soon to resolve the differences between the two versions and that the final appropriations bill will be passed by Congress and signed by President Bush within the next month.

Program	FY2003 Enacted*	FY2004 House	FY 2004 Senate
----- \$, thousands -----			
Research:			
Hatch Act	178,977	180,148	178,977
McIntire-Stennis Forestry	21,742	21,884	21,742
Evans-Allen Program	35,411	36,000	35,411
Animal Health and Disease	5,065	5,065	5,065
National Research Initiative	166,045	149,248	180,000
Special Research Grants	111,534	101,241	101,637
Improved Pest Control	15,165	15,194	14,976
Canola — Alternative Crop	840	840	840
Critical Ag Materials Act	1,093	0	1,242
Hesperaloe — Alter. Crop	348	0	840
1994 Institutions	0	998	1,093
Joe Skeen Rangeland	994	1,000	0
Sustainable Agriculture	13,661	13,661	13,661
Aquaculture Centers	4,471	3,996	4,471
Federal Administration	29,466	36,815	26,698
Total	584,861	567,430	586,813
Higher Education:			
Institution Challenge Grants	4,888	4,888	4,888
Graduate Fellowships	3,222	3,222	3,222
Multiculture Scholars	992	992	992
1890 Capacity Building	11,404	9,479	11,404
Hispanic Educ. Partnership	4,073	4,073	4,073
1994 Institutions	1,689	1,689	1,689
Alaska/Hawaii Institutions	3,477	2,997	3,500
Secondary Ag Education	944	994	994
Total	30,689	27,342	30,762
Cooperative Extension:			
Smith-Lever (3)b&(3)c	279,390	275,940	279,390
1890 Institutions	31,908	31,908	31,908
Farm Safety	5,489	5,489	5,489
Food and Nutrition Educ.	58,185	58,185	58,185
Indian Reservation Agents	1,983	1,983	1,983
Pest Management	10,689	10,689	10,689
Sustainable Agriculture	4,843	4,843	4,843
Youth at Risk	8,426	8,426	8,426
Youth Farm Safety	496	496	496
Renewable Resources Act	4,516	4,093	4,516
1890 Facilities	14,903	13,500	14,903
Rural Health and Safety	2,605	0	2,605
1994 Extension	3,365	3,373	3,273
Grants to Youth Orgs.	2,981	0	2,981
Federal Administration	20,741	19,417	20,397
Total	450,520	438,242	450,084
Integrated Activities:			
Critical Issues — Disease	497	497	497
Rural Develop. Centers	1,503	1,503	1,503
Water Quality	12,887	12,887	12,887
Food Safety	14,870	14,870	14,870
Pest Impact Assess.	4,502	4,501	4,502
Int. Science Education	497	1,000	497
Crops at Risk — FQPA	1,487	1,487	1,487
FQPA Risk Mitigation	4,857	4,857	4,857
Methyl Bromide Trans.	3,229	3,229	3,500
Organic Transition	2,111	2,111	2,111
Homeland Security	0	16,000	0
Total	46,439	62,942	46,711

Proposals Submitted for Federal Grants

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The following is a listing of proposals that were submitted the past few months by faculty for federal grant programs. While not all grants will be funded, we are appreciative of faculty members' outstanding efforts in submitting proposals to the various agencies.

Terry Mader, Q. Steven Hu and Rick Rasby — USDOE/NIGEC — Evaluation of Ecosystem Models for Beef Cattle Production — \$324,512

Brad Zumwalt and Mark Hutchison — USDA/AMS — Seizing the Opportunity: Helping North Central Producers to Enter the Growing Goat Meat Market — \$96,800

Al Peters and Lei Ji — NASA — Forecasting Vegetation Greenness with Satellite and Climate Data — \$485,841

Curtis L. Weller — U.S. Department of Agriculture and U.S. Department of Energy — Compositional Analysis of Grain Sorghum Lipid Materials — \$323,981

Albert Weiss and P. Stephen Baenziger — USDOE/NIGEC — Improved Predictions of Winter Wheat Growth, Development and Yield in the Great Plains of the United States — \$306,464

Robert M. Caldwell and David R. Swanson — USDOE/NIGEC — The Value of Detail in Ecosystem Models for Predicting County-Level Wheat Yields Throughout the Great Plains — \$363,361

Gary Y. Yuen — USDA/ARS — Biocontrol of Scab with *Stenotrophomonas maltophilia* C₃ — \$19,229

Janos Zempleni — NIH — The Essential Role of Biotin in Cell Proliferation — \$605,000

James E. Specht — USDA/ARS/SSA — Drought Stress Tolerance in Nebraska — \$68,185

Robert Wright — USEPA — Demonstration and Evaluation of Reduced Risk Pesticides to Protect Against Seed and Seedling Insects in Corn — \$39,875

Larkin Powell — U.S. Fish and Wildlife — Comparing Sustainability of Grazing in the Nebraska Sandhills: Which Regime is Best for Cattle and Wildlife — \$63,000

Milford Hanna and Sandun Fernando — USDA/NRCS — Development of a New Biofuel Comprised of Ethanol, Biodiesel and Diesel Fuel Blends (EB-Diesel) — \$308,879

Scott Josiah — USDA/FS — Market Driven Conservation: Producing Commercially Valuable Woody Crops in Riparian Buffers — \$43,780

Don Wilhite — USDA/CSREES/SPECIAL — Developing Drought Mitigation and Preparedness Technologies for the U.S. — \$46,296

Ed Peters — USDA/FS — Riparian Management for Aquatic Health in the Central Great Plains — \$23,886

Walter H. Schacht, Geoffrey M. Henebry, Patrick Reece, Jerry Volesky and Bruce E. Anderson — USDA/RMA — Assessing Interannual Variation in Forage Production: Integrating Climatic Analysis, Advanced Remote Sensing and Ecological Forecasting for Risk Assessment and Management — \$608,880

Ruben Donis — USDA/CSREES/NRI through University of Maryland — Control and Prevention of Avian Influenza in the U.S. — \$384,532

Joseph J. Barycki — NSF — CAREER: Regulation of Glutathione Homeostasis — \$736,868

James Brandle — USDA/FS — Seedscape — Practically Speaking — \$10,000

Qi "Steve" Hu — NOAA — Diagnostic and Modeling Study of Land Memory Processes Affecting Summer Monsoon Rainfall in the SW United States — \$315,086

Vadim Gladyshev — Department of Health and Human Services — Mechanism of Prostate Cancer Prevention by Selenium — \$1,631,250

Julie M. Stone — NSF — Role of a Transcriptional Regulator in Programmed Cell Death and Plant Development — \$370,596

Thomas P. Powers — NSF — Nematode Communities in the Nebraska Sand Hills — \$195,483

Martin B. Dickman — NSF — Role of Proline in Blocking Fungal Apoptosis and ROS Induced Stress — \$623,025

Han Asard — NSF — Biochemical Properties and Physiological Functions of Plant Cytochromes b561 — \$396,178

David R. Smith — USDA/APHIS — An Accurate Determination of the Proportion of Beef Cattle Herds with Johnes Disease and Risk Factors for Herd Status — \$100,000

Xun-Hong Chen and Kenneth Hubbard — NOAA — The Interactions of Soil Moisture with Ground Water, Vegetation and Atmosphere — \$382,809

Dean Eisenhauer — USDA/FS — Improved Methods for Assessing Infiltration in Riparian Buffers — \$20,462

Galen Erickson — USDA/CSREES through North Carolina State University — Managing Phosphorus in Beef Feedlot Operations — \$29,396

Anne K. Vidaver — USDA/NRI — Detection, Molecular Analysis and Plant/Microbe Interactions of the Toxigenic Bacterium *Rathayibacter toxicus* and *R. rathayi* in Grasses — \$997,426

Dennis Schulte, Rick Koelsch, David Billesbach and Lakshmi Koppolu — USDA/NRI through Iowa State University — Verification of Odor Dispersion Modeling for Siting of Livestock and Poultry Production Systems — \$122,135

Galen Erickson — USDA/NRI — Evaluation of Dietary and Management Intervention Strategies to Reduce Emissions from Cattle Feedlots Using Standard Field Protocols — \$499,051

Raymond Supalla — USDA/ARS — Addressing Water Supply and Environmental Needs in the North Platte River Basin with Markets — \$17,200

Qi "Steve" Hu — NOAA — Diagnostic and Modeling Study of Land Memory Processes Affecting Summer Monsoon Rainfall in the SW United States — \$315,086

Clinton Jones — NIH — The HSV-1 LAT Gene Regulates Interferon Expression — \$401,500

Jeffrey D. Cirillo and Andrew K. Benson — NIH/NIAID — Evolutionary Mechanisms in Infectious Diseases — \$1,735,300



Grants and Contracts Received August and September, 2003

Agricultural Economics

Giannakas, Konstantinos — USDA/ARS	\$ 25,000
Suppala, Ray — USDA/ARS	17,200
Miscellaneous Grants under \$10,000 each	20,432

Agronomy/Horticulture

Baenziger, Stephen — Nebraska Wheat Board	60,000
Beecher, Brian — Nebraska Wheat Board	40,000
Cassman, Kenneth — USDA/ARS	20,000
Diestler, Dennis — NSF	22,779
Dobermann, Achim — Foundation for Agronomic Research/United Soybean Board	20,000
Graef, George — USDA/ARS	144,578
Wortmann, Charles — Alan and Irene William Endowment via UN Foundation	14,000
Miscellaneous grants under \$10,000 each	15,250

Animal Science

Calkins, Charles — Nebraska Beef Council	33,569
Klopfenstein, Terry — Nutrition Physiology Corporation	43,080
Miscellaneous grants under \$10,000 each	5,000

Biochemistry

Banerjee, Ruma — NIH	341,429
Becker, Don — NIH	187,867
Gladyshev, Vadim — NIH	165,000
Simpson, Melanie — Layman Funds via UN Foundation	10,000
Weeks, Donald — United Agri Products	10,000

Biological Systems Engineering

Koelsch, Rick — Tire Recycling Centers, USA, INC	25,055
Schulte, Dennis — National Pork Board	52,375

Biometry

Marx, David — USDA/ARS	26,667
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Center for Applied Rural Development

Allen, John — University of Missouri — Columbia	86,762
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Center for Biotechnology

Miscellaneous grants under \$10,000 each	9,132
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Entomology

Kamble, Shripat — USDA through Michigan State University	86,355
Meinke, Lance — Monsanto	25,000
Miscellaneous grants under \$10,000 each	16,000

Food Science and Technology

Hefle, Susan — USDA/CSREES	139,309
Jackson, David — Ohio State University	33,750
Taylor, Stephen — USDA/CSREES	39,007
Taylor, Stephen — USDA/CSREES	445,785
Miscellaneous grants under \$10,000 each	7,588

Northeast Research and Extension Center

Hunt, Thomas — Iowa State University	10,995
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Nutritional Science and Dietetics

Zempleni, Janos — NIH	145,000
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Panhandle Research and Extension Center

Gary Hein — USDA/ARS	36,700
Pavlista, Alex — Nebraska Department of Agriculture	24,750
Miscellaneous grants under \$10,000 each	6,000

Plant Pathology

Giesler, Loren — Ohio State University	12,312
Giesler, Loren — Iowa State University	18,180
Mitra, Amit — USDA/CSREES	200,000
Steadman, James — USDA/ARS	49,475
Miscellaneous grants under \$10,000 each	14,600

Plant Science Initiative/Horticulture and Agronomy

Mackenzie, Sally — U.S. Department of Energy	99,999
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School of Natural Resources

Gosselin, Dave, Ed Harvey, Matt Joeckel and Mark Kuzila — USEPA	25,000
Hoagland, Kyle — Nebraska Game and Parks Commission	33,963
Holz, John — Nebraska Department of Environmental Quality	45,000
Hu, Steve — U.S. Department of Commerce	40,000
Jess, Michael — Nebraska Department of Health and Human Services	24,497
Jess, Michael — USGS	40,390
Josiah, Scott — USDA/FS	43,780
Peters, Ed — Nebraska Game and Parks Commission	219,361
Powell, Larkin — NPS	25,000
Wedin, Dave, Geoffrey Henebry, Tim Arkebauer and Dave Billesbach — NSF	1,696,675
Wilhite, Donald — USDA/CSREES	208,962
Wilhite, Donald — Columbia University	17,000
Miscellaneous grants under \$10,000 each	14,732

Veterinary and Biomedical Sciences

Schmitz, John — Nebraska Department of Health and Human Services	20,000
Zhon, You — Layman funds via UN Foundation	10,000
Miscellaneous grants under \$10,000 each	2,500

West Central Research and Extension Center

Payero, Jose — USGS	13,844
Miscellaneous grants under \$10,000 each	1,500

GRAND TOTAL \$ 5,288,184

Correction: In the August 2003 ARD Newsletter, the amount of the USDOE-EPSCOR grant to Shashi Verma, Timonthy J. Arkebauer, Ken Hubbard, J. Knops and Gary Lynne was incorrect. The grant is for \$941,161.

Diane says

A great purpose leads to great achievement.