2-1999

ARD News February 1999

ARD
Agricultural Research Division News
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February 1999 Volume 33, Number 3

Dean's Comments

Dear Colleagues:

I am currently in the process of studying approximately 260 Annual Reports of Faculty Accomplishments (ARFA) as part of the IANR faculty evaluation process. Two generalizations have arisen from this examination of ARFAs. First, faculty are struggling to identify impacts. From a research perspective, we are looking for statements of potential impacts. If we are unable to speculate on the potential impacts of our research from the standpoint of adding to the storehouse of new knowledge or improving the social, economic or environmental well being of our clientele, taxpayers will wonder why the project is being undertaken.

Second, many faculty are having difficulty stating a professional development plan for the upcoming year. It appears that most faculty are not thinking about their professional development to any depth. Professional development can take many forms: enrollment in a course, learning a new skill, participating a development seminar, reading outside the discipline, attending professional/scientific meetings, engaging in a change of duty station, or applying for a faculty development leave.

Each project leader has been requested to provide information about their project(s) on a World Wide Web database. It is important that this information be entered completely using lay language. This will serve as the only source of project level impact reporting and the database will be used by CIT News and Publishing in developing news releases, stories for **Research Nebraska** and **Endeavors**, and submissions for national impact reports. We believe that this database will save everyone a lot of time and minimize reporting. We will appreciate your assistance in getting the database complete and on line.

Darrell W. Nelson
Dean and Director

112th ARD Annual Report

The 112th Annual Report for ARD recently was published. Although this report is required by legislation establishing the Nebraska Agricultural Experiment Station on March 31, 1887, it is published primarily as a way to communicate faculty research accomplishments to decision makers. The publication also serves as a historical record of faculty appointments, active projects, faculty and graduate student recognition and outputs from the research program.

The annual report is sent to wide range of people including the Governor, members of the Nebraska Legislature, the Nebraska congressional delegation, members of the Board of Regents, NU and UNL administrators, state agency directors, USDA officials, ARS collaborators, and IANR supporters. Copies of the annual report have been sent to each unit administrator for circulation to faculty. Anyone interested in having a personal copy of the report should contact the ARD office at 2-2045.

Travel on Regional Project Funds

ARD Advisory Council approved a policy several years ago regarding travel to professional society meetings using regional research funds that have been assigned to departments. These funds are intended to direct support of research contributing to the regional project objectives. They may be used for travel that relates directly to the regional project only, such as research planning meetings. They should not be used to support travel to professional society meetings or similar meetings that do not relate directly to the regional project. Support for travel to these should be from other grant funds. This policy is intended to ensure the most effective use of regional research funds in direct support of research and to ensure that use is consistent

with the language and the intent of the federal legislation authorizing the appropriations of regional research funds.

NABC Bioethics Institute

North Carolina State University is sponsoring the 1999 NABC Bioethics Institute on May 22-27 in Raleigh. The Bioethics Institute is designed to teach faculty how to help students deal with ethical issues in the life sciences such as the use of animals for biomedical research, the social implications of genetically engineered food, and indigenous peoples rights to novel genes. The aim of the course is to provide the knowledge base so that faculty can integrate ethics into the life science curriculum by emphasizing active learning skills.

Applicants must be tenured or tenure-track life scientists committed to serious study of moral philosophy. Each participant receives a stipend of $250 plus books and other materials. In addition, participants will receive a $650 travel and living expense allowance. Applications are due March 1, 1999. Please contact your unit administrator or the ARD Office for more information. Application instructions are available at:

http://www.cals.cornell.edu/extension/nabc/bioethicsinstintro.html

Ehlers Report Released

In February 1997, the House of Representatives commissioned a study by the House Science Committee to help Congress "develop a new, sensible, coherent long-range science and technology policy." Led by Representative Vern Ehlers, the Science Committee produced a report on the state of science and technology policy titled "Unlocking Our Future: Toward a New National Science Policy" (http://www.house.gov/science/science_policy_study.htm).

This report focuses on basic research funded by most federal agencies except agriculture, defense and health. Most of the criticism of the report is directed at the fact that the defense and health, the two largest components of federal R & D funds, are not addressed. Another controversial issue is the proposal that basic research is the domain of the federal government and that "states are far better suited to stimulating economic development through technology-based industry within their borders." The Ehlers report does pay special attention to science education and makes a strong case for K-12 programs; teacher training; and undergraduate and graduate science, math and engineering programs. Some other criticisms revolve around that fact that the report is too status quo oriented and does not focus on future opportunities; lacks emphasis on environmental quality issues; and does not examine the role that science and technology plays in the distribution of educational opportunities, access to health care or the distribution of income.

NASULGC is concerned that agricultural R & D was not addressed in the report. As a consequence, NASULGC has appointed a President's Commission to obtain more focus on a science policy for agriculture. ESCOP also has been concerned about the lack of federal agency interest in agricultural research and is devising a strategy for engaging decision makers on the importance of a science policy for agricultural and natural resource programs. The Agricultural Research Institute has convened the first of two meetings to dialogue on this issue with Congress, private industry, federal agency administrators and university leaders.

Innovative and High Risk Research Program

Four 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 members' 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 three proposals were funded by the Innovative and High Risk Research Program effective January 1, 1999:

Chris Calkins, Animal Science Department
"Adding Value to Low-Quality Beef Muscles Through Glycolytic Inhibition of Pre-Rigor Muscle"
Amount Funded: $15,000

Jess Miner, Animal Science Department
"Purification of Porcine Acylation Stimulating Protein (ASP)"
Amount Funded: $15,000

Albert Weiss, School of Natural Research Sciences
{Co/Investigators: P.S. Baenziger (Agronomy), K.M. Eskridge (Biometry), G.H. Helmers, Agricultural Economics, D.J. Lyon (PREC), S. Madhavan (Biochemistry), J.W. Maranville (Agronomy), and D.R. Shelton (Agronomy)}
"Wheat Ecosystems for the Future: Addressing Climate Change and Profitability"
Amount Funded: $13,500

Federal R & D Funding for FY 1999

Research and development programs fared well in the final FY 1999 budget allocations. Defense R & D increased by 3.5 percent, non-defense R & D increased by 7.4 percent, and basic research increased by 11.3 percent. Listed below are the FY 1999 R & D budgets for a number of federal agencies and percentage increase from FY 1998 provided by Congress:

Agency	R&D Budget, Millions	% Increase
DOD, military	38,532	2.9%
DOD, other	30,729	3.7%
NASA	9,727	-1.6%
DOE	7,002	11.4%
HHS	15,748	14.0%
NIH	14,943	14.1%
NSF	2,784	8.4%
USDA	1,656	6.6%
DOT	696	3.0%
EPA	692	3.0%
NOAA	599	3.3%
AID	150	0%

The R & D budget for USDA includes funding for ARS and CSREES including the extension funds. We were pleased that Congress increased the USDA research funding for FY 1999 but expect a more difficult situation with the Congress now in session because of increasingly tight budget caps agreed to several years ago.

Building Demolition Completion at the ARDC

The demolition of contaminated and unused former ordnance plant buildings at the ARDC is scheduled to conclude the first part of March. As part of the demolition activities, several hundred buildings have been razed. Prior to demolition, asbestos was removed from the buildings and disposed at the Butler County Landfill. The wood and metal demolition debris also have been hauled to the Butler County Landfill. Over 150,000 tons of cement debris is being recycled by local governmental entities.

The building demolition and asbestos remediation were performed by private companies under a contract with the Army Corps of Engineers. The Department of Defense funded the demolition as a result of efforts by Senator Bob Kerrey. The ARDC appreciates the assistance and patience of many individuals in making the demolition activity a successful and safe undertaking. Thanks for your efforts!

New or Revised Projects

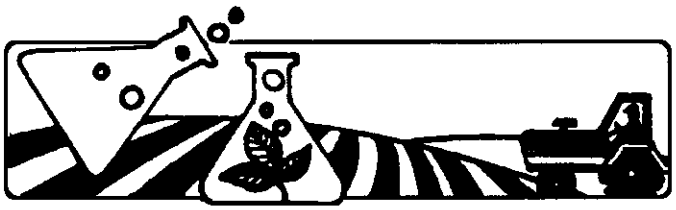
The following station projects were approved recently by the USDA Current Research Information System:

NEB-15-087 (Biochemistry) Regulation of Photosynthetic Processes
Investigator(s): Ray Chollet, John P. Markwell and Robert J. Spreitzer
Status: Revised Hatch project that contributes to NC-142 effective Oct. 1, 1997

NEB-16-080 (Food Science & Technology) Competitive Inhibition of Food-Borne Pathogens in Meat and Poultry Products and in Cattle
Investigator: Mindy Brashears
Status: New Hatch project effective July 1, 1998

NEB-40-001 (School of Natural Resources) Developing Drought Mitigation and Preparedness Technologies in the U.S.
Investigator: Donald A. Wilhite
Status: New Special grant effective June 1, 1998

NEB-48-024 (South Central Research & Extension Center) Epidemiology and Life History of *Claviceps africana* in the Great Plains
Investigator: James P. Stack
Status: New Special grant effective June 1, 1998



Grants and Contracts Received December 1998 and January 1999

Agricultural Economics	
Miscellaneous grants under $10,000 each	3,000
Agronomy	
Baenziger, P. S. — Charles and Katherine Baker Endowment — UN Foundation	12,000
Eastin, Jerry — Pioneer International	14,895
Mortensen, Dave — USDA/CSREES	400,000
Shelton, D. R. — Haven Smith Memorial Funds via NU Foundation	28,338
Miscellaneous grants under $10,000 each	4,920

Animal Science	
Klopfenstein, Terry and Milton, Todd — Nebraska Beef Council	23,000
Milton, Todd — Elanco Animal Health	25,000
Milton, Todd and Grant, Rick — Novartis Seeds	42,556
Milton, Todd — Hoechst Roussel Vet	58,000
Scheideler, S. E. — Frank E. Inez L. Mussehl via NU Foundation	29,768
Miscellaneous grants under $10,000 each	6,000
Biochemistry	
Miscellaneous grants under $10,000 each	5,000
Center for Grassland Studies	
Massengale, M. A. — Arthur William Sampson Fellowship — NU Foundation	17,000
Miscellaneous grants under $10,000 each	2,500
Director's Office	
Ella M. Miller Endowment — via NU Foundation	35,000
Entomology	
Miscellaneous grants under $10,000 each	7,300
Food Science & Technology	
Brashears, Mindy — Frank E. and Inez L. Mussehl — NU Foundation	10,000
McKee, Shelly — Frank E. and Inez L. Mussehl — NU Foundation	10,000
Taylor, Stephen — Nebraska Department of Agriculture	80,000
Zeece, Michael and Markwell, John — Pioneer, Inc.	69,800
Miscellaneous grants under $10,000 each	12,224
Horticulture	
Miscellaneous grants under $10,000 each	5,792
Northeast Research & Extension Center	
Mader, Terry and Parkhurst, Anne — USDA/CSREES	350,000
Miscellaneous grants under $10,000 each	3,000
Panhandle Research & Extension Center	
Miscellaneous grants under $10,000 each	25,688
Plant Pathology	
Partridge, James — USDA/ARS	36,600
Rollins, Jeff — USDA/CSREES	90,000
Miscellaneous grants under $10,000	3,500
School of Natural Resources	
Hergenrader, Gary — USDA/FS	19,480
Miscellaneous grants under $10,000 each	6,000
South Central Research & Extension Center	
Benham, Brian — Burlington Northern	26,198
Miscellaneous grants under $10,000 each	5,860
Veterinary & Biomedical Sciences	
Barletta, Raul — Texas A&M	15,000
Jones, Clinton and Doster, Alan — USDA/CSREES	178,338
Moxley, Rod — USDA/CSREES	140,000
Miscellaneous grants under $10,000 each	1,270
West Central Research & Extension Center	
Adams, Don — Helen Porter Van Spronssen Charitable Trust — UN Foundation	10,000
Miscellaneous grants under $10,000 each	2,300
Total	**1,815,327**

Proposals Submitted for Federal Grants

The following is a listing of proposals that were submitted after mid-November 1998 by faculty for federal grant programs. While not all grants will be funded, we appreciate the faculty members' efforts in submitting proposals to the various agencies.

James R. Brandle, Michelle Schoeneberger, James Merchant and **Qinfeng Guo** — USDA/CSREES — Tree-Based Buffers: Ecological Implications in Agricultural-Dominated Landscapes Under Shifting Climate Scenarios — $263,031

David Stanley, W. Wyatt Hoback and **Leon Higley** — NSF — Anaerobiosis in Tiger Beetle Larvae: The Evolution of Flood Plain Exploitation — $4,600

John C. Allen — USDA/CSREES through North Dakota State University — Socioeconomic and Environmental Impacts of Agricultural Processing Plants — $123,941

Lois Scheyer — NSF — Effects of Chemical Modifications on the Properties of Wheat Gluten Films — $71,680

P. S. Baenziger, Donald Nettleton, Kulvinder Gill and **Kent Eskridge** — USDA/CSREES — The Genetic Basis of Agronomic Traits in Cultivated Wheat — $244,450

Milford A. Hanna, Jae Yoon Cha and **Qi Fang** — USDA/CSREES — Neural Network Modeling and Control of Extrusion Process — $163,479

David S. Jackson and **Deepak Sahai** — USDA/CSREES — Determining Corn Starch Functionality: Relationships Between Starch Polymer Structure Functions — $159,894

Ruma Banerjee — NIH — Reaction Mechanisms of Mammalian B12-Dependent Enzymes — $181,724

Saleem Shaik — USDA/CSREES — Impact of Climate Change on Agriculture Production, Factor Use Patterns and Total Factor Productivity — $90,000

Rochelle L. Dalla and **Shirley L. Baugher** — USDA/CSREES — Transformation in Rural America Community Impacts from Meat-Processing and Immigration — $219,162

Lori A. Allison — USDA/CSREES — The Role of a Family of Nuclear-Encoded Sigma Factors in Plastid Transcription Regulation — $304,525

Robert J. Spreitzer — USDA/CSREES — Rubisco Phylogenetic Correction — $271,100

Kenneth W. Nickerson, Patrick Dussault and **Kyle Hoagland** — NSF — Structure of Extracellular Quorum Sensing Molecules from Eukaryotes: Dimorphic Fungi and Diatoms — $403,188

Lloyd B. Bullerman, Andrew K. Benson and **Celestin Munimbazi** — USDA/ARS — Biological Control of Preharvest Aflatoxin Contamination Using *Bacillus pumilus* — $50,000

Thomas E. Clemente, Amit Mitra, James Steadman, George Graef and **and Brian Rector** — USDA/NRI — Pyramiding Transgenes with QTLs for Durable Resistance to *Sclerotinia* in Soybean — $487,289

Gary Y. Yuen and **Garald L. Horst** — USDA/NRI — Ultraviolet Effects on Turfgrass Disease Biocontrol by Applied Bacterial Agents — $137,578

Lloyd B. Bullerman, Milford A. Hanna and **Mauricio M. Castelo** — USDA/NRI — Extrusion Processing as a Means of Reducing *Fusarium* Mycotoxins in Cereal Foods — $170,889

Michael E. Scharf, Blair D. Siegfried, Lance J. Meinke, Robert J. Wright and **Laurence D. Chandler** — USDA/NRI — Esterase-Based Markers as a Tool for the Study of Resistance Evolution — $232,483

Amit Mitra — USDA/NRI — Broad-Spectrum Virus Resistance in Transgenic Crops — $228,508

Jeffrey D. Cirillo — USDA/NRI — Role of Entry Mechanisms in Virulence of *Mycobacterium marinum* — $333,863

David W. Stanley, Steven R. Skoda and **Dennis R. Berkebile** — USDA/NRI — Prostaglandins and Other Eicosanoids in Screwworm Host-Parasite Interactions — $97,720

Kulvinder Gill — USDA/NRI — Functional Genomic Analysis of a Major Gene Cluster Region of the Triticeae — $304,363

James E. Specht — USDA/ARS — Field Drought Tolerance in Soybean Plant Introductions and Breeding Lines in Nebraska — $40,000

John Markwell and **John C. Osterman** — NSF — Plant Formate Dehydrogenase — $370,271

P. S. Baenziger, Thomas Clemente, Martin Dickman, Amit Mitra, John Watkins and **David Baltensperger** — USDA/ARS — Enhancement of Scab Resistance in Winter Wheat Germplasm by Plant Breeding and Plant Transformation — $70,000

Xinzhi Ni, Sharron Quisenberry and **Leon Higley** — USDA/NRI — Light Modulation of Herbivore-Elicited Chlorosis — $191,892

Gerald Duhamel — USDA/NRI — Role of *Brachyspira pilosicoli mgl* Operon in Porcine Colonic Spirochetosis — $254,999

Jeffrey T. Gray and **Mindy M. Brashears** — USDA/NRI — Infection Dynamics of *Salmonella typhimurium* Multi-Drug Resistant DT104 in Cattle and Cats — $198,182

Fernando A. Osorio, F. Zuckermann and **Alan R. Doster** — USDA/NRI — The Effect of PRRSV on the Immune System During Acute and Persistent Infection — $237,545

Donald A. Wilhite — USDA/CSREES — Developing Drought Mitigation Preparedness Technologies for the U.S. — $187,120

Milford A. Hanna — USDA/CSREES — Industrial Agricultural Products Center — $59,878

Ruben Donis — NIH — Use of the Salmonella Type III Secretion System for Antigen Delivery — $596,587

Clinton Jones, Fernando Osorio, Alan Doster and **Howard Gendelman** — NIH — Inhibition of Programmed Cell Death by HSV-1 LAT Gene — $1,438,789

Susan L. Hefle — USDA/CSREES — Alliance for Food Protection — $140,340

Stephen L. Taylor — USDA/CSREES — Midwest Advanced Food Manufacturing Alliance — $395,759

Terry J. Klopfenstein, James R. Brandle and **Charles A. Francis** — USDA/CSREES — Integrated Crop/Livestock/Agroforestry Research for Sustainable Systems in Nebraska — $55,200

Stephen L. Taylor — USDA/CSREES — Development and Quality/Safety Enhancement of Specialty Food Products — $39,295

Marjorie F. Lou, Udaua B. Kompella and **Wallace Thoreson** — NIH — Ocular Transport Mechanisms and Efficacy of Noval ARIs — $103,170

Kyle Hoagland and **Istvan Bogardi** — US EPA — Impacts of Climate Change on Lake Phytoplankton at Regional and Local Scales — $422,228

nuGRANT, A New Grants Administration Effort

The Research Grants and Contracts Office has developed an electronic grants administration system that will be implemented during the next year. The first phase is the implementation of a shared database that will provide grant proposal and award information for all colleges and departments through **nulook**, will meet university reporting requirements, and provide data for the Nebraska Performance Model. Also under development in phase one are an electronic routing form and a budgeting tool.

Future phases will include the capability for full electronic proposal submission and award acceptance. If you have questions about **nuGRANT**, please contact Norm Braaten at 2-3780.

NABC Vision for Agricultural R & D in the 21st Century

The National Agricultural Biotechnology Council has issued a vision statement for agricultural R & D in the 21st century. This vision proclaims that agricultural R & D will take the lead in providing technology for a bio-based economy in the next century. In contrast to the present fossil fuel-based economy, the bio-based economy will use renewable resources such as plants instead of non-renewable fossil sources. With the bio-based industry now emerging, agricultural R & D will have a greatly expanded role beyond the traditional areas of food, feed and fiber.

The 20th century agricultural R & D has enabled the U.S. to have a secure, low-cost food supply and to export surplus food to the rest of the world. In the next century, agricultural R & D will maintain this food security while improving nutritional quality and food safety. Food will be modified to be more healthful and transgenic plants and animals will produce health-related products such as pharmaceuticals and vaccines.

The energy resources and industrial chemicals of the 20th century are fossil-fuel based. In the future, the dominant sources of energy and industrial products will be bio-based, at prices that are economically competitive with fossil derived sources. Bio-industrial crops and novel bio-based processes now are being developed to produce liquid fuels at about half the current cost of producing ethanol. Plants will be genetically altered to make bio-polymers or to be readily processed into chemicals, polymers and fibers. In the long-term, the need for imported fossil fuel could be eliminated, making the U.S. self-sufficient in energy, chemicals, and materials.

Bio-based industrial products will be a major U.S. economic growth area in the next century, improving economic security through the use of domestic vs imported resources, optimal use of currently unused or underused land, and geographically widespread production and manufacture across the U.S. Investments in agricultural R & D to develop the bio-based industry of the 21st century will enable the U.S. to be the world leader in this major emerging industry while expanding U.S. security in food, energy, environment, health and the economy.

Fulbright Scholar Awards Program

The Fulbright Scholars Program offers about 800 grants for university lecturing, advanced research, and combined research and lecturing. Opportunities range from two months to an academic year in another country. There are openings in 130 countries and, in many regions, multicountry research is possible. Virtually all disciplines participate.

The basic eligibility requirements for a Fulbright Scholar are U.S. citizenship and the Ph.D. or equivalent degree. For lecturing awards, university teaching experience is expected. The deadline for lecturing or research grants is Aug. 1 of the year before the award is to be implemented. For application materials contact the Council for International Exchange of Scholars, (202) 686-7877. To discuss the Fulbright Scholar Program please contact Dean Merlin Lawson, UNL International Affairs Office.

Diane says

The best thing about the future is that it comes only one day at a time.