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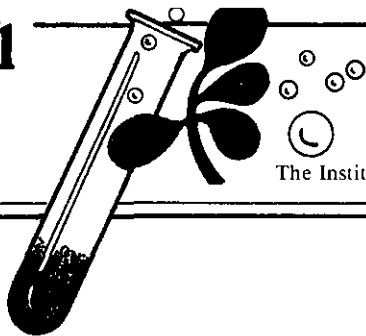
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October 1993

Volume 28, Number 2

COMMENTS FROM THE DEAN

Dear Colleagues:

Congratulations! During FY 1993, faculty with ARD appointments obtained grant and contract funds that totaled \$20,750,355. This amount represents 28 percent of all grant and contract funds received by UNL and 53 percent of all research funds obtained by UNL faculty. This accomplishment attests to the extra efforts that our motivated faculty put forth to obtain funding for their programs. The extramural funds coming to ARD faculty allow them to address problems of importance to Nebraska and the region. The grant funds also have a significant direct impact on the state's economy. Our studies show that ARD faculty have an above-average success rate in national-level competition for CSRS, NFS, NIH, and DOE grants, indicating the excellent quality of the science practiced within IANR. Keep up the good work.

The IANR Administrative Council has authorized the fill of several faculty positions with research appointments. Positions previously released include: department head (Ag Economics), range scientist (Agronomy), director (Panhandle R & E Center), and swine nutritionist (West Central R & E Center). Positions approved for fill at a future date include: department chair (Nutritional Science & Dietetics) and range scientist (West Central R & E Center). Positions recently released for fill within the next year include: meat and poultry byproducts (Biological Systems Engineering & Animal Science), animal molecular genetics (Animal Science), textile scientist (Textiles, Clothing & Design), and soil microbial ecologist (Agronomy). These positions were funded from the IANR Reallocation Pool based on requests from units and priorities identified in the IANR Strategic and Action Plans.

Your outstanding success with grant proposals, our opportunity to hire several highly qualified faculty members, and the ongoing enhancements in research facilities create a sense of optimism for the future. We appreciate your dedicated efforts to improve the quality and relevance of our research programs. ARD is committed to providing support of your research endeavors.

Darrell W. Nelson
Dean and Director

NEW OR REVISED PROJECTS

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

NEB-11-079 (Biological Systems Engineering) Agricultural Tractor Testing Board: Policies and Procedures
Investigator(s): L. L. Bashford, R. D. Grisso and K. VonBargen
Status: Revised Hatch project effective July 1, 1993

NEB-13-118 (Animal Science) Factors Affecting Calcium Transport in the Avian Small Intestine and Egg Shell Quality
Investigator: S. E. Scheideler
Status: New Hatch project effective Sept. 1, 1993

NEB-20-054 (Horticulture) Establishment and Management of Turf-Type Buffalograsses
Investigator: R. E. Gaussoin
Status: New Hatch project effective Sept. 1, 1993

NEB-43-047 (West Central Research and Extension Center) Selection and Development of Native Herbaceous Landscape Plants
Investigator: D. T. Lindgren
Status: Revised Hatch project effective Aug. 1, 1993



GRANTS AND CONTRACTS RECEIVED AUGUST AND SEPTEMBER, 1993

Agricultural Economics	
Helmers, G. — USDA/ERS	\$ 55,860
Miscellaneous grants under \$5,000 each	3,284
Agricultural Meteorology	
Easterling, W. E. — USDA Forest Service	25,000
Walter-Shea, E. A. and Arkebauer, T. J. — NOAA	150,000
Miscellaneous grants under \$5,000 each	1,000
Agronomy	
Comfort, S. K. — U.S. Army Cold Regions Research and Engineering Lab	24,990
Nissen, S. J., Martin, A. R., Lee, D. J. and Rowe, M. L. — USDA	74,740
Miscellaneous grants under \$5,000 each	47,438



Animal Science	
Klopfenstein, T., Calkins, C. and Stock, R. — Nebraska Beef Board	12,000
Miscellaneous grants under \$5,000 each	9,715
Biochemistry	
Banerjee, R. — March of Dimes	40,000
Markwell, J. and Sarath, G. — NSF	137,000
Biological Systems Engineering	
Martin, D. — Nebraska Department of Water Resources	57,000
Miscellaneous grants under \$5,000 each	5,000
Biometry	
Marx, D. B. — SmithKline Beecham	7,500
Entomology	
Higley, L. — NCR-PIAP via Ohio State University	16,500
Siegfried, B. — NCR-PIAP via Ohio State University	8,500
Stanley-Samuels, D. W. — Oklahoma State University	21,266
Stanley-Samuels, D. W. — UN Foundation	40,000
Miscellaneous grants under \$5,000 each	31,100
Food Processing Center	
McAuliffe, T. — Nebraska Banker's Association	6,855
Miscellaneous grants under \$5,000 each	1,144
Food Science and Technology	
Taylor, S. — M&M Mars	74,820
Miscellaneous grants under \$5,000 each	5,547
Forestry, Fisheries and Wildlife	
Brandt, J. R., Case, R. M., Holland, R. S. and Peters, E. J. — U.S. Fish and Wildlife	29,700
Hoagland, K. D. — Nebraska Department of Environmental Quality	16,649
Hoagland, K. D. — U.S. Fish and Wildlife	95,040
Hoagland, K. D. and Kayes, T. — MSU	15,000
Hoagland, K. D. — USDA/FS	12,000
Kayes, T. B. — MSU	13,445
Peters, E. J. and Holland, R. S. — U.S. Fish and Wildlife	33,500
Savidge, J. — U.S. Fish and Wildlife	10,780
Seibert, T. and Holland, R. S. — U.S. Fish and Wildlife	6,930
Horticulture	
Miscellaneous grants under \$5,000 each	26,452
Industrial Ag Products Center	
Hanna, M. A. — Kellogg Foundation	22,500
Northeast Research and Extension Center	
Mader, T. — Syntex Animal Health	30,000
Miscellaneous grants under \$5,000 each	11,100
Panhandle Research and Extension Center	
Miscellaneous grants under \$5,000 each	53,898
Plant Pathology	
Dickman, M. B. — USDA/BARD	140,690
VanEtten, J. — NIH	191,992
Miscellaneous grants under \$5,000 each	9,599
South Central Research and Extension Center	
Ferguson, R. B., Hergert, G. W., Cahoon, J. and Peterson, T. — USDA/CSRS	149,854
Miscellaneous grants under \$5,000 each	10,000
Veterinary and Biomedical Sciences	
Lou, M. — NIH	297,787
Srikumaran, S., Jones, C. J. and Thaker, S. R. — USDA	75,000
Miscellaneous grants under \$5,000 each	4,510
Water Center/Environmental Programs	
Volk, B. — USDA/ARS	160,000
Volk, B. — USDA	240,000
Watts, D. and Spalding, R. — USDA/CSRS	360,000
West Central Research and Extension Center	
Miscellaneous grants under \$5,000 each	18,675
Grand Total	2,891,360

PROPOSALS SUBMITTED FOR FEDERAL GRANTS

The following is a listing of proposals that were submitted after Aug. 1, 1993, 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.

Joel Cahoon — USDA/BARD — Soil and Water Properties as Indicators of Surged Flow Irrigation Success — \$164,040

Clinton Jones — National Institutes of Health — Regulation of HSV-2 Encoded RRA by Protooncogenes — \$663,887

Michael Zeece — USDA/OICD/RSED — Investigation of Easily Releasable Myofilaments (ERM) in Bovine Skeletal Muscle — \$60,000

Michael S. Turner — USDA/ACS — Cooperative Opportunities for Value-Added Contributions in the Pork Industry and the Impact of Public Policy Limitations — \$24,915

James E. Kinder — USDA/OICD/RSED — Controlling Reproductive Processes in Heifers to Enhance Efficiency of Beef Production and Improve the Heifers Well-Being — \$44,600

Nancy M. Lewis — National Institutes of Health — Breast Cancer Prevention: A Dietary Intervention — \$66,794

H. Edward Grotjan and Debora L. Hamernik — National Institutes of Health — Luteinizing Hormone Structure-Function Relationship — \$429,587

William E. Easterling — USDA — The Role of Trees in Semi-Arid Regions Under Climate Change — \$25,000

Marjorie Lou — National Institutes of Health — Protein-thiol Disulfide in Cataractogenesis — \$297,787

PROJECT FUNDED BY BOARDS

The following projects were approved by the Nebraska Dry Bean Commission for July 1, 1993-June 30, 1994 funding:

Gary Yuen	<i>Biological Control of White Mold and</i>	
Eric Kerr	<i>Other Diseases of Dry Beans</i>	\$8,500
James Steadman		
James Steadman	<i>Identification of the Rust Strains Infecting</i>	
Eric Kerr	<i>Beans in Western Nebraska and Implications</i>	
Daniela O'Keefe	<i>for Resistance Strategies 1992-93</i>	6,000
Daryl E. Ellis	<i>Evaluate Information Sources Through the</i>	
	<i>INTERNET System</i>	1,000
David Nuland	<i>Commercial Evaluation of Pinto Breeding Line</i>	
	<i>WM2-89-5</i>	1,000
David Nuland	<i>Evaluation of Dry Bean Cultivars for Adaptive</i>	
Dale Lindgren	<i>Characteristics, Performance, and Disease</i>	
James Steadman	<i>Reaction in Western Nebraska</i>	5,150
Dermot Coyne		
Durward Smith	<i>Processing Beans to Provide Ingredients for</i>	
Larry Williams	<i>Non-Conventional Foods</i>	7,900
Dermot Coyne	<i>Breeding Dry Beans with Multiple Disease</i>	
James Steadman	<i>Resistance Combined with Improved Seed</i>	
Anne Vidaver	<i>and Canning Quality, Yield and Plant Type</i>	12,700
Dave Nuland		
Dale Lindgren		

The following projects are additional awards from the Nebraska Corn Development, Utilization and Marketing Board for July 1, 1993 - June 30, 1994 funding:

David S. Jackson	<i>Application of Fundamental Chemical</i>	
Blaine Johnson	<i>Physical Properties to Corn Quality</i>	
Randy Wehling	<i>Measurement and Improvement</i>	10,380
David S. Jackson	<i>Development of a Nebraska Corn Quality Database</i>	5,000
Milford Hanna	<i>International Processing of Corn for New Food and Industrial Uses</i>	15,000

FY 1994 CSRS BUDGET

As indicated in the last issue of ARD News, the FY 1994 CSRS budget provides slight increases in funding as compared to FY 1993. Hatch Act funds increased by 1.5 percent. Although the National Research Initiative (NRI) increased by \$14.65 million, about \$7.83 of this amount was derived from moving a part of the IPM, PIAP, global change, and water quality funding from Special Grants to the NRI. We were pleased to obtain increases in programs on clearance of pesticides for minor uses and minor use animal drugs. The Nebraska Congressional delegation was very helpful in obtaining six state-specific Special Grants that will significantly enhance our research program.

Program	FY 1993	FY 1994
---- thousands of dollars ----		
Base Funds:		
Hatch Act	168,785	171,304
McIntire-Stennis	18,533	20,809
Animal Health	5,551	5,551
National Research Initiative	97,500	112,150
Special Grants:		
Aquaculture Research	316	316
Biofuels/Biomass	0	500
Global Change	2,000	1,250
IPM/Biological Control	4,450	2,000
Minor Use Animal Drugs	464	650
National Biol. Impact Assess.	300	300
Pesticide Clearance	3,500	6,750
Pesticide Impact Assess.	2,968	1,568
Rural Development Centers	500	500
Water Quality	8,950	4,500
Nebraska Specific Grants:		
Food Processing Center	50	50
Midwest Food Manufact. Alliance*	0	500
Non-food Agricultural Products	110	110
Rural Housing Policy	80	80
Rural Policies Institute**	525	525
Sustainable Ag Systems	70	70
Other Research Projects:		
Aquaculture Centers	4,000	4,000
Sustainable Ag Res and Educ.	6,725	7,400
Supplemental and Alter. Crops	1,168	1,818
Rangeland Research	475	475

* In partnership with several North Central Region universities.

** In partnership with Arkansas, Iowa State, and Missouri.

ARD MISSION

During the past few months, the ARD Advisory Council has worked to refine the ARD mission statement. The updated mission statement is presented below:

“The mission of the Agricultural Research Division is to conduct problem-solving and fundamental research that:

- addresses priority issues facing Nebraska’s agricultural and food industries;
- provides a knowledge base essential for managing our natural resources in ways that enhance the environment and ensure a sustainable base for food production;
- promotes family well-being and community development;
- educates future scientists through hands-on experiences.”

ARD GOALS AND OBJECTIVES

The ARD Advisory Council has spent the last few months studying and revising the previously established ARD “Goals” and “Objectives.” The “Goals” and “Objectives” listed below are those that the Council believes will move the ARD research program to a new level of excellence.

GOAL:

To enhance the effectiveness of our scientific community in conducting and disseminating the results from relevant, innovative, and focused research that is widely recognized for excellence in addressing the needs of today’s clientele and contributing to the scientific knowledge necessary to meet tomorrow’s challenges.

OBJECTIVES:

- Recruit and retain the most talented scientists as faculty members.
- Develop improved methods for assessing research needs.
- Implement focused research projects that support the targeted areas in the IANR Strategic Plan and maintain essential core programs.
- Achieve an appropriate balance in efforts devoted to agricultural profitability, post-harvest processing, natural resources/environment, and quality of life research.
- Encourage faculty to upgrade their knowledge and skills through a variety of professional development programs.
- Increase exposure of faculty, graduate students and post-doctoral scientists by encouraging them to regularly present their research at national and international meetings.
- Increase the number and quality of research accomplishment reports to decision-makers, targeted clientele groups and Nebraska citizens.

- Improve the rapidity with which research information is converted to extension publications and other educational materials.
- Assist clientele in applying or utilizing research results.
- Improve regional coordination of research programs.
- Increase interdisciplinary research to at least 25 percent of the program by FY 1995.
- Increase discretionary funds in ARD to 5 percent of the total budget to all "risk-taking" and investments in emerging opportunities.
- By FY 1995, increase the refereed publication output to an average of three per research FTE per year on a unit basis.
- By FY 1995, increase the number of dissertations/theses to an average of one per research FTE per year on a unit basis.
- By FY 1995, increase appropriated resources to \$150,000 per research FTE on a unit basis.
- By FY 1995, increase grant and contract funding to \$100,000 per research FTE on a unit basis.

ARD-MANAGED GRANT PROGRAMS

The following projects were funded for FY 1994 through grant programs managed by the Agricultural Research Division:

Interdisciplinary Research Grants:

- Name:** Ben Douppnik
Department: South Central Research and Extension Center
Project Title: Investigations on the epidemiology and control of maize chlorotic mottle virus
Amount: \$15,000
Status: Third year (July 1, 1993 - June 30, 1994)
- Name:** Marilyn Schnepf
Department: Nutritional Sciences and Dietetics
Project Title: Antioxidant incorporation in edible films for maintaining meat quality
Amount: \$20,000
Status: Second year (July 1, 1993 - June 30, 1994)
- Name:** Robert Britton
Department: Animal Science
Project Title: Feed quality improvement of sorghum grain
Amount: \$20,000
Status: Second year (July 1, 1993 - June 30, 1994)
- Name:** Susan Cuppett
Department: Food Science and Technology
Project Title: Utilization of poultry skin
Amount: \$19,530
Status: Second year (July 1, 1993 - June 30, 1994)

Innovative and High Risk Research Grants:

- Name:** Shawn Kaepler
Department: Agronomy
Project Title: Cloning differences between plant genomes
Amount: \$15,000
Status: One year (Sept. 1, 1993 - Aug. 31, 1994)
- Name:** Elizabeth Walter-Shea
Department: Agricultural Meteorology
Project Title: Ultraviolet radiation interactions in a vegetative canopy.
Amount: \$14,980
Status: One year (July 1, 1993 - June 30, 1994)
- Name:** Mark Morrison
Department: Animal Science
Project Title: The evaluation of yeast fermentation end-products for their contribution to improved animal performance via changes in rumen microbiology and metabolism
Amount: \$20,000
Status: One year (July 1, 1993 - June 30, 1994)

Sampson Range and Pasture Management Endowment:

- Name:** Gary Y. Yuen
Department: Plant Pathology
Project Title: Biological control of leafy spurge with endemic *Rhizoctonia solani*
Amount: \$10,000
Status: Second year (July 1, 1993 - June 30, 1994)
- Name:** James Stubbendieck
Department: Agronomy Department
Project Title: Control and management of eastern red cedar on Nebraska range and pastures
Amount: \$10,000
Status: Second year (July 1, 1993 - June 30, 1994)
- Name:** Scott J. Nissen
Department: Agronomy
Project Title: Revegetation of leafy spurge-infested rangelands following application of imazapyr
Amount: \$ 6,350
Status: Second year (July 1, 1993 - June 30, 1994)
- Name:** Don C. Adams
Department: Animal Science
Project Title: Integrated use of native range and subirrigated meadow for efficient forage and beef production
Amount: \$ 9,500
Status: Second year (July 1, 1993 - June 30, 1994)
- Name:** Robert G. Wilson
Department: Panhandle Research and Extension Center
Project Title: Leafy spurge control in native range
Amount: \$ 4,450
Status: Second year (July 1, 1993 - June 30, 1994)

Anna H. Elliott Fund Research Project Proposals:

Name: Gail A. Wicks
Department: Panhandle Research and Extension Center
Project Title: Use of smother crops to control weeds in corn
Amount: \$17,800
Status: Second year (March 1, 1993 - April 30, 1994)

Name: David Baltensperger
Department: Panhandle Research and Extension Center
Project Title: Improvement of proso millet breeding techniques
Amount: \$17,200
Status: Second year (March 1, 1993 - April 30, 1994)

Name: Gary D. Binford
Department: Panhandle Research and Extension Center
Project Title: Long-term effects of manure on soil nutrient levels and continuous corn yields
Amount: \$ 2,855
Status: Second year (March 1, 1993 - April 30, 1994)

Name: Drew J. Lyon
Department: Panhandle Research and Extension Center
Project Title: Effects of intermittent plowing in three wheat-fallow tillage system
Amount: \$15,000
Status: Second year (March 1, 1993 - April 30, 1994)

Name: Robert Wilson
Department: Panhandle Research and Extension Center
Project Title: Integrated systems for control of Canada thistle
Amount: \$22,000
Status: Second year (March 1, 1993 - April 30, 1994)

Name: Gary L. Hein
Department: Panhandle Research and Extension Center
Project Title: Factors affecting infestation potential of the Russian wheat aphid in winter wheat in western Nebraska
Amount: \$15,000
Status: Second year (March 1, 1993 - April 30, 1994)

Name: John E. Watkins
Department: Panhandle Research and Extension Center
Project Title: Develop an improved screening procedure for wheat streak mosaic virus
Amount: \$25,000
Status: Second year (March 1, 1993 - April 30, 1994)

Name: Don C. Adams
Department: Animal Science
Project Title: Plant maturity and supplementation effects on intake, digestibility, and passage rate of leaves and stems of Sandhills grasses in beef cattle
Amount: \$13,000
Status: Second year (March 1, 1993 - April 30, 1994)

DR. ALAN DOSTER SELECTED FOR LEADERSHIP DEVELOPMENT COURSE

Dr. Alan Doster, Professor of Veterinary and Biomedical Sciences and Director of the Veterinary Diagnostic Laboratory, has been selected to participate in the 1993-94 ESCOP/ACOP Leadership Development Course. Alan will complete a three-phase program that features a week-long "introduction to leadership" workshop, an Administrative Internship in the ARD Office from July through June, and a capstone seminar with federal agency personnel and Congressional staff members in Washington. While serving as an intern, Alan will lead project reviews, undertake several special projects and study research administration. We are pleased to have Alan working in our office during the next year.

Diane Says

Challenge — Don't try to think why you can't.
Think how you can.

RESTRICTIONS ON GRADUATE STUDENT FELLOWSHIPS

Some units have used grant funds to provide "add on" fellowships for graduate students currently holding research or teaching assistantships. Carl Mueller, Sponsored Programs Finance, has informed ARD that federal grant funds cannot be used to provide a "fellowship" or "scholarship" to undergraduate or graduate students. The only exception to this policy are those grants written specifically to provide fellowships or those grants having a fellowship "written in" to the grant proposal as a definite line item. Apparently, the key policy element resides with the federal definition of "student aid" that includes all fellowships and scholarships.

IMPROVEMENT OF RESEARCH FACILITIES

During the last year, major strides have been taken to improve our off-campus research facilities. These facility needs have existed for many years and we are pleased that the improvements have been undertaken using a variety of funding mechanisms. Listed below are funding sources and the projects that have been completed, or are being planned or under construction at the present time:

Bonds Retired By Cigarette Tax Revenues:

Elliott Building heating and air conditioning system
Research support building

Swine gestation/lactation building
Staff/conference center
Swine finishing building

Research and outreach building

Panhandle Research and Extension Center
West Central Research and Extension Center
West Central Research and Extension Center
Gudmundsen Sandhills Lab
Northeast Research and Extension Center
Agricultural Research and Development Center

Miller Land Sale Endowment:

Development of 80 acres of surface irrigated land	Panhandle Research and Extension Center
Irrigation well	High Plains Ag Lab
Linear move irrigation system	South Central Research and Extension Center
Linear move irrigation system	Northeast Research and Extension Center

Adams Street Land Sale Proceeds:

Storage building	ARDC (Ag Meteorology)
Machinery storage building	ARDC (Agronomy)
Feedlot renovation and addition	ARDC (Animal Science)
Shop and irrigation well	ARDC (Biol Sys Eng)
Lab renovation	ARDC (Entomology)
Irrigation system	ARDC (FFW)
Land preparation and irrigation equip.	ARDC (Horticulture)
Isolation pens	ARDC (Vet and Biomed Sci)
Road repair	ARDC (General)

Many of these projects have been undertaken without state appropriated funds. We hope to continue these self-help programs that provide state-of-the-art research facilities for faculty and staff. Our strategy is to address small projects with unit funds, medium-sized projects with bonds paid off by endowments and revolving funds, and large projects with appropriations through the capital construction budgeting process.

REPORT ON THE NATIONAL RESEARCH INITIATIVE FOR FY 1992

During FY 1992, the NRI program received 2,911 proposals requesting funds totaling \$597 million. Funding was available to support 777 grants totaling \$92,138,350. The success rate was 27 percent. The average grant award for regular research programs was \$126,998. The NRI also funded over \$16 million in Agricultural Research Enhancement Awards (individual postdoctoral fellowships, new investigator awards, and strengthening awards) during FY 1992.

Listed below are summaries of funding provided in various program areas, types of research, and degree of disciplinary involvement:

	percent of projects	percent of funds
Program Area:		
Natural Resources and Environment	18.4	18.5
Nutrition, Food Quality and Health	6.6	6.7
Animal Systems	20.1	25.6
Plant Systems	46.3	41.0
Markets, Trade and Policy	4.9	4.1
Processing for Value-Added Products	3.7	4.1
Type of Research:		
Fundamental Research	—	70.0
Mission-Linked Research	—	30.0
Disciplinary Involvement:		
Multidisciplinary Research	—	24.8
Single Discipline Research	—	75.2

A number of cross-cutting issues such as plant genome, forest biology, global change, sustainable agriculture, animal genome, animal health, and water quality were addressed as part of the funding provided under the six general program

areas. About 61 percent of the grants awarded addressed one or more of the cross-cutting issues.

FEDERAL RESEARCH AND DEVELOPMENT BUDGETS — FY 1992

Provided below is an analysis of federal expenditures for research and development (R & D) during FY 1992. It is evident that national defense and health receive most of the federal R & D funds. Natural resources and environment and agriculture programs receive a very small proportion of total federal R & D funds. A small percentage of the USDA budget is spent on R & D in contrast to some other programs such as space, general science or energy. Please note that the program area designated as "General Science" covers those activities funded by NSF.

Budget function	R & D \$, millions	R & D as percent of total	percent of total federal R & D funds
National defense	40,083	13.6	58.6
Health	10,055	10.9	14.7
Space research	6,744	51.1	9.9
General science	2,659	64.5	3.9
Energy	3,099	50.8	4.5
Transportation	1,523	4.1	2.2
Natural resources & environment	1,688	7.9	2.5
Agriculture	1,155	5.2	1.7

From NSF Bulletin 93-311

GREAT PLAINS REGIONAL CENTER FOR GLOBAL ENVIRONMENTAL CHANGE

The following grants have been awarded to UNL faculty members by the Great Plains Regional Center for Global Environmental Change. This is a new program that provides funding for faculty in Nebraska as well as other Great Plains states. Awards to faculty in other states are not shown.

Shashi B. Verma	<i>An Integrated Investigation of Methane and Carbon Dioxide Fluxes in Mid-Latitude Prairie Wetlands: Micro-meteorological Measurements, Process-Level Studies and Modeling</i>	\$ 158,000
Wm. E. Easterling Albert Weiss	<i>Development of a Nested Regional Model for the Conterminous United States and Formation of High Resolution Climate Change Scenarios with an Application to Crop Climate Models</i>	34,000
Kyle D. Hoagland Stephen G. Ernst	<i>The Detection of Climate Change Using Living and Extinct Diatom Floras</i>	68,000
Istvan Bogardi	<i>Space-Time Local Hydrology Influenced by Changing Climatology: Disaggregation, Prediction and Comparison</i>	36,000
Kenneth Dewey	<i>The Detection of Climate Change Using Long-Term Daily Climate Records Over Grassland Regions of The Northern Hemisphere</i>	46,000
Donald C. Rundquist David C. Gosselin	<i>Natural Responses of Shallow Lakes and Wetlands for Detecting Climatic/ Environmental Change</i>	120,000
Jim Brandle Wm. E. Easterling	<i>Assessment of Climate Change on a Mixed Agricultural and Forest Landscape on the North American Great Plains</i>	90,000