University of Nebraska - Lincoln
DigitalCommons@University of Nebraska - Lincoln

Agricultural Research Division News & Annual Reports

Agricultural Research Division of IANR

2-1-1992

ARD News February 1992

Follow this and additional works at: http://digitalcommons.unl.edu/ardnews

Part of the Agriculture Commons

"ARD News February 1992" (1992). *Agricultural Research Division News & Annual Reports.* Paper 72.
http://digitalcommons.unl.edu/ardnews/72

This Article is brought to you for free and open access by the Agricultural Research Division of IANR at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Agricultural Research Division News & Annual Reports by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

Agricultural Research Division News

The Institute of Agriculture and Natural Resources

Office of the Dean, 207 Ag Hall
Lincoln, NE 68583-0704
Phone (402) 472-2045

University of Nebraska-Lincoln

February 1992 Volume 26, Number 4

ARD "SERVICE OBJECTIVES"

All ARD administrators and office staff believe that our role is to provide support and service to the research programs of units and faculty members. We will continually strive to enhance the effectiveness of all research projects to the greatest extent possible. One means of assisting the research efforts of faculty members is to provide the highest level of administrative services possible. We are committed to excellence in administration and, hereby, establish the following "Service Objectives".

OFFICE STAFF OBJECTIVES:

- The following forms will be processed, signed and forwarded to the appropriate office/unit either the same day or the morning of the following day (in some cases additional processing may occur in Agricultural Hall before forms are returned to the unit or sent to City Campus):
  - Position descriptions
  - Personnel requisitions and related documents
  - Proposals to interview
  - Personnel Action Forms (PAFs)
  - Reimbursement vouchers
  - Research Council proposals/requests
  - IANR Professional Development requests
  - Permission to engage in outside professional activity
  - Requisitions and purchase orders
  - Tuition remission forms
  - Travel authorizations
  - Manuscript record forms
  - Other routine documents
- Telephone calls will be handled in a courteous and helpful manner. Telephone messages will be relayed as soon as the person returns or can be contacted.
- Efforts will be made to initiate scheduling project reviews within three working days after the research project outline arrives in ARD. The time that the review is conducted depends upon the availability of review committee members.
- All grant proposals, whether federal or private, will be processed and forwarded to either Sponsored Programs or USDA agencies as appropriate within eight working hours after receipt in ARD.
- Processing of revised project outlines and AD 416/417 Worksheets will be initiated within three working days after arrival in ARD. The project materials will be sent to the CRIS system and CSRS as soon as possible after this date.
- Processing of cooperative agreement and contracts will be initiated within three working days after arrival in ARD. Processing will be completed and the documents forwarded to the agency/company as soon as possible thereafter.

ADMINISTRATOR OBJECTIVES:

- Except in the most extreme circumstances, someone with ARD signature authority will be available every working day. Under no circumstance will there be more than one consecutive working day without this capability.
- RFPs will be sent to units within two working days after ARD receipt.
- Recurring RFPs will be anticipated and preliminary notice sent to units at least thirty days prior to the proposal deadline.
- Rationale for funding decisions will be communicated to unit administrators.
- All priority incoming mail will be processed as soon as possible and acknowledgements /responses will be sent within five working days.
- All telephone calls to a specific individual will be returned within twenty four hours after the person returns to the ARD office.
- Decisions or priority rankings on proposals for "local" grant programs (i.e., Layman Fund, UN Foundation, ARD Interdisciplinary Research, Elliott Fund, Sampson Fund, ARD International Travel, etc.) will be made within two weeks after deadline for receipt of proposals.
- Decisions on recipients for ARD awards will be made within two weeks after deadline for nominations.
- Decisions regarding allocation of "new" resources (i.e., equipment funds, operating, hourly, and GRA stipends) will be made within two weeks after deadline for receipt of proposals from units. Decision requiring joint decisions by divisions/college may require a longer period of time.
- Administrators will maintain an "open door" policy. We will be pleased to meet with any faculty member or unit administrator at any time our schedule permits

The Agricultural Research Division provides information and educational programs to all people without regard to race, color, national origin, sex or handicap.

RANKING OF 1992 ESCOP RESEARCH INITIATIVES

Initiative	Rankings ARD*	NC Region	Nation
Protection and enhancement of water resources	1	1	1
Devise alternative uses of agricultural products	2	11	16
Biology & mgmt of plant systems	3	6	5
Ensuring food safety	4	3	3
Compatibility of agriculture natural resources & environ.	5	2	2
Pest management strategies	6	4	4
Biol. & genetic enhancement of animal efficiency	7	8	8
Sustaining forest, range & related natural resources	8	10	7
Optimal health through improved nutrition	9	14	11
Plant genome mapping & genetics	10	7	9
Developing processes for new food and fiber products	11	13	15
Animal health and well being	12	9	17
Animal production systems	13	17	12
Enhancing composition, nutritional quality & safety of animal prod.	14	15	13
Families, communities, & rural development	15	16	14
Understanding dietary patterns & behavior of food consumers	16	19	19
Improving competitiveness in global markets	17	5	6
Impacts of new technology on environment, people and communities	18	12	10
Monitoring techniques to ensure product quality and safety	19	18	18

* Input on priorities received from Department Head and Chairs, District Directors, and members of the ARD Advisory Council.

PROGRAM SIZE AND FY 1990 RESEARCH EXPENDITURES OF SELECTED AGRICULTURAL EXPERIMENT STATIONS

The table below provides some data regarding the relative size of research programs and funding of selected agricultural experiment stations (AESs) in the North Central region. ARD compares favorably with many of the leading AESs in terms of projects, scientist years , and state appropriations. We are below average in "Formula Funds and CSRS Special Grants" and "Industry and Other Grants". Our relatively good ranking in "Federal Competitive Grants and Contracts" is in part the result of significant "Specific Cooperative Agreements" and Research Support Agreements" with ARS.

	AGRICULTURAL EXPERIMENT STATION					
	NE	MN	KS	IA	IL	WI
No. of projects	282	397	370	374	334	551
Scientist Years	149	183	198	125	173	173
Formula Funds & CSRS Special Grants[1]	3,764	3,669	4,172	12,758	5,119	5,465
Federal Competitive Grants and Contracts[1]	6,748	4,426	4,982	7,357	4,204	17,672
Industry & Other Grants[1]	2,702	7,502	3,363	14,445	5,851	7,902
State Appropriations[1]	17,885	32,315	19,893	18,660	14,011	21,983
Total Funds[1]	31,099	47,912	32,410	53,220	29,185	53,022

[1] Dollars expended in thousands.

EXECUTIVE BUDGET FOR FY 1993

President Bush recently released his federal budget for FY 1993. In keeping with his announced austerity program, many CSRS budget elements were projected at or below FY 1992 funding levels. An exception is the National Research Initiative program in that the Executive Budget requests an increase of $52.5 million. Listed below are some details of the President's budget:

Program	FY 1992 Approp.*	FY 1993 NASULGC**	FY 1993 Executive
	---------- $ in thousands ----------		
Formula programs:			
Hatch Act	168,785	182,288	168,785
McIntire-Stennis	18,533	25,000	15,754
Animal Health	5,551	5,995	0
Nat. Res. Init.	97,500	200,000	150,000
Special Res. Grants	73,979	102,341	28,918
Other programs:			
Rangeland Res.	475	3,000	0
Aquaculture Cent.	4,000	4,073	0
Sustainable Ag.	6,725	7,263	4,450
Alternative Crops	1,168	1,168	0
Ag. Weather Info	400	400	0

* Actual Appropriations for current fiscal year.
** National Association of State Universities and Land Grant Colleges recommendation for FY1993.

Specific areas in the NRI include $52 million for plant systems including funding for genome mapping; $32 million for animal systems; $17 million for nutrition, food quality and health; $28 million for natural resources; $5 million for markets, trade and policy; and $16 million for processes antecedent to adding value or developing new products.

Specific programs in Special Research Grants area were enhanced. Requested funding levels for programs of national/regional significance are: Global Climate Change, $4 million; Integrated Pest Management/Biological Control, $5

million; National Biological Impact Assessment, $300,000; Minor Use Pesticide Clearance, $7 million; Pesticide Impact Assessment, $2,968,000; and Water Quality, $9 million. The President requested that all state specific (pork barrel) grants not be funded for FY 1993.

CHANGES IN ARD EXPENDITURES DURING THE PAST FIVE YEARS

For the first time in history, expenditures for ARD sponsored research exceeded $40 million during FY 1991. These funds were obtained from state appropriations (55%), federal formula programs (8%), USDA cooperative agreements (4%), federal competitive grants (10%), industry grants (9%), and sales of crops and livestock (14%). Listed below are the changes that have occurred in ARD expenditures during the past five fiscal years (FY 1987 to FY 1991):

Funding Source	Change, %
Federal formula programs	+ 9.2
State appropriations	+ 77.5
USDA coop. agreements	- 31.0
CSRS competitive & special grants	+186.3
Other federal competitive grants	+106.9
Industry grants	+ 29.0
Total grants	+ 66.7
Product sales	+ 36.9
Total expenditures	+ 52.0

The increase in state appropriations results primarily from three years of large salary increases and the addition of the Nebraska Research Initiative funding. The decrease in USDA cooperative agreements occurred as a result of converting managerial-professional personnel at MARC from state to federal employees. The increase in grant funding is a testimony to the initiative and creativity of faculty members in identifying sources and competing successfully for grants. The large increase in federal competitive grant fund demonstrates that IANR faculty rank with the most productive scientists in the United States. We challenge all faculty members to continue to improve their record in grantsmanship.

UPCOMING COMPREHENSIVE REVIEWS

Comprehensive reviews are important activities which require units to critically examine their current programs and develop a plan for the future. The Department of Agronomy had a successful comprehensive review in November. Listed below are other units that will undergo comprehensive reviews during the current federal fiscal year:

Panhandle R and E Center	March 4-6, 1992
Department of Plant Pathology	April 27-30, 1992
Department of Entomology	September 14-18, 1992

WORKSHOP

HUMAN SUBJECTS

Dr. Ernest Prentice, Vice Chair of the Institutional Review Board, will be presenting four workshops for UNL faculty. All faculty who are planning to conduct research in the near future, or who are presently conducting research using human subjects, should plan to attend one of the following workshops:

Wednesday, February 26th	**Thursday, March 5th**
Time: 10:00-11:30	Time: 10:00-11:30
East Campus Union	East Campus Union
OR	**OR**
Time: 1:30- 3:00	Time: 2:00- 3:30
City Campus Union	City Campus Union

(Note: Room numbers will be posted for the workshops.)

Please call the Office of Sponsored Programs (472-3171), to inform them of the session you plan to attend.

ARD OUT-OF-STATE TRAVEL POLICY PROFESSIONAL SOCIETY MEETINGS

The current policy within the Agricultural Research Division is to not allow the use of state-appropriated funds (LGE/62-xxx-01) for travel support to attend professional society meetings out of state.

This policy was adopted several years ago by ARD. This reflects the ARD philosophy that state and federal appropriated operating funds are very limited and must be conserved to use for direct support of research activity. It also results from attempts by state government accountants to identify areas within the University budget that could be easily reduced or deleted without significant impact on the program. While we believe it is very important for faculty members to attend professional society meetings, it has been difficult to communicate the importance of this to state government. In order to reduce this vulnerability, a decision was made that travel to such meetings would have to be on other funding, primarily grant funds, IANR Professional Development Program funds and Research Council funds. This policy was recently reviewed and reconfirmed as standard operating policy for ARD. Any exceptions to the policy must be justified by the unit administrator and approved by ARD prior to travel.

CSRS WATER QUALITY GRANTS FOR FY 1991

During FY 1991, CSRS awarded total of 44 water quality grants on a national basis with 17 being shared grants. Five of the shared grants involved three institutions. North Central SAESs were involved with 11 of the grants either as primary or cooperating institutions. The total funds awarded to North Central SAESs was $1,318,161 (23% of the national total). Listed below are total funds received by NC SAESs:

State	Total funds, $	No. of projects	No. as lead
Iowa	60,500	1	0
Indiana	177,941	2	1
Minnesota	298,051	3	0
Missouri	113,000	1	1
Nebraska	341,654	3	3
Wisconsin	103,666	2	2
Ohio	220,059	2	2
South Dakota	93,290	1	1

THE NATIONAL SCIENCE FOUNDATION BUDGET

The NSF budget for FY 1992 is six times larger than the CSRS budget. As you are aware, NSF supports a wide variety of basic research in the physical, social and biological sciences. Faculty should consider NSF as a potential source of research funds. Competition for NSF funding is intense but excellent proposals will receive strong consideration. Listed below is some budget information for NSF:

Program	FY 1991 Approp.	FY 1992 Approp.
	---------- $ in millions ----------	
Research	1,694	1,879
Education	322	465
Antarctic	175	88
Instrumentation	0	33
Facilities	21	0
Inspector General	3	3
Salaries & Expenses	101	109
Total	2,316	2,578

FACTS ABOUT THE REGIONAL RESEARCH PROGRAM

Twenty five percent of the Hatch Funds are set aside each year for the conduct of regional research. Regional research is designed to encourage scientist from several states to work collaboratively on a specific project to generate information that would not be possible if one or two states worked independently. Regionality is an essential criteria for all regional research projects. Listed below are some facts concerning the regional research program in the North Central Region and ARD's participation in regional research.

- There are 55 active NC projects. ARD participates in 42 NC projects. ARD also participates in 4 Northeast projects, 4 Southern projects, and 6 Western projects.
- On average, North Central SAESs participate in 40 NC projects and 17 projects in other regions.
- The average number of North Central SAESs participating in a NC project is 8.7. The average number of total SAESs (all regions) involved in NC projects is 13.3.
- The average age of a NC project is 11.25 years. Of the 55 active projects, 28 were initiated since 1985. No project approved since 1983 has been terminated. Since 1970, 114 NC projects have been approved and only 60 of those have been terminated.

NEW OR REVISED PROJECTS

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

10-114 (Ag Economics) Labor Management of Farms in Size Transition
Investigator: R. E. Massey
Status: New Hatch project effective October 1, 1991

10-115 (Ag Economics) Evaluating Alternative Risk Management Strategies for Nebraska Grain Producers
Investigator: T. Park
Status: New Hatch project effective October 1, 1991

10-118 (Ag Economics) Economics of Beef Cattle Management Systems in Nebraska
Investigator: G. H. Pfeiffer
Status: New Hatch project effective December 5, 1991

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, 1991

12-209 (Agronomy) Procedures for Assessing Impacts of Nonpoint Agrichemicals on Ground Water
Investigator: R. F. Spalding
Status: New Hatch project effective September 1, 1991

12-213 (Agronomy) Resource Efficient Cropping Systems for Nebraska
Investigator: C. A. Francis
Status: New Hatch project effective October 11, 1991

12-216 (Agronomy) Resource Efficient Crop Production Systems
Investigator(s): M. D. Clegg and S. C. Mason
Status: New State project effective November 5, 1991

13-110 (Animal Science) Factors Regulating Protein Synthesis, Degradation and Growth in Skeletal Muscle
Investigator: S. J. Jones
Status: New Hatch project that contributes to regional project NC-131 effective October 1, 1990

14-063 (Veterinary Science) Modulation of Latent Pseudorabies Virus Infections by Vaccines: A Quantitative Analysis
Investigator(s): F. A. Osorio and C. Jones
Status: New Competitive Grant effective September 1, 1991

14-064 (Veterinary Science) Development and Evaluation of a Parturition Detection Device
Investigator: G. P. Rupp
Status: New State project effective December 1, 1991

16-060 (Food Science & Technology) Evaluation and Characterization of Antioxidants from Plant Sources
Investigator: S. Cuppett
Status: New Hatch project effective November 6, 1991

17-056 (Entomology) Determinants of Insecticide Toxicity in Resistant Pests and Nontarget Aquatic Insect Species
Investigator: B. D. Siegfried
Status: New Hatch project effective November 1, 1991

17-057 (Entomology) Genetic Factors Associated with the Development of Aphid Biotypes and Insecticide Resistance
Investigator: Z B Mayo
Status: New Hatch project effective November 5, 1991

20-050 (Horticulture) Cultural Practices to Minimize Environmental Stress on Vegetable Crop Production and Physiology
Investigator: L. Hodges
Status: New Hatch project effective December 1, 1991

20-051 (Horticulture) Physiology and Development of Turfgrasses for Low Resource Requiring Environments
Investigator: G. L. Horst
Status: New Hatch project effective December 1, 1991

21-047 (Plant Pathology) Development of Vectors and Their Use in Plant Transformation and Plant Gene Regulation Studies
Investigator: A. Mitra
Status: New State project effective November 6, 1991

27-011 (Ag Meteorology) Relationships Between Remotely-Sensed Spectral Properties of Vegetated Surfaces & Biophysical Properties
Investigator: E. A. Walter-Shea
Status: New project effective December 1, 1991

42-018 (Northeast Research & Extension Center) Integrated Crop Management Effects on Stalk-Boring Lepidoptera
Investigator: J. F. Witkowski
Status: New Hatch project that contributes to regional project NC-205 effective December 1, 1990

43-042 (West Central Research & Extension Center) Sorghum & Corn, Sorghum, & Wheat Variety Eval. Under Central NE Environmental Conditions
Investigator: P. T. Nordquist
Status: Revised Hatch project effective August 9, 1991

43-052 (West Central Research & Extension Center) Quantifying Year-Around Leaching Losses in Structured Soil with Percolation Lysimeters
Investigator: N. L. Klocke
Status: New Hatch project effective September 1, 1991

PROPOSALS SUBMITTED FOR FEDERAL GRANTS

The following is a listing of proposals that were submitted after December 1, 1991 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.

Amit Mitra and W. G. Langenberg - National Competitive Research Initiative Grants Program - Fungal Zoospore Mediated Transfer of Foreign DNA into Plants - $155,795.

Sylvia Darr - National Competitive Research Initiative Grants Program - Ribonuclease P from the Chloroplast and Nucleus of *Chlamydomonas reinhardtii* - $240,702.

Raymond Chollet - National Competitive Research Initiative Grants Program - Molecular-Genetic/Biochemical Studies of C4 PEPC and PPDK Phosphorylation Cycles - $184,418.

Stephen G. Ernst - National Competitive Research Initiative Grants Program - Investigation of Natural Hybridization in Sympatric Populations of *Juniperus virginiana* and *J. scopulorum* - $137,941.

John H. Golbeck - National Competitive Research Initiative Grants Program - Resolution and Reconstitution of Photosystem I - $201,130.

Robert J. Spreitzer - National Competitive Research Initiative Grants Program - Chloroplast Heteroplasmic Suppression - $240,142.

Albert Weiss, Timothy J. Arkebauer and Kent M. Eskridge - National Competitive Research Initiative Grants Program - A Modeling Approach to Evaluate Avoidance Mechanisms in a Corn/Velvetleaf Ecosystem - $232,962.

Charles A. Francis and Glenn A. Helmers - National Competitive Research Initiative Grants Program - Biological and Economic Implications of Biodiversity in Flexible Agroecosystems - $511,322.

John P. Markwell - National Competitive Research Initiative Grants Program - Biosynthesis of Chlorophyll *b* - $119,877.

Martin B. Dickman - National Competitive Research Initiative Grants Program - Plant Induced Gene Expression in *Colletotrichum trifolii* During Early Stages of Alfalfa Anthracnose - $166,676.

Alice J. Jones, John Doran and Mark Liebig - National Competitive Research Initiative Grants Program - Soil Physio-Chemical and Microbial Relations Impacting Agri-Chemical Degradation - $172,140.

Robert G. Wilson, Gary L. Hein and Eric D. Kerr - National Competitive Research Initiative Grants Program - Integrated Systems for Control of Canada Thistle - $126,838.

Thomas O. Powers - National Competitive Research Initiative Grants Program - Enhanced Nematode Diagnostics by Polymerase Chain Reaction - $166,625.

Blair D. Siegfried, Tony Zera and Z B Mayo - National Competitive Research Initiative Grants Program - Biochemistry and Genetics of Insecticide Resistance in the Greenbug, Schizaphis *graminum* (Homoptera: Aphididae) - $256,705.

Jerry D. Eastin and James E. Partridge - National Competitive Research Initiative Grants Program - The Biochemical Nature of Developmental Stress Resistance Mechanisms in Sorghum - $190,539.

Leon G. Higley - National Competitive Research Initiative Grants Program - Photosynthetic Compensation to Herbivory: Characterization and Application - $115,933.

Donald C. Rundquist, David C. Gosselin and Elizabeth Walter-Shea - National Competitive Research Initiative Grants Program - Remote Sensing of Atrazine-Contaminated Algal Phytoplankton and Aquatic Macrophytes - $269,911.

Thomas O. Powers - National Competitive Research Initiative Grants Program - Enhanced Nematode Diagnostics by Polymerase Chain Reaction - $166,625.

Kenneth Von Bargen, David A. Mortensen and George E. Meyer - Special Research Grants/USDA - Improvement of Water Quality by Use of a Sensor Controlled Intermittent Sprayer - $117,940.

Delwyn D. Dearborn - Special Research Grants/USDA - Beef/Range Systems--Integrating Management Practices to Improve Efficiency - $93,774.

Steve L. Taylor and Dan Neumeister - Special Research Grants/USDA - Development and Quality/Safety Enhancement of Specialty Food Products - $47,361.

William L. Powers, Patrick J. Shea and David B. Marx - Special Research Grants/USDA - A Sampling Strategy to Better Assess the Vertical Movement of Agrichemicals - $130,095.

Raymond J. Supalla - Special Research Grants/USDA - Socio-Economics of Groundwater Protection Practices: A Multi-State Study - $24,974.

Joseph Skopp - Special Research Grants/USDA - Determination of CC14 Transport Coefficients in Porous Media - $132,311.

Joel E. Cahoon - Special Research Grants/USDA - Observation and Response Techniques to Enhance Limited Furrow Irrigation - $134,971.

Richard B. Ferguson, Gary W. Hergert, Joel E. Cahoon, David Marx and Todd Peterson - Special Research Grants/USDA - Nitrogen Application According to Soil Nitrate Variability with Furrow Irrigation - $133,300

Roy F. Spalding, Vitaly A. Zlotnik, Michael J. Ellis and Douglas M. Mackay - Special Research Grants/USDA - Tracer Experiments for Transport Characteristics at Nebraska MSEA - $133,788.

Alice J. Jones, Anne M. Parkhurst and Donald C. Rundquist - Special Research Grants/USDA - Spatial Assessment of Macroscale Soil Roughness and Detention Storage Impacting Water and Agrichemical Leaching - $129,054.

Kenneth J. Moore and Daniel T. Walters - Special Research Grants/USDA - Management of Forage Sorghum and Switchgrass for Recycling Nitrogen from Sewage Sludge - $222,746.

Leonard L. Bashford - Special Research Grants/USDA - Using the Global Positioning System for Accurate Placement of Fertilizers - $134,641.

Raymond J. Supalla - Special Research Grants/USDA - Socio-Economics of Groundwater Protection Practices: A Multi-State Study - $24,988.

Charles A. Francis - Special Research Grants/USDA - Integrated Crop/Livestock Research for Sustainable Systems in Nebraska - $198,915.

Shripat T. Kamble - Special Research Grants/USDA - Participation in the National Agricultural Pesticide Impact Assessment Program

John C. Allen - EPSCOR/NSF - Infrastructure and Rural Economic Development - $2,674,987.

William E. Easterling - EPSCOR/NSF - Great Plains Interdisciplinary Research Program in Global Environmental Change - $4,124,895.

John Golbeck - EPSCOR/NSF - The Function of Metals in Natural Processes - $2,200,782.

John Golbeck - National Science Foundation - Research Experience for Undergraduate - $8,000.

Robert J. Spreitzer - National Science Foundation - Chloroplast Heteroplasmic Suppression - $301,183.

Stephen W. Ragsdale - U. S. Department of Energy - Purchase of an Electron Paramagnetic Resonance Spectrometer System - $326,550.

Ruma V. Banerjee - National Science Foundation - Young Investigator Awards Program - $125,000

Ruma V. Banerjee - National Institute of Health - Reaction Mechanisms of Mammalian Cobalamin-Dependent Enzymes - $488,222.

Stephen W. Ragsdale - National Institute of Health - Mechanism of Methyl Transfers in Acetyl-CoA Synthesis - $143,434.

Michael M. Meagher and Paul Blum - National Science Foundation - Bioengineering Heterologous Protein Aggregates in *E. coli* Using Chaperones for Cross Flow Membrane Separation - $592,406.

Wayne Woldt - U.S. Department of Energy - Quantification of Vadose Zone Contamination Using in Situ Active Soil Gas Sampling Yield - $91,143.

Leonard Bashford - National Science Foundation - Global Positioning system and Associated Equipment - $22,323.

Stephen G. Ernst - National Science Foundation - Investigation of Natural Hybridization in Sympatric Populations of *Juniperus virginiana* and *J. Scopulorum* - $171,389.

Kyle D. Hoagland, Stephen G. Ernst, and Dean M. DeNicola - U. S. Department of Energy - $81,281.

Kyle D. Hoagland - U. S. Army Corps of Engineers - Changes in the Zooplankton and Phytoplankton of Pawnee Reservoir Over the Past Two Decades - $23,901.

Milford A. Hanna - USDA/AID - Extrusion for Improving Nutrition and Value of Cereal Grains - $150,000.

Martin B. Dickman - National Science Foundation - Foreign DNA in a Filamentous Fungus: Fate, Stability and Biological Constraints to Movement - $373,068.

Amit Mitra and W. G. Langenberg - National Science Foundation - Fungal Zoospore Mediated Transfer of Foreign DNA in Plants - $180,371.

Clinton Jones - National Institute of Health - Activation of Transcription by the Tumor Promoter, Pristane - $852,281.

Raul G. Barletta - National Institute of Health - Molecular Analysis of *Mycobacterium avium* Drug Resistance - $518,044.

Clinton Jones - National Institute of Health - The Regulation of HSV-2 Ribonucleotide Reductase Genes - $125,000

James E. Kinder - EPSCOR/NSF - Research Enhancements and Education Programs in Biotechnology - $5,543,070.

Edward J. Peters and Richard S. Holland - U.S. Fish & Wildlife Service - Distribution and Abundance of Fish Species in the Central Platte River - $26,323.

Stephen M. Spomer - U.S. Fish & Wildlife Service - A Guide to the Butterflies of Nebraska - $16,500

Kyle D. Hoagland - Office of Naval Research - Biosynthetic and Physiology of Adhesive Production by Fouling Diatoms - $174,693.

GRANTS AND CONTRACTS RECEIVED DECEMBER 1991 AND JANUARY 1992

Agricultural Economics	
Miscellaneous grants under $5,000 each	3,000
Agricultural Meteorology	
Hubbard, K. - Winrock International	27,410
Agronomy	
Miscellaneous grants under $5,000 each	53,713
Animal Science	
Miller, P. S. - Ag Processing, Inc.	21,600
Stock, R. - Southeastern Poultry & Egg	37,440
Miscellaneous grants under $5,000 each	21,294
Biological Systems Engineering	
Miscellaneous grants under $5,000 each	2,300
Biochemistry	
Darr, S. - UN Foundation - Layman Fund	6,100
Entomology	
Miscellaneous grants under $5,000 each	19,350
Food Processing Center	
Miscellaneous grants under $5,000 each	13,892
Food Science & Technology	
Hutkins, R. - National Dairy Promotion & Research Board	53,560
Taylor, S. - UN Foundation	33,074
Wehling, R. - Pioneer Hi-Bred International	19,200
Miscellaneous grants under $5,000 each	6,512
Forestry, Fisheries & Wildlife	
Miscellaneous grants under $5,000 each	5,000
Horticulture	
Riordan, T. - Sharp Brothers Seed	12,000
Miscellaneous grants under $5,000 each	32,624
Industrial Ag Products Center	
Hanna, M. A. - Nebraska Beef Industry Development Board	11,000
Hanna, M. A. & Chinnaswamy, R. - World Wildlife Fund	35,600
Miscellaneous grants under $5,000 each	5,000
Northeast Research & Extension Center	
Miscellaneous grants under $5,000 each	32,580
Panhandle Research & Extension Center	
Reece, P. - UN Foundation - Anna H. Elliott Fund	16,006
Yonts, C. D. - UN Foundation	11,200
Miscellaneous grants under $5,000 each	10,543
Plant Pathology	
Dickman, M. & Mitra, A. - Pioneer Hi-Bred Internat., Inc	30,000
Steadman, J. - University of Puerto Rico	37,475
South Central Research & Extension Center	
Miscellaneous grants under $5,000 each	18,200
Veterinary Science	
Schmitz, J. - Schering-Plough Animal Health	10,000
Miscellaneous grants under $5,000 each	36,417
West Central Research & Extension Center	
Hergert, G. - Central Platte NRD	89,500
Miscellaneous grants under $5,000 each	4,163
TOTAL	**715,753**

FY 1990 CASH RECEIPTS AND EXPENDITURES BY FUND SOURCE
NORTH CENTRAL STATE AGRICULTURAL EXPERIMENT STATIONS[1,2]

State	Ag Cash Receipts 1990	Rank	State Approp. to SAES	Rank	State Approp. + Product Sales	Rank	Federal Formula Funds3	Rank	Other Federal Funds[4]	Rank	Industry & Other	Rank	Total	Rank	State Approp. & Product Sales Per $1,000 Cash Receipts	Rank
Illinois	7,938	3	14,011	10	17,110	10	4,704	3	4,619	8	5,851	6	32,285	9	2.16	11
Indiana	4,931	7	19.842	6	24,034	4	4,391	6	8,963	4	7,348	4	44,437	5	4.87	5
Iowa	10,319	1	18,660	7	20,511	8	5,047	23	15,068	3	14,445	1	55,073	1	1.99	12
Kansas	6,995	5	19,893	5	25,689	3	2,981	9	6,154	6	3,363	9	38,187	7	3.67	8
Michigan	3,183	11	21,137	3	22,999	5	4,357	7	16,934	2	7,134	5	51,433	4	7.22	1
Minnesota	7,011	4	32,315	1	35,622	1	4,581	5	4,744	7	,7502	3	42,488	3	5.08	4
Missouri	3,939	8	14,565	9	17,560	9	4,230	8	4,280	9	3,692	7	29.763	10	4.46	6
N. Dakota	2,537	12	11,341	11	13,901	11	2,077	12	3,211	10	2,239	11	21,428	11	5.48	2
Nebraska	8,845	2	17,885	8	26,893	2	2,866	10	7,646	5	2,702	10	40,107	6	3.04	9
Ohio	4,172	9	20,197	4	22,694	6	5,182	1	2,787	11	3,373	8	34,035	8	5.44	3
S. Dakota	3,349	10	5,872	12	8,965	12	2,152	11	453	12	133	12	11,704	12	2.68	10
Wisconsin	5,706	6	21,983	2	21,983	7	4,627	4	18,510	1	7,902	2	53,022	2	3.85	7

1Compiled by the Office of the North Central Director-at-Large.
2Cash receipts are in millions; expenditures are in thousands.
3Hatch and McIntire-Stennis.
4Includes special grants, competitive grants, animal health, other CSRS funds, USDA cooperative agreements and contracts, and other federal funds.

Sources: Rankings of States and Commodities by Cash Receipts, 1990, ERS Bulletin No. 832, 11/91. Inventory of Agricultural Resaerch FY 1990, Current Research Information System, USDA, Page 120.