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Agricultural Research Division News

The Institute of Agriculture and Natural Resources

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COMMENTS FROM THE DEAN

Dear Colleagues:

This issue of *ARD News* contains several articles concerning the amount of emphasis being placed on aspects of our program such as sustainable agriculture and urban studies. This information was assembled by the ARD staff in response to requests from faculty and clientele about our investment of resources in specific areas of research. We hope that you find this data informative and useful as you discuss our research program with friends and neighbors.

A large amount of legislative activity that will affect our programs is currently underway in Congress. Recision of current fiscal year federal appropriations ($17 billion) will not impact funding for IANR. Congressional debate has started on the 1995 Farm Bill. This legislation provides the authorization for all federal research, extension and higher education programs in agriculture, veterinary medicine, forestry and home economics. Hearings for the FY 1996 appropriations also have started. It appears likely that Congress will hold federal formula and NRICGP funds at the FY 1995 level. Many of the state-specific special grants will be eliminated but we are hopeful that some of the competitive special grant programs such as IPM and SARE will receive additional funding.

We maintain close contact with the Nebraska Congressional delegation and provide input on the 1995 Farm Bill and the FY 1996 appropriations. Although the federal budget will be reduced, many members of Congress feel that research and education are good investments for the future. I am certain that the Nebraska delegation will continue to support adequate funding for our problem-centered research program.

Darrell W. Nelson
Dean and Director

PROCEDURES FOR PROCESSING PROPOSALS

Due to requirements of the Research Grants and Contracts Office (RGCO), the following procedures must be followed in submitting grant proposals:

(1). All proposals to federal agencies, state agencies, and private companies must be accompanied by a completed **"Proposal Approval and Submission"** form. The form must carry the signature(s) of the principal investigator(s) and unit administrator(s). Previously, **"Proposal Submission and Approval"** forms were not required on proposals to USDA agencies until the grant was approved. Previously, the form was required for proposals to federal agencies other than USDA, state agencies, and companies.

(2). Proposals to Nebraska commodity boards will not require preparation of a **"Proposal Submission and Approval"** form until the principal investigator is notified that the project has been selected for funding. Proposals submitted to non-Nebraska commodity boards will require a **"Proposal Submission and Approval"** form.

(3). Proposals to internal ARD, IANR, UNL or NU Foundation grant programs will not require the preparation of a **"Proposal Submission and Approval"** form.

(4). Industry gift funds or transfers of funds from NU Foundation accounts will be documented on the **"Payment/ Fund Transfer Authorization"** form.

Faculty should understand that ***all*** proposals must be processed by ARD. Sending proposals directly to RGCO will slow down the submission process because Sharon Davis will not sign proposals that lack ARD approval. The procedures described above ensure that all proposals prepared by faculty are documented in the RGCO data base and that unit administrators have approved the proposed research.

NEW OR REVISED PROJECTS

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

NEB-10-127 (Agricultural Economics) The Impact of Cropland Diversion Program on Rural Population Change and Farm Numbers
Investigator: E. Van der Sluis
Status: New competitive grant effective Sept. 15, 1994

NEB-14-083 (Veterinary and Biomedical Sciences) Prevention of Alphaherpesvirus Latency by Homologous Interference
Investigator(s): F. A. Osorio, A. K. Cheung and C. Jones
Status: New competitive grant effective Sept. 1, 1994

NEB-31-003 (Center for Sustainable Agricultural Systems) Biological and Economic Consequences of Flexible Crop Rotations
Investigator: C. A. Francis
Status: New competitive grant effective Sept. 15, 1994

PROPOSALS SUBMITTED FOR FEDERAL GRANTS

The following is a listing of proposals that were submitted after mid-January 1995 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.

Gary Y. Yuen, Loren J. Giesler, and **Tyler A. Kokjohn** – National Science Foundation – Environmental Factors Affecting Bacterial Populations on the Phylloplane – $9,600

Robert V. Klucas and **Gautam Sarath** – National Research Initiative Competitive Grants Program – Enzymes Influencing Leghemoglobin in Legumes – $119,860

Robert Hutkins – National Research Initiative Competitive Grants Program – Carbohydrate Metabolism in *Listeria monocytogenes* – $102,870

Lloyd B. Bullerman and **Milford Hanna** – National Research Initiative Competitive Grants Program – Fate of Fumonisin B_1 in Heat Processed Corn Products – $127,496

Donald P. Weeks and **Gautam Sarath** – National Science Foundation – Acquisition of an Amino Acid Analyzer, Rapid Protein Purification System, Microborne HPLC, and Capillary Electrophoresis System – $127,500

Michael F. Kocher and **Robert D. Grisso** – National Research Initiative Competitive Grants Program – Simulation Model to Compare Application Accuracy of Ground-Based Field Crop Sprayer Configurations –$116,841

Elizabeth A. Walter-Shea, Joon Kim, Ram M. Narayanan and **Karen M. St. Germain** – NASA – Integration of Optical and Microwave Remote Sensing for Estimating Transpiration and Photosynthesis over a Vegetated Surface – $406,586

Gautam Sarath and **Robert V. Klucas** – National Research Initiative Competitive Grants Program – Soybean Root Nodule Senescence – $170,439

Clinton Jones and **Martin Dickman** – National Institutes of Health – Molecular Analysis of a Novel Carcinogen, Funonisin B_1 – $890,212

Pauline D. Zeece and **E. Raedene Combs** – National Research Initiative Competitive Grants Program – Impact of Head Start on Rural Families and Community Viability – $192,341

David L. Holshouser and **David A. Mortensen** – National Research Initiative Competitive Grants Program – Assessing Weed Sampling Methods and Techniques to Improve Integrated Weed Management Systems – $18,664

Susan L. Cuppett and **Paul E. Read** – National Research Initiative Competitive Grants Program – Production of Economically Important Secondary Metabolites from Rosemary – $49,889

Michael Zeece and **Steve Jones** – National Research Initiative Competitive Grants Program – Myofibrillogenesis in Fetal Bovine Skeletal Muscle Cells – $125,252

Mark Morrison and **Richard J. Grant** – National Research Initiative Competitive Grants Program – Molecular and Kinetic Analyses of Rumen Bacterial Adherence to Plant Cell Walls – $265,200

Steve D. Comfort and **Patrick J. Shea** – National Research Initiative Competitive Grants Program – State-Of-The-Art Mass Selective Detector for Identification and Confirmation Analyses – $21,581

Swey-Shen A. Chen, Fred Brown and **Thomas M. Petro** – National Research Initiative Competitive Grants Program – Synthetic Co-linear B-T Peptide for Foot-and-Mouth Disease Virus – $503,261

James L. Stubbendieck, Kenneth G. Hubbard, Anne M. Parkhurst and **Walter H. Schacht** – USDA Rangeland Research Program – Modeling Vegetation Dynamics and Climatic Fluctuations in a Fragile Ecosystem – $79,515

David W. Stanley-Samuelson – National Institutes of Health – Eicosanoids Mediate Insect Immunity – $295,616

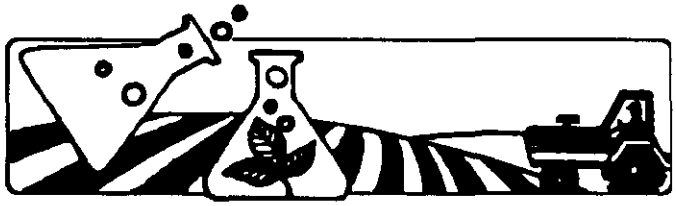
S. Madhavan – National Research Initiative Competitive Grants Program – Dynamics of Acetylcholine Metabolism in Guard Cells – $49,910

Terry J. Klopfenstein, Don C. Adams and **Walter H. Schacht** – USDA Rangeland Research Program – Integration of Rangeland and Cropland in Growing-Finishing Beef Production – $76,302

Donald P. Weeks and **Gautam Sarath** – National Research Initiative Competitive Grants Program – Acquisition of a PerSeptive Instruments BioCAD Workstation – $47,800

Thomas O. Powers – National Science Foundation – Integrating Molecular and Morphological Characters in Nematode Taxonomy – $1,099,110

Kenneth G. Hubbard – U.S. Department of Agriculture – Project EarthLink: Global Environmental Change Education – $110,000



GRANTS AND CONTRACTS RECEIVED FEBRUARY AND MARCH, 1995

Agricultural Meteorology	
Easterling, W. — USDA/FS	20,000
Hubbard, K. — USDA-Global Change Program Office	56,030
Agronomy	
Baenziger, S. — USDA/ARS	90,000
Comfort, S. — National Water Research Institute	7,501
Comfort, S. — Kansas State University	24,890
Johnson, B. — Pioneer Hi-Bred, International	61,818
Kaeppler, S. — Pioneer Hi-Bred, International	15,000
Mortensen, D. and Martin, A. — UN Foundation	15,000
Schepers, J. — Environmental Protection Agency	88,300
Miscellaneous grants under $5,000 each	11,707
Animal Science	
Klopfenstein, T. — Fats and Protein Research Foundation	32,000
Miscellaneous grants under $5,000 each	34,559
Biochemistry	
Banerjee, R. — National Institutes of Health	93,700
Ragsdale, S. — Office of Naval Research	80,000
Weeks, D. and Arumuganathan — National Science Foundation	256,170
Weeks, D. — Sandoz Agro Inc.	48,490
Biological Systems Engineering	
Martin, D. — Environmental Protection Agency	75,200
Biometry	
Eskridge, K. — Pioneer Hi-Bred, International	40,010
Center for Rural Affairs	
Cordes, S. and Lamphear, C. — Univ. of Missouri	27,323
Center for Sustainable Agriculture	
Francis, C., Klopfenstein, T. and Brandle, J. — USDA/CSREES	55,242
Entomology	
Miscellaneous grants under $5,000 each	21,700
Family and Consumer Science	
Prochaska-Cue, K. — USDA/CSREES	63,878
Food Processing Center	
Taylor, S. and Neumeister, D. — USDA/CSREES	39,455
Miscellaneous grants under $5,000 each	10,000
Food Science and Technology	
Sumner, S. — Nebraska Beef Council	60,235
Taylor, S. — Pioneer Hi-Bred, International	10,640
Taylor, S. — USDA/CSREES	397,362
Zeece, M. — USDA	20,000
Miscellaneous grants under $5,000 each	18,942
Forestry, Fisheries and Wildlife	
Hoagland, K. — National Water Research Institute	17,800
Hoagland, K. — Michigan Technical University	68,996
Horticulture	
Coyne, D. — Nebraska Dry Bean Commission	8,000
Miscellaneous grants under $5,000 each	3,000
Industrial Agricultural Products Center	
Hanna, M. — U.S. Department of Energy	54,000
Northeast Research and Extension Center	
Miscellaneous grants under $5,000 each	9,596
Panhandle Research and Extension Center	
Baltensperger, D. — Nebraska Sustainable Agricultural Society	7,250
Binford, G. — National Water Research Institute	18,122
Pavlista, A. — Nebraska Department of Agriculture	11,800
Weichenthal, B. — Nebraska Department of Agriculture	8,000
Miscellaneous grants under $5,000 each	24,367
Plant Pathology	
Miscellaneous grants under $5,000 each	7,295
Veterinary and Biomedical Sciences	
Kelling, C. — Hoechst Celanese	169,265
Lou, M. — National Institutes of Health	213,534
Miscellaneous grants under $5,000 each	7,625
Water Center/Environmental Programs	
Comfort, S. — US Geological Survey	15,500
Franti, T. — US Geological Survey	14,068
Kamble, S. — USDA/CSREES	14,787
Schulte, D. — US Geological Survey	16,000
Siegfried, B. — US Geological Survey	15,500
Volk, B. and Schepers, J. — USDA/ARS	200,000
Volk, B. — US Geological Survey	15,345
Woldt, W. — US Geological Survey	15,330
Miscellaneous grants under $5,000 each	15,050
West Central Research and Extension Center	
Klocke, N. — National Water Research Institute	15,690
Miscellaneous grants under $5,000 each	5,580
GRAND TOTAL	$2,746,652

SUSTAINABLE AGRICULTURE RELEVANCY ANALYSIS

External panels evaluated a representative number of research projects in four state agricultural experiment stations (SAES) for their relevancy to sustainable agriculture. Nebraska was one of the four SAESs participating in the project. The criteria used to assess relevancy were those developed by a joint CSRS and ARS committee and formalized as the Sustainable Agriculture Relevancy Protocol.

The results of the relevancy analysis for Nebraska and the average of the four states are given below:

	Nebraska	Average of 4 states
	-----% of research projects-----	
Sustainable Ag Systems Research	12	10
Sustainable Ag Component Research	27	35
Unclassified	62	54
Research Not Consistent With Sustainable Ag	0	2

URBAN EMPHASIS WITHIN ARD PROGRAMS

An analysis of the ARD research portfolio suggested that about 9 percent of research projects have a primary focus on urban clientele and 15 percent have a partial focus on urban issues. About 51 percent of research projects have a focus on issues of importance to farmers, ranchers, and agribusinesses, whereas 25 percent of research projects seek to advance knowledge through fundamental studies.

Listed below is the breakout of research projects according to focus by unit:

Unit	Primary urban	Partially urban	Little urban	Basic science
	- - - - *number of projects* - - - - -			
Ag Economics	3	2	13	2
Biol Systems Engineering	0	4	15	6
Agronomy	0	2	49	11
Animal Science	0	1	27	7
Vet and Biomedical Sci	0	1	16	11
Biochemistry	0	0	0	21
Food Sci and Technology	2	12	0	5
Entomology	1	2	7	2
Food Processing Center	0	3	0	0
Horticulture	4	2	2	0
Plant Pathology	0	3	5	10
Ag Lead, Edu and Comm	0	2	0	0
Water Ctr/Env Programs	0	3	0	1
Forestry, Fish and Wild	0	10	0	1
Agriculture Meteorology	0	3	3	5
Ind Ag Products Center	0	0	0	4
Sustain Ag Center	0	0	3	0
NEREC	0	0	9	0
WCREC	1	0	10	0
PHREC	0	0	14	0
SCREC	0	1	8	0
Nutri Science and Diet	11	1	0	0
Family and Consumer Sci	7	1	1	0
Textiles, Cloth and Des	2	0	0	1
Total	31	53	182	87

ESCOP/CSREES RESEARCH INITIATIVES — 1995

Each year ARD is asked to rank a number of research initiatives that are included in the four-year ESCOP/CSREES Strategic Research Plan. We rank the initiatives on the basis of program areas that should receive additional federal funding because of their importance to the region or nation. The rank is not an indication of the relative importance of the program area – highly ranked initiatives are considered to be good investments for **new** federal funds. In formulating the ARD ranking for 1995, we solicited input from department heads and chairs, district directors and members of the ARD Advisory Council.

Each state agricultural experiment station submitted its' ranking of 21 initiatives. The rankings were then compiled at regional and national levels. The ARD, North Central Region, and national rankings of the initiatives are given below:

Initiative	ARD	NCR	National
Conserve and enhance air, soil and water resources	1	1	1
Develop integrated and sustainable animal production systems	3	3	2
Develop alternative plant mgmt sys	11	5	3
Enhance food safety	2	2	4
Develop resource mgmt decision systems	9	6	5
Manage ecosystems to conserve and enhance biodiversity	10	10	6
Protect plants for sustained productivity	4	8	7
Enhance ag markets and competitiveness	6	7	8
Enhance food quality and value through processing	7	4	9
Strengthen rural econ development	14	11	10
Use genetics to improve plants for the 21st century	8	21	11
Recover and use waste resources through ag and forestry systems	18	13	12
Enhance animal genetic diversity and biological performance	17	12	13
Convert processing byproducts to beneficial uses	15	14	14
Target optimal nutrition for individual health	13	15	15
Understand fund plant processes	16	18	16
Enhance health and well-being of food animals	12	17	17
Develop new non-food products	5	9	18
Empower people for social viability	20	16	19
Promote health food choices	21	20	20
Design foods for healthy diets	19	19	21

RESEARCH PROGRAM COMPARISON: ARD vs OTHER SAESs

Listed below are the proportions of SAES expenditures devoted to research program groups by ARD, the average of all North Central Region SAESs, and the average of all SAESs.

Program Group	ARD	NC SAESs	All SAESs
	- - - - - - - - - % of expenditures - - - - - -		
Natural resources	20.7	17.5	20.9
Field and hort crops	35.0	30.3	34.1
Livestock	28.9	31.3	28.0
People and communities	6.5	4.3	3.6
Trade and policy	2.9	5.6	4.1
Food and nutrition	3.3	5.2	4.7
General technology	2.8	5.8	4.6

In general, the ARD research program seems to be in balance with the North Central Region and U.S. SAESs. As compared with other states, we seem to be somewhat underfunded in "food and nutrition" and "competition, trade and policy" areas.

FY 1996 FEDERAL RESEARCH BUDGET

The President's Budget for FY 1996 that was released on Feb. 6, 1995, provided additional funding for research and development in most agencies (see table below). However, USDA and DOD research and development budgets were reduced by 3.6 and 3.1 percent, respectively. Most of the reduction in USDA came from elimination of state-specific grants in the Special Grant category. The President's budget proposed significant increases for the NRICGP, IPM, Pesticide Clearance, and SARE. New programs were proposed for "Alternatives to Pesticides" and "Energy Biomass/ Biofuels".

FY 1996 BUDGET FIGURES FOR FEDERALLY SUPPORTED R&D
(in millions of dollars)

	FY 1995	FY 1995 proposed	%change FY 95-96
National Science Foundation	3,264	3,360	+ 3.0
National Institute of Health	11,321	11,789	+ 4.1
National Aeronautics & Space Administration	9,455	9,517	+ 0.7
Department of Energy	6,637	7,125	+ 7.4
Department of Agriculture	1,554	1,499	- 3.6
Department of Commerce	1,284	1,404	+ 9.3
Department of Transportation	687	755	+10.0
Department of the Interior	687	697	+ 1.4
Environmental Protection Agency	589	682	+15.8
Department of Defense	36,272	35,161	- 3.1
Total for R&D programs (including other agencies)	**72,713**	**72,883**	**+ 0.2**
–Civilian R&D	33,815	34,902	+ 3.2
–Defense R&D	38,898	37,981	- 2.4
–Academic R&D	11,641	12,504	+ 7.4
–Merit reviewed R&D	28,454	29,344	+ 3.1

Note: Source/Office of Science & Technology Policy
Chart: Karen Eavis/The Scientists

Congress has started debate on the FY 1996 Agricultural Appropriations bill. The House Budget Committee has proposed that federal support for agricultural research and extension activities be reduced by $1.33 billion over five years as a part of the total budget cutting process. The House Budget Committee has stated that some agricultural research and extension is in the category of "corporate welfare" because USDA is funding programs that should be supported by the private sector. Some illustrative cuts to achieve the $1.33 billion reduction would be: (i) 10 percent cut for ARS, (ii) elimination of all state-specific research grants for programs and buildings within CSREES, and (iii) "greatly" restructure the Extension Service. The budget debate will continue for several months and until the final bill is passed we will not know our level of federal funding support for agricultural research.

SIZE OF NORTH CENTRAL REGION SAES PROGRAMS

Listed below is a comparison of the size of research programs in selected North Central Region SAESs. Nebraska is above average in the number of support staff FTE per faculty FTE and total expenditures per project. We are about average in number of research projects per faculty FTE and total expenditures per faculty FTE. Total expenditures include appropriated funds, grant funds, and revolving funds.

State	No. Proj	Faculty FTE	Staff FTE	Proj /FTE	Staff /FTE	Tot $ /Proj	Tot $ /FTE
Illinois	319	155	554	2.1	3.6	118.0	241.0
Indiana	342	150	686	2.3	4.6	142.2	324.2
Iowa	387	167	658	2.3	3.9	150.6	348.9
Kansas	374	180	582	2.1	3.2	111.0	230.6
Michigan	504	148	297	3.4	2.0	104.5	355.8
Minnesota	379	182	835	2.1	4.6	154.3	321.3
Missouri	393	132	589	3.0	4.5	86.4	257.1
Nebraska	355	150	797	2.4	5.3	132.5	313.5
Ohio	378	123	452	3.1	3.7	94.2	289.6
Wisconsin	524	169	710	3.1	4.2	133.0	412.4
Average	396	156	616	2.6	4.0	122.7	309.4

Data were taken from consolidated FY 1993 Form AD 419 reports. All dollar values are expressed in thousands. The FTEs represent those with salaries on appropriated and grant funds. Nebraska faculty FTE on appropriated funds is 132.

FACULTY RECOGNITION

The IANR Liaison Committee and IANR Vice Chancellor Irv Omtvedt are pleased to invite you to a reception recognizing those faculty who retired from IANR since Dec. 1993 or have indicated they plan to retire this spring. The reception will be held in connection with April Update at the Nebraska East Union in the Arbor Suite (Cottonwood/Sycamore Rooms) beginning at 4:45 p.m. on Tuesday, April 18. We encourage you to take advantage of this opportunity to show your appreciation of the efforts of the following individuals:

Connie Ahlman (SEREC/Cass Co.)
Virginia Book (AgLEC)
Richard Dam (Biochemistry)
Roy Dillon (AgLEC)
Phil Johnson (NEREC/Boone-Nance Co.)
Duane Kantor (NEREC/Platte-Colfax-Butler Co.)
Charlotte Kern (SEREC/Douglas Co.)
Harriet Kohn (Nut. Sci. and Diet.)
Delmar Lange (NEREC/Butler Co.)
Lloyd Mielke (Agronomy)
Don Miller (SEREC/Lancaster Co.)
Ed Penas (SEREC/Agronomy)
Leon Rottmann (Fam. and Con. Sci.)
Sotero Salac (Horticulture)
Wilfred Schutz (Biometry)
Khem Shahani (Food Sci. and Tech.)
Frank Smith (Con. and Sur. Div.)
John Woodward (Fam. and Cons. Sci.)
Loyd Young (SEREC)

SOURCES OF SAES FUNDING IN NC REGION

Listed below are the expenditures for FY 1993 by selected SAESs in the North Central Region. Although total expenditures vary by a factor of two, the proportion of research funds obtained from different sources was reasonably constant. Nebraska was above average in obtaining funds from state appropriations, product sales, and the National Research Initiative. We were below average in funding from other competitive federal grant programs and industry. These are areas that can be improved in upcoming years.

State	Total Expend	CSRS Base	CSRS NRI	Other Fed	State Approp	Prod Sale	Industry
	$ x 1000-	- - - - - - % of total	- - - - - - - - - -				
Illinois	37,630	20.0	2.1	9.8	37.7	10.2	12.7
Indiana	48,626	11.4	5.1	13.4	45.5	9.3	9.8
Iowa	58,263	17.2	3.5	12.2	42.9	7.9	16.2
Kansas	41,512	13.1	1.6	9.7	51.8	13.2	4.0
Michigan	52,654	22.3	3.1	14.2	42.7	5.5	6.1
Minnesota	58,478	11.1	4.4	3.9	53.4	7.8	6.0
Missouri	33,938	22.7	3.4	5.1	45.3	9.1	6.7
Nebraska	47,020	14.8	5.0	7.6	52.2	12.1	3.5
Ohio	35,624	21.2	1.7	4.6	52.3	5.2	11.6
Wisconsin	69,696	12.8	1.0	29.2	39.5	0	19.3
Average	48,344	16.7	3.1	11.0	46.3	8.0	9.3

Data taken from a summary of the Form AD 419s documenting FY 1993 expenditures of state agricultural experiment stations.

Diane Says

Good, the more communicated, the more abundant grows.