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ARD

Agricultural Research Division News

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April 1999

Volume 33, Number 4

Comments from the Dean

Dear Colleagues:

IANR is facing a reallocation tax being collected throughout UNL to pay for a tuition shortfall at the system level and some unfunded imperatives at the campus level. These issues have been discussed for some time, but the time is coming to begin paying the bills. I anticipate that some very painful decisions will be made between now and December 31, 1999, regarding the budget for the biennium beginning July 1, 1999. There is no question that unit budgets will be affected and that our flexibility to address a broad range of issues will be decreased.

Some faculty have asked me why we are implementing new programs such as the Plant Science Initiative and the Animal Molecular Biology program at a time when a reallocation tax is being assessed. I respond that ARD programs cannot remain static when clientele needs and funding opportunities are changing rapidly. The reallocation tax will force ARD and all units to make some difficult choices and really prioritize our efforts. We must decrease or eliminate programs that are outmoded, unproductive or not meeting a societal need. There will be disagreements about which programs should be decreased or eliminated and which programs should be enhanced. Faculty will have an opportunity for input in all of these decisions. After considering inputs, decisions regarding programs will be made by unit administrators, deans and vice chancellors. The new intercollegiate programs being implemented resulted from broad-based faculty discussions and decisions by administrators at several levels within the University.

Given the current outlook for funding within the University of Nebraska, we must make some very wise programmatic choices. Faculty will be required to generate more of their research funds than has been the case in past years. Therefore, programs to be enhanced should be in areas where an adequate level of external

funds is available. We also need to consider building on existing areas of strength. In some areas, a small increase in faculty FTE or support can vault the program into national and international prominence. Prominence normally results in more opportunities for external funding and recruitment of better-qualified graduate students and post-doctoral research associates. We also must closely examine the needs of Nebraska. The recently conducted listening sessions have provided IANR with a wealth of information regarding perceived needs of citizens. Our challenge is to examine these needs to determine if ARD is the organization most capable of developing the needed knowledge. Other land-grant universities or other colleges at UNL have more capabilities for research in certain fields than is present in ARD units.

Our units vary greatly in research productivity, ability to attract external funds, strength of graduate programs, national reputation and proportion of effort devoted to solving immediate problems of Nebraska citizens. These criteria will be used as ARD makes decisions regarding funding for program enhancements. Most of the program enhancement efforts will focus on interdisciplinary thrusts such as food safety, genomics, waste management and molecular biology. These are key areas for Nebraska's future and involve faculty in several departments.

The increase in Hatch Act funds effective July 1, 1999, will be allocated to a few key research thrusts rather than across the board to units. All faculty will have a chance to compete for these funds within the targeted areas.

Although many of us do not like change, change we must. I am committed to making the programmatic changes that will position ARD for the 21st century. Our goal remains: "to be a nationally recognized research organization that strives to meet the critical knowledge and technology needs of Nebraska in agriculture, natural resources, and family and consumer sciences".

Darrell W. Nelson
Dean and Director



It is the policy of the University of Nebraska-Lincoln not to discriminate on the basis of gender, age, disability, race, color, religion, marital status, veteran's status, national or ethnic origin or sexual orientation.



NABC 11 Meeting

The annual meeting of the National Agricultural Biotechnology Council will be held in Lincoln on June 6-8, 1999. The conference is entitled "World Food Security and Sustainability: The Impacts of Biotechnology and Industrial Consolidation". The meeting is being hosted by the University of Nebraska and the Henry A. Wallace Institute for Alternative Agriculture.

The format for the meeting is a group of plenary speeches, followed by small group discussions of policy issues raised by the speakers. The discussion groups develop consensus recommendations regarding national policy. These recommendations are published in the conference proceedings and presented to Congress.

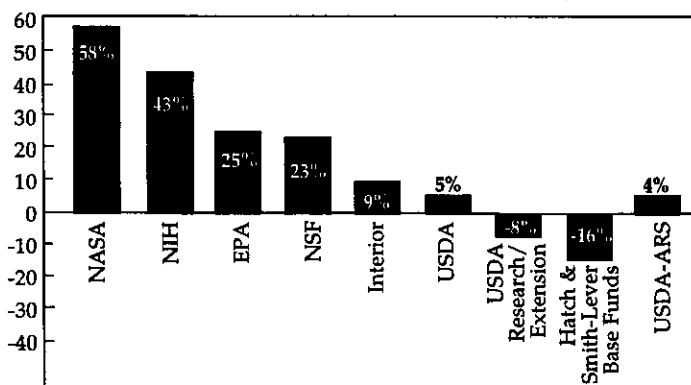
An outstanding group of provocative speakers has been confirmed for the conference. These speakers will represent all viewpoints regarding the future of agriculture and the impacts of technology and vertical integration of the food system. It is essential that participants in the conference also represent the entire spectrum of opinion so that meaningful dialogue occurs in the small groups.

All IANR faculty and graduate students are invited to attend the conference. You should have received a conference announcement and information about reduced registration fees for faculty and students. We encourage you to attend and actively participate in this unusual and stimulating conference.

Federal Funding for Agricultural Research

Research and development funding for space exploration, the environment, basic science and health has increased in constant dollars from 23 percent to 58 percent over the last ten years. But during this same period, the funding for agricultural research and extension programs, the lifeblood of our food supply system, has shrunk by 8 percent in constant dollars. Base funds have eroded by 16 percent. Base funds provide us with the capability to respond to emerging needs and do not require elaborate grant proposals or peer panels. Base funds leverage state funds by about seven-fold in Nebraska.

Federal Agencies Research and Development Funding



GPRA and POW – What Are They and Why Should I Care?

Periodically in 1998, IANR faculty may have heard reference to "GPRA Reports". A few faculty may have even become involved in preparing components of these reports. GPRA refers to the Government Performance and Results Act, an act passed by the U.S. Congress that placed a planning and reporting requirement on all agencies of the federal government, including the U.S. Department of Agriculture (USDA). Components of the land-grant university system that receive USDA formula funding were required in 1998 to submit GPRA performance plans to Cooperative State Research, Extension and Education Service (CSREES) as part of this GPRA requirement. In Nebraska, the Agricultural Research Division and the Cooperative Extension Division each submitted GPRA performance plans identifying the Nebraska objectives and implementation plans for program activities related to five USDA research, extension and education goals. Those goals are as follows:

- To achieve an agricultural production system that is highly competitive in the global economy
- A safe, secure food and fiber system
- A healthy, well-nourished population
- An agricultural system that protects natural resources and the environment
- Enhanced economic opportunity and quality of life for Americans

State reports were assembled by CSREES to prepare the agency GPRA report to Congress and fulfill the accountability requirements for the federal funds coming to these programs.

While there was an understanding in 1998 that GPRA reporting by the states would continue to be an annual requirement, the research and education title of the Farm Bill passed in 1998 changed the reporting. While USDA still has a GPRA reporting requirement at the agency level, the Agricultural Research, Extension and Education Reform Act of 1998 (AREERA) specified that each state agricultural experiment station and cooperative extension unit provide an annual Plan of Work with annual accomplishment reporting and plan updates. These Plans of Work (POWs) provide additional accountability which Congress apparently had been seeking, as well as providing input for the future GPRA reports that USDA must prepare.

A joint land-grant university (LGU)-USDA task force has worked on guidelines for POWs since fall 1998. The draft guidelines are to be published in the Federal Register for public comment in the next few weeks. The Agricultural Research Division will be submitting the first POW sometime in the summer of 1999, working cooperatively with Cooperative Extension Division. POWs must relate to the five REE goals, just as the GPRA report did. However, the POW guidelines include additional requirements such as: performance goals, outcome indicators, key program components, internal and external linkages, target audiences,

program duration and allocated resources. States also must document processes for broad, representative stakeholder input and for merit and peer review of all programs utilizing federal formula funds.

Since the initial POW submission was fortunate in coinciding with the IANR Listening Sessions already being held as part of the IANR Strategic Plan revision, a well-documented stakeholder input process is already in place. A well-defined merit and peer review process also is established for Agricultural Research Division projects.

Another major requirement of the POW guidelines is documentation of multi-institutional, multi-disciplinary, multi-state and integrated activities. Both the state agricultural experiment stations and cooperative extension service must document that these multi-activities be addressed by not less than 25 percent of the formula funds being used for this purpose. ARD faculty involvement in regional research activities, now to be termed "multi-state" activities, will meet much of this requirement, but there also will be other activities documented to address this requirement.

The remaining information for the POW will be primarily assembled using ARD project information from the USDA-CRIS database, as well as the IANR Strategic Plan, department Action Plans, departmental information provided for ARD Annual Reports and other similar sources. If necessary, there may be requests to departments and faculty for specific items of information related to the POW, but we expect this need to be minimal and perhaps not needed at all.

It is the intent of ARD to provide an accurate and useful document that will help USDA communicate internally and to Congress and other agencies of government that the federal funds are being used effectively to address high-priority problems. Consistent with the ARD philosophy, we will try to keep the bureaucracy associated with preparing this report at a minimum, especially to departments and to individual faculty.

Layman Awards

IANR faculty submitted 12 proposals for funding by the Layman Trust. A subcommittee of the ARD Advisory Council carefully evaluated each proposal and ranked the submissions in relation to quality of science and the potential impact of the proposed research. All proposals were forwarded to the Vice Chancellor for Research.

The primary aim of the Layman Awards is to provide seed money to enhance the possibility of obtaining external support for the research project. Only untenured faculty or tenured faculty who have not yet received an external grant are eligible for the program.

Seven of the twelve proposals submitted by ARD faculty were funded:

Lori A. Allison \$7,500
 Biochemistry Department
 "Transcript in Higher Plant Chloroplasts:
 Determining the *in vivo* Sequence Requirements of
 a Subset of Chloroplast tRNA Gene Promoters"

Vadim Gladyshev \$7,500
 Biochemistry Department
 "An Algorithm for Distinguishing Between
 Terminator and Selenocysteine TGA Codons:
 Discovery of New Selenoproteins"

Gary Y. Yuen \$7,500
 Plant Pathology Department
 "The Role of Bacterial Chitinases in Plant Disease
 Control"

Jess L. Miner \$7,500
 Animal Science Department
 "Assay of a Proposed Hormone That Controls Fat
 Synthesis"

Gary Sherman \$7,455
 Veterinary & Biomedical Sciences
 "In Vivo Reporter Gene Signaling of Reproductive
 Endocrine Status"

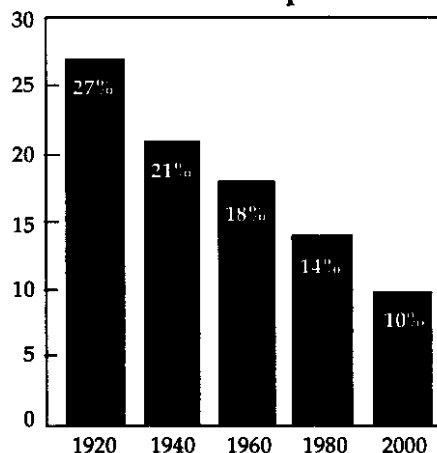
Richard Bischoff \$7,472
 Family & Consumer Sciences
 "Overusing Medical Services: An Investigation of
 Patient Illness and Treatment Narratives"

Rochelle Dalla \$7,468
 Family & Consumer Sciences
 "Transformations in Rural America: Impacts from
 Industry Growth and Migration"

American Agriculture: A Food, Fiber and Environmental System

Although America is now considered an industrial society, almost 20 percent of American workers derive their paycheck from agricultural and food enterprises. Eleven percent of our wages, salaries, rents, and profit stems from food and agricultural-related businesses. We still have the cheapest food supply on the planet when compared with our income, spending only 11 percent of our disposable income on food. This is far less than our worldwide neighbors in Canada, France, Australia and Japan.

Percent of Income Spent on Food



FY 2000 CSREES Budget Recommendations

Listed below are the CSREES budget recommendations for FY2000 proposed by President Clinton and by the NASULGC Board on Agriculture budget committee. We were pleased to see that President Clinton recommended a substantial increase in overall funding for agricultural research but he also recommended a significant decrease in formula funds.*

Funding lines (amounts in \$000)	FY 1999 Appropriate Act	FY 2000 President's Budget \$ Amount	FY 2000 NASULGC Budget \$ Amount
Research			
Base Programs:			
Hatch Act	\$180,545	\$153,672	\$191,545
McIntire-Sternis	21,932	19,882	23,332
Evans-Allen (1890)	29,676	27,735	31,976
Animal Health	5,109	4,775	5,409
Subtotal: Base	237,262	206,604	252,262
Special Research Grants			
Critical Issues	200	467	200
Expert IPM Decision Support System	177	260	177
Food Safety	5,000	moved	5,000
Global Change, UV-B Monitoring	1,000	1,567	1,000
Integrated Pest Management & Biological Control	2,731	2,731	2,731
Minor Crop Pest Management, IR4	8,990	10,711	8,990
Minor Use Animal Drugs	550	550	550
National Biological Impact Assessment Program	254	254	254
Pesticide Impact Assessment	1,327	moved	1,327
Pest Management Alternatives	1,623	4,220	1,623
Rural Development Centers	523	423	523
Trade and Policy Research Center	-	300	0
United States/Israel-Binational Ag Research and Development	400	2,000	400
Water Quality	3,461	moved	3,461
Other	51,928	0	51,928
Subtotal: Special	78,164	23,463	78,164
Cooperative Grants:			
National Research Initiative	119,300	200,000	119,300
Integrated Activities	0	72,844	0
Integrated Problem Solving Grants**	0	0	120,000
Subtotal: Competitive Grants	119,300	272,844	239,300
Other Research:			
Critical Agriculture Materials Act	600	0	0
Aquaculture Centers	4,000	4,000	4,000
Sustainable Agriculture Research and Education Program	8,000	8,500	8,000
Supplemental and Alternative Crops	750	0	0
1994 Research Grants	—	667	667
Federal Administration	10,688	4,038	10,688
Subtotal: Other Research	24,038	17,205	23,355
Total Research:	458,764	519,576	593,081

* The President's budget moved three existing funding lines from extension and research to a new integrated account. The President's budget also recommended that The Fund for Rural America (\$30 million) and The Initiative for Future Food and Agricultural Systems (\$120 million) be funded.

** A new program that will provide funding for applied research and education program. Included in the total is \$35 million for agricultural genomics and \$5 million for germplasm preservation.

New or Revised Projects

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

NEB-10-137 (Agricultural Economics) Evaluation of the Productivity - Environment Tradeoff: A Great Plains Case Study

Investigator: Richard K. Perrin

Status: New Competitive Grant effective Sept. 1, 1998

NEB-12-270 (Agronomy) Molecular Characterization of a Major Gene Cluster of Wheat

Investigator: Kulvinder Gill

Status: New Competitive Grant effective July 1, 1998

NEB-12-271 (Agronomy) IPM Implementation in a Corn/Soybean/Cotton/Wheat System (1998-2001)

Investigator(s): David Mortensen and Gail Wilkerson

Status: New Special Grant effective Sept. 15, 1998

NEB-12-272 (Agronomy) Germination, Growth, and Development of Selected Perennial Forage Grasses

Investigator: Lowell E. Moser

Status: New Hatch project effective Dec. 3, 1998

NEB-14-100 (Veterinary & Biomedical Sciences) Analysis of Apoptosis and Pathogenesis by Bovine Herpes Virus and BICPO

Investigator(s): Clinton Jones and Alan Doster

Status: New Competitive Grant effective Nov. 15, 1998

NEB-14-101 (Veterinary & Biomedical Sciences) Role of E. Coli Heat-Labile Enterotoxin-I in Diarrhea and Septicemia in Swine

Investigator(s): Rodney A. Moxley and Raul G. Barletta

Status: New Competitive Grant effective Nov. 1, 1998

NEB-14-102 (Veterinary & Biomedical Sciences) Strategic Plan for an IANR Disease Research Program at the Dept. Of Vet. & Biomedical Sciences

Investigator: David R. Smith

Status: New Hatch project effective Oct. 6, 1998

NEB-14-103 (Veterinary & Biomedical Sciences) Pathogenic Mechanisms of Bacterial Respiratory Pathogens

Investigator: Jeffrey D. Cirillo

Status: New Animal Health project effective Nov. 1, 1998

NEB-15-088 (Biochemistry) Enzymology of Anaerobic CO₂ Fixation and Bioremediation

Investigator: Robert V. Klucas

Status: New Hatch project effective Nov. 3, 1998

NEB-16-081 (Food Science & Technology) Genomic Analysis of E. Coli 0157:H7 Populations from Cattle and Humans

Investigator(s): Andrew K. Benson and Robert W. Hutkins

Status: New Competitive Grant effective Aug. 1, 1998

NEB-20-062 (Horticulture) Exploring Plant Nutrient Interactions in Floricultural and Ornamental Crops

Investigator: Ellen T. Paparozzi

Status: New Hatch project effective Dec. 2, 1998

NEB-21-071 (Plant Pathology) Entomopathogenic Nematodes for Biological Control of Filth Flies in Feedlots

Investigator(s): Thomas O. Powers and Allen Szalanski

Status: New Competitive Grant effective Oct. 1, 1998

NEB-21-072 (Plant Pathology) Molecular Analysis of Sclerotial Development in Sclerotinia Sclerotiorum

Investigator: Jeffrey A. Rollins

Status: New Competitive Grant effective Oct. 15, 1998

NEB-21-073 (Plant Pathology) Environmental Effects on Plant Host-Parasite Interactions

Investigator: James E. Partridge

Status: New Hatch project effective Dec. 3, 1998

NEB-21-074 (Plant Pathology) Broad-Spectrum Virus Resistance in Transgenic Plants

Investigator: Amit Mitra

Status: New State project effective Jan. 1, 1999

NEB-42-007 (Northeast Research & Extension Center) Management Considerations for Feedlot Cattle Exposed to Environmental Stressors

Investigator(s): Terry Mader and C. Todd Milton

Status: Revised Hatch project effective Oct. 1, 1998

NEB-42-023 (Northeast Research & Extension Center) Modifying Pig Performance Through Facility and Diet Management

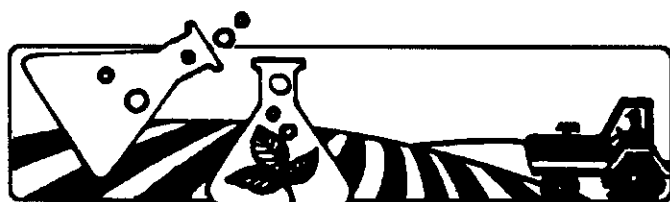
Investigator: Michael C. Brumm

Status: New Hatch project effective Oct. 9, 1998

NEB-91-050 (Nutritional Science and Dietetics) Health Implication of Folate and Homocysteine as it Relates to Fruit and Vegetable Consumption

Investigator: Julie A. Albrecht

Status: New Hatch project effective Jan. 1, 1999



Grants and Contracts Received February and March, 1999

Agronomy

Clement, Tom — The Samuel Roberts Noble Foundation, Inc.	20,000
Specht, James — USDA/ARS	40,000
Miscellaneous grants under \$10,000 each	43,888

Animal Science

Calkins, Chris and Mandigo, Roger — National Cattlemen's Beef Association	104,864
Pomp, Daniel — Cotswold Pig Company	90,000
Miscellaneous grants under \$10,000 each	65,539

Biochemistry

Banerjee, Ruma — NIH	181,724
Ragsdale, Stephen and Weeks, Donald — Consortium for Plant Biotechnology Research	28,000
Weeks, Donald — NSF	90,000

Biological Systems Engineering

Martin, Derrel — Platte River and Basin Cooperative Hydrology Study Sponsors	40,925
Miscellaneous grants under \$10,000 each	3,000

Entomology

Siegfried, Blair — Pioneer Hi-Bred International	11,409
Siegfried, Blair — Dekalb	28,318
Siegfried, Blair — Mycogen Corporation	26,634
Miscellaneous grants under \$10,000 each	37,000

Food Science and Technology

Hutkins, Robert — Dairy Management, Inc.	89,116
Meagher, Michael — Biomir, Inc.	12,950
Meagher, Michael — Ludwig Institute for Cancer Research	10,200
Meagher, Michael — National Renewable Energy Laboratory	32,142
Meagher, Michael — National Corn Growers Association	79,294
Taylor, Steve — Nebraska Food Industry Association	10,879
Miscellaneous grants under \$10,000 each	48,252

Horticulture

Read, Paul — Small Fruit Research Fund — UN Foundation	44,500
Miscellaneous grants under \$10,000 each	27,058

Northeast Research and Extension Center

Brumm, Michael — U.S. Poultry and Egg Association	27,315
Miscellaneous grants under \$10,000 each	17,400

Nutritional Science and Dietetics

Miscellaneous grants under \$10,000 each	10,000
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Panhandle Research and Extension Center

Hibberd, Charles — Western Sugar Company	24,000
Smith, John — Western Sugar Company	26,500
Miscellaneous grants under \$10,000 each	86,428

Plant Pathology

Powers, Tom — Nebraska Game and Parks Commission	18,000
Miscellaneous grants under \$10,000 each	1,295

School of Natural Resource Sciences

Hergenrader, Gary — National Resources Conservation Service	41,000
Hoagland, Kyle — U.S. Army Corps of Engineers	24,848
Hoagland, Kyle and Peters, Ed — Nebraska Game and Parks Commission	272,735
Hoagland, Kyle and Holz, John C. — Nebraska Game and Parks Commission	45,000
Kamble, Shripat — USDA/CSREES	22,527
Spalding, Roy — Nebraska Department of Agriculture	25,000
Wedin, Dave — University of Minnesota (subcontract)	33,716
Miscellaneous grants under \$10,000 each	6,950

South Central Research and Extension Center

Miscellaneous grants under \$10,000 each	15,500
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Veterinary and Biomedical Sciences

Miscellaneous grants under \$10,000 each	18,244
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West Central Research and Extension Center

Miscellaneous grants under \$10,000 each	25,700
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Grand Total **1,907,850**

Proposals Submitted for Federal Grants

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The following is a listing of proposals that were submitted after February 1999 by faculty for federal grant programs. While not all grants will be funded, we are appreciative of the faculty member's effort in submitting proposals to the various agencies.

Raul G. Barletta — USDA/NRI — Identification of *Mycobacterium paratuberculosis* Virulence Determinants — \$361,289

P. Stephen Baenziger, K. Arumuganathan, Thomas E. Clemente and Kulvinder Gill — NSF — Genomic Tools for Wheat — \$2,081,829

Shirley Niemeyer — NSF — The Impacts of Environmental Disclosure Policies and Knowledge, Resources, Market and Attitude Constraints on Housing Transaction Practices — \$46,432

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

Subramaniam Srikumaran — USDA/NRI — Molecular Characterization of *Pasteurella haemolytica* Leukotoxin — B₂ Integrin Interactions — \$245,249

Hu, Qi "Steve" — USDA — Soil Temperature Data Quality Control and Dissemination for NRCS Soil Climate Project Network — \$83,280

Pomp, Daniel — USDA/NRI — Development of Resources for Functional Genomics in the Pig — \$209,584

Morrison, Mark — USDA/NRI — Molecular and Kinetic Analyses of the Adherence of *Ruminococcus albus* 8 to Cellulose — \$303,653

Sarath, Gautam — USDA/NRI — Soybean Root Nodule Acid Phosphatases — \$181,349

Zeece, Michael and Jones, Steve — USDA/NRI — Gelsolin and its Role in Myofibrillar Degradation — \$119,885

Hu, Qi "Steve" — NOAA/NASA — Orographic and Land Cover Effects on Regional Atmospheric Circulation, Precipitation, and Water Resources in GCIP LSA-NW — \$267,536

Kelling, Clayton and Donis, Ruben — USDA/NRI — Genotype 2 Bovine Viral Diarrhea Virus Determinants of Virulence — \$222,132

Volk, Bob — USGS — Production of Educational Newsletter "Water Current" and Other Materials Identified as Important for the General Public to Understand — \$18,178

Comfort, Steve and Shea, Pat — A Test of Permeable Zero-valent Iron Barriers for *In-Situ* Containment and Remediation of Pesticide Contamination in Unsaturated Soils — \$12,550

Siegfried, Blair and Hoagland, Kyle — USGS — Evaluating the Effects of Pesticide Mixtures to Freshwater Algae — \$9,750

Powers, Thomas and Gardner, Scott — NSF — Monographic Studies of Nematodes: An Integrated Approach — \$750,005

Policy Prohibits Use of University Funds for Memberships, Subscriptions

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In 1997, the Vice Chancellor's Council approved a policy that prohibits the use of university funds for purchase of individual memberships in scientific organizations or personal subscriptions to journals. The policy statement is provided below:

- No university funds (appropriated, grants, contracts, indirect cost recovery, or revolving) may be used to pay individual memberships in professional societies or other periodicals.
- University funds may be used to purchase institutional memberships in civic or professional organizations or to purchase institutional subscriptions for journals or other periodicals.
- University of Nebraska Foundation funds may be used to pay for personal memberships or subscriptions if individuals endowments are established for this purpose.

The policy was adopted because several cases of abuse were discovered and because Council members believe that faculty members have personal responsibility to be members of their professional or scientific society.

Technology Transfer in Universities

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Approximately \$30 billion of economic activity and 250,000 new jobs each year are attributable to commercialization of academic innovations, according to the Seventh Annual Licensing Survey by the Association of University Technology Managers (AUTM). The survey indicated that universities' royalty income increased 33 percent over the previous year. The leading recipient of royalty income was the nine-campus University of California system, which received \$61.3 million.

The commercialization process — often referred to as university-technology transfer — involves identifying discoveries made in academic research laboratories, patenting them and licensing the patents to industry to enable their development into commercial products.

The AUTM survey indicated that U.S. universities were awarded 2,239 new patents in fiscal year 1997. More than 1,000 products currently on the market are based on university-licensed technology, and university patents resulted in 333 new spin-off companies being formed.

Faculty are encouraged to contact Dale Vanderholm (IANR Patent Officer) or Don Helmuth (UNL Patent Administrator) if they have discoveries that may deserve protection and commercialization. A patent disclosure must be filed before information about the discovery is made public.

(Information taken from the February 1999 issue of NASULGC Newsline.)