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Agricultural Research Division News

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December 1999

Volume 34, Number 2

Season's Greetings

The Agricultural Research Division staff extends to all faculty and staff our best wishes for a joyful holiday season and a productive new year.

The past year has been notable because of your increasing productivity and continued success in acquisition of external funds to support your research programs. For the fiscal year ending June 30, 1999, ARD faculty expended more than \$57.8 million on research projects — an all-time record. Of this total, 47.2% was state-appropriated funds, 30.4% grants and contracts, 11.5% revolving, 5.8% federal formula funds, and 5.1% Nebraska Research Initiative funds. During FY 1999, ARD faculty obtained more than \$21 million in new grants and contracts. The total output of refereed publications increased by about 4% in FY 1999 while the faculty FTE decreased about 1% as compared to FY 1998.

It is likely that 2000 will continue to be a year of challenges. ARD will be providing approximately \$200,000 in temporary bridging funds to satisfy our portion of the current year reallocation tax. ARD-affiliated units are paying the FY 2000 tax but not all of the funds were available on July 1, 1999. The ARD budget will be providing all of our portion of the IANR reallocation tax to be assessed in FY 2001 (units will not be reassessed). The reallocation taxes will hinder our ability to release faculty positions for recruitment since a portion of the ARD assessment will be derived from the IANR Faculty Salary Pool. This, in turn, affects our collective ability to move the research program in new directions. However, we are confident that the excellent hires that have been made during the last few years coupled with the faculty positions to be released in the next two years will guarantee that our programs will continue to address critical state and national issues in an outstanding manner.

ARD staff have finished preparation of the 113th Annual Report. We hope that you will read this report and help celebrate the many accomplishments of your colleagues that are documented in the publication. We believe that the Annual Report presents an overview of an outstanding research program carried out by dedicated faculty. Thanks to each of you for your efforts in making our organization recognized both in Nebraska and nationally for excellence and relevance. The ARD staff look forward to working with each of you during 2000.

Darrell
Karen
Dale
Shane
Debra
Helene
Steve



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.



Foundation Seed Division

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Administrative responsibility for the Foundation Seed Division will move from the Agronomy Department to the Agricultural Research Division on January 1, 2000, as suggested by a faculty task force. The Strategic Planning Task Force for the Foundation Seed Division made this move one of their key recommendations to Dr. Ken Cassman, Head of the Department of Agronomy. Dr. Steve Baenziger chaired the committee.

Over a year ago, faculty decided it might be appropriate to take a new look at the FSD organization as a result of rapid changes in the seed industry. The announcement that the current Director, Ron Helsing, was going to retire added an additional sense of urgency to their mission.

According to the task force, this move would:

- Enable better land coordination and access to the whole farm system by being based at the ARDC and possibly utilizing Research and Extension Centers.
- Recognize that FSD works with more than agronomic crops.

Dean Darrell Nelson agreed that the ARD would accept administrative responsibility for the FSD and assigned oversight responsibility for FSD to Dan Duncan, Director of the ARDC. Given Ron Helsing's announced retirement date of January 7, 2000, a national search for a new director of FSD has been initiated.

FY 1999 Expenditures Per Budgeted Research Faculty

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Faculty have often stated that they receive only small amounts of recurring funding to support their approved research projects. An analysis of FY 1999 research expenditures indicates that on average ARD is providing units with \$258,582 of state appropriations and federal formula funds per research faculty FTE. These funds pay a portion of the faculty member's salary and fringe benefits; the salary/wages and fringe benefits for support staff, graduate research assistants, and undergraduate students; and operating costs (supplies and expenses, travel, and equipment). During FY 1999, faculty members spent on average \$135,262 of grant and contract funds per research FTE and \$51,357 of revolving funds per research FTE. Total expenditures per faculty research FTE were \$445,201 during the past fiscal year.

Salaries, wages, and fringe benefits account for 84% of state-appropriated and federal formula fund

expenditures, 45% of grant and contract expenditures, 37% of revolving expenditures and 64% of all expenditures. Conversely, operating costs account for 16% of state-appropriated and federal formula fund expenditures, 55% of grant and contract expenditures, 63% of revolving expenditures, and 36% of all expenditures. Overall, the ratio between personnel costs and operating costs is reasonable, but the acquisition of additional grant and contract funds would provide the operating funds needed by some projects.

A Retrospective on the FY 1999 Federal Budget

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For FY 1999, the federal budget totaled about \$1.7 trillion. About 54% of the funds were allocated to mandatory spending programs, 14% was devoted to interest on the national debt, 15% was allocated to defense discretionary funding, and 17% devoted to non-defense discretionary programs. All research programs and many other federal activities fall into the non-defense discretionary category.

Federal support for research totaled \$35 billion during FY 1999. The proportions allocated to various federal agencies were: NIH, 45%; NASA, 14%; DOD, 12%; DOE, 10%; NSF, 8%; USDA (includes ARS, ERS and FS), 4%; Commerce, 2%; and others, 5%. From FY 1994 to FY 1999, the NIH and NSF budgets increased in constant dollars by 21% and 14%, respectively, whereas USDA and NASA budgets decreased in constant dollars by 9% and 10%, respectively.

The research and development allocations within the USDA budget were: ARS, \$790 million; CSREES, \$485 million; FS, \$120 million; ERS, \$60 million; and other, \$50 million. The distribution of CSREES research funds are 49% formula, 35% competitive, and 15% special grants. About 70% of the CSREES competitive grant funds are distributed through the National Research Initiative, and the remainder is through a large number of smaller competitive programs.

Recognition of Junior Faculty for Excellence in Research

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In 1991, the ARD Advisory Council established a program to recognize the research accomplishments made by junior faculty members. No more than two junior faculty are recognized each year. The recognition consists of a certificate, engraved plaque, and \$3,000 for professional development or research-related activities.

Criteria used to evaluate nominees include scientific publication record, especially those publications resulting from research at UNL, external grant funding, and recognition by peers. A sub-committee of the ARD Advisory Council evaluates the nominations and recommends recipients to the Dean for Agricultural Research.

The following faculty members were selected for recognition during the 1999-2000 academic year:

- Dr. Jeffrey D. Cirillo, Assistant Professor, Veterinary and Biomedical Sciences
- Dr. David A. Wedin, Assistant Professor, School of Natural Resource Sciences.

Congratulations to Drs. Cirillo and Wedin! A call for nominations is issued each year on about June 1. We encourage faculty and administrators to nominate deserving junior faculty in their units.

ARD Royalty Income

Royalties from licensing of intellectual property developed by UNL faculty members are shared according to Board of Regents policy among the inventors and the institution. The policy provides that the inventor(s) will receive one-third of the patent license royalties after the direct expenses of obtaining the patent and/or license have been deducted. The remaining two-thirds of the income, after direct expenses, is distributed to the University Technology Transfer Office and to the appropriate administrative unit, with each receiving one-third.

Under current distribution procedures, the one-third for the administrative unit comes to the IANR division at which the inventor is employed. For intellectual property resulting from research, the administrative unit is ARD, and current practice is for the one-third share to be transferred from the University Technology Transfer Office to the ARD office. Funds going to the relevant division can be used as research innovation or contingency funds with first priority ordinarily given to the needs of the department wherein the income-producing intellectual property originated. There may be instances where the high priority needs may take precedence over distribution to the originating department.

For the past few fiscal years, the ARD has returned the full one-third share received through its distribution to the originating center or department. This could be done because there were no specific needs that arose for other appropriate use of these funds. Units may use these royalty funds according to their unit policy. Four departments and two centers received royalty income distributions in the past year.

Income resulting from licensing intellectual property originating from ARD faculty has been growing steadily in recent years. The following table identifies a total royalty income to the University of Nebraska from ARD faculty intellectual property licensing in recent years.

ARD-Related Royalty Income to UNL	
<i>Year</i>	<i>Total ARD Royalties</i>
1995-96	\$246,680.30
1996-97	\$317,338.86
1997-98	\$354,025.80
1998-99	\$375,356.63

Of this total, \$54,980.61 was used for direct expenses associated with patenting and for distribution to other co-sponsors under terms of prior agreements. This left a total of \$320,376.02 to be distributed according to the Board of Regents policy. Accordingly, the inventors, the Agricultural Research Division, and the Office of Technology Transfer each received \$106,792, with the entire ARD amount then being returned to appropriate departments.

The royalties returned to units can have a positive impact for uses benefitting the programs of the unit. It is anticipated that we will see a steady growth rate in these funds, and we consider intellectual property licensing as improving the research programs of the ARD units.

NUPROF Faculty Development

The dates for the Faculty Development Institute segment of the NUPROF class of 2000-2001 have been set for September 27-29, 2000. Participation in the Faculty Development Institute is a mandatory part of NUPROF involvement. Please mark your calendars to prevent scheduling conflicts if you are considering applying for the class of 2000-2001.

Shear-Miles Fellowship

The Shear-Miles Agricultural Scholarship and Fellowship was established at the NU Foundation with a \$173,000 gift from the estate of Dorothy S. Miles. James Dennis, executor of the Miles estate, said Dorothy Miles planned that the gift memorialize her father and father-in-law, Cornelius Lott Shear and George Miles. Shear and Miles both graduated from the College of Agriculture at the University of Nebraska. Shear

received his bachelor's and master's degrees in 1887 and 1901, and Miles graduated in 1903. This endowed fund provides scholarships and fellowships to benefit the Agricultural Research Division and the College of Agricultural Sciences and Natural Resources.

Two students listed below will be recipients of this \$2,000 award given for the first time by ARD:

James L. Figarola (Ph.D.) Entomology Department
Nedum Mutle (Ph.D.) Horticulture Department

Undergraduate Research Conference

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Please note the sixth annual Undergraduate Research Conference will be held on Friday, March 24 (afternoon) and Saturday, March 25 (morning), 2000. This year, the event will coincide with the Centennial Research Fair.

As we finish the semester, please urge undergraduates who are involved in research to consider presenting their work at the conference, and please consider sponsoring one or more students. This opportunity is an excellent time to introduce promising students to the excitement of sharing their research and their observations. The conference also provides students the chance to become familiar with a conference atmosphere in a non-threatening, non-competitive environment. The research does not have to be complete for presentation.

New or Revised Projects

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

NEB-14-104 (Veterinary & Biomedical Sciences) Identification of *Mycobacterium paratuberculosis* Virulence Determinants

Investigator: Raul G. Barletta

Status: New competitive grant effective September 1, 1999

NEB-15-089 (Biochemistry) Rubisco Phylogenetic Correction

Investigator: Robert J. Spreitzer

Status: Revised competitive grant effective September 15, 1997

NEB-19-008 (Food Processing Center) Development and Quality/Safety Enhancement of Specialty Food Products

Investigator: Stephen L. Taylor

Status: New special grant effective July 1, 1999

NEB-32-006 (SARE Office) FY-99 Plan of Work for the North Central Region Sustainable Agriculture Research and Education Program

Investigator: Steve Waller

Status: New cooperative agreement effective July 15, 1999

Proposals Submitted for Federal Grants

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

James Van Etten, Michael Graves, and James Gurnon — U.S. Army Research Office — Virus Subversion of a Lower Eukaryote's Transcriptional Machinery — \$279,615

Donald Wilhite — USDA/FSA/MSD — Coping with Drought in Sub-Saharan Africa Best Use of Climate Information — \$11,000

Jeff Cirillo — NIH/NIAID — Entry Mechanisms of *Mycobacterium marinum* — \$1,440,000

David A. Mortensen — USDA/CSREES — IPM Implementation in a Corn/Soybean/Cotton/Wheat System — \$200,000

John B. Campbell — USDA/ARS — Biology and Control of Stable Flies Afflicting Cattle in Pastures — \$20,000

James C. Partridge — USDA/ARS — Sorghum Ergot Epidemiology in the Great Plains — \$26,600

Rhonda M. Brand — NIH — Ethanol Consumption and Dermal Penetration of Pesticides — \$1,033,000

Rhonda M. Brand — NSF — Biomedical Techniques to Prevent and Treat Musculoskeletal Disabilities — \$287,149

David Marx — USDA/ARS — Spatial Statistical Methods for Assisting Mid South Area Scientists — \$10,000

Lance Meinke — USDA/ARS — Western Corn Rootworm Resistance to Insecticides-Development of Resistance Management Strategies — \$14,000

Clinton J. Jones — NIH — Inhibition of Programmed Cell Death by HSV-1 LAY Gene — \$1,782,720

David A. Mortensen and Christopher Neeser — USDA/NRICGP — Spatial Distribution of Weed Patches: The Influence of Habitat Heterogeneity — \$216,696

John L. Lindquist, Timothy J. Arkebauer, and Daniel T. Walters — USDA/NRICGP — Elucidating the Mechanisms of Corn-Velvetleaf Competition for Soil Nitrogen and Light — \$284,874

William L. Kranz, Charles A. Shapiro, and Rameshwar S. Kanwar — USDA/NRICGP — Developing Operational Criteria for Application of Swine Effluent via Center Pivot — \$191,541

Clint Rowe, Mark Anderson, Steve Hu, and Xun-Hong Chen — NOAA — Using Integrated Modeling Techniques to Investigate the Hydrological Cycle in the Nebraska Sand Hills — \$329,866

Albert Weiss, Timothy J. Arkebauer, P. Stephen Baenziger, and S. Madhavan — USDA/NRICGP — Winter Wheat Responses to Increased Temperature and (CO₂) — \$431,461

Judy A. Driskell — USDA/NRICGP — Bioavailability of Carotenoids from Carrot Chip Product in Gerbils — \$167,478

Nancy Betts — NIH — Defining Readiness to Change Fruit and Vegetable Intake — \$432,000

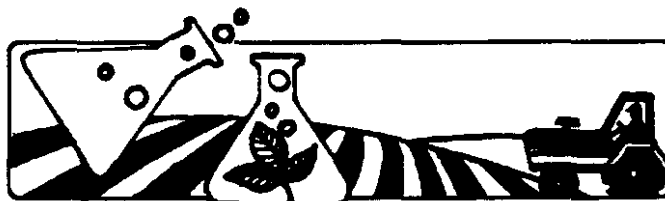
Nancy Lewis — USDA/NRICGP — Web-Based Nutrition Education to Improve Nutrition Status in Overweight Children — \$207,828

Julie Albrecht and Kathleen Prochaska-Cue — USDA/ERS — Consumer Valuation of Reducing Foodborne Health Risks — \$327,090

Shashi Verma et al — DOE-EPSCoR — Carbon Sequestration and Global Climate Change — \$840,000

Walter H. Schacht — USDA/NRICGP — Fire and Grazing Effect in Sandhills Rangeland — \$116,652

Ruma Banerjee — NIH — Reaction Mechanisms of Mammalian B₁₂-Dependent Enzymes — \$187,176



Grants and Contracts Received October and November, 1999

Agricultural Economics	
Miscellaneous grants under \$10,000 each	\$1,600
Agronomy	
Maranville, Jerry — Pioneer HiBred International	20,000
Mortensen, David — USDA/CSREES	200,000
Miscellaneous grants under \$10,000 each	47,365
Animal Science	
Calkins, Chris — Nebraska Beef Council	66,800
Miscellaneous grants under \$10,000 each	4,800
Biochemistry	
Miscellaneous grants under \$10,000 each	5,000
Biometry	
Marx, David — USDA/ARS	55,000
Center for Sustainable Agriculture	
Klopfenstein, Terry, James Brandle, and Chuck Francis — USDA/CSREES	55,200
Entomology	
Siegfried, Blair — DeKalb	11,500
Miscellaneous grants under \$5,000 each	78,200
Food Science and Technology	
Brashears, Mindy — USDA/CSREES	49,481
Meagher, Michael — Crosscut	88,985
Miscellaneous grants under \$5,000 each	135,007
Horticulture	
Miscellaneous grants under \$5,000 each	32,995
Northeast Research & Extension Center	
Miscellaneous grants under \$5,000 each	31,900
Panhandle Research & Extension Center	
Miscellaneous grants under \$5,000 each	75,650
Plant Pathology	
Partridge, James — USDA/ARS	26,600
Vidaver, Anne — Kansas State University	176,404
Miscellaneous grants under \$5,000 each	8,000
School of Natural Resource Sciences	
Peters, Edward — Nebraska Game & Parks Commission	193,200
Vitzthum, Ed — DOI-GS	20,000
Wilhite, Donald — USDA/FAS	11,000
Wilhite, Donald — USDA/CSREES	201,009
Miscellaneous grants under \$5,000 each	43,000
South Central Research & Extension Center	
Miscellaneous grants under \$5,000 each	38,300
Veterinary & Biomedical Sciences	
Donis, Ruben — Pfizer	48,629
Gray, Jeff — Nebraska Beef Council	20,500
Osorio, F.A. — USDA/CSREES	150,000
Rogers, Douglas — USDA/ARS	15,000
Miscellaneous grants under \$5,000	22,565
West Central Research & Extension Center	
Campbell, John — USDA/ARS	20,000
Miscellaneous grants under \$5,000 each	9,059
Grand Total	\$2,162,749

Food for Thought

"... If this century is the age of physics, the 21st century will be the age of biology."

Alan Bromley

"Computers have changed biology forever, even if most biologists don't yet realize it."

Michael Levitt

"Two months in the lab can easily save an afternoon on the computer."

Alan Bleasby, *The Biochemist*, October 1997

Diane says

You should do something every day to make other people happy, even if it's only to leave them alone.