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THE AGRICULTURAL EXPERIMENT STATION
INSTITUTE OF AGRICULTURE
AND NATURAL RESOURCES
UNIVERSITY OF NEBRASKA-LINCOLN 68583-0704



Agricultural Experiment Station News

APRIL 1984

VOL 17 NO 9

1985 IANR AG EXPO

Leo Lucas and Irv Omtvedt appointed the following persons as the steering committee for the 1985 IANR AG EXPO at the University Field Laboratory: **Blaine Blad, James Brandle, Elbert Dickey, Douglas Duey, Richard Fleming, Keith Glewen, Dale Hanson, Paul Hay, Stanley Jensen, Herman Knoche, Z. B. Mayo, and Darrell Nelson.** Loyd Young and Warren Sabs will serve as Co-Chairmen. Focus for the 1985 event will be on crop production.

UPCOMING EVENTS

Department of Horticulture Comprehensive Review. East Campus with visits to North Platte Station, Panhandle Station, and University Field Laboratory. April 23-27, 1984.

IANR AG EXPO. Focusing on animal agriculture. University Field Laboratory. July 26, 1984.

ADVISORY COUNCIL

Faculty in District 1 (Agr. Economics; Food Science and Technology), District 3 (Agronomy), District 6 (Biometrics; Forestry, Fisheries and Wildlife; Veterinary Science), and District 7 (Agr. Biochemistry; Plant Pathology) will be invited to nominate faculty to represent them on the Agricultural Research Advisory Council. The terms for **Dale Anderson, Jim Steadman, Khem Shahani, and Marvin Rhodes** will expire June 30, 1984 and **Gary Peterson** will be leaving this summer at the end of the first year of his 3-year term.

Replacements will be selected by mail ballots. The two faculty members from each district who receive the most nominations on the first mailing will constitute the second mail ballot to select the representative for each district. The Council meets at least quarterly to discuss issues relating to the Agricultural Research program.

Faculty who have items they wish to have discussed by the Council should contact their district representatives or **Dale Anderson**, Council Chairman (472-1940).

IMPORTANT DEADLINES

Small Business Innovation Research Grants. USDA is accepting research proposals in areas of: forests and related resources; plant production and protection; animal production and protection; air; water and soils; food science and nutrition; and rural and community development. Proposals must be postmarked no later than May 1, 1984.

NFIA Travel Fellowship Award. Moorman Manufacturing Company is sponsoring a travel fellowship for animal nutrition research. Forms available in 109 Ag. Hall. Deadline: May 15, 1984.

UNL Research Council Grants-in-Aid. Deadline date for projects beginning July 1, 1984 through December 31, 1984 is May 1, 1984.

November 1, 1984 is the deadline for projects beginning January 1, 1985 through June 30, 1985. A minimum of \$200 will be considered for grant-in-aid requests.

DNA SEQUENCING WORKSHOP

The following IANR staff participated in the special workshop in DNA Sequence Analysis April 11-13. **James Partridge** was Workshop Coordinator.

Unit	Name
Agr. Biochemistry	John Markwell
Agronomy	James Specht Beth Swisher
Animal Science	Mary Beck Franklin Eldridge Roger Kittok
Entomology	Z. B. Mayo
Horticulture	Ellen Paparozzi
Plant Pathology	Lois Girton Gurmel Sidhu
Veterinary Science	Gary Anderson Merwin Frey Marvin Rhodes

Ellen Paparozzi (Horticulture) was also a member of the Chancellor's Biotechnology Committee, but her name was omitted in the article in the March Newsletter.

REGENTS RESOLUTION

The Board of Regents passed a special resolution in honor of the contributions of **John L. Adams** on March 17, 1984. Special mention was made of his contributions as Chairman of the Department of Poultry Science, Director of the Cooperative Extension Service, and Professor of Agricultural Communications. He died on February 28, 1984.

MOROCCAN DRYLAND AGRICULTURE RESEARCH

The Dryland Agriculture Research project in Morocco has been expanded and extended for a second five-year period. The first five-year contract involved \$4.2 million of USAID funding and five U. S. scientists on site. Moroccan funding provided the new "Aridiculture" research center land and construction as well as extensive staffing.

The second five-year contract for \$19.2 million from USAID will expand the U. S. staff to 13, train 35 Moroccan scientists with advanced degrees, and provide extensive scientific and field research equipment. Matching Moroccan funds will provide staffing, supplies, travel and operating costs. **Darrell Watts**, Professor of Agricultural Engineering, is team leader for this research program.

BUDGET UPDATE

The Legislature approved a budget of \$162,569,757 for the University of Nebraska for 1984-85. This represents about a 9% increase over 1983-84. Specific items include:

Salaries and Wages: 3% increase on March 1, 1984 and 5% increase on July 1, 1984 plus a special salary adjustment package of \$1,845,123. Guidelines for distribution of the salary increases will be determined by the Board of Regents at their April meeting.

Health Insurance: Sufficient to cover increase in premiums.

Replacement Equipment: \$312,000.

Library Acquisitions: 10% increase.

IANR Information Technology Program: \$145,000.

Veterinary Student Contracts: \$195,605 increase.

FOOD PROTEIN RESEARCH GROUP COORDINATION

Effective April 6, 1984, **Herman Knoche** is Coordinator of the Food Protein Research Group, replacing **Glen Vollmar**. Vollmar has effectively served as Coordinator of this group for several years.

The FPRG is a good example of productive, cooperative interdisciplinary research. Research emphasis is shifting towards the use of proteins in corn gluten meal and corn germ, although other protein sources are still being addressed.

RESEARCH PROJECT FUNDING FROM CHECK-OFF BOARDS

The Nebraska Corn, Sorghum, Soybean, and Wheat Boards have made preliminary budget decisions, including action on research proposals for fiscal 1984-85.

The **Nebraska Corn Board** approved 5 research projects out of 24 submitted. Of the five, four were in the area of utilization and one was in the area of conservation and environment. Three were continuation projects and two were new projects. Total research funding approved was \$139,024.

The **Nebraska Grain Sorghum Board** approved 13 out of 21 proposals submitted. Five continuation projects and eight new projects were funded. Five of the funded projects were in the area of utilization, five in production efficiency, and three in basic plant physiology/biochemistry. Funding totaled \$122,420.

Of 28 proposals submitted to the **Nebraska Soybean Board**, 19 were approved. These included four utilization proposals, seven production efficiency proposals, three marketing and economics proposals, and five basic plant physiology/biochemistry proposals. Twelve continuation projects and seven new projects were funded, for a total of \$230,294.

Only continuation projects have been approved by the **Nebraska Wheat Board**. Action on new project proposals will be taken at the next meeting.

Check-Off Board grants are a significant source of support for our research programs. The boards have unanimously indicated they are impressed with the depth and breadth of our research programs and realize that they are unable to fund some good project proposals. Having these groups familiar with our programs and needs can prove beneficial in the long term.

SURVEY OF WORKING COLLECTIONS OF MICROBIAL AND SUBCELLULAR GERM PLASM

The national Experiment Station Committee on Policy (ESCOP) Subcommittee on Microbial and Subcellular Germ Plasm Collections has recently completed a survey of "working" collections of microbial and subcellular germ plasm currently maintained by Experiment Station and USDA scientists.

The objective of this survey was to provide data to hold a small initial workshop to study the mechanics of a national network to link these working collections. Rapidly advancing techniques of genetic engineering extend the possibilities of manipulating this diverse microbial germ plasm. Copies of survey results have been sent to selected scientists. If you have not received a copy of this and are interested, contact **Dale Vanderholm**.

PATENT RIGHTS FROM UNIVERSITY RESEARCH

Board of Regents policy recognizes the benefits of selectively obtaining patents and associated proprietary rights on discoveries and investigations resulting from university research. Benefits include disseminating new ideas and making these discoveries available to the public; stimulating research and creativity on the part of University personnel; and recognizing and remunerating both the individual and the University. Faculty are urged to follow approved procedures for patenting research results since failure to observe some simple precautions could disqualify the discovery.

Patent law generally requires an inventor to be prompt in filing a patent application. Under U.S. law, the application must be filed within one year after the invention has been published, or publicly used, or sold. Most foreign countries require that the patent application be filed before any public disclosure. A published description of an invention which is adequate to permit a knowledgeable person to understand the nature of the invention is called an "enabling disclosure." This may occur as a written statement in a scientific article or a technical report, or may occur verbally as in a talk at a scientific meeting or public lecture or by public demonstration of the invention. Whether a disclosure is enabling or not is a complex question. Researchers should seek expert advice from university patent administrators before releasing any information on an invention. Notes in future Newsletters will address other factors which relate to the patentability of research discoveries.

—Dale Vanderholm

SUGARBEET TRANSPLANT PROJECT

Stan Haas reports that the Panhandle Station Sugarbeet Transplant Project Fund Drive to provide project support has been successful, with \$109,000 received to date. This exceeds the original goal of \$101,000. This support allows start of an expanded research and demonstration program. It is anticipated that this program will have a favorable impact on the sugar industry and on the economic well-being of the North Platte Valley and adjacent sugarbeet growing areas.

An Open House is scheduled at the Panhandle Station on Sunday, May 20, 1984, to give the public a chance to become acquainted with the sugarbeet project. Staff members involved in various phases of this project include Mike Boosalis, Eric Kerr, John Smith, Robert Wilson, Dan Yocom, and Dean Yonts.

FACULTY DEVELOPMENT LEAVES

A recent report to the Board of Regents indicates a smaller percentage of IANR faculty have participated in the UNL Faculty Development Fellowships compared to the rest of UNL. Here is a summary of participation:

Year	UNL* NO.	NO.	IANR faculty participants
1977-78	26	0	
1978-79	20	2	DeShazer, Satterlee
1979-80	32	1	Guyer
1980-81	25	3	Douplik, Gary Peterson, Shahani
1981-82	34	3	Kalyan-Masih, Klucas, Wagner
1982-83	35	6	Frank, Hergert, Maranville, Nielsen, Leroy Peters, Turner
1983-84	29	4	Gessaman, Gilley Linsenmeyer, Lowry
1984-85	23	2	DeFrain, Roeth
	224	21	

*Excluding IANR

IANR faculty, following their development leaves, indicated their value:

"... revitalized my job attitude, correcting a case of 'job burnout'. I have a renewed interest and desire."

"... was essential to my professional improvement."

"... there were many logistical and financial problems to work out ... but for the adventurous, the experience is invaluable."

"... upon returning to the University, I will be an enthusiastic supporter of faculty development leaves with business and industry."

"... faculty leave strengthened my research and teaching abilities. I look forward to sharing new techniques and learning styles with my students and colleagues."

The IANR administration encourages faculty to take advantage of this fringe benefit. Visit with your Unit Administrator or with Irv Omtvedt or Dale Vanderholm if you have specific questions. The Board of Regents acts on these requests in July and January and requests need to be approved at least six months in advance of the leave.

NEW FACULTY

Randy L. Wehling has joined the faculty in Food Science and Technology as an Assistant Professor. He is on a research-extension-teaching appointment in the area of food processing. Wehling received his B.S. in Milling Science, M.S. and Ph.D. degrees in Grain Science from Kansas State University. He had two years industry experience in cereal food processing as a quality control chemist before going to graduate school.



Wehling

NEW ADMINISTRATION

John A. Schmitz has been appointed Head of the Department of Veterinary Science effective July 1, 1984. He is currently Director of Veterinary Diagnostic Laboratory in the School of Veterinary Medicine and the Director of Pathology Services in the Center for Environmental Health Sciences at Oregon State University. He received his DVM from Colorado State University and his Ph.D. from the University of Missouri. Schmitz spent one year on the faculty in the University of Nebraska Veterinary Science Department before going to Oregon State in 1972. He also was in private practice in Oregon. He will replace **R. Gene White** who has been the Interim Department Head since July 1, 1983.



Schmitz

RESEARCH GRANTS AND CONTRACTS RECEIVED MARCH 1984

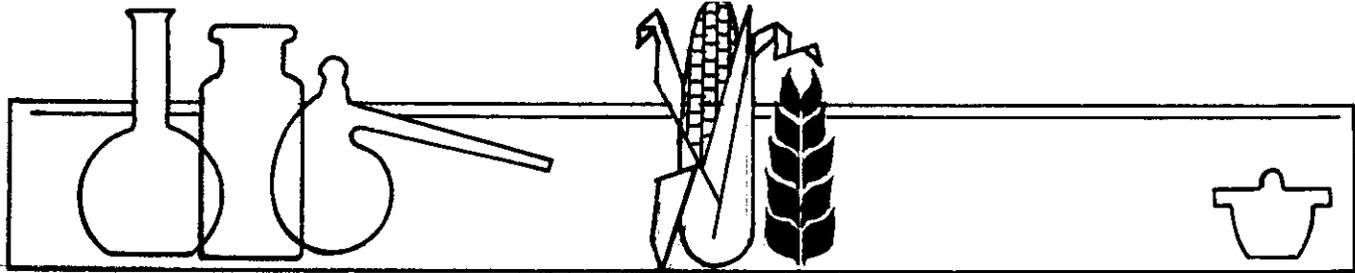
<i>Agricultural Biochemistry</i>	
Wagner, F. W. - Fercmo Biochemics, Inc.	6,810
<i>Agricultural Engineering</i>	
Miscellaneous Grants Under \$5,000 each	3,000
<i>Agronomy</i>	
Miscellaneous Grants Under \$5,000 each	3,000
<i>Animal Science</i>	
Miscellaneous Grants Under \$5,000 each	4,000
<i>Agricultural Research Division</i>	
USDA	271,276
<i>Environmental Programs</i>	
Miscellaneous Grants Under \$5,000 each	1,000
<i>Forestry, Fisheries and Wildlife</i>	
Miscellaneous Grants Under \$5,000 each	750
<i>North Platte Station</i>	
Miscellaneous Grants Under \$5,000 each	1,000
<i>Panhandle Station</i>	
Smith, J. - Nebraska Coop Beet Growers Association	11,340
<i>Plant Pathology</i>	
Miscellaneous Grants Under \$5,000 each	5,000
<i>South Central Station</i>	
Roeth, F. W. - NCRPIAP	12,629
<i>Veterinary Science</i>	
Ferguson, D. and Ward, J. K. (Animal Science) - Smithkline Animal Health Products	8,725
Total	<u>\$328,530</u>

NATIONAL ACADEMY OF ENGINEERING

Congratulations are extended to **W. E. Splinter**, Head of the Department of Agricultural Engineering, on being named to the National Academy of Engineering. Splinter is only the second agricultural engineer to be named to this prestigious academy.



Splinter



PROJECT ACCOMPLISHMENTS

13-057

Title: Improving Utilization of Starch in High Grain Rations for Finishing Cattle

Leader: Dennis R. Brink (Animal Science)

Feeding mixtures of whole and cracked corn improved performance of finishing cattle when compared to performance of either grain fed alone. The improvement cannot be sufficiently explained by optimizing site or extent of starch digestion. Additional feedlot studies and experiments with individually fed steers revealed that addition of 25-50% whole shelled corn or rolled sorghum grain significantly improved performance of cattle fed ground high moisture corn. These studies indicated that the response occurred during the first 28 days the cattle received the grain diet and was related to control of acidosis. Application of these results will allow the cattle feeder to utilize grains such as high moisture corn, wheat and grain sorghum when they are economically advantageous and maintain or improve feedlot performance.

44-021

Title: Micrometeorology of Sprinkler Irrigation

Leader: Albert Weiss (Panhandle Station)

A sensor was developed to measure leaf wetness. It was determined that leaf wetness and not air temperature was the limiting factor in development of white mold disease of dry edible beans. Studies also indicated that "honeydew" from sucking insects can increase duration of leaf wetness.

Methodology was developed and irrigation scheduling procedure was successfully implemented based on data from an automated station.

NEW OR REVISED PROJECTS

13-045

Title: Improvement of Beef Cattle Through Breeding Methods

Leader: Merlyn K. Nielsen, Animal Science

OBJECTIVES: (1) Evaluate sources of germ plasm and systems of breeding to maximize beef production efficiency. (2) Develop procedures for estimating genetic change and solve methodological problems related to selection under field conditions using industry data. Revised Hatch project effective October 1, 1983 that contributes to NC-1.

16-033

Title: Marketing and Delivery of Quality Cereals and Oilseeds in Domestic and Foreign Markets

Leaders: Lloyd B. Bullerman and Philip Handel
Food Science and Technology

OBJECTIVES: (1) To identify quality factors and determine their economic significance to producers, marketers, and end users of grains. (2) To relate quality factors to urgent problems of safety and health such as dust explosions, microorganisms, mycotoxins, and chemical (pesticide) contamination. (3) To develop equipment, techniques, and grain varieties to improve quality throughout the production and marketing system and determine their economic feasibility. New Hatch project effective October 1, 1983 that contributes to NC-151.

20-047

Title: Turfgrass ET Rates, Canopy Resistance, and Drought Avoidance Mechanisms

Leaders: Robert C. Shearman, Horticulture
Edward J. Kinbacher, Horticulture

OBJECTIVES: (1) Determine ET rates of cool season turfgrass species and cultivars grown in Nebraska. (2) Determine comparative ET rates for selected warm season and native species. (3) Evaluate seasonal variations in ET responses. (4) Assess factors contributing to canopy resistance mechanisms in well-watered turfgrass communities. (5) Determine cultural practice responses on ET and canopy resistance. (7) Develop criteria to be used in selection of low ET, drought resistant turfgrasses. New Hatch project effective February 1, 1984.

44-030

Title: The Effect of Microclimate on Plant Pests in a Semiarid Environment

Leader: Albert Weiss, Panhandle Station

OBJECTIVES: (1) To evaluate formation of leaf wetness as a function of a leaf shape, leaf surface characteristics, and at the interface of a leaf and a senescent blossom. (2) To establish the minimum amount and duration of moisture necessary for pests to develop, as a function of temperature, on a leaf surface. (3) To use numerical simulations of the crop microclimate to further an understanding of pest development. To verify these model predictions with field experiments. New Hatch project effective February 1, 1984.

93-018

Title: Farm Wives External Employment, Family Economic Productivity and Family Functioning

Leader: Patricia Knaub, Human Development and the Family

OBJECTIVES: (1) Assess the relationship between employment of wives and the economic functioning of the family. (2) Assess the relationship between external employment of wives and the interpersonal relationships of the farm family. New Hatch project effective October 1, 1983 that contributes to S-191.

IANR FIVE YEAR PLAN

The Board of Regents has approved the following Five Year Plan for IANR—in addition to University-wide objectives which include priority on salaries, computing, telecommunications and equipment.

Identified for Increased Support

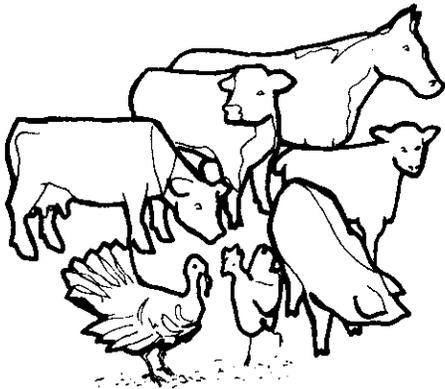
1. Programs that emphasize utilization and marketing of agricultural products.
2. Programs that foster more efficient agricultural production and more effective use of natural resources.
3. Academic computing to serve teaching, research, and extension.
4. Graduate programs in areas experiencing critical shortages of advanced degree graduates, such as Agricultural Economics, Agricultural Engineering/Mechanized Agriculture, Food Science & Technology, Agronomy, and Veterinary Science.
5. Commercial and domestic horticulture.
6. Human nutrition and family development.

Other Economies and New Sources of Income

1. Continue the redirection of resources.
2. Increase grant and contract support.
3. Continue to emphasize economies in travel and use of telecommunications.
4. Update fees for services and continue laboratory fees in teaching.

Other Considerations

1. Develop strategies to begin implementation of Agriculture 2001 Committee recommendations.
 2. Assure that budget requests include high priority capital facility improvements and additions, including completion of Animal Science, the University Field Laboratory at Mead, and greater Nebraska projects.
 3. Sustain the present policy with respect to the proposed Regional College of Veterinary Medicine.
 4. Increase participation in faculty development programs.
 5. Strengthen interdisciplinary programs with other University departments in areas such as genetics, biotechnology, toxicology, and hydrology.
 6. Develop and implement a master plan for meeting computer use demands for clientele and extension offices in Nebraska.
 7. Continue to seek greater external support for the University Field Laboratory at Mead, the Gudmundsen Sandhills Laboratory, and for the planning of a food industry center.
 8. Evaluate and test the use of satellite systems and cable television for transmission of educational programs.
 9. Conduct comprehensive curriculum reviews in the College of Agriculture & UNSTA.
- If you have questions or comments regarding these long range objectives relative to the research program, contact **Irv Omtvedt** or **Dale Vanderholm**.



ANIMAL SCIENCE COMPLETION PROJECT

The Legislature approved and the Governor signed LB 867 authorizing completion of the Animal Science Complex. The project is estimated to cost \$19.1 million and will connect Marvel Baker Hall and Loeffel Meat Laboratory. In addition to offices, classrooms and laboratories, the project will include an arena and livestock holding facilities to support the departmental teaching and research programs. Construction will begin in the spring of 1985.