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

Agricultural Experiment Station News

MARCH 1984 VOL 17 NO 8

GRANT PROPOSAL DEADLINES

UNL Research Council: Proposals for research travel to scholarly meetings and visiting scholars for July, August and September 1984 are due by May 1, 1984.

Proposals for grant-in-aid projects for July 1, 1984 through December 31, 1984 are due by May 1, 1984. November 1, 1984 is the deadline for projects beginning January 1, 1985 through June 30, 1985.

USDA Alcohol Research Proposals: Due in Washington by April 6, 1984.

LEAVE REQUEST DEADLINE

Faculty who are eligible for Faculty Development Leaves are encouraged to take advantage of this opportunity. Extremely positive reports have been received from all IANR faculty who have participated in the program. The Board of Regents will act on requests for Spring Semester 1985 at their July Board Meeting. Requests will need to be received in Ag. Hall by June 22, 1984.

SHATTERCANE CONFERENCE

The IANR and the Nebraska Grain Sorghum Development, Utilization and Marketing Board are sponsoring a Conference on Genetic Contaminants in Hybrid Sorghum at the Nebraska Center for Continuing Education on March 28, 1984. The conference is to provide a forum to define and describe the problems of genetic contaminants in hybrid sorghum, review current techniques and research on control of existing infestations in crop production areas, and discuss problems and opportunities of producing high quality hybrid sorghum seed free of genetic contaminants. Representatives from the seed industry, the chemical industry, state seed agencies, university researchers and sorghum producers are expected to participate.

The conference costs are being underwritten in part by a grant of $5,000 from the Nebraska Grain Sorghum Board. This conference stemmed from meetings organized by **Warren Sahs** to discuss shattercane problems at the University Field Laboratory. Coordinating the conference planning for IANR are **Don Hanway, Ken Bolen** and **Dale Vanderholm.**

EMPLOYEE SALARY INCREASES

The Legislature approved and the Governor signed LB 772 granting state employees a 3% salary increase effective March 1, 1984. The Board of Regents authorized the increase on an across-the-board basis to all eligible A, B and C-Line University employees with "Satisfactory" performance ratings. The action applied to all employees regardless of funding source.

Legislative action is still pending on an additional 5% salary increase plus the $1.8 million salary adjustment package recommended by the Appropriations Committee for the period starting July 1, 1984.

FACULTY DEVELOPMENT LEAVES

Pending Leaves

Alex Hogg, Veterinary Science Department, plans to spend three months in the College of Veterinary Medicine, Cornell University, starting April 1, 1984. He will focus on diagnosis and prevention of swine diseases and investigate methods of developing swine herd health programs.

Leave Reports

Gary Hergert, North Platte Station, spent a year as research soil scientist with the USDA Soil Nitrogen and Environmental Chemistry Laboratory at Beltsville, Maryland. He concentrated his efforts in the area of nitrogen recommendations and gained experience utilizing the SAS computer program.

Merlyn Nielsen, Animal Science Department, spent 10 months in the Department of Genetics, University of Edinburgh, Scotland. He conducted an extensive research project involving energy utilization of growing animals that provided background experience for initiating a new area of research. He also attended courses in quantitative genetics, animal breeding, and statistics.

SOIL-WATER-PLANT WORKSHOP

Bill Powers and **Dale Vanderholm** are planning an informal workshop to discuss and coordinate research activities involving soil-water-plant relationships. IANR researchers with interests in these areas are encouraged to participate. The workshop will be held on April 19-20, 1984 in Kearney. Faculty who have not received notification and are interested in participating should contact **Powers** or **Vanderholm.**

PROJECT REVIEW ACCOMPLISHMENTS

11-050
Title: Remotely Sensed Temperature to Evaluate Crop Moisture and Heat Stress
Leader: Blaine L. Blad

This project demonstrated that differences in mid-day plant canopy temperatures of fully-irrigated and water-stressed corn, soybean and sorghum crops measured with infrared thermometers can be used to quantify the degree of water stress that these crops experience. Models incorporating canopy temperature data were used to predict biomass production and grain yield. The feasibility of using canopy temperature in scheduling irrigation was established. Crop temperature data were used to monitor phenological development and to predict the effects of elevated canopy temperatures caused by water stress on phenological development. The effects of instrument inclination, view direction, and solar elevation angle on measured canopy temperature were also investigated and their relationships derived.

43-029
Title: Development and Demonstration of Planting Systems for Water, Soil and Energy Conservation
Leader: Norman L. Klocke

The "till-plant" sweep and the overlapping disk-furrower tillage attachments were adapted to a conventional row-crop surface planter. The planter was then used to ridge-plant corn into a continuous no-till cropping system. Results demonstrated that conventional surface planters could operate in no-till conditions in conjunction with the proper tillage attachments.

Two experimental no-till grain drill units were developed in this project. Conventional rolling coulters, shoe or hoe furrow openers, and double disk furrow openers were used in various configurations to allow the previous crop's stubble on the ground surface to flow through the drills. Row spacings for handling crop residues were evaluated.

Research was also started to measure the soil evaporation and plant transpiration components of crop water use. A method for measuring the evaporation and transpiration components in the field was developed to make more efficient use of water through irrigation management and use of crop residues.

43-024
Title: Injurious Insects Affecting Livestock in Nebraska
Leader: John B. Campbell

Horn fly populations affect cattle behavior and range utilization. Weaning weights of calves were not significantly affected by a horn fly population of 225/side on cows. However, previous studies revealed that a population of 55/side reduced calf weaning weights by 5.9 kg.

Horn fly populations averaging ca. 150/animal did not affect calf weaning weights.

Four types of insecticide-impregnated eartags provided 99+% horn-fly control and 65+% face-fly control. Horn and face fly control was started on all cattle herds in a 288-square mile area in Clay County (10,000 cattle). The delayed effect of this area control effort will be evaluated by monitoring populations in the treated area during the summer of 1984.

Other studies revealed that heavy population of cattle lice affected yearling cattle performance but light and moderate populations did not. House flies at a level of 40/pig did not affect weight gain performance of feeder pigs.

INCREASED EMPHASIS ON BIOTECHNOLOGY

An ad hoc committee appointed by **Chancellor Massengale** has presented a proposed program in molecular biology, genetic engineering and biotechnology. **Royce Ballinger,** Biological Sciences, and **Franklin Eldridge,** Animal Science, have been asked to develop implementation plans for a Center. **Massengale** endorses the fact that the University must take immediate steps to strengthen programs in biotechnology.

It is proposed that experts will be invited to the campus to present seminars and give advice that will help us design the proposed Biotechnology Center. Additional faculty positions in biotechnology will be needed and some of these are expected to come from the reallocation of positions within the IANR and the College of Arts and Sciences. The concept is for the Center to interact freely and effectively with all departments involved in biotechnology to strengthen the Center and departmental programs.

IANR faculty on the ad hoc committee included: **J. M. Daly** (Agricultural Biochemistry), **Franklin Eldridge** (Animal Science), **Lowell Satterlee** (Food Science and Technology), **James Specht** (Agronomy), **Gary Anderson** (Veterinary Science), **James Van Etten** (Plant Pathology), and **Irv Omtvedt.**

NEBRASKA RESEARCH EMPHASIS

For the Federal budget year ending September 30, 1983, the research expenditures for approved projects in the Agricultural Research Division were distributed as follows:

	%
Crop Production Efficiency	28
Plant and Animal Protection	25
Livestock Production Efficiency	18
Processing and Utilization	8
Conservation & Nat. Res. Mgt.	6
Weather and Climate	4
Energy Resources	3
Quality of Life	3
Marketing, Policy & Agri-Business	3
Communicating Research Results	2
	100

COMPREHENSIVE REVIEWS OF DISTRICT STATIONS

Discussions with the Agricultural Experiment Station Advisory Council, District Directors and IANR Deans and Directors have indicated a need for comprehensive reviews of district station programs. Currently, faculty at District Stations participate in their respective departmental reviews, but there is no opportunity for evaluating the entire program at each station. This opportunity for self-evaluation and external review would help districts to better coordinate and develop stronger programs relating to the specific needs of their districts. **Irv Omtvedt** and **Leo Lucas** will be working with the District Directors to develop proposed guidelines and procedures for these reviews.

DID YOU KNOW THAT——

The University of Nebraska was one of the first educational institutions to cover its employees with liability insurance. The first policy was purchased in 1969. The policy includes all the premises and all the operations of the University for liability imposed by law (torts) and liability assumed by contract (breach of contract). Personal injury of employees arising from various aspects of coverage is also included. The policy also covers anyone acting for or on behalf of the University (volunteers).

The policy has a $1,000,000 limit for any one occurrence, and a $1,000;000 limit on an annual aggregate basis for personal injuries. The policy provides $100,000 for property damage liability.

The University also carries a $10,000,000 umbrella excess liability policy on all employees. These two policies give University employees $11,000,000 coverage in case someone brings suit. Questions regarding the coverage should be directed to **Bill Cords.**

DNA SEQUENCING WORKSHOP

On April 11-13, 1984, there will be a DNA Sequencing Workshop at the University of Nebraska East Campus sponsored by the IANR Agricultural Research Division and by the University of Nebraska-Lincoln Biotechnology Committee.

This is a teaching workshop in DNA Sequence Analysis which includes lectures and hands-on laboratory experience. Laboratory facilities at the Department of Plant Pathology will be used for the workshop, which is conducted by the staff of the Bethesda Research Laboratory, Inc. Workshop attendance is limited and a procedure to select individuals to attend the workshop without cost has been developed, with appropriate departments throughout the campus asked to nominate qualified scientists.

This workshop provides an excellent professional development opportunity which should strengthen research capability in biotechnology at UNL and especially within the IANR. **Dale Vanderholm** is coordinating the selection of participants.

VISITING SCIENTIST

Professor Seaton Hall Baxter, distinguished foreign scholar of Mid-American State Universities Association, from Aberdeen, Scotland, is presenting a lecture series on space, boundaries, and animal responses and animal welfare. During his one-month visit to the USA, **Baxter** will meet with faculty and livestock leaders in Nebraska, Kansas, Missouri and Iowa. **Jim DeShazer** is serving as contact for Baxter's visit to Nebraska.

FEDERAL AGRICULTURAL RESEARCH BUDGET

The Executive Budget recommendations for the Cooperative State Research Service for fiscal year 1985 compared to the current year are:

	Thousands of Dollars	
	FY'84	FY'85
Federal Formula Funds:		
Hatch	152,281	155,326
McIntire-Stennis	12,702	12,452
Animal Health & Disease	5,760	0
Alcohol Fuels	540	0
CSRS Special Grants:	25,234	15,482
Competitive Research Grants:		
Plant Sciences	15,000	15,000
Human Nutrition	2,000	2,000
Animal Science	0	4,500
Biotechnology	0	28,500

The Senate and House Appropriation Committees are currently holding hearings on the proposed budget and it is hoped that it will be approved before the new budget year starts on October 1, 1984.

NEW RESEARCH STAFF

Michael G. Zeece was appointed Assistant Professor of Food Science and Technology effective March 1, 1984. He is on a research-teaching appointment. Zeece received his B.S. in Biology and Chemistry from St. Louis University, M.S. in Biochemistry from the University of Illinois, and Ph.D. in Food Technology from Iowa State University. Previous experience includes serving as a chemist for Sigma Chemical Company and as a research associate in the area of muscle protein biochemistry in the Food Technology Department at Iowa State University. Research at Nebraska will be concerned with basic protein chemistry studies on plant and animal proteins.

Michael G. Zeece

NEW ADMINISTRATIVE STAFF

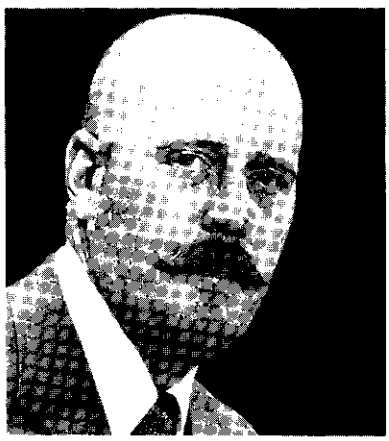
Anne M. Vidaver became Head of the Department of Plant Pathology on January 1, 1984. She received her B.A. degree in Biology from Russell Sage College and her M.A. and Ph.D. degrees in Bacteriology from Indiana University. Vidaver joined the faculty at the University of Nebraska as an Instructor in 1966 and was promoted to the rank of Professor of Plant Pathology in 1979. She is the first woman to be Head of a Plant Pathology Department in the U.S.

Anne M. Vidaver

Darrell W. Nelson became Head of the Department of Agronomy on March 1, 1984. He is a native of Aledo, Illinois. He received his B.S. and M.S. from the University of Illinois, and Ph.D. from Iowa State University. Nelson was previously a Professor of Soil Biochemistry and Director of the Water Resources Research Center at Purdue University. He joined the Purdue staff in 1969 following two years of service as a Project Director with the U.S. Army Chemical Corps. His research activity at Purdue was in the areas of nitrogen transformation in soil, water pollution, crop production and waste disposal on soils.

Darrell W. Nelson

Robert D. Fritschen will become Director of the Panhandle Station May 1, 1984. He is now a Professor of Animal Science and Extension Swine Specialist at the University of Nebraska. He is a native of Mitchell, South Dakota, and earned his B.S. and M.S. degrees from South Dakota State University. Previous assignments with the University of Nebraska include county extension agent positions in Scotts Bluff and Dawes Counties and a swine extension and research appointment at the Northeast Station.



Robert D. Fritschen

NEBRASKA'S AGRICULTURAL RANKINGS FOR 1983

1st Fed cattle and calves marketed, 1983. Number—4,580,000.
1st Alfalfa meal production, 1983. Tons—524,100.
1st Great Northern beans production, 1983. Cwt.—1,720,000.
2nd Cash receipts from cattle and calves, 1982. $3,271,504,000.
2nd Value of all cattle and calves on farms, January 1, 1984 — $2,760,000,000.
2nd All cattle and calves, January 1, 1984. Number—6,900,000.
2nd Cattle on feed, January 1, 1984. Number—1,760,000.
2nd Commercial cattle slaughter, 1983. Number—5,063,200.
2nd Commercial cattle slaughter (live weight), 1983. Thousand lbs.—5,496,215.
2nd Sorghum silage production, 1983. Tons—770,000.
3rd Commercial livestock slaughter, all species, 1983. Thousand lbs.—6,563,397.
3rd Commercial red meat production, 1983. Thousand lbs.—4,012,451.
3rd Sorghum grain production, 1983. Buschels—60,000,000.
3rd Dry edible beans production, 1983. Cwt.—2,188,000.
3rd Corn for grain production, 1983. Bushels—475,200,000.
3rd All hay production, 1983. Tons—8,048,000.
4th Beef cows and heifers that have calved, January 1, 1984. Number—2,054,000.
4th Pinto beans production, 1983. Cwt.—433,000.
4th Land in farms and ranches, 1983. Acres—47,600,000.
4th Cash receipts from all livestock marketings, 1982. $4,231,406,000.
4th All other hay (includes wild) production, 1983. Tons—2,520,000.
5th Red kidney beans production, 1983. Cwt.—35,000.
5th Capacity of commercial grain storage facilities, January 1, 1984. Bushels—699,890,000.
5th Calves born, 1983. Number 1,950,000.
5th All hogs and pigs, December 1, 1983. Number—3,900,000.
5th Cash receipts from hogs and pigs, 1982. $729,679,000.
5th Rye production, 1983. Bushels—1,265,000.
5th Commercial hog slaughter, 1983. Number—4,626,600.
5th Corn silage production, 1983. Tons—5,600,000.
5th Alfalfa hay production, 1983. Tons—5,528,000.
5th Cash receipts from farm marketings, 1982. $7,086,850,000.
6th Pigs saved, 1983. Number—6,135,000.
6th Winter wheat production, 1983. Bushels—98,900,000.
6th Value of principal crops produced, 1983. $2,985,619,000.
6th Sugar beets production, 1983. Tons—1,234,000.
6th Value of farm real estate, 1983. $26,799,000,000.
7th Sheep and lambs on feed, January 1, 1984. Number—80,000.
7th Harvested acreage, principal crops, 1983. Acres—15,268,000.
7th Cash receipts from crops, 1982. $2,855,444,000.
8th All wheat production, 1983. Bushels—98,900,000.
9th Soybean production, 1983. Bushels—59,450,000.
10th Oats production, 1983. Bushels—13,640,000.

RESEARCH GRANTS AND CONTRACTS RECEIVED (January 26, 1984 to March 5, 1984)

Agronomy	
Maranville, J. W. — CIBA-GEIGY	$ 25,000
Mattern, P. J. — Nebraska Wheat Board	9,000
Miscellaneous Grants Under $5,000 each	11,017
Animal Science	
Miscellaneous Grants Under $5,000 each	$ 7,900
Center for Agricultural Meteorology and Climatology	
Hubbard, K. G. and **Rosenberg, N. J.** — Big Byron Agricultural Services	$ 6,100
Entomology	
Miscellaneous Grants Under $5,000 each	$ 3,000
Forestry, Fisheries and Wildlife	
Miscellaneous Grants Under $5,000 each	$ 4,920
Horticulture	
Shearman, R. C. — Nebraska Turfgrass Foundation	$ 6,000
Miscellaneous Grants Under $5,000 each	2,140
North Platte Station	
Miscellaneous Grants Under $5,000 each	$ 4,599
Northeast Station	
Mader, T. L. — Distributors Process, Inc.	$ 6,000
Miscellaneous Grants Under $5,000 each	3,000
Panhandle Station	
Smith, J., Wilson, R., Yonts, D., Kerr, E., and **Robb, J.** — U of N Foundation	$ 10,000
Miscellaneous Grants Under $5,000 each	$ 12,150
Plant Pathology	
Miscellaneous Grants Under $5,000 each	$ 2,500
Southeast Extension and Research Center	
Miscellaneous Grants Under $5,000 each	$ 500
TOTAL	$ 113,826