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Agricultural Experiment Station News November 1982

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

Agricultural Experiment Station News

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FROM THE DIRECTOR'S DESK

I am honored to serve as your Agricultural Experiment Station Director and look forward to our work together as we become recognized as one of the most outstanding and progressive experiment stations in the country. Although we are facing a stressful budget situation, we have many reasons to be optimistic about the future for research involving agriculture and natural resources at the University of Nebraska. Some of the things that attracted me to this position and have been reinforced during my first month on the job include:

*A strong, well-balanced existing program upon which to build.

*The #1 industry in Nebraska which will gain in prominance in the years ahead.

*An administrative structure for agriculture and natural resources which facilitates responsiveness and should enhance the potential for increased future support.

*A general public becoming increasingly aware of the importance of efficient food production.

*An Experiment Station with dedicated, productive and well-trained personnel.

Since economic conditions make program expansion difficult at this time, reallocation of existing resources is essential in order to address the high priority needs that will continue to keep the Experiment Station responsive and effective in providing research leadership. We can not afford to back off and wait for improved economic times to launch into new and expanded program areas. Each of us must aggressively seek alternative funding sources and ways we can use existing resources more effectively. Now is not the time for tradition to stand in our way! Researchers with innovative and productive programs have the most to gain when economic conditions do improve.

You can count on me to do everything in my power to maintain an administrative atmosphere that will stimulate and encourage scientists to strive for continuous professional development and to achieve maximum creativity and productivity. We must work together enthusiastically and aggressively to provide increased leadership effectiveness at both the state and national levels to advance the frontiers of agricultural science. These can be some of the most stimulating and rewarding times in our history.

Irv Omtvedt
Dean and Director

USDA PHASES OUT NEBRASKA ALFALFA BREEDING PROGRAM

To consolidate programs and redirect its research priorities, ARS announced in October that it is phasing out the alfalfa breeding program at Nebraska and will concentrate its research efforts in this area at Manhattan, Kansas. The Nebraska cooperative program was responsible for releasing germplasm for private and public use plus four well-known alfalfa varieties (Ranger, Dawson, Baker and Perry) since its initiation in 1930. In a companion move, ARS is increasing its support in the grass breeding program at Nebraska.

SEPTEMBER GRANTS AND CONTRACTS

The 55 grants received by IANR totalled $1,427,041 and accounted for 69% of the $2,066,072 received by UNL during September, 1982. The distribution of IANR grants were:

Agricultural Experiment Station	$ 611,193
Nebraska Forest Service	500,000
Conservation and Survey	125,000
College of Agriculture	109,541
Cooperative Extension Service	81,307

CORRECTION - INSTRUMENT REPAIR SERVICE PHONE NUMBER

In the October, 1982 newsletter the wrong phone number was printed for the Instrument Repair Service answering service. The number should be 475-9020.

FOOD RESEARCH CENTER

A current study will determine the feasibility of developing a Food Research Center within IANR. Such a Center would pursue both basic and applied research related to the processing of Nebraska produced commodities into foods and/or food ingredients. Between now and mid-summer 1983, information will be gathered on:

1. how similar centers in the U.S. and Canada operate and what structure and mode of operation would be best for Nebraska; 2. what Nebraska produced commodities have the greatest need for further processing in-state; and 3. what current as well as potential food processing industries could be better served if a center was established. The study, which involves three IANR faculty (Larry Branen, Lowell Satterlee and Chuck Walker from Food Science and Technology) and Darrell Ullman from the Nebraska Department of Economic Development, is funded by the Nebraska Dept. of Economic Development and Abel Foundation Funds (University of Nebraska Foundation).

Lowell D. Satterlee

FOOD SCIENCE AND TECHNOLOGY REVIEW

The Department of Food Science and Technology underwent a comprehensive review by the CSRS, October 4-6, 1982. The panel was chaired by Dr. R. G. Garner from the CSRS in Washington, D.C. Other members of the CSRS review team were Dr. L. R. Beuchat, University of Georgia; Dr. E.F. Caldwell, CSRS and University of Minnesota; and Dr. P. E. Nelson, Purdue University. Dr. Dennis Schulte was the IANR faculty representative and Ms. Laurie Bunnell was the student representative to the committee. Drs. Don Pierce and Bob Stoddard served as representatives of the Academic Planning Committee.

The panel gave the Department and IANR administration an oral report on their findings. A formal written report will be provided at a later time.

A. L. Branen

AG BIOCHEMISTRY REVIEW

A comprehensive program review was conducted October 4-6, 1982, for the Department of Agricultural Biochemistry by the CSRS, USDA, and the Academic Planning Committee, UNL. Review panel members were: Dr. John M. Barnes, Panel Chairman, USDA, Washington, D.C.; Mr. Raymond J. Budde, Graduate Student of Ag Biochemistry, UNL; Dr. Francis A. Haskins, Professor of Agronomy, UNL; Dr. David W. Krogmann, Professor of Biochemistry, Purdue; Dr. James Scholz, Professor of Chemistry, UNL; Dr. George R. Waller, Professor of Biochemistry, Oklahoma State. After two days of intensive study the panel provided preliminary verbal reports to the Department and IANR administration. The panel noted considerable progress by the Department since its review in 1976 and provided several substantial recommendations that could further strengthen research and teaching programs.

H. W. Knoche

AUTOMATED WEATHER NETWORK GROWS

Since early 1981, an Automated Weather Data Network (AWDN) has been operated at the University of Nebraska's Center for Agricultural Meteorology and Climatology (CAMaC). Each weather station measures wind speed and direction, air temperature and humidity, solar radiation, soil temperature and precipitation. Once daily (3-5 a.m.) a dedicated computer in Lincoln dials these stations, collects the hourly data for the previous day, quality checks the data and archives it. Simultaneously the data are transmitted to AGNET for use on computer programs that compute evapotranspiration, irrigation scheduling, growing degree days and heating and cooling degree days.

The network of stations has grown in less than 18 months from the original 4 stations, provided by a grant from the National Climate Program Office, to 12 operational stations. Funds to add these stations were provided by the University of Nebraska Foundation, departments of IANR and USDA/ARS units located in Lincoln. By spring of 1983 the network will consist of 17 stations providing data in near-real time. The next step proposed for the network is regional data collection.

The CAMaC personnel who operate the AWDN are Dr. N. J. Rosenberg, Dr. K. G. Hubbard, James R. Hines and David C. Nielsen.

Kenneth G. Hubbard

NEW AND REVISED PROJECTS

NEB 10-089 - Evaluating Risk Management Strategies for Nebraska Farmers

This is a new Hatch project with an effective date of September 1, 1982. H. D. Jose (Ag Economics) is the project leader. The general objective is to identify, analyze and evaluate production, marketing and financial strategies to assist farmers to maintain or increase the equity in their farm businesses. Specific objectives include (a) to measure the level of risk experienced by a number of case study farms with different debt-equity ratios; (b) to evaluate alternative management strategies including production alternatives, financial planning, crop insurance, diversification and other risk reducing alternatives; and (c) to summarize the outcomes of the alternative management strategies and to generalize and disseminate the results.

NEB 13-066 - Dynamics of Forage Production and Utilization by Beef Cattle

This is a new Hatch project, with an effective date of October 1, 1982, contributing to NC-114. T. J. Klopfenstein (Animal Science), J. Stubbendieck (Agronomy), K. Von Bargen and T. L. Thompson (Ag Engineering) and G. Helmers (Ag Economics) are the principal investigators. The objectives of the research are (a) determine the model growth rates; (b) maximize beef production, and (c) evaluate systems of beef production.

NEB 15-031 - Structure, Chemistry and Metabolism of Compounds Toxic to Plants

This is a new Hatch project with an effective date of September 1, 1982. H. W. Knoche (Ag Biochemistry) is the principal investigator. The broad objectives are to determine the chemical structures of molecules toxic to plants and their structure-activity relationships. Immediate objectives are (a) determine the structure of PM-toxin *(Phyllosticta maydis,* yellow leaf blight of corn) and possible variations of structures that exhibit toxicity and host-selectivity, (b) continue studies on the toxin from *Helminthosporium carbonum,* HC-toxin and determine the effect stereochemical configuration, and structural modifications, and (c) investigate various metabolic processes in the production and action of plant pathotoxins.

NEB 42-007 - Beef Production Alternatives for the Farmer-Feeder

This is a new Hatch project with an effective date of October 1, 1982. T. L. Mader (Northeast Station), R. A. Britton (Animal Science) and H. D. Jose (Ag Economics) are the principal investigators. The objectives of this study are (a) evaluate alternative beef-feedlot production systems which are currently available to the farmer-feeder and compare the beef production and net returns per acre of harvested feedstuffs of these systems to typical production systems and (b) develop a beef production model that will simulate and evaluate various production alternatives, which have potential for use by the farmer-feeder.

GRANTS AND CONTRACTS

Blad, B. L. (Ag Meteorology and Climatology) - NASA	12,750
Bullerman, L. B. (Food Science and Technology) - Monsanto Company	33,270
Burnside, O. C. (Agronomy) - ICI Americas, Inc.	3,000
Campbell, J. B. (North Platte Station) - FMC Corporation	675
Campbell, J. B. (North Platte Station) - Ralston Purina Company	500
Chollet, R. (Ag Biochemistry) - National Science Foundation	6,549
Chollet, R. (Ag Biochemistry) - USDA/SEA	100,000
Compton, W. A. (Agronomy) - J. C. Robinson Seed Company	500
Dickason, E. A. (Entomology) - Otsuka Chemical	700
Dickason, E. A. (Entomology) - FMC Corporation	1,000
Dickason, E. A. (Entomology) - Stauffer Chemical	500
Flowerday, A. D. (Agronomy) - Amway Corporation	4,000
Gast, R. G. (Agronomy) - Nebraska Crop Improvement Association	210
Gold, R. E. (Environmental Programs) - Merck & Company	1,000
Hagen, A. F. (Panhandle Station) - Dow Chemical Company	750
Klopfenstein, T. (Animal Science) - Distillers Feed Research Council	5,000
Mader, T. L. (Northeast Station) - Hoffman-LaRoche, Inc.	7,000
Martin, A. R. (Agronomy) - Dow Chemical Company	1,000
Moomaw, R. (Northeast Station) - Stauffer Chemical Company	1,300
Paparozzi, E. T. (Horticulture) - Gloeckner Foundation, Inc.	4,000
Quinn, M. L. (Water Resources Center) - USDA/SEA	186,608
Riordan, T. P. (Horticulture) - Nebraska Turfgrass Foundation	1,154
Rush, I. G. (Panhandle Station) - Hoffman-LaRoche	14,000
Sander, D. H., Peterson, G. A. (Agronomy); Anderson, F. N. (Panhandle Station) - Anna H. Elliott Fund	10,000
Satterlee, L. D. (Food Science & Technology) - Nebraska Department of Economic Development	7,000
Shahani, K. M., Walker, C. E. (Food Science & Technology) - USDA/SEA	64,847
Shahani, K. M. (Food Science & Technology) - Casey Products, Inc.	230
Steadman, J. R. (Plant Pathology) - Rohm and Haas Company	500
Sullivan, T. W. (Animal Science) - Texasgulf Chemicals Company	4,800
Sullivan, T. W. (Animal Science) - H. J. Baker & Bro., Inc.	3,600
Vidaver, A. K. (Plant Pathology) - Illinois Foundation Seeds, Inc.	500
Wallen, S. E. (Food Science & Technology) - Tasty Toppings, Inc.	100
Wilson, R. G. (Panhandle Station) - Velsicol Chemical Corporation	500
Wilson, R. G. (Panhandle Station) - Dow Chemical	2,000
Wilson, R. G. (Panhandle Station) - Nor-Am Ag. Products	1,000
Wilson, R. G. (Panhandle Station) - U.S. Environmental Protection Agency	24,000
Witkowski, J. F. (Northeast Station) - Stauffer Chemical Company	500
Witkowski, J. F. (Northeast Station) - Otsuka Chemical Co., Ltd.	500
	505,543