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93rd Annual Report of the Nebraska Agricultural Experiment Station

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Issued January 1980, 1,000

The Agricultural Experiment Station provides information and educational programs to all people without regard to race, color or national origin.
FOREWORD

The 93rd Annual Report of the Nebraska Agricultural Experiment Station contains a list of all active projects during July 1, 1978 to June 30, 1979, a list of Station publications, staff members, and a financial report. Information derived from the various research projects is published in bulletins, circulars, scientific and trade journals, in the *Nebraska Farm, Ranch and Home Quarterly* and as departmental reports. Station bulletins, circulars and the *Quarterly* may be obtained free from any county agricultural agent or by writing to the Director of the Experiment Station, University of Nebraska-Lincoln, Institute of Agriculture and Natural Resources, Lincoln, Nebraska, 68583. Reprints of most journal articles may be obtained by writing directly to the authors.

Howard W. Ottoson, Acting Dean and Director
Agricultural Experiment Station

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B. B. Johnson 1, 2 Ph.D., Assistant Professor-Resource Economics
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J. G. Kendrick 1, 2 Ph.D., Professor-Marketing

1/Teaching
2/Station Staff
3/Extension Staff
4/Leave of Absence
5/Cooperative, USDA
6/Nebraska Forest Service
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Animal Science
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R. A. Britton 1,2 Ph.D., Assistant Professor-Ruminant Biochemist
P. H. Cole 2,3 M.S., Professor-Dairy Production
F. E. Eldridge 1,2 Ph.D., Professor-Dairy Production
S. D. Farlin 2,3 Ph.D., Associate Professor-Beef Nutrition
G. W. Froning 1,2,3 Ph.D., Professor-Poultry Products
P. Q. Guyer 2,3 Ph.D., Professor-Beef Nutrition
R. K. Johnson 1,2 Ph.D., Associate Professor-Swine Breeding
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T. J. Klopfenstein 1,2 Ph.D., Professor-Ruminant Nutrition
L. L. Larson 1,2 Ph.D., Associate Professor-Dairy Physiology
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R. W. Mandigo 1,2 Ph.D., Professor-Meats
F. B. Mather 1,2 Ph.D., Associate Professor-Poultry Physiology
B. D. Moser 1,2,3 Ph.D., Associate Professor-Swine Nutrition
M. K. Nielsen 1,2 Ph.D., Associate Professor-Beef Breeding
D. G. Olson 1,2 Ph.D., Assistant Professor-Meats
F. G. Owen 1,2,3 Ph.D., Professor-Dairy Nutrition
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T. W. Sullivan 1,2 Ph.D., Professor-Poultry Nutrition
J. K. Ward 1,2 Ph.D., Professor-Beef Nutrition
D. R. Zimmerman 1,2 Ph.D., Professor-Swine Physiology

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J. M. Daly 1,2 Ph.D., Professor-Plant Intermediary Metabolism
R. Dam 1,2 Ph.D., Assistant Professor-Nutritional Biochemistry
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R. V. Klucas 1,2 B.S., Assistant Professor-Nitrogen Fixation
R. L. Ogden 2 B.S., Assistant Professor-Alfalfa Processing
F. W. Wagner 1,2 Ph.D., Associate Professor-Enzymes

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J. H. Bell 2,5 B.S., Assistant Professor-Plant Pest Control
R. E. Gold 1,2 Ph.D., Associate Professor-Entomology and Coordinator-Environmental Programs
R. E. Hill 1,2 Ph.D., Professor (Emeritus)
T. O. Holtzen 1,2 Ph.D., Assistant Professor-Crop Insects
J. A. Jones 1,2 Ph.D., Assistant Professor-Shelterbelt Insects
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J. R. Rushing 1,2 M.S., Assistant Instructor-Food Processing
L. D. Satterlee 1,2 Ph.D., Professor-Food Protein Chemistry
K. M. Shahani 1,2 Ph.D., Professor-Food Chemistry
E. F. Wallen 2,3 Ph.D., Assistant Professor-Food Microbiology

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J. R. Brandle 2 Ph.D., Associate Professor-Forestry
R. M. Case 1,2 Ph.D., Associate Professor-Wildlife
R. J. Johnson 2,3 Ph.D., Assistant Professor-Wildlife
W. R. Lovett 2,6 M.S., Assistant Professor-Forestry-Nebraska Forest Service
E. J. Peters 1,2 Ph.D., Associate Professor-Wildlife
R. A. Reed 2,5 M.F., Associate Professor-Forestry
D. F. VanHaverbeke 2,5 Ph.D., Associate Professor-Forestry

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R. E. Neild 1,2,3 Ph.D., Associate Professor-Horticulture
E. E. Pierson 1,2 M.S., Instructor
S. S. Salac 1,2,3 Ph.D., Assistant Professor-Ornamental Horticulture
M. L. Schuster 2 Ph.D., Professor-Horticulture
R. C. Shearman 2,3 Ph.D., Assistant Professor-Turf
R. K. Sutton 1,2 MLA, Assistant Professor-Landscape Horticulture
T. P. Riordan, Ph.D., Associate Professor-Turf Breeding

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A. McIntosh, A.D., M.S.L.S., Agriculture Campus Librarian
A. L. Smith, A.B., B.S.L.S., Agriculture Campus Librarian
E. Thomas, Dipl. Bibl., Agriculture Campus Librarian

Plant Pathology
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E. M. Ball 2 Ph.D., Associate Professor-Virus Diseases
E. K. Brakke 2,5 Ph.D., Professor-Virus Diseases
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W. G. Langenberg 2,5 Ph.D., Associate Professor-Virus Diseases
J. E. Partridge 1,2 Ph.D., Assistant Professor-Corn and Sorghum Stalk Rot
G. W. Peterson 2,5 Ph.D., Professor-Tree Diseases
S. R. Poe 2,5 M.S., Instructor-Disease Survey
J. W. Riffle 2,5 Ph.D., Associate Professor-Tree Diseases
J. R. Steadman 1,2 Associate Professor-Epidemiology of Vegetable Diseases
J. L. Van Etten 1,2 Ph.D., Professor-Microbial Physiology
A. K. Vidaver 1,2 Ph.D., Associate Professor-Bacterial Diseases

Biometrics & Information Systems Center

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R. F. Mumm 1,2 Ph.D., Professor-Statistical Consultant
A. M. Parkhurst 1,2 M.S., Assistant Professor-Statistical Consultant

Veterinary Science

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D. L. Ferguson 1,2 Ph.D., Professor-Parasitology
M. L. Frey 2 Ph.D., Professor-Microbiology
O. D. Grace 1,2 M.S., D.V.M., Professor-Diagnostic Laboratory
C. L. Kelling 2 Ph.D., Assistant Professor-Virology
K. C. Olson 2 B.S., Instructor-SPF Swine
A. S. Ramos, Jr. 1,2 D.V.M., Ph.D., Assistant Professor-Pathologist
M. B. Rhodes 2 M.S., Associate Professor-Enzymology of Parasites
T. E. Socha 2 Ph.D., Instructor-SPF Field Coordinator
A. Torres-Medina 2 D.V.M., Ph.D., Assistant Professor-Virology
M. J. Twiehaus 1,2 D.V.M., M.S., Professor Emeritus-Pathology
N. R. Underdahl 2 B.S., M.S., Professor-Swine Diseases
W. B. Wren 2 D.V.M., Ph.D., Associate Professor-Pathology
Regional Stations

Northeast Station, Concord

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J. T. Nichols 2,3 Ph.D., Professor-Agronomy (Range Management)
P. T. Nordquist 2 Ph.D., Associate Professor-Agronomy (Sorghum Breeding)
G. A. Wicks 2,3 M.S., Professor-Agronomy (Weed Science)

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L. A. Daigger 2,3 M.S., Professor-Agronomy
C. R. Fenster 2,3 M.S., Professor-Agronomy
R. D. Fritschen 2,3 M.S., Professor and Associate District Director
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L. A. Nelson 1,2 Ph.D., Associate Professor-Agronomy
D. S. Nuland 2,3 M.S., Assistant Professor-Horticulture
R. B. O’Keefe 2,3 Ph.D., Professor-Horticulture
P. E. Reece 2,3 Ph.D., Assistant Professor-Agronomy
R. E. J. Retzlaff 2,3 Ph.D., Associate Professor-Agricultural Economics
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R. G. Wilson 2,3 Ph.D., Assistant Professor-Agronomy

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L. L. Peters 2,3 Ph.D., Associate Professor-Entomology
F. W. Roeth 2,3 Ph.D., Associate Professor-Agronomy
L. S. Svec 2,3 Ph.D., Associate Professor-Agronomy

U. S. Meat Animal Research Center, Clay Center

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J. R. Chenault 5 Ph.D., Research Physiologist
R. K. Christenson 4 Ph.D., Research Physiologist
J. D. Crouse 2,5 Ph.D., Research Physiologist
L. V. Cundiff 2,5 Ph.D., Research Geneticist
G. E. Dickerson 2,5 Ph.D., Research Geneticist
S. E. Echternkamp 5 Ph.D., Research Physiologist
R. D. Eichner 2,5 Ph.D., Research Chemist
C. L. Ferrell 5 Ph.D., Research Chemist
J. J. Ford 2,5 Ph.D., Research Physiologist
S. P. Ford 5 Ph.D., Research Physiologist
K. E. Gregory 4 Ph.D., Research Geneticist
G. L. Hahn 5 Ph.D., Agricultural Engineer
V. L. Harrison 2,5 Ph.D., Agricultural Economist
A. G. Hashimoto 2,5 Ph.D., Agricultural Engineer
T. G. Jenkins 5 Ph.D., Research Geneticist
R. M. Koch 2 Ph.D., Research Geneticist
K. A. Leymaster 5 Ph.D., Research Geneticist
D. D. Lunstra 5 Ph.D., Research Physiologist
R. C. Manak 5 Ph.D., Microbiologist
R. R. Maurer 5 Ph.D., Research Physiologist
J. A. Nienaber 2,5 M.S., Agricultural Engineer
W. G. Pond 2,5 Ph.D., Research Animal Scientist
R. L. Prior 2,5 Ph.D., Research Chemist
L. L. Richer  Ph.D., Research Chemist
B. D. Schanbacher  Ph.D., Research Physiologist
R. A. Scott  Ph.D., Research Animal Scientist
R. T. Stone  Ph.D., Research Physiologist
V. H. Varel  Ph.D., Microbiologist
W. E. Wheeler  Ph.D., Research Animal Scientist
J. T. Yen  Ph.D., Research Animal Scientist
L. D. Young  Ph.D., Research Geneticist

College of Home Economics

Education and Family Resources

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S. M. Krautz  Ed.D., Associate Professor-Development of Teaching Skills
F. Walker  Ph.D., Associate Professor-Home Management Family Economics

Human Nutrition and Food Service Management

H. M. Fox  Ph.D., Professor and Chairman of Department
C. Kies  Ph.D., Professor-Nutrition
H. Kohn  M.S., Associate Professor-Nutrition
M. E. Knickrehm  Ph.D., Professor-Food Service Management
T. A. Shaffer  M.S., Assistant Professor-Food Service

Human Development and the Family

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B. Chesser  Ph.D., Associate Professor-Rural Family Crisis
J. DeFrain  Ph.D., Associate Professor-Rural Family Crisis
V. Kalyan-Masih  Ph.D., Associate Professor-Cognitive Development (Piaget)
L. O. Schwab  Ed.D., Professor-Rehabilitation of Handicapped Women

Textiles, Clothing and Design

A. E. Newton  Ph.D., Professor and Chairman of Department
J. Laughlin  Ph.D., Associate Professor-Textiles, Clothing and Design
NEBRASKA AGRICULTURAL EXPERIMENT STATION
RESEARCH PROJECTS

Research projects are listed by departments. An asterisk (*) indicates that the project was discontinued in fiscal 1978-1979.

Administration

01-001 General administration of federal fund research. H. W. Ot­­toson.
01-004 Regional research coordination, North Central Region. H. W. Ottoson.
02-001 Title V - Identification of alternatives for local land use deci­sions. M. P. Carlson, R. H. Stoddard, P. H. Gessaman.

Agricultural Communications

18-001 Dissemination of research information. R. J. Graham, J. P. Holman.

Agricultural Economics

10-001 Farm enterprise analysis. L. Bitney.
10-034 Economics of resource use in the Sandhills area of Nebraska. G. Pfeiffer.
10-057 Alternative institutional arrangements in area management of ground water. L. K. Fischer.
10-070 Economics aspects of vertical coordination between cow­­calf and feedlot operators. J. G. Kendrick, J. B. Hassler, A. Wellman.
10-072 Economic analysis of the U.S. grain exporting systems. D. A. Linsenmeyer.
10-073 Economics analysis of factors associated with financial success of farm firms. L. L. Bitney, R. J. Hanson, J. B. Hassler.
10-074 Objective decision procedures and advisory information services for economic management of swine and beef firms. J. B. Hassler, L. L. Bitney.
10-075 Economic analysis of off-farm employment and income among farm families in eastern Nebraska. R. J. Hanson, B. B. Johnson.
10-077 Reporting and analyzing farm real estate values and market developments in Nebraska. B. B. Johnson, R. J. Hanson.
10-078 Legal-institutional arrangements affecting water development, use, and management. J. D. Aiken.
10-079 Forward pricing alternatives for Nebraska livestock and grain producers. L. H. Lutgen.
10-080 Economics of water management options for selected areas in Nebraska. R. J. Suppala.
10-081 Analysis of multi-county intergovernmental units and impacts on local governments. P. H. Gessaman.
10-082 Analysis of operational experience with rural water systems. P. H. Gessaman.
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24-017 An appraisal of innovative approaches to leadership education action. J. T. Horner.
24-018 Assessment of time utilization, use of advisory councils, and the core curriculum in Nebraska. R. D. Dillon.

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*11-021 Operations research on mechanized systems for cutting, curing and handling hay. G. M. Peterson, K. L. VonBargen.
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22-005 Nutrient interrelationships, feed additives and mineral sources in poultry diets. T. W. Sullivan.

*22-017 Physiological responses of chickens to varying environments. F. B. Mather, J. A. DeShazer.

22-020 Physiology of energetics of egg production and egg shell formation. F. B. Mather, E. W. Gleaves, J. A. DeShazer.

22-021 Composition, nutritive value and stability of poultry meat and egg products. G. W. Froning, R. Dam.

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17-025 Genetics and ecology of the European corn borers. F. J. Witkowski.


17-031 Biology and control of insects injurious to forage legumes. G. R. Manglitz.
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17-034 Insects affecting tree planting in Nebraska. J. A. Jones.

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21-017 Physiology of fungal spore germination. J. W. VanEtten.

21-021 Isolation, purification and characterization of bacterial plant pathogens, their viruses and bacteriocins. A. K. Vidaver.

21-022 Development of root disease control technology with emphasis on biological control in corn and soybeans and other crops with common pathogens. M. G. Boosalis, B. L. Doupnik, L. D. Dunkle.

21-023 Detection, survival and control of plant pathogenic bacteria on seeds and plant propagative material. A. K. Vidaver.

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14-017 Pathophysiology of acute fluid and electrolyte imbalances in baby pigs. C. L. Kelling, G. A. Kennedy.


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43-002 Development of principles of weed control for west central Nebraska. G. A. Wicks.

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*43-022 Development of ornamental plants for Nebraska as a great plains state. D. T. Lindgren.

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43-026 Agricultural production systems for the Nebraska Sandhills. R. G. White.

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44-015 Cultural and nutrient investigations for irrigated crops in western Nebraska. F. N. Anderson.
44-016 Weed control for western Nebraska crops and conditions. R. G. Wilson, Jr.
44-017 Investigation of irrigation management in western Nebraska. W. L. Trimmer.
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44-021 Micrometeorology of sprinkler irrigation. A. Wiess.
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*48-002 How cultural practices affect root and stalk rot diseases of corn and sorghum. B. J. Doupnik.
48-003 Biology and control of crop insects in south central Nebraska. L. L. Peters.
48-004 Occurrence and effects of mycotoxins in feeds and foods. B. L. Doupnik, T. L. Thompson.
48-005 Biology and control of troublesome weeds - south central Nebraska. F. W. Roeth.
48-007 Popcorn production factors affecting yield and quality. L. S. Svec.
48-008 Cultural and physiology studies for efficient crop production on south central Nebraska. L. S. Svec.

Roman L. Hruska U.S. Meat Research Center

46-002 Improvement of beef cattle through breeding methods. R. M. Koch, G. E. Dickerson, L. V. Cundiff.
46-004 Improvement of beef cattle through breeding methods - (Germ Plasm valuation). L. V. Cundiff, D. B. Laster, R. M. Koch.

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93-012 A life span analysis of rural children’s mental and social development. V. Kalyan-Masih.
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91-020 Nutrient bioavailability - a key to human nutrition. C. Kies, H. M. Fox, L. Vaughan.
91-022 Food preservation practices of Nebraska consumers. T. A. Shaffer.
91-023 The impact selected food and nutrition education programs on food intake behavior of learners. H. Kohn, H. M. Fox.
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94-008 Determining levels of clothing comfort with emphasis on individuals with physical limitations. A. E. Newton.

EXPERIMENT STATION PUBLICATIONS


Nebraska Farm, Ranch and Home Quarterly, Summer, 1978 (24 pages). 12,000 copies.

Nebraska Farm, Ranch and Home Quarterly, Fall, 1978 (20 pages). 12,000 copies.

Nebraska Farm, Ranch and Home Quarterly, Winter, 1979 (28 pages). 12,000 copies.

Nebraska Farm, Ranch and Home Quarterly, Spring, 1979 (20 pages). 6,000 copies.

Bulletins


Bulletins (reprints)


Research Bulletins

283. Forage Quality Evaluations of Twelve Grasses in Relation to Season for Grazing (43 pages). L. C. Newell and W. J. Moline. 1,000 copies.

284. Sulfur Fertilization of Alfalfa and Corn on the Sandy Soils of Nebraska (26 pages). G. W. Rehm. 1,000 copies.

286. A Forecasting-Programming Method for Placement-Sales Decisions for a Beef Feedlot (32 pages). Franz Schwarz and J. B. Hassler. 1,000 copies

North Central Regional Publications

NCR 253. Consumer Perceptions of Selected Community Services in the Great Plains Published at the University of Nebraska-Lincoln.

Nebraska Farm, Ranch and Home Quarterly Articles

To Expand—or Not to Expand? Larry J. Held and Glenn A. Helmers. Vol. 25 (2) 14-15.
Financial Choices in Wheat Farming. Glenn A. Helmers and Larry J.
Black Walnut is Prized Crop. Frank Hershey. Vol. 25 (3) 15-16.
Nebraska Firms Like to Hire Farmers. Stuart Bartruff, Ron Hanson and Bruce Johnson. Vol. 25 (4) 11-13.
Nebraskans Play a Role in Care Labeling. Joan Laughlin. Vol. 26 (1) 16-17.

Departmental Reports

Biometrics and Information Systems Center


Department of Agronomy


Department of Animal Science

1979 Beef Cattle Report.

1979 Nebraska Swine Report.

Report Number 2-78. Survey of Nebraska Dairymen. F. G. Owen.

Department of Agricultural Economics

Report Number 84. Nebraska Farm Real Estate Market Developments in 1977-78. Ronald Hanson and Bruce Johnson.


Report Number 88. The Impact of Rate Regulation Upon Common Carrier Back Hauls. John Richard Felton.


Report Number 91. Selected Economic Characteristics of Nebraska’s Farming Sector. Stuart Bartruff and Bruce Johnson.


Report Number 93. Transporting Western Coal: Railroads; Slurry Pipelines; or Both. Everett Peterson


Report Number 95. Economic Integration and Nebraska’s Agricultural-Industrial Complex. F. Charles Lamphear.

Department of Agricultural Engineering


Department of Education & Family Resources


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Department of Human Development and Family


Department of Human Nutrition and Food Service Management


Report Number 37. Use of Individualized Instruction in Quantity Food Production for Students. Marion Bracey and Marie E. Knickrehm.


Department of Textiles, Clothing and Design


North Platte Station


South Central Station


Report Number 5. Corn Hybrid Performance Trial Summary Results. Leroy Svec.


Journal Series
(Technical Articles and Papers Published or Submitted for Publication)


5169. Effects of Ration Roughage Content on Viscosity and Theoretical Head Losses in Pipe Flow for Beef Cattle.


5631. Accidental Organophosphate Toxicosis in Cattle (Case Study). Clair M. Hibbs. Veterinary and Human Toxicology.


Comparison of Learned Interests of Eighth Grade Students in Applied Biological and Agribusiness, Based on Social, Economic and Class Rank Factors. Roy D. Dillon. Journal of the American Association of Teacher Educators in Agriculture.


Design for Year-Round Irrigation of Municipal Sewage Effluent. Gerald R. Bodman and Earl A. Myers. Transactions of the ASAE.


Photosynthetic Carbon Metabolism in \( C_4 \) Plants and \( C_3-C_4 \) Intermediate Species - A Review. C. K. M. Rathnam and Raymond Chollet. Phytochemistry.


5721. Effect of Lanolin or Lanolin + Starch Rings on Absorption and Translocation of 2,4-D or Glyphosate in Hemp Dogbane (Apocynum cannabinum). M. E. Schultz and O. C. Burnside. Weed Science.


Management of Solar and Low-Temperature Grain Drying Systems Part II: Layer Drying and Solution to the Overdrying Problem. R. O. Pierce and T. L. Thompson. Transactions of the ASAE.


The Effect of Sublethal Dosages of Carbofuran and Carbaryl on Fecundity and Longevity of the Female Western Corn Rootworm, Diabrotica virgifera LeConte. Harold J. Ball and Paulina P. Su. Journal of Economic Entomology.


Vitamin B₆ Nutritional Status of Several Strains of Mice and Rats as Affected by Pantothenic Acid Deficiency. L. Huang, C. Kies and H. M. Fox. Journal of Food Science.


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78-1089. Effect of Irrigation and N Fertilization of Winter Wheat. L.


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78-1138. Vitamin B6 Nutritional Status of Several Strains of Mice and Rats as Affected by Pantothenic Acid Deficiency. Larry Huang, C. Kies and H. M. Fox. Institute of Food Technology.


79-1153. Food Habit Changes of Persons of Chinese Background Living in Lincoln, Nebraska. Grace Yang (Dr. Fox).


79-1161. Development of a New High-quality Decorative Cucurbita maxima Hubbard, Marrow, and Cylindrical Fruit Types. Dermot P. Coyne. ASHS-Vegetable Improvement Newsletter.


79-1165. Sex and Strain Differences in Response to Pantothenic Acid Deficiency of Small Animals as Manifested in Vitamin B6 Nutritional Status. L. Huang and C. Kies. Nebraska Academy of Sciences.


79-1181. Inheritance of Ovule Number/Pod, Seed Number/Pod, Seed Weight, and Association with Several Traits in Dry Bean (*Phaseolus vulgaris* L.) Crosses. Faisal A. Al-Mukhtar and Dermot P. Coyne. Hort. Science - Annual Meeting, American Society of Horticultural Science.


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# Report of Income and Expenditures

## General Current Funds

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
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<tr>
<td>Received from United States Government</td>
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</tr>
<tr>
<td>Hatch Fund</td>
<td>$1,383,540</td>
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<tr>
<td>Budgeted by the University</td>
<td>$8,352,606</td>
</tr>
<tr>
<td>Total</td>
<td>$9,736,146</td>
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## Expenditures:

<table>
<thead>
<tr>
<th>Category</th>
<th>Amount</th>
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<tbody>
<tr>
<td>Salaries, Wages &amp; Staff Benefits</td>
<td>$7,895,808</td>
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<tr>
<td>Operating Expenses</td>
<td>$1,301,102</td>
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<tr>
<td>Equipment and Improvements</td>
<td>$539,236</td>
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<td>Total</td>
<td>$9,736,146</td>
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## Restricted Current Funds

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<tr>
<td>From United States Government Agencies</td>
<td>$2,426,311</td>
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<tr>
<td>From State of Nebraska Agencies</td>
<td>$177,961</td>
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<tr>
<td>From Industry</td>
<td>$569,995</td>
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<tr>
<td>From Foundations &amp; Health Organizations</td>
<td>$61,317</td>
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<tr>
<td>Total</td>
<td>$3,235,584</td>
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## Expenditures:

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<th>Amount</th>
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<tr>
<td>Salaries, Wages &amp; Staff Benefits</td>
<td>$1,741,599</td>
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<tr>
<td>Operating Expenses</td>
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<td>Equipment and Improvements</td>
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<td>Total</td>
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</tbody>
</table>
### CASH REVOLVING FUNDS

**Income:**

- Sales and Services: $2,784,241

**Expenditures:**

- Salaries, Wages & Staff Benefits: $681,205
- Operating Expenses: $1,834,672
- Equipment and Improvements: $268,364

**Total: $2,784,241**

### AGENCY REVOLVING FUND

**Income:**

- Sales and Services: $3,849,671

**Expenditures:**

- Salaries, Wages & Staff Benefits: $2,605,106
- Operating Expenses: $987,284
- Equipment and Improvements: $257,281

**Total: $3,849,671**

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1. These amounts do not include capital construction expenditures totaling $811,349.
2. Includes University Research Council funds from state appropriations totaling $7,973.
3. Includes Meat Animal Research Center, Foundation Seed, Tractor Testing, and the Basic Seed Potato Program.