12-1966

80th Annual Report: Nebraska Agricultural Experiment Station

Follow this and additional works at: http://digitalcommons.unl.edu/ardnews

Part of the Agriculture Commons


This Article is brought to you for free and open access by the Agricultural Research Division of IANR at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Agricultural Research Division News & Annual Reports by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.
80TH
annual report
Nebraska
Agricultural
Experiment
Station

UNIVERSITY OF NEBRASKA
COLLEGE OF AGRICULTURE AND HOME ECONOMICS
E. F. FROLIK, DEAN   H. H. KRAMER, DIRECTOR

Lincoln Nebraska   December 1966
CONTENTS

Foreword .................................................. 2
Administration and Staff .................................. 2
Research Projects .......................................... 9
Experiment Station Publications .......................... 20
Publications of the Staff .................................. 35
Financial Report ........................................... 58

Issued December 1966, 2,500

Foreword

The 80th Annual Report of the Nebraska Agricultural Experiment Station contains a list of all active projects from July 1, 1965 to June 30, 1966, 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 Experiment Station Quarterly and as mimeographed departmental reports. Station bulletins, circulars and the Quarterly may be obtained free from county agricultural agents or by writing to the Director of the Experiment Station, University of Nebraska College of Agriculture and Home Economics, Lincoln, Nebraska, 68503. Reprints of most journal articles may be obtained by writing directly to the authors.

HEBERT H. KRAMER
Director

Administration and Staff

The Regents of the University
Richard E. Adkins, Osmond
J. G. Elliott, Scottsbluff
B. N. Greenberg, York
Robert Raun, Norman
C. E. Swanson, Lincoln, President
J. Leroy Welsh, Omaha
Clifford M. Hardin, Ph.D., Chancellor of the University
Joseph Soshnik, Corporation Secretary

The Station Officers
Merk Hobson, Ph.D., Vice Chancellor for Research
C. E. Frolik, Ph.D., Dean
Franklin E. Eldridge, Ph.D., Director, Resident Instruction
H. H. Kramer, Ph.D., Director, Agricultural Experiment Station
Virginia Trotter, Ph.D., Director, School of Home Economics
J. L. Adams, Ph.D., Director, Agricultural Extension Service

The Technical Staff
Agronomy
D. G. Hanway, Ph.D., Professor and Chairman of Department
F. A. Haskins, Ph.D., Professor and Acting Chairman of Department
L. L. Brownlee, M.Sc., Assistant Professor, Foundation Seed
O. C. Burnside, Ph.D., Associate Professor, Weeds
D. F.Buzzhaff, Ph.D., Associate Professor, Range Management
Leon Chesin, Ph.D., Associate Professor, Crops
W. L. Colville, Associate Professor, Crops
E. G. Conard, Ph.D., Associate Professor, Pastures
A. F. Dreier, M.Sc., Associate Professor, Outstate Testing
J. V. Drew, Ph.D., Associate Professor, Soil Survey
J. D. Eastin, Ph.D., Assistant Professor, Sorghum Physiology
A. D. Flowerday, Ph.D., Assistant Professor, Crops and Soils
C. O. Gardner, Ph.D., Professor, Statistics Genetics
H. J. Gorg, Ph.D., Professor, Sweetclover
J. L. Hughes, M.Sc., Instructor, Castorbeans
V. A. Johnson, Ph.D., Professor, Winter Wheat
W. R. Kehr, Ph.D., Professor, Alfalfa
Andris Kleinholfs, M.Sc., Instructor, Chemistry Genetics
D. W. Lancaster, M.Sc., Research Associate, Crop Improvement
T. L. Lavy, Ph.D., Assistant Professor, Weeds
L. N. Leininger, Ph.D., Associate Professor, Crops
J. H. Lonnquist, Ph.D., Professor, Grass Improvement
T. M. Mattern, M.Sc., Associate Professor, Cereal Quality
A. P. Mazurak, Ph.D., Professor, Soil Physics
R. N. Mills, B.Sc., Research Associate, Crop Improvement
M. Rosalind Morris, Ph.D., Professor, Cytogenetics
L. C. Newell, Ph.D., Professor, Grass Improvement
R. A. Olson, Ph.D., Professor, Soil Fertility
R. L. Robison, Ph.D., Assistant Professor, Weeds
J. W. Schmidt, Ph.D., Professor, Small Grains
C. J. Siffris, M.Sc., Instructor, Weeds
R. C. Sorensen, Ph.D., Assistant Professor, Soil Fertility
D. D. Warnes, M.Sc., Instructor, Small Grains
O. J. Webster, Ph.D., Associate Professor, Sorghum
D. E. Wesley, Ph.D., Assistant Professor, Soil Fertility
J. H. Williams, Jr., Ph.D., Associate Professor, Chemurgic Crops
N. E. Williams, M.Sc., Instructor, Corn

Animal Science
F. H. Baker, Ph.D., Professor and Chairman of Department
C. H. Adams, Ph.D., Associate Professor, Meats
M. A. Alexander, M.Sc., Professor, Sheep
V. H. Arthaud, M.Sc., Assistant Professor, Meats and Breeding
M. L. Baker, D.Sc., Professor, Beef Nutrition (Emeritus)
C. T. Blum, Ph.D., Professor, Genetics
T. H. Doane, Ph.D., Associate Professor, Sheep
K. E. Gregory, Ph.D., Professor, Beef Cattle Breeding
R. M. Koch, Ph.D., Professor, Beef Breeding
Biochemistry and Nutrition

R. L. Borchers,1,2 Ph.D., Professor and Acting Chairman of Department
J. M. Daly,2,4 Ph.D., Professor, Intermediary Metabolism
Richard Dam,1,2 Ph.D., Assistant Professor, Nutritional Biochemistry
R. M. Hill,1,2 Ph.D., Associate Professor, Protein Biochemistry
H. W. Knoche,1,2 Ph.D., Assistant Professor, Biochemical Endocrinology
D. R. Lineback,4 Ph.D., Assistant Professor, Enzymes
R. L. Ogden,2 B.Sc., Assistant Professor, Alfalfa Processing
Mrs. Patricia P. Weymouth,2 Ph.D., Research Analysis, Nucleic Acid Biochemistry

Dairy Science

P. L. Kelly,2,4,5 Ph.D., Professor and Chairman of Department
R. C. Chandan,5 Ph.D., Research Associate, Dairy Chemistry
P. H. Cole,1,2,4 M.Sc., Associate Professor, Extension Dairyman
L. K. Crowe,1,2 Ph.D., Professor, Dairy Technology
C. W. Dill,2,4 Ph.D., Associate Professor, Dairy Technology
T. A. Evans,1,2,4 M.Sc., Associate Professor, Dairy Marketing
R. B. Maxcy,1,2 Ph.D., Professor, Microbiology
F. G. Owen,1,2 Ph.D., Professor, Nutrition
M. M. Plum,1,2 Ph.D., Professor, Production
A. B. Schultz,1,2 Ph.D., Associate Professor, Physiology
K. M. Shahani,1,2 Ph.D., Professor, Dairy Chemistry
J. R. Vakil,1,2 Ph.D., Research Associate
L. J. Valker,1,2 B.Sc., Instructor, Dairy
K. M. Nilson,1,2 M.Sc., Instructor, Dairy

Economics (Agricultural)

H. W. Ottoson,1,2,4 Ph.D., Professor and Chair of Department
L. L. Bitney,1,2 B.Sc., Assistant Professor, Farm Management
H. W. Delvo,2,4 M.Sc., Instructor, Farm Management
Alfred Eckert,2 M.A., Assistant Professor, Marketing
A. W. Epp,1,2 Ph.D., Professor, Farm Management
Loyd Fischer,1,2 Ph.D., Professor, Land Economics
J. D. Greer,1,2 B.Sc., Assistant Professor, Farm Management
James Hassler,1,2 Ph.D., Associate Professor, Marketing and Price Analysis
Glen Hellmers,1,2 Ph.D., Assistant Professor, Production Economics
P. A. Henderson,2,5 Ph.D., Professor, Farm Management
R. D. Johnson,2,5 M.Sc., Instructor, Farm Management
James Kendrick,1,2 Ph.D., Assistant Professor, Marketing
William Lagrone,5,6 M.Sc., Associate Professor, Production Economics
C. J. Miller,1,2 Ph.D., Associate Professor, Marketing
John Muehlbeier,1,2 M.Sc., Professor, Land Economics
Glen Vollmar, Ph.D., Associate Professor, Farm Management and Production Economics
Richard Walsh, Ph.D., Associate Professor, Marketing
Clayton Yeutter, Ph.D., Assistant Professor, Land Economics

Editorial

R. J. Graham, B.A., Professor, Station Editor and Chairman of Department
J. P. Holman, M.Sc., Associate Professor, Publications
G. I. Johnson, B.A., Assistant Professor, Press
Marilyn Lunner, B.Sc., Instructor, Home Economics Radio and Television
Dwain Trenkle, B.Sc., Assistant Professor, Radio and Television

Education (Agricultural)

J. T. Horner, Ph.D., Professor and Chairman of Department
A. A. Kahler, M.Sc., Assistant Professor, Agricultural Education
M. G. McCready, M.Sc., Associate Professor, Agricultural Education

Engineering (Agricultural)

R. W. Kleist, Ph.D., Professor and Chairman of Department
O. E. Cross, Ph.D., Associate Professor, Farmstead Engineering
A. R. Dedrick, M.Sc., Instructor, Soil and Water Conservation
J. A. DeShazer, Ph.D., Associate Professor, Livestock Facilities
D. M. Edwards, Ph.D., Associate Professor, Natural Resources
L. F. Larsen, M.Sc., Professor, Tractor Testing
L. F. Nelson, M.Sc., Assistant Professor, Machinery
S. O. Nelson, M.Sc., Associate Professor, Production Processing
G. M. Petersen, M.Sc., Associate Professor, Farm Structures
B. R. Somerhalder, M.Sc., Associate Professor, Natural Resources
G. W. Steinbruegge, M.Sc., Professor, Land Locomotion
L. E. Stetson, B.Sc., Instructor, Radio Frequency Energy
J. J. Sulek, M.Sc., Associate Professor, Power Units
N. P. Swanson, B.Sc., Instructor, Soil and Water Conservation
K. L. Von Bargen, M.Sc., Assistant Professor, Materials Handling
U. E. Wendorff, M.Sc., Associate Professor, Farm Machinery
H. D. Wittmuss, Ph.D., Associate Professor, Natural Resources
F. M. Zou, M.Sc., Assistant Professor, Tractor Testing

Entomology

R. E. Hill, Ph.D., Professor and Chairman of Department
W. T. Atyeo, Ph.D., Associate Professor, Insect Systematics and Acarology
H. J. Ball, Ph.D., Professor, Insect Physiology and Toxicology
J. H. Bell, B.Sc., Research Associate, Grasshopper Control
C. M. Jones, M.Sc., Instructor, Livestock Pests
S. D. Kindler, B.Sc., Instructor, Forage Crops Insects
D. E. Lawson, M.Sc., Instructor, Insect Physiology
G. R. Manglitz, Ph.D., Associate Professor, Forage Insect Investigations
J. D. Munson, M.Sc., Instructor, Corn Insects
K. P. Pruess, Ph.D., Associate Professor, Economic Entomology
J. M. Schalk, M.Sc., Instructor, Forage Crop Insects
Robert Staples, Ph.D., Associate Professor, Insect and Plant Disease Relationships

Horticulture and Forestry
J. O. Young, Ph.D., Professor and Chairman of Department
W. T. Bagley, M.Sc., Associate Professor, Forestry
D. F. Coyne, Ph.D., Associate Professor, Horticulture
A. E. Dufek, Ph.D., Assistant Professor, Turf
E. J. Kinbacher, Ph.D., Associate Professor, Physiology
G. G. Long, M.Sc., Instructor, Horticulture
R. E. Neild, M.Sc., Assistant Professor, Horticulture
D. S. Nuland, M.Sc., Instructor, Horticulture
R. B. O'Keefe, Ph.D., Associate Professor, Horticulture
H. M. Pellett, Ph.D., Assistant Professor, Ornamentals
R. A. Read, M.F., Research Associate, Forestry
N. J. Rosenberg, Ph.D., Associate Professor, Physiology
C. Y. Sullivan, Ph.D., Assistant Professor, Physiology
D. F. Van Havrebeke, M.Sc., Instructor, Forestry

Plant Pathology
M. G. Boosalis, Ph.D., Professor and Chairman of Department
W. B. Allington, Ph.D., Professor, Virus Diseases
M. K. Brakke, Ph.D., Professor, Virus Diseases
R. W. Goets, Ph.D., Professor, Fungus Diseases (Emeritus)
D. S. Meredith, Ph.D., Associate Professor, Epidemiology
Glenn Peterson, Ph.D., Assistant Professor, Tree Diseases
M. L. Schuster, Ph.D., Professor, Nematode Diseases
J. L. Van Etten, Ph.D., Assistant Professor, Plant Physiology

Poultry Science
T. E. Hartung, Ph.D., Professor and Chairman of Department
D. H. Free, B.Sc., Instructor, Poultry Improvement
G. W. Fronning, Ph.D., Associate Professor, Poultry Production
E. W. Gleaves, M.Sc., Assistant Professor, Poultry Nutrition
T. W. Sullivan, Ph.D., Professor, Poultry Nutrition
H. L. Wiegens, M.Sc., Assistant Professor, Poultry and Wildlife Management

Veterinary Science
M. J. Twiehaus, M.Sc., D.V.M., Professor and Chairman of Department
J. M. Aiken, M.Sc., D.V.M., Research Associate, Swine Diseases
R. E. Coupe, B.Sc., Instructor, SPF Swine
J. W. Dunn, M.S., D.V.M., Research Associate, Cattle Diseases
D. L. Ferguson, M.Sc., Instructor, Parasitology
O. D. Grace, M.Sc., D.V.M., Professor, Diagnostic Laboratory
C. L. Marsh, Ph.D., Associate Professor, Biochemistry
C. A. Mehus, D.V.M., Ph.D., Professor, Pathology
K. C. Olson, B.Sc., Instructor, SPF Swine
L. C. Payne, D.V.M., Ph.D., Professor, Physiology
M. B. Rhodes, M.Sc., Instructor, Enzymology of Parasites
R. L. Sweat, B.Sc., D.V.M., Instructor, Cattle Diseases
N. R. Underdahl, B.A., M.S., Associate Professor, Swine Diseases
A. B. Welch, B.Sc., Instructor, Viral Diseases Swine
L. C. Welch, B.Sc., Instructor, SPF Field Coordinator

Library
W. R. Collings, B.Sc., B.L.S., Senior Librarian

Statistics
R. F. Mumm, M.Sc., Instructor, Statistical Consultant

School of Home Economics
Family Economics and Management
Dorothy Larery, Ph.D., Professor and Chairman of Department
A. E. Baragar, M.Sc., Associate Professor, Housing and Equipment
Florence Walker, Ph.D., Associate Professor, Family Economics and Management

Food and Nutrition
Mrs. Hazel M. Fox, Ph.D., Professor and Chairman of Department
Constance Kies, Ph.D., Associate Professor, Food and Nutrition
Marie Knickrehm, Ph.D., Professor, Institutional Administration
Pauline Paul, Ph.D., Professor, Food and Nutrition

Home Economics Education
Hazel Anthony, Ph.D., Professor and Chairman of Department
Shirley Kreutz, Ph.D., Associate Professor, Home Economics Education

Human Development and the Family
J. C. Woodward, Ph.D., Professor and Chairman of Department
J. N. Edwards, Ph.D., Associate Professor, Family Relations
Mrs. Ruby Gingles, M.Sc., Associate Professor, Family Relations

Textiles, Clothing and Design
Audrey Newton, M.Sc., Associate Professor and Chairman of Department
June Ericson, M.A., Assistant Professor

Regional Stations
Box Butte Experiment Station, Alliance, Nebraska
Paul Ehlers, B.Sc., Superintendent of Station

Fort Robinson Beef Cattle Research Station, Crawford, Nebraska
J. E. Ingalls, M.Sc., Superintendent of Station
L. D. Baumann, B.Sc., Technician, Animal Science
S. C. Eittreim, D.V.M., Research Associate
D. L. Hall, B.Sc., Technician, Animal Science
C. W. Kasson, M.Sc., Technician, Animal Science
J. A. Rothlisberger, M.Sc., Assistant Superintendent
Northeast Station, Concord, Nebraska
H. J. Zimmerman, M.Sc., Assistant Agriculturalist and Acting Area Supervisor
U. U. Alexander, M.Sc., Assistant Professor, Agronomy
R. D. Fritschen, M.Sc., Assistant Professor, Agronomy
D. J. Kubik, B.Sc., Associate Extension Agriculturalist, Dairy
E. J. Schwartz, B.Sc., Assistant Professor, Agronomy
W. L. Tolman, B.Sc., Assistant Professor, Animal Science

Scotts Bluff Experiment Station, Mitchell, Nebraska
Lionel Harris, M.Sc., Superintendent of Station
F. N. Anderson, M.Sc., Instructor, Agronomy
L. A. Daigger, M.Sc., Associate Professor, Area Specialist, Soils
C. R. Fenster, B.Sc., Associate Professor, Crop Management
A. F. Hagen, M.Sc., Assistant Professor, Entomology
W. F. Peterson, M.Sc., Research Associate, Agronomy

University of Nebraska Field Laboratory, Mead, Nebraska
F. G. Hastert, B.Sc., Operations Manager
W. W. Sahs, M.Sc., Superintendent of Field Laboratory

North Platte Experiment Station, North Platte, Nebraska
L. F. Sheffield, M.Sc., Superintendent of Station
M. G. Rumery, B.Sc., Associate Professor and Assistant Superintendent
D. C. Clanton, Ph.D., Professor, Animal Science
D. M. Danicic, Ph.D., Assistant Professor, Animal Science
F. H. Grabowski, B.Sc., Assistant Professor, Agronomy, Outstate Testing
P. T. Nordquist, M.Sc., Instructor, Agronomy
D. E. Smika, M.Sc., Research Soil Science
John Vallentine, Ph.D., Associate Professor, Range Management
Glenn Viehmeyer, Assistant Professor, Horticulture
G. A. Wicks, M.Sc., Assistant Professor, Weed Control

1 College Staff
2 Station Staff
3 Extension Staff
4 Leave of Absence
5 Cooperative, USDA
*Includes only staff holding Experiment Station appointment on July 1, 1966.
Nebraska Agricultural Experiment Station
Research Projects

Research projects are listed in order by subject matter departments. An asterisk (*) indicates that the project was discontinued in fiscal 1965-1966.

Administration
1-1 General administration of federal grant funds research. E. F. Frolik and H. H. Kramer.
1-2 The planning and coordination of cooperative regional research. H. H. Kramer.
1-3 Administration of federal grant marketing research funds. H. H. Kramer.

Agricultural Economics
10-1 Farm business and enterprise analysis. A. W. Epp.
10-12 An economic analysis of the farm real estate market in Nebraska. H. W. Ottoson, L. K. Fischer and Rodney Johnson.
10-17 Use of ground water in excess of recharge-economic consequences and possible methods of control. L. K. Fischer.
*10-20 The determination of optional hog marketing rates with respect to weight classes and time. J. B. Hassler.
*10-22 Transportation services and costs for agricultural products from the Northern Plains States. C. J. Miller.
*10-29 Adjustments in livestock marketing in the North Central States to changing patterns of production and consumption. J. B. Hassler.
*10-30 Volume cost relationships in farm supply cooperatives. R. G. Walsh.
10-32 Needed adjustments in land tenure to meet changing agricultural conditions. L. K. Fischer.
*10-33 The impact of changing conditions on Nebraska grain marketing. C. J. Miller.
10-34 Economics of beef production in range area of Nebraska. A. W. Epp.
10-37 Taxes paid for the support of selected state and local services and a comparison of these taxes with income and with the quality of services in the Great Plains states. E. B. Schmidt.
Effects of technological changes on inter-area competition for the livestock-feed wheat sectors of the midwest. J. B. Hassler and H. W. Ottoson.

Adjustment opportunities for wheat farms. M. D. Skold and H. W. Ottoson.


Economic factors affecting sugar marketing. C. J. Miller.

Dairy market adjustment problems in the North Central region. T. A. Evans.


Economic growth of Nebraska farm and ranch firms. G. T. Vollmar.

Agricultural Engineering


Planning farmstead buildings and their auxiliary equipment. O. E. Cross.

The integration of machine operations required in crop culture. B. R. Somerhalder.

Engineering phases of land treatment related to soil storage and use-efficiency of rainfall. H. D. Wittmuss.

Factors affecting the drying rate and the compaction characteristics of alfalfa hay. K. L. Von Bargen.


Water loss by evaporation from soil and plant surface. J. R. Davis.

Engineering and agronomic studies associated with land shaping under dryland conditions in western Nebraska. P. L. Ehlers and H. D. Wittmuss.


The relationship of moisture, density and temperature to the appearance and chemical composition of baled alfalfa hay. L. F. Nelson.

The mechanics and measurement of soil tillage. G. W. Steinbruegge.

Energy production potential on irrigated land. B. R. Somerhalder.

Effect of dynamic loading on tractor performance. J. J. Sukel.

Thermogenic properties and nutrient retention of grain at different moisture levels during storage. O. E. Cross.

Operations research on mechanized systems for cutting, curing and handling hay. R. W. Kleis and G. M. Petersen.


Agronomy

Determination and application of principles of corn improvement. J. H. Lonnquist and N. E. Williams.

Improvement and evaluation of oats and barley. D. D. Wames.
12-5 Developing and applying principles of alfalfa improvement. W. R. Kehr.
12-6 Cultural, ecological and physiological studies with various agronomic crops. W. L. Colville.
12-7 Chemical and cultural control of weeds. O. C. Burnside, G. A. Wicks and C. R. Fenster.
12-8 Improvement of forage grasses by breeding and the propagation and evaluation of new strains and experimental varieties of grasses. L. C. Newell.
12-10 Crop residues. T. M. McCalla, W. D. Guenzi, F. A. Norstadt and H. E. Weakly.
12-11 Mineralogical, physical and chemical characterization of Nebraska soils in relation to their genesis, classification and mapping. J. V. Drew.
12-12 Selection, breeding and testing of soybeans for productivity, high oil and protein content for industrial and farm utilization. J. H. Williams.
12-15 Preservation of alfalfa clones and seed stocks needed in alfalfa improvement and preliminary evaluation of plant introductions. W. R. Kehr.
12-16 The introduction, multiplication, preservation and determination of potential value of new accessions and strains of native and exotic grasses. L. C. Newell.
12-17 Corn germplasm preservation. J. H. Lonnquist.
12-19 Soil management practices under non-irrigated and irrigated systems of farming in Nebraska. R. A. Olson, F. N. Anderson and C. R. Fenster.
12-22 Genetic breeding and physiological investigations of sweetclovers. H. J. Gorz.
12-23 Development of crops for industrial or other special uses. J. H. Williams.
12-24 Summarization of Nebraska climatological data. W. L. Colville.
12-25 Isolation, culture and improvement of superior soil structure stabilizing microorganisms. T. M. McCalla and F. A. Haskins.
12-26 Improvement and culture of sainfoin and birdsfoot trefoil in Nebraska. E. C. Conard and D. E. Smika.
12-29 Cytogenetic studies of economic characters, such as stature and resistance to bunt and rust, in Nebraska winter wheats by means of aneuploids and irradiation. M. Rosalind Morris, J. W. Schmidt and V. A. Johnson.
12-30 Trace element deficiencies in Nebraska soils and their influence on production and quality of crops. Leon Chesnin and F. N. Anderson.

Evaluation of effects of radiation on quantitative characters in soybeans as related to breeding improved varieties. J. H. Williams and D. G. Hanway.

Fate of applied nitrogen in relation to type of carrier and time and method of application. R. A. Olson, A. F. Dreier and K. D. Frank.

Breeding regionally adapted sudangrass varieties and hybrids with specific reference to low hydrocyanic acid content and seed production. P. T. Nordquist.

Factors affecting the classification of range sites in Nebraska sandhills. D. F. Burzlaff.

The influence of different levels of stocking on summer livestock gains and the consequent changes in botanical composition, range condition and quality of forage on western Nebraska rangeland. D. F. Burzlaff and Lionel G. Harris.

Climatological phenomena and their effects on agronomic crops. W. L. Colville.

Chemical, morphological and nutritional changes occurring in Great Plains grasses and their relationship to management practices. D. F. Burzlaff.

Equip, staff and operate a laboratory to study wheat quality problems and evaluate the quality characteristics of new experimental wheat strains. V. A. Johnson, J. W. Schmidt and P. J. Mattern.

Breeding high amylose corn hybrids for industrial utilization. J. H. Lonnquist.


Chemical genetics of the metabolism of coumarin and related compounds in sweetclover. F. A. Haskins and H. J. Gorz.

Gluten, air classification and baking properties of high protein lines of winter wheat developed in Nebraska. P. J. Mattern, V. A. Johnson and J. W. Schmidt.


Botanical composition of true prairie vegetation as influenced by several management practices. E. C. Conard and R. M. Koch.

Development of production practices for castorbeans in Nebraska. J. H. Williams.


Fate of herbicides in soils and Opuntia spp. O. C. Burnside, G. A. Wicks, C. R. Fenster and T. L. Lavy.

Studies of morphological, anatomical and physiological characteristics that determine yield and agronomic performance in wheat. V. A. Johnson and J. W. Schmidt.

Investigations for improvement of safflower and development of other potential crops for western Nebraska. L. R. Robison.
Investigations for developing adapted castorbean varieties and hybrids and means of castorbean disease control in Nebraska. J. H. Williams and M. L. Schuster.


Influence of soil structure on plant growth and uptake of nutrients by plants. A. P. Mazurak and Leon Chesnin.

Life history studies of important pasture and rangeland weeds. M. K. McCarty.

Effect of bench leveling on the physical and chemical properties of soil and on plant growth. A. P. Mazurak, L. C. Harris, Leon Chesnin and F. N. Anderson.

The feasibility, economic potential and production of hybrid wheat varieties. J. W. Schmidt and V. A. Johnson.


Reducing costs of corn and grain sorghum production by increasing economy of water and nitrogen use. R. A. Olson and W. L. Colville.

Physiological processes in relation to growth and development of sorghum. J. D. Fastin.

Seed production of breeding lines of insect pollinated legumes. W. R. Kehr.

Outstate testing—crop variety tests. A. F. Dreier, K. D. Frank, P. H. Grabouski and M. L. Vitosh.

Outstate testing—soil studies with cultivated crops. A. F. Dreier, P. H. Grabouski, K. D. Frank and M. L. Vitosh.

Foundation Seed, LaMoine Brownlee.

Animal Science


Breeding tests of population genetic theory. C. T. Blunn.

Effect of varying energy and protein levels during the winter on productivity of beef cows. D. C. Clanton and D. R. Zimmerman.


Dietary factors affecting the utilization of protein and energy sources by swine during the pre-weaning growth period. E. R. Peo, Jr., and D. B. Hudman.

Utilization of protein and energy sources for post-weaning growth and reproductive performances of swine. D. B. Hudman and E. R. Peo, Jr.
13-19 The effects of summer wool covering on weight gain and fleece weight of Corridale and Hampshire lambs. M. A. Alexander.
13-21 The nature of genetic viability for quantitative traits in diverse population of cattle. L. J. Sumption.

Veterinary Science
14-1 Examination and diagnosis of diseased animals. O. D. Grace.
14-4 Biornomics and epidemiology of the parasites of Nebraska livestock. D. L. Ferguson, C. L. Marsh.
14-6 Study and control in specific pathogen free herds. E. R. Peo, Jr., and G. W. Kelley.
14-10 Gamma globulin absorption in the newborn. L. C. Payne and C. L. Marsh.
14-12 Studies on the immunological properties of parasite enzymes in domestic animals. C. L. Marsh.

Biochemistry and Nutrition
15-1 The utilization of food elements by growing chicks. C. W. Ackerson.
15-4 Naturally occurring enzyme inhibitors and their nutritional significance with particular reference to raw soybeans. R. L. Borchers.
15-6 Oilseed processing. R. L. Ogden.
Determination of the chemical changes associated with the thick egg white and yolk membrane during storage and marketing of shell eggs. R. Dam.

*15-9 Mechanism of antibiological action. R. Dam.

15-10 Biochemical aspects of carbohydrate and nitrogen metabolism in the rumen. R. L. Borchers.


15-12 Physico-chemical properties at the molecular level of surfaces of biologically important proteins using ovalbumin and urease as the principal model proteins. R. M. Hill.

15-13 Enzymes of nucleic acid metabolism in animal and plant tissues. Patricia P. Weymouth.

15-14 Enzymatic and chemical modification of starches for industrial and pharmaceutical uses. D. R. Lineback.


Dairy Science

*16-1 The nicotinic acid, pantothenic acid, biotin, pyridoxine and vitamin E content of the more important kinds of cheese. K. M. Shahani, K. M. Nilson and J. R. Vakil.

16-2 The development and use of Holstein-Friesian cattle with high efficiency for milk and butterfat production. M. M. Plum, M. G. Rumery and L. C. Harris.

16-4 The relationship between changes in certain blood characters and physiological function (growth rate, milk producing ability). A. B. Schultze.


*16-6 The determination of the occurrence and the nature of the starter inhibitory and stimulatory substances in the raw milk supply. K. M. Shahani.

16-8 Evaluating the efficiency of circulation cleaning procedures with welded milk lines. R. B. Maxcy and K. M. Shahani.

16-9 Effect of dietary carbohydrate composition and physical properties of the ration on energy consumption and utilization by dairy cattle. F. G. Owen.

16-10 Influence of hormone administration on reproductive performance in the laboratory rat. A. B. Schultze.

16-13 Marketing effects of processing and storage on the flavor and keeping quality of butter oil. C. W. Dill.

16-14 A study to improve flavor quality and storage characteristics of high temperature treated fluid milk products. C. W. Dill and L. K. Crowe.


Entomology

17-1 Biology, ecology and control of the stable fly. C. M. Jones.
17-2 Arthropod transmission of plant disease pathogens. R. Staples and W. B. Allington.
17-3 Sweetclover weevil investigations. G. R. Manglitz.
17-4 Annual census of European corn borer population. R. E. Hill.
17-7 The photosensitivity in insects. H. J. Ball.
17-8 Investigations of field bean insects with emphasis on the western bean cutworm, Loxagrotis albicosta. A. F. Hagen.
17-10 Biology and control of insect pests affecting livestock and man. C. M. Jones and R. E. Hill.
17-12 Alfalfa pollination by native bees and other insects. W. E. LaBerge.
17-13 Factors influencing the distribution and abundance of grasshoppers in Nebraska. K. P. Pruess and R. E. Hill.
17-17 Biology, ecology and economics of noctuidae in Nebraska. K. P. Pruess.
17-18 Use of attractants, repellents and sterility agents for insect control. H. J. Ball.
17-19 Factors affecting the role of microorganisms in the biological control of insect pests. R. E. Hill and D. E. Lawson.
17-20 Migration of aphids and noctuids. K. P. Pruess.

Information

18-1 Dissemination of research information. R. J. Graham.

Horticulture and Forestry

20-1 Cultural studies with potatoes. R. B. O'Keefe, L. W. Anderson and L. C. Harris.
20-3 Bean breeding and genetics. D. P. Coyne.
20-5 The improvement of ornamentals and fruits for Nebraska through selection, breeding and cultural practices. J. O. Young and G. Viehmeyer.
20-6 Improvement of tomatoes, sweet potatoes, cabbage and broccoli. D. P. Coyne and R. B. O'Keefe.
20-8 Effect of interrupted dark period on seedling growth of three conifers. W. T. Bagley and Ralph A. Read.
Breeding potato parental lines for resistance to scab, heat and/or drought. R. B. O'Keefe and D. S. Nuland.

Forest tree improvement through selection and breeding. R. A. Read and W. T. Bagley.

Evaluation of varieties and cultural practices in vegetable crop production in Nebraska. D. S. Nuland.

Agroclimatic parameters for selected regions in Nebraska. R. E. Neild.


Windbreak shelter effects. W. T. Bagley and N. J. Rosenberg.

Effect of temperature extremes on plants. E. J. Kinbacher.

Drought injury and resistance in plants. E. J. Kinbacher.

Potato genetics. R. B. O'Keefe.

Outstate testing. D. S. Nuland.

**Plant Pathology**

Plant disease survey and minor investigations. M. G. Boosalis and the Plant Pathology Staff.


Plant viruses, the disease of plants they cause and their control. W. B. Allington, M. K. Brakke and Ellen M. Ball.


Fundamental studies on root diseases of plants. M. G. Boosalis.

Diseases of shade trees and ornamental plants. Glenn W. Peterson and W. B. Allington.


Physiologic studies of obligate parasitism, with special emphasis on disease caused by rust. J. M. Daly.


Physiology of nematode diseases with emphasis on use of tissue culture. M. L. Schuster and Robert Sandstedt.


Dwarfing virus diseases of corn. W. B. Allington.

Epidemiology and control of vegetable diseases in Nebraska. D. S. Meredith.

**Poultry Science**

The effects of environmental factors (space, temperature, humidity, light and ventilation) on growth and reproduction in chickens. T. E. Hartung.


Effect of dehydrated alfalfa meal and other dietary components on egg yolk pigmentation and reproductive performance of chickens. T. W. Sullivan.

Amino acid requirements of the laying hen as affected by protein level. W. J. Owings.

Determination of factors affecting the development of off-flavors in poultry meat. R. Dam.


The role of mammalian physiological food intake regulators in poultry. E. W. Gleaves.

Improving market acceptability and utilization of poultry products. G. W. Froning.

**Statistical Laboratory**

Applications of statistics to research in agriculture. C. O. Gardner.

**Agricultural Education**

Employment opportunities in agricultural non-farm occupations in Nebraska. J. T. Horner.

An experiment to compare effectiveness of various means of enlisting participation in young farmer-rancher short courses. J. T. Horner.

An analysis of factors influencing occupational and educational plans of Nebraska farm boys. J. T. Horner.

An experimental evaluation of approaches to preparing high school students for agricultural occupations other than farming. J. T. Horner.

**Box Butte**


**Fort Robinson**

Management and feeding practices affecting the gains of beef cattle on range and in the feedlot. J. E. Ingalls, D. C. Clanton, J. A. Rothlisberger and K. E. Gregory.

Improvement and alteration of reproductive performances of beef cattle. D. R. Zimmerman and J. E. Ingalls.

**North Platte**


The evaluation of feeding and management practices during the different phases of swine production. D. M. Danielson and J. C. Adams.

Chrysanthemum breeding. G. Viehmeyer.

Interspecific hybridization and genetic and evolutionary studies in Penstemon. G. Viehmeyer.

The relation of cropping and tillage practices to crop production and maintenance of soil fertility under dryland conditions. D. E. Smika.

The effect of adding soybean meal, dehydrated and chopped alfalfa hay to a ration of ground ear corn to yearling steers. G. N. Baker, D. C. Clinton and James C. Adams.


Principles and methods for control of downy brome (brome tectorum) and other annual bromes. G. A. Wicks, O. C. Burnside, C. R. Fenster and D. E. Smika.

Collection of native plants for use as ornamental or breeding material in western North America. G. Viehmeyer.


Development of irrigation in Nebraska. James C. Adams.

**Scotts Bluff**

Improve of safflower by development of better cultural methods and superior varieties. W. F. Peterson.

Dry bean variety test. F. N. Anderson and D. P. Coyne.


Fertilizer and manure application for production of continuous corn on very fine sandy loam. F. N. Anderson.

Small grain investigations. F. N. Anderson.

Alfalfa variety testing and corn testing. F. N. Anderson, W. R. Kehr and A. F. Dreier.

Effects of high rates of phosphate fertilization on the production of corn. F. N. Anderson and R. A. Olson.

Fertilizers for sugar beet production. F. N. Anderson.

**Mead Field Laboratory**

Field laboratory development. W. W. Sahs.

**School of Home Economics**

**Family Economics and Management**

Performance of thermostatically controlled gas and electric range surface units. A. E. Baragar.

Factors affecting the selecting and satisfaction of floor coverings by rural families. Dorothy A. Larery.

Patterns of major financial decisions and crises in the family life cycle. Dorothy A. Larery.
Food and Nutrition

*91-1 Pantothenic acid requirement of college women and dietary inter-relationships which affect this requirement. Hazel M. Fox.

*91-2 Availability to man of amino acids from foods. Constance Kies and Hazel M. Fox.

91-4 Factors relating to diets of preschool children. Hazel M. Fox.

91-5 Utilization of dietary fats from various sources. Hazel M. Fox.

Human Development and the Family

93-1 High school girls who marry before the age of nineteen. Ruby Gingles.

*93-2 Parental concerns about child rearing. Ruby Gingles.

93-3 Effect of emotional climate of the home on personality development. Beverly Fowler and Ruby Gingles.

*93-4 Development of instruments to evaluate the effect of parent-child interaction. Ruby Gingles and Harold Abel.

Textiles, Clothing and Design


Experiment Station Publications

Nebraska Experiment Station Quarterly, Summer, 1965 (20 pages). 15,000 copies.
Nebraska Experiment Station Quarterly, Fall, 1965 (16 pages). 17,500 copies.
Nebraska Experiment Station Quarterly, Winter, 1966 (24 pages). 17,500 copies.
Nebraska Experiment Station Quarterly, Spring, 1966 (24 pages). 17,500 copies.

Bulletins


489. Liability and Liability Insurance for Farmers (28 pages). Harvey Pearlman. 5,000 copies.


Research Bulletins


Tractor Test Reports
Summary of Results of Nebraska Tractor Tests for 1965. 15,500 copies.
Nebraska Tractor Tests 900-944. 88,000 copies.
Reprints of individual tests: 699, 500 copies; 907, 1,000 copies, 909, 2,000 copies.

Outstate Testing Circular
120. Performance of Sorghum Hybrids and Varieties in Nebraska, 1965 (40 pages). A. F. Dreier, P. T. Nordquist and P. H. Grabouski. 6,000 copies.

Nebraska Experiment Station Quarterly Articles
Teen-age Marriages—Are They Successful? Ruby Gingles and Jacqueline Voss. Vol XII (2) 14–16.
First-Aid For Your Shelterbelt. David Van Haverbeke. Vol XII (2) 17–18.
New Laboratory Technique Speeds Up Test For Cancer. Grant I. Johnson. Vol XII (3) 4.
Wilted Beet Tops—Good Silage. Lionel Harris and Donald C. Clanton. Vol XII (3) 9–10.
Personality Develops At Home. Dr. Beverly Fowler. Vol XII (3) 11–12.


Worldwide Acclaim for UN From "Pinch of Seed in '43." Glenn Viehmeyer. Vol XII (4) 4-5.


Where Are the Children While Mother Is at Work? Sally Van Zandt and Ruby Gingles. Vol XII (1) 16-17.


Ground Cover For Western Nebraska Winters. Paul Ehlers. Vol XII (1) 21-22.


Departmental Reports

Department of Agricultural Economics


Report Number 44, Custer County Overall Economic Development Plan 1964-65. Custer County Rural Area Development Committee and Jack Timmons.

Department of Horticulture and Forestry


Report Number 49, Dry Bean and Snap Bean Variety Trials in Nebraska 1965. Dermot P. Coyne.


Report Number 51, 1965 Potato Trials In Nebraska. Lloyd Anderson and Dave Nuland.


Miscellaneous Publications


North Central Regional Publications

162. Coordination of Egg Production and Marketing in the North Central States. II. Characteristics and Attitudes of Independent Contract Egg Producers. Published at Purdue University.


164. Farm House Requirements and Their Application in the Improvement of Farm Housing. Published at Purdue University.

165. Shipping Fever. Published at Purdue University.

166. Productivity of Soils in North Central Region of United States. Published at University of Illinois.


168. Federal, State and Local Laws Affecting Marketing. Published at North Dakota State University.

169. Adolescent Girl Skirts. Part I. Published at University of Minnesota.

170. Adolescent Girl Skirts. Part II. Published at University of Minnesota.

Journal Series (Technical Articles and Papers)


1784. Decarboxylation of Indoleacetic Acid by Near-Isogenic Lines of Wheat Resistant or Susceptible to Puccinia graminis f. sp. tritici. E. Antonelli and J. M. Daly. Phytopathology.


1816. The Cytogenetics of Wheat and Its Relatives. Rosalind Morris and E. R. Sears. Chapter for a monograph on Wheat to be published by ASA.


1825. Antibody Production in Blood Serum and Egg Yolk Extract From Chickens Immunized with Three Plant Viruses and a Comparison with Rabbit Antiserum. Ellen Moorhead Ball. Immunology.


1859. The Effect of Exotic Germplasm on Genetic Variances in Maine Varieties. 


1907. Soil Particles and Aggregates Transported in Water Runoff Under Various Slope Conditions Using Simulated Rainfall. N. P. Swanson and A. R. Dedrick. Agriculture Engineering or the Transactions of the ASAE.


Publications of the Staff

Key to Abbreviations

C—Circular
SB—Station Bulletin
RB—Research Bulletin
OTC—Outstate Testing Circular
DR—Departmental Report
Q2—Summer Quarterly 1965
Q3—Fall Quarterly 1965
Q4—Winter Quarterly 1965
Q1—Spring Quarterly 1966
J—Journal Series

Abdel-Malek, Albert, A. W., J1823, J1828
Abed, Fauzi, M. A. H., J1747
Abel, Harold, J1796
Adams, J. L., J1905
Adams, J. L., Q4
Aksay, Ayhan, J1912a
Alexander, U. U., OTC1l9, OTC122
Allington, Thomas B., SB491
Al-Janabi, Abdul M., J1854
Al-Libaidi, Y. Y., J1899a, J1912a
Al-Yasiri, Salih Aziz, J1779
Anderson, Lloyd, DR51
Anderson, F. N., SB486, OTC119, OTC122, J1767
Anderson, Henry, J1708, J1755
Antonelli, E., J1784
Apple, J. L., J1801
Arthaud, V. H., J1848
Attyco, W. T., J1673, J1803, J1820
Attoc, O. J., J1833
Bagley, W. T., Q1, DR48, J1842
Baker, M. L., SB487
Ball, Ellen M., J1789, J1825, J1866
Ball, H. J., J1598, J1815
Bateman, D. F., J1898
Biever, K. J., J1886
Blum, C. T., J1699, J1904
Boettcher, A. L., Q2
Borchers, R. L., J1690, J1793
Bovey, R. W., J1605, J1657, J1676, J1691, J1817
Brasch, N. L., J1673
Brakke, M. K., J1819, J1845, J1853
Brouse, E. M., SB487, J1659
Burnside, O. C., Q1, J1593, J1676, J1712, J1782a, J1788a, J1791a, J1792a, J1791, J1804
Butcher, J. E., J1865
Burzlaff, D. F., OTC112, J1659, J1777, J1821, J1831
Calkins, C. O., J1703
Chand, R. C., J1775, J1814, J1858, J1878a, J1879a, J1931
Chen, Shirley C. S., J1904, J1915a
Crespin, Sharon C., J1916a
Crow, L. K., J1927
Dam, R., J1913a
Daigler, L. A., OTC118
Daly, J. M., J1784, J1898
Danielson, D. M., J1865
Davies, G. S., J1647, J1688, J1817
Dreier, A. R., Q4, J1788a, J1805, J1844, J1850, J1885, J1886, J1907, J1918, J1922a, J1929a
Dexter, A. C., J1904
Dill, C. W., J1810, J1857a, J1862a, J1868, J1879a, J1931
Doty, R. L., J1839
Dow, J. V., J1747
Dreier, A. F., OTC118, OTC119, OTC120, OTC121, J1682
Drew, J. V., J1747, J1854
Dudek, A. E., DR50, Q4, J1918, J1922a, J1923a
Van Haverbeke, David, Q2
Van Zandt, Sally, Q1
Viehmeyer, Glenn, Q4
Voss, Jacqueline, Q1, Q2
Walstrom, R. J., J1703
Ward, T. L., J1770
Warnes, D. D., OTC118, J1679, J1680
Weekman, G. T., J1808
Welch, L. C., J1685, J1780, J1781
Weldon, M. D., Q4
Whited, D. A., J1771
Whitemore, J. H., J1901a
Wicks, G. A., Q1, J1593
Williams, Eleanor, J1914a
Williams, J. H., J1764, J1770
Wilson, Ben B., J1903a
Wilkbank, J. N., RB224, J1786, J1824
Wood, W. W., J1666, J1902a, J1903a
Woodruff, N. P., J1926
Yeutter, Clayton, SB491, J1919
Young, J. O., SB488, J1650, J1910
Zimmerman, D. R., J1824
The University of Nebraska
Agricultural Experiment Stations
REPORT OF INCOME AND EXPENDITURES
For the Year Ended June 30, 1966

GENERAL CURRENT FUNDS
Funds Available:
    Received from United States Government
    Hatch Fund ...................................................... $  608,790.00
    Budgeted by the University ....................................  1,748,829.49
    Total ............................................................... $2,357,619.49

Expenditures:
    Salaries and Wages ............................................. $1,873,297.19
    Operating Expense ..............................................  328,161.11
    Equipment and Improvements ....................................  156,161.19
    Total ............................................................... $2,357,619.49

RESTRICTED CURRENT FUNDS
Income:
    Gifts, Grants, and Contracts
        From United States Government Agencies ...... $  863,653.23
        From State of Nebraska Agencies ...............  139,777.22
        From Industry ............................................  201,626.24
        From Foundations and Health Organizations ...  69,668.59
        From Other Sources ...................................  1,523.95
        Total ......................................................... $1,276,199.23

Expenditures:
    Salaries and Wages ............................................. $  822,005.57
    Operating Expenses ............................................  532,149.13
    Equipment and Improvements ..................................  122,044.53
    Total ............................................................... $1,276,199.23

CASH AUXILIARY FUND
Income:
    Sales and Services ........................................... $1,839,277.31

Expenditures:
    Salaries and Wages ............................................. $ 403,147.45
    Operating Expenses ............................................  1,332,217.00
    Equipment and Improvements ..................................  103,912.88
    Total ............................................................... $1,839,277.31