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THE AGRICULTURAL EXPERIMENT STATION
INSTITUTE OF AGRICULTURE
AND NATURAL RESOURCES
UNIVERSITY OF NEBRASKA-LINCOLN
ROY G. ARNOLD, DIRECTOR

Agricultural Experiment Station NEWS

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Experiment Station

Vol. 14, No. 2, August 1980

*** SUMMER ISSUE ***

FROM THE DIRECTOR'S DESK

Activities Update

Activities and meetings during the last month have included:

- Field Days -- Sandhills Ag Laboratory, Panhandle and South Central Stations
- Tractor Power & Safety Days
- Agronomy Department -- Lincoln area field research sites
- North Central Region, Ag Experiment Station Directors Summer Meeting in Michigan
- Northeast Region Ag Experiment Station Directors visit to Bell Laboratories in New Jersey
- Animal Science Sub-Committee of the Nebraska Stock Growers Association
- Nebraska Corn Development, Utilization and Marketing Board

Quarterly Issue

This issue of the Experiment Station Newsletter represents the second special quarterly issue, which includes summaries of new Station scientists and recently approved projects.

Special Feature

At my invitation Dr. Wilfred Schutz, Head of the Biometrics and Information Systems Center, has provided for this issue a description of the role of the Biometrics Center within the Ag Experiment Station. Consultant and research collaborative roles of the Biometric Center's faculty are outlined by Dr. Schutz.

Maximization of productivity from investments of the Ag Experiment Station research funds will require increased attention to experimental design and established analysis techniques by Station scientists.

A Reminder...

In planning and carring out research projects on cooperators' farms, please inform the local County Extension Agent of your plans. Extension Agents are asked questions about research activities within their counties. They need to be informed.

Correction

The July issue of this Newsletter should have identified both Dr. J. R. Gilley and Dr. Darrell G. Watts as recipients of a USDA grant in the amount of $57,500.

Roy G. Arnold

-- GRANTS & CONTRACTS --

Amend, J. G., M. L. Frey & E. O. Dickinson - Vet Science - USDA/SEA	$149,401
Brumm, M. - Animal Science (NE Station) - National Pork Producers	5,000
Bullerman, L. B. - Food Sci. & Tech. - Government of Lybia	1,800
Burnside, O. C. - Agronomy - Miscellaneous Donors	2,550
Campbell, J. B. - Entomology (NP Station) - Miscellaneous Donors	2,000
Dickason, E. A. - Entomology - Stauffer Chemical	500
Fenster, C. R. - Agronomy (PH Station) - Miscellaneous Donors	2,500
Flowerday, A. D. - Agronomy - National Crop Insurance Association	4,000
Gast, R. G. - Agronomy - University Foundation, Agr. Discretionary Fund	3,000
Haderlie, L. C. - Agronomy - UN Foundation, A. H. Elliott Fund	7,100
Kerr, E. D. - Plant Pathology (PH Station) - Miscellaneous Donors	2,200
Martin, A. R. - Agronomy - Miscellaneous Donors	1,000
Moomaw, R. S. - Agronomy (NE Station) - Miscellaneous Donors	1,150
Peters, L. L. - Entomology (SC Station) - Miscellaneous Donors	800
Roeth, F. W. - Agronomy (SC Station) - Miscellaneous Donors	2,300
Steadman, J. R. - Plant Pathology - Rohm & Haas	1,000
Trimmer, W. L. - Ag Engineering (PH Station) - Upper Niobrara-White NRD	900
Walker, C. E. - Food Sci. & Tech. - Nebr. Dept. Economic Development	11,700
Wicks, G. A. - Agronomy (NP Station) - Miscellaneous Donors	2,700
Wilson, R. G., Jr. - Agronomy (PH Station) - Miscellaneous Donors	5,300
Wysong, D. - Plant Pathology - Miscellaneous Donors	1,700

We express our appreciation to the Corn Board, Soybean Board and Wheat Board for their continued support to our research projects. The grants for FY 1980-81 are:

Corn Board:
- W. A. Compton (Agronomy) - $15,250
- A. P. Handel (Food Sci. & Tech.) -- $7,800
- T. Klopfenstein (Animal Science) -- $7,500
- L. C. Lane & B. L. Doupnik (Plant Pathology) -- $10,827
- A. R. Martin & F. W. Roeth (Agronomy) -- $13,120
- E. J. Penas, G. W. Rehm, K. D. Frank, G. W. Hergert & R. A. Wiese (Agronomy) -- $7,000
- J. H. Rupnow (Food Sci. & Tech.) -- $11,900
- J. F. Witkowski (Entomology) -- $9,590
- T. A. Shaffer (Human Nutrition) -- $400

Wheat Board:
- M. D. Clegg (Agronomy) - $1,200
- L. C. Lane & M. Brakke (Plant Pathology) -- $10,500
- C. A. Long (Food Sci. & Tech.) -- $10,400
- A. K. Vidaver (Plant Pathology) -- $6,100
- J. W. Schmidt, V. A. Johnson & P. J. Mattern (Agronomy) -- $14,000
- P. J. Mattern, J. W. Schmidt, V. A. Johnson (Agronomy) -- $18,800
- V. A. Johnson, P. J. Schmidt, S. L. Kuhr, J. W. Schmidt (Agronomy) -- $12,000

Soybean Board:
- J. E. Specht & J. D. Eastin (Agronomy) -- $5,500
- A. K. Vidaver (Plant Pathology) -- $6,400
- M. Hanna (Ag Engineering) -- $8,920
- G. W. Rehm, R. C. Sorensen & R. A. Wiese (Agronomy) -- $2,500
- R. W. Klucas & F. W. Wagner (Ag Biochemistry) -- $9,800
- J. H. Williams (Agronomy) -- $8,000
- J. D. Furrer, A. R. Martin & O. C. Burnside (Agronomy) -- $9,400
- J. F. Witkowski (Entomology) -- $9,400

-- GRANTSMANSHIP --

Three of our "pros" in proposal writing and submission are offering hints to researchers. We thank them for their contribution.

From A. Philip Handel (Food Science & Technology):

"I attended a week-long intensive course in grantsmanship given by the Grantsmanship Center of Los Angeles, CA. I recommend this course highly and would encourage others to take it. The course was offered in both Lincoln and Omaha this year. I am not certain about future dates. Tuition is $375 for the 1980 courses.

"The Grantsmanship Center also produces a series of reprints. The one I think is most useful is Program Planning and Proposal Writing-Expanded Version by Norton J. Kiritz. Cost is $2.45 each for 1-10 copies and may be ordered from the Grantsmanship Center, 1031 South Grand Avenue, Los Angeles, CA 90015. This article presents a format for proposal writing, what should be in each section and good and bad examples of proposals. Government agencies and some private agencies have formats for writing a proposal. Many agencies do not have a specific format or have a vague set of guidelines. The proposal format given in this article serves as a valuable guide in producing a clear, readable and hopefully successful proposal."

"Clarity is of the utmost importance in preparing a proposal. As much, if not more, care should be taken in writing a grant proposal as in writing a journal article. Journal articles will be read by persons familiar with your field and jargon. Proposals may not be. Journal articles are reviewed and may be sent back for revision before acceptance. You don't usually get that chance with a grant proposal. A poor proposal just won't be funded. A method I use to avoid assumptions and jargon in a proposal is to have someone read it who is not an expert in my field. Usually my wife reads it for me. Of course, having a colleague read it from the standpoint of scientific merit is also important."

"Knowing who might fund a particular project is obviously important. One should find out as much about an agency as possible prior to submitting a proposal. One of the best ways to do this is by visiting an agency and talking about areas of mutual interest with the people involved in funding projects. If there is an advisory panel, getting to know one or more of these people can be helpful. From these types of contacts you find out what areas of research the agency is most interested in and their objectives in funding research. They also get to know you as a person rather than just a name. Having this information will enable you to write a better proposal and increase your creditability with the granting agency."

From Anne Vidaver (Plant Pathology):

"1. Read directions: each agency is different.

2. Have colleagues read your proposal.

3. Obtain a proposal that was funded, if possible, to see what approach the agency favors."

From Lois Schwab (Human Development & The Family):

"The writing of a successful research proposal starts with payment of your professional dues to the appropriate professional or interest group! It is essential to know the state of science within your chosen field which comes not only from reading the literature on which there may be as much as a two-year delay from funding to print, but also from attending sessions on papers and visiting in person with the presentors. This should be done with the questions - where is this leading? What are the implications? What is the next step in development? Where is the "cutting edge" in this problem? This gathering of information is a constant process which means attending professional meetings every year."

"Data gathered from the above paper sessions and visits should be filed along with appropriate other information, i.e. new analytical methodology, new techniques, etc., - all information necessary for development of a project. Simultaneously, information to your research interest should be shared with your administration, especially, the persons receiving the Federal Register, calls for research, etc., so that requests for proposals as available will reach you."

"Often requests for funding have short periods for return of proposal. Your job is half-done if your file of research ideas is up-to-date and complete. Most every proposal has a format to be followed and an accompanying evaluation criteria with weights given to every detail of the requirements of the request. Often, a successful sample proposal is available for the "asking". A question or two for clarification to the agency may be in order."

"If you obtain the funding, be sure that reports reflect the "follow-through" and success. For the next funding, nothing "begats" success, like success."

*** Copies of funded proposals are on file at the Ag Experiment ***
Station Office. Please feel free to use them as reference.

-- PROJECTS APPROVED --

NEB 12-073 -- Subsoil Chemical Properties in Relation to Nutrient Requirements of Field Crops -- Revised Hatch project effective June 1, 1980. Dr. G. A. Peterson, Agronomy Dept., is the project leader. Drs. D. H. Sander and F. N. Anderson are cooperating on the project. Project reviewed by Drs. Gast, Frank, Gilley, Olson, Mumm and Arnold. The objective of the project is to determine the positional and chemical availability of nutrients in subsoils, their influence on field crop production and their relationship to soil management history.

NEB 12-116 -- Crop Yield Potential as Affected by the Rhizosphere, Soil, and Other Environmental Factors -- A Hatch project that contributes to Regional Project Number W-154. Project leaders are Dr. C. Y. Sullivan, Agronomy, and Dr. D. G. Watts, Ag Engineering. The objectives are: (1) Develop and quantify the relationship between roots, rhizosphere, soil and their effects on water and nutrient uptake, (2) develop information on the diurnal and seasonal uptake and allocation of water, nutrient and carbon for whole plants and on feedbacks which exist in the partitioning of assimilates between plant parts, (3) quantify the effect of the physical and chemical environments on roots, rhizosphere and yield, and (4) through objectives 1-3 define the characteristics of plants that will assist in selecting and managing crops to avoid or tolerate stress.

NEB 12-117 -- Improvement Practices for Range on Blue-Grama-Buffalograss Dominated Loess Soils of Nebraska -- A Hatch project effective April 14, 1980. Dr. Steven S. Waller, Agronomy Dept., is the project leader. Reviewers were Drs. J. L. Stubbendieck, P. E. Reece, L. Moser, W. Schutz, R. C. Shearman, R. G. Gast and W. W. Sahs. The objectives are to: (1) determine the inherent capacity of deteriorated Mixed Prairie to revegetate naturally following use of mechanical disturbance to reduce the competition of existing shortgrass sod, (2) determine the effectiveness of using mechanical and/or chemical suppression of a shortgrass sod with overseeding or interseeding of warm-season, native grasses to renovate deteriorated Mixed Prairie. This project will be in cooperation with projects under the direction of Drs. Nichols, Reece, Stubbendieck, Moser and Anderson as a component of the total Range and Forage Management research effort for Nebraska.

NEB 12-119 -- Crop Production Systems in the Western Corn Belt -- A new Hatch project effective July 1, 1980. Dr. A. D. Flowerday, Agronomy Dept., is project leader. Reviewers were Drs. Gast, Moomaw, Mumm, Francis, Penas and Arnold. The objectives are to initiate new and study existing crop production systems in the Western Corn Belt and evaluate their effects on crop yield and quality and the crop production environment.

NEB 15-029 -- Improved Soybean Meal -- A new Hatch project effective April 8, 1980. The project leader is Dr. Raymond Borchers, Ag Biochemistry Dept. Reviewers were Drs. Britton, Mumm, Rhodes, Shahani, Knoche and Arnold. The objectives are to develop a soybean protein which exhibits its full potential for supporting the growth of animals fed soybean products. (1) isolate and identify the soybean growth inhibitors, (2) determine the mode of action of the growth inhibitors, and (3) develop applied procedures which will remove or neutralize the growth inhibitors.

NEB 17-029 -- Modeling for Insect Pest Management -- A revised Hatch project effective April 22, 1980. The project leader is Dr. K. P. Preuss, Entomology Dept. Reviewers were Drs. Dickason, Hassler, Schutz, Ball, Berry and Arnold. The objectives are to develop heat unit models for insect development and prediction, develop grasshopper population models, improve heat unit accumulation methods and improve stable fly simulation model.

NEB 20-010 -- Improvement of Potatoes as a Food and Energy Resource -- A revised Hatch project effective July 1, 1980. Dr. R. B. O'Keefe, Panhandle Station, is project leader with Drs. R. G. Wilson, Jr., F. N. Anderson, E. D. Kerr, A. F. Hagen as cooperators. Reviewers were Drs. Weihing, Uhlinger, Clegg, Bodman, Schuster, Steadman, Turner, Stroup and Arnold. The objectives are to: (1) improve the processing quality, yielding ability, ethanol production and nutritional value of potatoes through breeding of new varieties, (2) improve cultural and storage practices for specific varieties and market types of potatoes including ethanol production, and (3) obtain and utilize basic genetic, physiological and biometrical genetic information for the improvement of potatoes for selected factors.

NEB 20-037 -- Assessment of impact of Climate on Agriculture in Nebraska and the North Central Region -- A revised Hatch project effective June 1, 1980. Dr. R. E. Neild, Horticulture Dept., is project leader with D. A. Wilhite, Ag Meteorology & Climatology Dept., as cooperator. Reviewers were Drs. Uhlinger, Rosenberg, Norman, Supalla, Weiss, Steadman, Mumm and Arnold. The objectives are to characterize climatic parameters related to agriculture, improve the use of the climatic data base, organize climatic information into forms available to users and implement the research aspects of the National Climatic Plan.

NEB 20-042 -- Biology and Control of Bacterial/Nematode Diseases of Certain Crops -- A revised Hatch project effective July 1, 1980. Dr. M. L. Schuster, Horticulture Dept., is project leader. Reviewers were Drs. Uhlinger, Coyne, Neild, Kerr, Compton, Mumm and Arnold. The objectives are to continue detection, identification, and maintenance of pathogenic bacteria/nematodes and pathotypes of beans, corn, popcorn, soybeans, etc., and to study infection, life cycles population dynamics, host-parasite relations, environmental effects, survival and other epidemiological factors and to seek long and short-range control.

NEB 42-005 -- Influence of Certain Management Regimens on Performance of Newly Purchased Feeder Pigs -- A new Hatch project effective July 1, 1980. The personnel involved are Dr. M. C. Brumm (leader), Northeast Station, and Dr. E. R. Peo, Jr., Animal Science Dept. Reviewers were Drs. Bitney, Bodman, B. Moser, Lowry, Underdahl, Zimmerman, Omtvedt, Peo, Ward and Sahs. The objectives are: (1) determine the effect of receiving diet on feeder pig performance and profitability, and (2) determine the effect of selected management system on performance and profitability of feeder pigs.

NEB 44-023 -- Supplementation and Utilization of Forage and Grain Resources in the High Plains Region -- A new Hatch project effective May 9, 1980. Dr. Ivan G. Rush (leader), Panhandle Station, and Dr. T. Klopfenstein, Animal Science Dept. are the personnel. The reviewers were Drs. Omtvedt, Brink, Lowry, Kinder, Stubbendieck, Clanton, Weihing and Arnold. The objectives are: (1) investigate proper methods to supplement forages produced in the Nebraska Panhandle with non-protein nitrogen and comparable protein sources, (2) evaluate the differences in feed value of alfalfa when harvested as dry hay, wilted haylage, or direct chop silage, and the most appropriate methods of the storage of alfalfa, and (3) place emphasis on the most appropriate time to utilize forages in the total production of growing and finishing cattle rather than maximum efficiency on any specific phase.

NEB 44-024-- Bionomics and Management of Selected Insect Pests in Nebraska Panhandle -- A new Hatch project effective May 1, 1980. Dr. Arthur F. Hagen, Panhandle Station, is project leader. Reviewers were Drs. Weihing, Dickason, Gold, Peters, Schutz, Schuster and Kleis. The objectives are to determine the life history, feeding and reproductive habits and management of Labops hesperius Uhler on wheatgrass and other hosts, determine if Oedipodine grasshoppers caused significant damage to rangeland and crops and evaluate management of insect pests on dry beans, sugar beets, winter wheat and rangeland.

The Biometrics and Information Systems Center

The Biometrics and Information Systems Center (formerly called the Statistical Laboratory), was established in 1957 in response to the need to provide a strong biometrics program to support the research and graduate training activities of IANR.

The functions of the Center are 1) to provide statistical consulting services to the professional staff and graduate students in the Agricultural Experiment Station; 2) to provide computing services and facilities for both staff and students in the Institute of Agriculture and Natural Resources; 3) to teach courses in experimental design and statistical analysis for both graduate and undergraduate students in the College of Agriculture; and 4) to conduct research in statistical methodology.

In many respects the role of the Center differs from that of other departments on campus, since most of its activities are services performed for other departments in the Colleges of Agriculture and Home Economics. Hence, much of the research of the Center consists of a supporting role in various research projects throughout the Experiment Station.

An important function of the Center is to work cooperatively with the Experiment Station research staff in planning and designing experiments and analyzing and interpreting the results of their research. Even though research workers are highly trained and experienced in their fields of specialty, the services of a consulting statistician are often needed to clarify objectives and to determine the appropriate procedure and techniques to use to obtain valid results. The consulting statistician can select or develop an experimental design that fits the situation so that the objectives of the research can be achieved in the most efficient way.

The data processing function of the Center serves a two-fold purpose. It relieves the research worker of routine computing chores thereby allowing more time for the planning of research and the publication of results and it makes sophisticated computing equipment available to the researcher that could not be provided by individual projects or departments.

The teaching function of the Center tends to reinforce, and is a logical outgrowth of, the statistical consulting role. Courses in statistical concepts and methodology and computer utilization are fundamental to a good graduate program in any department in the Colleges of Agriculture and Home Economics. A basic knowledge of statistical principles enables the research worker to effectively implement the suggestions of the statistical consultants and to recognize potential pitfalls in proposed experiments. Statistics courses prepare undergraduates for decision making roles by providing training in techniques useful in analyzing quantitative information.

As new research problems are posed and new research techniques become available the statistical consultant must develop new methods for the design and analysis of increasingly sophisticated experiments. Thus, research in statistical methodology is a natural consequence of the consulting function of the Center and serves to strengthen all phases of the research program of the Experiment Station. A desirable result of collaborative work between the consulting statisticians and IANR subject matter specialists is the publication of their work as joint research.

Faculty and students who wish to utilize the expertise of the Center's consultants are encouraged to do so by calling to make an appointment with any of the following people:

Roger Deaton. Roger's area of emphasis is statistical data processing and the use of SAS and other statistical software packages, experimental design, and the analysis of designed experiments.

Steve Lowry. Steve provides assistance in experimental design and analysis, unbalanced designs and linear models. Much of his consulting is on the applications of statistics to animal research.

Robert Mumm. Bob handles a broad range of consulting activities involving experimental design and analysis, data processing and regression analysis (including response surfaces). Many of Bob's clients are plant science researchers.

Anne Parkhurst. The use of multivariate techniques such as discriminant analysis and factor analysis, experimental design and analysis, design of questionnaires, and the use of SPSS, SAS, and other software packages are major activities in Anne's consulting work.

Walter Stroup. Experimental design and analysis with emphasis in animal research, the application of statistical theory to "messy data" problems, and sampling and sample survey problems are important components in Walt's consulting work.

Experiment Station staff and students who wish to become better acquainted with the staff of the Center and the computing and data processing facilities available in Miller Hall are invited to visit the Center at any time.

W. M. Schutz, Head

No Tillage Agriculture

The non-tillage system, a combination of the ancient and modern cultural practices, should be reconsidered in a season such as 1980 where soil erosion in eastern Nebraska is the most severe for a number of years.

In a recent issue of Science (cover page and a comprehensive article), 6 June 1980, Vol. 208, No. 4448, University of Kentucky research and extension personnel report on No-Tillage Agriculture. The authors predict that at least 65 percent of the corn and soybean acreage in the Southern Corn Belt will be grown with the no-tillage system by the year 2000.

The authors emphasize that the system should be applied on well drained land, that more fertilizer is needed than the conventional system, and that herbicides are judiciously utilized in lieu of early season tillage and cultivation.

It was emphasized that no-tillage demands a greater management ability, that one may encounter greater populations of insects and disease-producing organisms, and that the soil temperatures most likely will be lower at planting time, thus delaying spring planting in the central and northern United States.

The no-tillage system reduced the energy input into corn and soybean production by 7 and 18 percent, respectively, when compared to conventional tillage systems.

In Kentucky, no-tillage crop yields were as high or higher than those obtained with traditional tillage with the added advantage of virtually no soil erosion, the major source of pollution in rural areas.

W. W. Sahs

-- PERSONNEL ACTION --

LEONARD BASHFORD, Associate Professor, Ag Engineering

Previously at UNL from 1972 to 1977, returned in May to the Ag Engineering Department to work in power and machinery and energy programs. He came from private business.

MARY M. BECK, Assistant Professor, Animal Science

A native of Maryland, she came to Nebraska from the Univ. of Maryland where she completed her Ph.D. She joined the IANR staff in May. Dr. Beck will conduct research in environmental physiology and cerebral metabolism in birds and will teach courses in avian biology and environmental physiology.

GENE H. DEUTSCHER, Assoc. Prof. & Extension Beef Specialist
Animal Science Dept., North Platte Station

A native of Kansas, Dr. Deutscher came to Nebraska in 1978 from South Dakota State University. He has been doing extension work in beef cattle management with emphasis in reproductive physiology at the North Platte Station. His new appointment includes Extension and Research.

RICHARD L. FLEMING, Department Head, Ag Communications

A Ph.D. in Adult Education, Univ. of Nebraska, his first appointment was as Assist. Extension Editor in 1956. He became Assist. Dir. of Public Relations in 1963 and was named Director of Public Relations in 1973. Dr. Fleming has been serving as Assist. to the Chancellor and Dir. of University Information since 1976. He transferred to Ag Communications May 1st.

DONALD B. HUDMAN, Prof., Animal Science, Panhandle Station

A native of Texas, his Ph.D. is from Iowa State University. Dr. Hudman was a member of the University of Nebraska Animal Science staff from 1956 to 1966. His last position was as Director of the Ag Division for the Kerr Foundation at Poteau, Oklahoma. He returns to work in the area of swine nutrition in the western part of the State.

JERRE JOHNSON, D.V.M., Ph.D., Associate Professor, Veterinary Science, North Platte Station

A Ph.D. from Kansas State University Dr. Johnson joined the IANR staff in June. He is a Veterinary Pathologist at the Veterinary Science Laboratory, North Platte Station.

NORMAN D. JONES, D.V.M., M.S., Associate Professor, Veterinary Science, Panhandle Station

Dr. Jones joined the staff July 1st. He came from a post-doctoral fellowship at Bowman Gray School of Medicine, North Carolina. He is a Veterinary Pathologist and Extension Specialist at the Veterinary Science Laboratory, Panhandle Station.

H. DOUGLAS JOSE, Associate Professor & Extension Economist, Ag Economics

Dr. Jose was on the staff of the University of Saskatchewan from 1974 to 1979. A Canadian, he has a Ph.D. from Oklahoma State University. At UNL he will work on machinery economics, economics of crop production practices, livestock economics (beef & dairy cattle), and computer application to farm management decisions. Joined IANR in January.

JOSEPH M. SKOPP, Assistant Professor, Agronomy

Dr. Skopp has a Ph.D. in Soil Science from the University of Wisconsin, Madison. He joined the IANR staff May 1st with teaching and research responsibilities in soil physics.

CHARLES WALKER, Associate Professor, Food Science & Tech.

Joined IANR July 1st. He received his Ph.D. from North Dakota State University in 1966. He came from Omaha where he served as Associate Director of Research for Fairmont Foods Company. At UNL Dr. Walker will do research in cereal grain utilization and will develop and teach courses in cereal chemistry.

Journal Abstracts - Submitted for Publication (contact authors for more information)

80-1374. Adjusting Carcass Composition for Differences in Weight. R. M. Koch, L. V. Cundiff and K. E. Gregory. Journal of Animal Science.

80-1375. Comparison Between Alfalfa Silages and Hay in Corn Silage Rations. V. E. Krause and R. A. Britton. Journal of Animal Science.

80-1376. Diallel Analysis of Genetics of Reaction to *Xanthomonas Phaseoli* in Dry Beans (*Phaseolus vulgaris* L.). N. E. Valladares-Sanchez, D. P. Coyne and M. L. Schuster. Bean Improvement Cooperative.

80-1377. Genetic Improvement of Plant Mineral Nutrient Efficiencies and Tolerances. Ralph B. Clark. American Chemical Society, Division of Fertilizer and Soil Chemistry.

80-1378. The Characterization of Alfalfa Protein: Laboratory Analysis. D. W. Rock, T. J. Klopfenstein, J. K. Ward and R. A. Britton. Journal of Animal Science.

80-1379. Corn Stalk Quality as Affected by Variety and Management. M. L. McDonnell and T. J. Klopfenstein. Journal of Animal Science.

80-1380. An Enzymatic Technique for Determining Ruminal Degradation. Mary Poos, T. Klopfenstein, R. A. Britton and D. G. Olson. American Dairy Science Association.

80-1381. A Comparison of Laboratory Techniques to Predict Ruminal Degradation of Protein Supplement. Mary Poos, T. Klopfenstein, R. A. Britton and D. G. Olson. Journal of Animal Science.

80-1382. Effects of Ariboflavinosis on Population of *Polyplax Spinulosa* (Burmeister) in Artificially Infested Albino Rats. V. J. Gibney and J. B. Campbell.

80-1383. Variations on the Surface Morphology of the Boar Vas Deferens. A. S. Ramos, Jr. and A. R. Doster. 17th Annual Electron Microscopy Colloquium, May, 1980.

80-1384. Ultrastructure and Nature of the Intranuclear Inclusion Bodies in Baboon Epididymis and Vas Deferens. A. S. Ramos, Jr. and Neal Woolen. Annual Meeting of the American Association of Veterinary Anatomists, July, 1980.

80-1385. Development and Application of Enzyme-Linked Immunosorbent Assay for Detection of Antibodies to Mycoplasma Bovis and Mycoplasma Dispar in Calves with Respiratory Disease. S. A. Mills and M. L. Frey. International Organization for Mycoplasmology.

80-1386. Niacin Utilization from Opaque-2 Corn Diets by Human Adults and Adolescents. C. Kies, O. Echeverri and H. M. Fox. American Chem. Society Proceedings.

BULLETINS PRINTED

RB 292. Influence of Fertilizer Nitrogen and Sulfur on Production of Malting Barley. G. W. Rehm and R. S. Moomaw.

NEBRASKA AGRICULTURAL EXPERIMENT STATION PUBLICATIONS - July 1980

Journal Articles - Submitted for Publication (contact authors for more information)

5898. A Comparison of *In Vivo* Apparent Protein Digestibility in Man and Rat to *In Vitro* Protein Digestibility as Determined Using Human and Rat Pancreatins and Commercially Available Proteases. N. Rich, L. D. Satterlee and J. L. Smith. Nutrition Reports International.

5899. Thatch Accumulation in Kentucky Bluegrass as Influenced by Cultivar, Mowing, and Nitrogen. R. C. Shearman, E. J. Kinbacher, T. P. Riordan and D. H. Steinegger. HortScience.

5900. Horticulture and Interdisciplinary Research. Dermot P. Coyne. HortScience. v46 (6):686, December, 1979.

5901. Inactivation of Crystalline Tobacco Ribulose 1,5-Bisphosphate Carboxylase by Modification of Arginyl Residues with 2,3-Butanedione and Phenylglyoxal. Raymond Chollet. Archives of Biochemistry and Biophysics.

5902. Ratio Analysis Program for Tolerance Evaluation of Two Component Turfgrass Mixtures. T. P. Riordan, A. H. Bruneau, R. C. Shearman and E. J. Kinbacher. Journal of Seed Technology.

5903. Energy Utilization and Efficiency of Crossflow Grain Dryers. R. O. Pierce and T. L. Thompson. Transactions of the American Society of Agricultural Engineers.

5904. *Ascaris suum*: Solid-Phase Indirect Radioimmunoassays to Detect Specific Antibodies in Sera and Intestinal Content of Swine. Marvin B. Rhodes, Lisa A. Staudinger and Renee A. Hart. Experimental Parasitology.

5905. Anthelmintic Activity of Injectible Levamisole Against Experimental *Metastrongylus Apri* Infection in Swine. D. L. Ferguson. Journal of Parasitology.

5906. Extension Agent and Vocational Agriculture Teacher: Some Cooperative Activities That Work! Roy D. Dillon. Cooperative Extension Journal.

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