August 1996

COMMENTS FROM THE ASSOCIATE DEAN

Dear Colleagues,

As you know, shifts have occurred which have changed IANR and ARD administrative assignments for the next several months. As a result, I have the opportunity to greet you in the lead article of the ARD newsletter. Most of my recent articles in this publication have dealt with mundane things such as intellectual property, indirect costs, and publication authorship. They appeared in the later pages of the newsletter and may not always be the type of topic to inspire the reader to continue further. I've enjoyed writing them, however, and hopefully they've clarified the issues and policies for some of you in this regard.

For this newsletter, I'm taking a different approach, however. At a recent retreat of the IANR Administrative Council, I was asked to report on some current positive results or outcomes for the ARD. I reported on several of these, but one result that I want to repeat here is the enviable progress ARD faculty have made in obtaining external grants and contracts.

With the uncertainties in state and federal appropriations and given the fact that a large percentage of state funds are dedicated to salaries of faculty and staff, it follows that gift, grant, and contract (GGC) funds are critical in many programs to provide adequate operating support for state-of-the-art research. ARD faculty have made great progress in this regard. Just 10 years ago, in fiscal year 1986, the GGC expenditures for ARD were $6.9 million. New ARD financial records for fiscal year 1996 indicate GGC expenditures of $16.8 million. This is an increase of 8 percent over FY 1995 and continues a steady trend of increases of similar or higher amounts in recent years.

Another indicator, the number of USDA National Research Initiative Competitive Grants received by ARD faculty, was 16 for the FY 1995 cycle. This compares to eight that were received in the 1994 cycle and is the highest number received by ARD since the NRI began! New opportunities, such as the recently established USDA Fund for Rural America, provide more possibilities.

Recent information from the UNL Office of Grants and Sponsored Programs indicates that the UNL totals in terms of proposals submitted and awards received, including federal awards, decreased in FY 96. We don't know the numbers for ARD faculty as compared to the entire UNL campus, but GGC expenditures for ARD as mentioned above suggest you're all still doing well and are countering the UNL-wide trend. Keep up the good work!

Dale H. Vanderholm
Associate Dean and Director

ARDC SUPERFUND UPDATE

The timetable for the EPA Superfund remediation of contaminated soil and groundwater at the ARDC is becoming clearer. The most recent plan for the soil remediation calls for the incineration of approximately 13,000 cubic yards of soil to remove TNT, RDX and related breakdown products. A rotary-kiln incinerator will be located in the northeast corner of the ARDC to accomplish the incineration. A large pit will be excavated near the incinerator to provide fill soil for the remediation areas. The incinerated soil will be placed in the pit, covered with top soil and seeded to grass. This process should start and conclude in 1997.

The groundwater containment and remediation is scheduled to begin in late 1996 or early 1997. Two wells, designed to contain the contaminant plumes, will be linked to a treatment facility located approximately 1/4 mile east of the southeast corner of the ARDC on Air Force Reserve property. One of the wells is located in section 26 on the ARDC. The other well is on private property. Within three years additional wells, most of which will be on the ARDC, will be connected to the treatment facility. These wells will be designed to remediate the TNT, RDX and TCE contaminants in the groundwater.

At full capacity the wells will pump approximately 4,000,000 gallons of water per day for treatment. This process is expected to last approximately 130 years. A local group, organized by the LPNNRD, has contracted for a study to determine the feasibility of using the treated water as supply for a rural water district that would serve the eastern half of Saunders County.

In August, the USACE will conduct a sweep for unexploded ordnance in the old ordnance demolition area.
near the current ARDC feedlot. This sweep will be to a depth of four feet. It should take approximately one week to conduct. In the past, live fuses were discovered in this area.

USACE also has agreed to perform a more in-depth study of all safety concerns relating to the unused portions of the former bomb load line areas. It is hoped this study will determine if the buildings pose potential risks to employees and the general public. Based on these risks, decisions will be made regarding how to dispose of these structures.

**WIDAMAN TRUST DISTINGUISHED GRADUATE ASSISTANT AWARD**

The Widaman Trust was established in 1975 through a generous gift provided to the University of Nebraska Foundation by Ms. Blanch Widaman. Ms. Widaman asked that the income from the trust be used by UNL for basic research in agriculture and the funds support people rather than purchase supplies and/or equipment. She suggested that the money be used for scholarships or fellowships for graduate students conducting basic research in agriculture.

The criteria established for the Widaman Trust Distinguished Graduate Assistant Award specifies that only 5 percent of the graduate students in a department can receive the recognition and that the awardees must demonstrate outstanding scholarship and excellence in research. We congratulate the following graduate students for receiving the Widaman Trust Distinguished Graduate Student Award for 1996-1997:

<table>
<thead>
<tr>
<th>Name</th>
<th>Thesis area</th>
<th>Department</th>
<th>Advisor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Litao Yang</td>
<td>Plant Physiology</td>
<td>Agronomy Department</td>
<td>Tim Arkebauer</td>
</tr>
<tr>
<td>Jasbir Singh</td>
<td>Soil and Water Science</td>
<td>Agronomy Department</td>
<td>Pat Shea and Steve Comfort</td>
</tr>
<tr>
<td>Timothy Schnell</td>
<td>Meat Science</td>
<td>Animal Science</td>
<td>Roger Mandigo</td>
</tr>
<tr>
<td>Diane Moody</td>
<td>Breeding and Genetics</td>
<td>Animal Science</td>
<td>Daniel Pomp</td>
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<tr>
<td>Jose Molin</td>
<td>Engineering</td>
<td>Biological Systems Engineer</td>
<td>Leonard Bashford</td>
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</table>

**HARDIN DISTINGUISHED GRADUATE FELLOWSHIP FOR 1996-1997**

For the second year the recipient of the Hardin Distinguished Graduate Fellowship for 1996-1997 is John LeRoy Lindquist from the Agronomy Department. The fellowship is made possible by an endowment established at the University of Nebraska Foundation by former University of Nebraska Chancellor Clifford Hardin to support outstanding graduate students doing research in plant physiology.

John Lindquist is completing his Ph.D. in plant stress physiology associated with an ecophysiology approach to understanding maize tolerance and weed suppressive ability. John is modifying INTERCOM, an interplant competition model, to identify physiological and morphological traits having the greatest impact on simulated maize-weed interference. His research project focuses specifically on the physiology and morphology of maize that will allow it to be more tolerant or suppressive to weed competition, a major stress in crop production. Dr. Dave Mortensen is his advisor.

**INNOVATIVE AND HIGH RISK RESEARCH PROGRAM**

Nine proposals were submitted for the Innovative and High Risk Research Program during the past six months. This program is designed to provide seed money for very innovative research projects. The objective is to obtain preliminary data that can be used to support requests for grants from federal agencies or companies. Funding will not be provided for projects that are a continuation of a faculty member's current research program. The proposals may be submitted at any time during the year. The proposals are evaluated quarterly or on an as-needed basis by a subcommittee of the ARD Advisory Council.

The following proposals were funded by the Innovative and High Risk Research Program effective July 1, 1996:

<table>
<thead>
<tr>
<th>Name</th>
<th>Thesis area</th>
<th>Department</th>
<th>Advisor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thomas Clark</td>
<td>Insect/Biological Control</td>
<td>Entomology Department</td>
<td>John Foster and John Witkowski</td>
</tr>
<tr>
<td>Susanne Eidmann</td>
<td>Vet Science</td>
<td>Veterinary and Biomedical Sciences</td>
<td>S. Srikumaran</td>
</tr>
<tr>
<td>Nancy Caceres</td>
<td>Vet Science</td>
<td>Veterinary and Biomedical Sciences</td>
<td>Raul Barletta</td>
</tr>
</tbody>
</table>
Sharron Quisenberry  
Entomology Department  
Molecular interactions in aphid/wheat systems  
$15,000

Milford Hanna  
Industrial Agricultural Products  
Production of microcrystalline cellulose from soybean hulls and corn cobs  
$13,125

Andrew Benson  
Food Science and Technology  
Identification of low-temperature induced genes in *Listeria monocytogenes*  
$15,000

**BURLINGTON NORTHERN ENDOWMENT**

Six proposals were submitted for the Burlington Northern Endowment. This was established in the University of Nebraska Foundation in 1982 to support water and irrigation research projects related to the general areas of agriculture and natural resources including forest lands and wetlands. It is not intended to address water issues related to municipal, industrial, or domestic use, or to waste disposal sites.

The following proposals were funded for 1996-1997:

- **William L. Krantz, C. Shapiro, M. Brumm, B. Anderson, D. Schulte**  
  Northeast Research and Extension Center  
  Determining the environmental impact of irrigating alfalfa with swine effluent  
  $12,000

- **Brian Benham, D. Eisenhauer, R. Hotchkiss**  
  South Central Research and Extension Center  
  Improved application of ultrasonic water flow measurement in irrigation  
  $10,540

- **Gary Hergert, R. Ferguson, B. Benham, C. Shapiro, W. Kranz**  
  West Central Research and Extension Center  
  Site-specific management strategies for improving nitrogen use efficiency under furrow irrigation  
  $18,000

**NATIONAL RESEARCH INITIATIVE**

The Agricultural Research Division recently received notification of the program areas for the National Research Initiative Competitive Grants Program. There is a possibility that a program area may be removed for funding from the program area. The later part of September 1996, please access the World Wide Web as follows: [http://www.rees.usda.gov](http://www.rees.usda.gov). The program description and program areas will be on the Web. If you have any questions, please contact the ARD Office.
PROPOSALS SUBMITTED FOR FEDERAL GRANTS

The following is a listing of proposals that were submitted after May 27, 1996 by faculty for federal grant programs. While not all grants will be funded, we applaud the faculty member’s effort in submitting proposals to the various agencies.

Wayne Woldt, Istvan Bogardi and Chunhua Dou — National Science Foundation — Fuzzy Rule-Based Approach to Describe Solute Transport in the Unsaturated Zone — $296,101


James L. Van Etten — National Institutes of Health — DNA Replication and Gene Expression of Chlorella Viruses — $254,804

Mark Morrison — United States Department of Energy — Molecular-based Analysis of Cellulase Complex Assembly and Adherence to Cellulose by Ruminococcus albus — $254,804

M. Madhavan — United States Department of Energy — Dynamics of Acetylcholine Metabolism in Guard Cells and Chloroplasts — $465,403

Donald P. Weeks — United States Department of Energy — Isolation and Characterization of Genes Involved in CO2 Accumulation in Chlamydomonas reinhardtii — $465,403

Clinton Jones — National Institutes of Health — Analysis of an Alpha Herpesvirus LAT Protein — $656,625

David Stanley-Samuelson — National Science Foundation — Eicosanoid Mediation of an Immune Response in Moths — $373,713

Shashi B. Verma — NASA — Measurement and Analysis of Net Carbon Exchange in a Tallgrass Prairie Ecosystem — $443,140

Manoj Kumar — NSF — Mechanistic Enzymology of an Oxo-molybdenum Enzyme Involved in Carbon Monoxide Metabolism from Carboxydothermic Bacteria — $661,510

Kulvinder S. Gill — NSF — Understanding the Mechanism of Chromosome Pairing in Polyploids — $366,925

NEW OR REVISED PROJECTS

The following station projects were approved recently by the USDA Cooperative State Research Service:

NEB-10-135 (Agricultural Economics) Monitoring and Analysis of Farm Real Estate Market Developments in Nebraska
Investigator: B. B. Johnson
Status: New Hatch project effective May 1, 1996

NEB-12-149 (Agronomy) Breeding Sorghum and Pearl Millet for the USA and Developing Countries
Investigator: D. J. Andrews
Status: Revised State project effective April 1, 1996

NEB-12-254 (Agronomy) Community Structure and Functional Diversity of Soil Microbial Communities in Natural and Agroecosystems
Investigator: R. A. Drijber
Status: New Hatch project effective June 1, 1996

NEB-13-129 (Animal Science) Mapping the Pig Genome
Investigator: D. Pomp
Status: New Hatch project that contributes to NC-210 effective Oct. 1, 1995

NEB-14-090 (Veterinary and Biomedical Sciences) Development of a Mycobacterial Marker Vaccine
Investigator(s): R. G. Barletta and R. A. Moxley
Status: New State project effective July 1, 1996

NEB-17-063 (Entomology) Stress-Cereal Crop Interactions and Development of Resistant Cultivars
Investigator: S. Quisenberry
Status: New Hatch project effective June 1, 1996

NEB-19-005 (Food Processing Center) Development and Quality/Safety Enhancement of Specialty Food Products
Investigator: S. L. Taylor
Status: New Special Grant effective July 1, 1996

NEB-20-056 (Horticulture) Integrated Turfgrass Management Practices
Investigator: R. C. Shearmun
Status: New Hatch project effective June 7, 1996

NEB-21-066 (Plant Pathology) Ultraviolet Dosimetry in Crop Canopies
Status: New State project effective July 1, 1996

NEB-21-067 (Plant Pathology) Molecular Analysis of Programmed Cell Death in Plants
Investigator: M. B. Dickman
Status: New State project effective July 1, 1996

NEB-27-007 (Agricultural Meteorology) Response and Policy Implications
Investigator(s): D. A. Wilhite and M. J. Hayes
Status: Revised Hatch project effective April 1, 1996
AGRICULTURAL ENHANCEMENT OF POTATO PRODUCTION AND UTILIZATION

INVESTIGATOR: A. D. Pavlista

STATUS: Revised Hatch project effective March 1, 1996

GRANTS AND CONTRACTS RECEIVED JUNE AND JULY, 1996

Agronomy
Cassman, K. — Pioneer Hi-Bred International, Inc. $25,000
Distler, D. — ONR 69,978
Stubbedieck, J. — Nebraska Department of Agriculture 9,600
Miscellaneous grants under $5,000 each 16,650

Animal Science
Miscellaneous grants under $5,000 each 12,853

Biochemistry
Golbeck, J. — National Science Foundation 100,000
O’Leary, M. — National Institutes of Health 170,650

Biological Systems Engineering
Miscellaneous grants under $5,000 each 1,208

Center for Rural Community Revitalization and Development
Cordes, S., Allen, J., Van der Sluis, E. — USDA through Univ. of MO 40,000

Entomology
Miscellaneous grants under $5,000 each 48,500

Horticulture
Gaussoin, R. — USGA and GCSAA Foundation 20,000
Riordan, T. — USGA 69,458
Miscellaneous grants under $5,000 each 14,700

Northeast Research and Extension Center
Miscellaneous grants under $5,000 each 53,183

Panhandle Research and Extension Center
Baltensperger, D. — Anna Elliott Fund 9,500
Hein, G. — Anna Elliott Fund 7,420
Reece, P. — Anna Elliott Fund 14,998
Wilson, R. — Western Sugar Company 36,500
Miscellaneous grants under $5,000 each 42,025

Plant Pathology
Miscellaneous grants under $5,000 each 10,600

South Central Research and Extension Center
Miscellaneous grants under $5,000 each 44,150

Veterinary and Biomedical Sciences
Lou, M. — Nebraska Department of Health 30,000
Miscellaneous grants under $5,000 each 19,733

West Central Research and Extension Center
Miscellaneous grants under $5,000 each 6,232

Grand Total $872,938

PROJECTS APPROVED BY THE COMMODITY BOARDS
JULY 1, 1996 - JUNE 30, 1997

Nebraska Wheat Board

The following projects were approved by the Nebraska Wheat Board for July 1, 1996-June 30, 1997 funding:

David Shelton Selecting Nebraska $51,218
Steve Baenziger Wheats for Processing
C. James Peterson Needs of Domestic and
Robert A. Graybosch Foreign Markets

Steve Baenziger Improving Winter Wheat 43,000
David Shelton Varieties for Nebraska
David Baltensperger

C. James Peterson Hard White Wheat 65,000
Steve Baenziger Development for Nebraska
David Shelton
David Baltensperger
Robert Graybosch

John Watkins Lessening the Impact of 16,000
Steve Baenziger Leaf and Stem Rust
David Baltensperger and Wheat Streak Mosaic

Drew Lyon Continuous Dryland 7,000
Cropping System

Lenis Nelson Variety Testing of Public 12,000
Wheat Varieties Developed Outside of
Nebraska

Nebraska Grain Sorghum Board

The following projects were approved by the Nebraska Grain Sorghum Development, Utilization and Marketing Board for July 1, 1996-June 30, 1997:

Paul Nordquist Breeding Sorghum for $9,610
Nebraska Growing Conditions

Max Clegg Sorghum Tolerance 9,600
Thomas Elthon Mechanism to Suboptimal
Dave Andrews Temperatures
Jerry Eastin
<table>
<thead>
<tr>
<th>Name</th>
<th>Project Description</th>
<th>Funding</th>
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<tbody>
<tr>
<td>Jerry Eastin</td>
<td>Testing Medium-Large Seed Size Hybrids for Yield, Seed Size and Grain Fill Duration and Developing a Large-Seeded Population</td>
<td>19,070</td>
</tr>
<tr>
<td>David Andrews</td>
<td>Using New Genetic Diversity to Develop Grain Sorghum Germplasm with Good Adaptation to Eastern Nebraska</td>
<td>19,640</td>
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<tr>
<td>Paul Nordquist</td>
<td></td>
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<tr>
<td>Max Clegg</td>
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<tr>
<td>Charles Francis</td>
<td>Three-Year Grain Sorghum/Soybean/Corn Rotations</td>
<td>2,500</td>
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<tr>
<td>David Nuland</td>
<td>Commercial Evaluation of Pinto Breeding Line 94-4</td>
<td>2,000</td>
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<tr>
<td>Jim Schild</td>
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<tr>
<td>Robert Wilson</td>
<td>Integrating Rotary Hoeing, In-Row Cultivation and Herbicides for Low Cost Weed Control in Dry Edible Beans</td>
<td>2,500</td>
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<tr>
<td>John Smith</td>
<td></td>
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<tr>
<td>Nebraska Corn Board</td>
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<tr>
<td>Nebraska Dry Bean Board</td>
<td>The following projects were approved by the Nebraska Dry Bean Development, Utilization and Marketing Board for July 1, 1996-June 30, 1997 funding:</td>
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<tr>
<td>David Nuland</td>
<td>Evaluation of Dry Bean</td>
<td>$5,400</td>
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<tr>
<td>Dale Lindgren</td>
<td>Cultivars for Disease</td>
<td></td>
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<tr>
<td>James Steadman</td>
<td>Reaction and Performance in Western Nebraska</td>
<td></td>
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<tr>
<td>Dermot Coyne</td>
<td>Breeding Great Northern and Pinto Dry Beans with Multiple Disease Resistance</td>
<td>11,600</td>
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<tr>
<td>James Steadman</td>
<td></td>
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<td>Anne Vidaver</td>
<td></td>
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<tr>
<td>David Nuland</td>
<td>Combined with Improved Seed Quality, Yield and Plant Type</td>
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<tr>
<td>Dale Lindgren</td>
<td></td>
<td></td>
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<tr>
<td>James Steadman</td>
<td>Monitoring Pathogen Variation of Bean Rust in Western Nebraska for Stabilizing Rust Resistance</td>
<td>5,000</td>
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<tr>
<td>Eric Kerr</td>
<td></td>
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<tr>
<td>Dale Lindgren</td>
<td></td>
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<tr>
<td>Daniela O’Keefe</td>
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<tr>
<td>Jim Schild</td>
<td>Evaluation of Fertilizer Nitrogen and Foliar Fungicides on Regrowth and Yield Following Hail</td>
<td>3,200</td>
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<tr>
<td>Dave Nuland</td>
<td></td>
<td></td>
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<tr>
<td>Greg Binford</td>
<td></td>
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<tr>
<td>Eric Kerr</td>
<td></td>
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<tr>
<td>Chuck Hibberd</td>
<td>Increasing the Production Efficiency and Market Value of Dry Edible Beans Through a Collaborative, Integrated Research and Extension Program at the Panhandle Research and Extension Center</td>
<td>20,000</td>
</tr>
<tr>
<td>C. Dean Yonts</td>
<td>Polyacrylamide (PAM) — A Method to Control Irrigation-Induced Soil Erosion</td>
<td>3,750</td>
</tr>
<tr>
<td>Ken Frank</td>
<td>Developing and Updating Prediction Equations for Total and Wet Milling</td>
<td>$7,400</td>
</tr>
<tr>
<td>Blaine Johnson</td>
<td></td>
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<tr>
<td>Steve Mason</td>
<td>Starch in Corn by the Infra Tech Model 1255 NIR-T Grain Analyzer</td>
<td></td>
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<tr>
<td>David Jackson</td>
<td>Small Business Innovative Research Grant Preparation</td>
<td>7,503</td>
</tr>
<tr>
<td>Gerald Biby</td>
<td>Commercialization Research on Polylactic Acid (PLA) Thermoplastics</td>
<td>24,293</td>
</tr>
<tr>
<td>Milford Hanna</td>
<td></td>
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<tr>
<td>Milford Hanna</td>
<td>Developing Industrial Uses Chapter for FFA Textbooks</td>
<td>1,500</td>
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<tr>
<td>Viswas Ghorpade</td>
<td></td>
<td></td>
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<tr>
<td>Gerald Biby</td>
<td></td>
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<tr>
<td>Milford Hanna</td>
<td>Horticulal Uses of Polylactic Acid</td>
<td>18,300</td>
</tr>
<tr>
<td>Jay Fitzgerald</td>
<td></td>
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<tr>
<td>Lois Hamilton</td>
<td>Development of Polylactic Acid Fibers for Textile Fabrics</td>
<td>24,843</td>
</tr>
<tr>
<td>Milford Hanna</td>
<td></td>
<td></td>
</tr>
<tr>
<td>David Jackson</td>
<td>Assessing the Intrinsic Value of Commercial Hybrids Grown in Nebraska</td>
<td>10,020</td>
</tr>
<tr>
<td>Diane Says</td>
<td>Good intentions and good eggs soon spoil unless they soon hatch.</td>
<td></td>
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</tbody>
</table>