

Northeast Research & Extension Center Haskell Agricultural Laboratory 50th Anniversary 1957-2007



**University of Nebraska
Haskell Ag Lab 2007
Composite Photo:
Top—Swine research
Center—Farm Operations
Bottom — HAL office building**



You Are Invited!

*Public Field Day
Tuesday, August 14
8:30 a.m.—4 p.m.*

*Haskell Ag Lab
Concord NE*

August 14 Field Day Marks 50th Anniversary Celebration

The public is invited to celebrate 50 years of University of Nebraska–Lincoln agricultural research in northeast Nebraska on Tuesday, August 14, 2007. Field day activities include tours, information booths, and hands-on activities for youth and adults. See page 8 for a full description of the day’s activities.

The UNL faculty and staff are dedicated to providing the highest quality educational programs that are ecologically sound, economically viable, socially responsible, and scientifically appropriate in the areas of food, agriculture, agribusiness systems, human and natural resources. Our vision is to help shape Nebraska’s future in the 21st century by putting knowledge to work.

We invite you to read this publication to learn about the work of the state’s premier land grant university and how that work has impacted northeast Nebraska agriculture, families, and communities.

History of the Haskell Agricultural Laboratory

On March 1, 1957 the University of Nebraska took possession of a 320-acre tract of land located 1.5 miles east of Concord in Dixon County, donated by Mr. and Mrs. C. D. Haskell of nearby Laurel. The donation marked the end of a citizen campaign initiated as early as the late 1930s to establish an agricultural experiment station and the beginning of university-sponsored research in the northeast corner of the state.

The citizen campaign was led by several area producers and bankers including Rollie Ley of Wayne and Richard Adkins, Sr. of Osmond. In 1943, Nebraska State Senator M. Mischke of Crofton, offered an amendment to LB284 in the Nebraska Legislature

Extension is a Division of the Institute of Agriculture and Natural Resources at the University of Nebraska–Lincoln cooperating with the Counties and the United States Department of Agriculture.

University of Nebraska–Lincoln Extension educational programs abide with the nondiscrimination policies of the University of Nebraska–Lincoln and the United States Department of Agriculture.

to create an experimental station in Knox and Cedar counties. The proposed legislation, however, was not enacted.

In 1954, a group of area visionary farm leaders met and organized the Northeast Nebraska Experimental Farm Association to renew an effort to locate an experimental farm in northeast Nebraska. The Association organized fund drives and sold \$25 memberships. By 1956 about \$40,000 had been raised. At that point Mr. and Mrs. C.D. Haskell of Laurel came forward with a 320-acre land gift valued near \$70,000.

As a condition of the gift, Mr. Haskell asked the Association to establish a fund in the name of Margaret T. Haskell to be used for low- or zero-interest loans to students from northeast Nebraska majoring in agriculture or engineering at the University of Nebraska–Lincoln. That loan fund is still accessible through the NU Foundation.

The initial name was the Northeast Nebraska Experimental Farm which was changed to the Northeast Nebraska Experiment Station in 1958. There have been three additional name changes since that time. The last was in 1997 when the name became the Haskell Agricultural Laboratory (HAL) in honor of the Haskell family.

To learn more about the development of the Haskell Ag Lab, see the timeline and milestones on pages 4-5 of this insert and our webpage at nrec.unl.edu.

Outreach Mission A Core Responsibility of Haskell Ag Lab

The initial concept for the Northeast Experiment Station included the integration of both research and Extension education. The Articles of Incorporation of the Northeast Experimental Farm Association stated the purpose was “...to promote and encourage

the operation of said farm and the dissemination of information for the benefit of citizens and land owners of the State of Nebraska involved in the operation of farming and agricultural land with emphasis on Northeast Nebraska problems...”

The Cooperative Extension Service was established through the 1914 Smith-Lever Act for the purposes of increasing farm productivity and improving rural life. The legislation connected the U.S. Department of Agriculture with the nation’s land-grant university system to provide rural people with research-based informal education in the areas of agriculture, home economics and boys and girls club work.

HAL was the first experiment station to have a joint administrative appointment of an Extension and Experiment Station staff member. The joint administrative model was eventually adopted at all of the Experiment Station sites in Nebraska and in several other states. In 1997 the Northeast District administrative office and specialists without research appointments moved to the new Lifelong Learning Center building on the Northeast Community College campus in Norfolk. Still the Northeast Extension District and the Haskell Ag Lab are one administrative unit, the Northeast Research and Extension Center.

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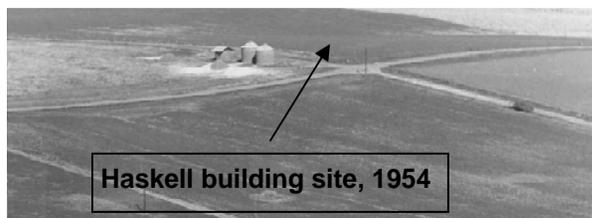
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Haskell building site, 1954



Livestock Research, Education, and Impacts

The Northeast Extension District is home to 30 percent of the state's cow/calf inventory, 35 percent of feedlot cattle and 54 percent of Nebraska swine production. Livestock research has always been an important component of the research effort at the Haskell Ag Lab.

Beef Cattle



University of Nebraska animal science researchers at the Haskell Ag Lab have extensively studied feedlot cattle nutrition since the late 1950s. Beginning in 1958, Walt Tolman investigated the nutritional value of various cattle diets and the value of adding nutritional supplements.

Vernon Krause (1975-1980) continued the work on beef cattle nutrition adding research studies evaluating the utilization of high-moisture corn.

Current beef specialist Dr. Terry Mader (1981-present) has continued research emphasis on beef feedlot nutrition management systems. Mader is currently studying the amounts of dried distillers grains, a byproduct of the rapidly expanding ethanol industry, that can be efficiently utilized by cattle. In addition, Mader has expanded his area of research emphasis to include environmental concerns and is now studying the impact of environmental stress on beef cattle. The ground-breaking environmental stress research is being followed across the U.S. and internationally. He is also participating in a three-year study funded by the Environmental Protection Agency (EPA) tracking hormonal residue from growth promotant systems.

Research on beef cattle nutrition, conducted at HAL, throughout the state at other research and Extension facilities, and across the nation's land-grant university system, is translated into Extension education programming by scientists with Extension responsibilities and by UNL Extension educators. Educational programs are then provided to local producers through workshops, demonstration projects, home-study materials, and online courses. Examples of research-based Extension educational programs include the Beef Basics home study courses, a Feedlot Cattle Shortcourse, Low Cost Cow/Calf Production meetings, and a new home-study course outlining recommendations for feeding distillers grains.

As producers have implemented best management practices recommended through Extension education, they have realized economic benefits through both reduced feeding costs and increased livestock prices. For example, an integrated reproductive management demonstration herd project collected production data for cows and heifers from nine 100 to 650-head herds over a four-year period. The demonstration project documented overall improvements for a 100-head herd resulting in in-

creased annual gross income of \$10,725 and net income of \$7,152. That economic impact applied to the nearly 1.7 million beef cows in the state could increase net income to cow-calf producers by more than \$120 million.

In another example, a county Extension Educator worked with an area co-op to develop a range cube made up of 60 percent distillers grain meal. Ranchers using the distillers grain cube realized a feed cost savings of \$31 per ton and an annual savings of more than \$400,000.

A group of Extension Educators in the Nebraska Sandhills area of the Northeast District have initiated demonstrations with cow/calf producers. The projects include studies on pasture management, forage mineral testing, grazing management practices, grazing corn, and least-cost feed rations.

Dairy Extension Program

In 1962 Don Kubik was hired as an area Dairy Extension agent in the Northeast District. (1962-1984). He offered producers educational programs related to record-keeping and management; buildings and equipment; and nutrition and herd health. In 1984 Kubik was transferred to the UNL campus in Lincoln. He continued to offer dairy Extension programs statewide and used audio tapes to distribute educational information on a variety of topics including mastitis management.

Swine Production and Management

Northeast Nebraska has always had the highest concentration of swine production in the state so it was a natural area of research emphasis for the early Northeast Station.

The first swine specialist, Bob Fritschen (1965-1978) helped establish the Nebraska Pork Producers Association and local pork producer groups. These groups supported a capital fund drive initiated by the Experimental Farm Association to build swine research facilities at HAL in 1967 and to remodel those facilities in 1975. Fritschen was instrumental in the design and subsequent adoption of the enormously popular Nebraska Modified Open Front confinement housing building. This building design was the most popular swine facility in the U.S. in the late 1970s and early 80s.



The Nebraska mono-slope roofed modified open front growing-finishing building was designed to utilize natural ventilation by taking advantage of physical characteristics of air at different temperatures and thermal requirements of pigs.

After Fritschen moved into university administration, Dr. Mike Brumm assumed the swine specialist position at HAL in 1979. Brumm's research focused on swine housing and management performance for the next 27 years. With the addition

of a fully slatted research facility in 1994, Brumm examined the impact of wean-finish versus conventional nursery and grow-finish housing systems, feeder and drinker designs and management systems to reduce variation in growth.



Interior view of 1994 swine research facility at HAL.

Most recently Dr. Don Levis, a long-time UNL Extension swine specialist and reproductive physiologist, joined the HAL staff in December 2006. Levis plans to implement a research project looking at genetic resistance to Porcine Reproductive and Respiratory Syndrome (PRRS). The National Pork Board has identified PRRS as the most economically significant disease affecting the pork industry today, costing U.S. pork producers an estimated \$600 million annually.

Niche Products Production and Marketing

In addition to the research and Extension work supporting the needs of the traditional pork and beef industries, newer niche livestock areas are being researched and information shared with current and potential producers.

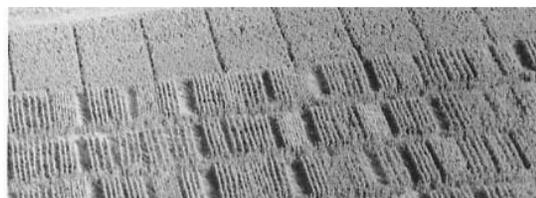
UNL Extension Educator in Knox County, Terry Gompert, has assisted nine grass-based organic dairies with their development and marketing plans. The dairies, representing 500 cows, market their product to Horizon Organic, a national distributor of organic dairy products. In addition, a new Extension educator position focusing on alternative or niche pork production and marketing was established in 2005. Richard Ness works with livestock producers raising pigs for specialty or niche markets including organic, Niman Ranch, and heritage breeds such as Red Wattle.

International Influence

The research and Extension programs at the Haskell Ag Lab extend well beyond Nebraska. HAL scientists have gained international recognition for their expertise. In 1976, Bob Fritschen visited Russia as part of a USDA team examining Soviet pork production systems. In the early 1990s, John Witkowski and a USDA delegation traveled to Mexico to investigate the impact of transgenic technology in hybrid corn varieties on Monarch butterfly populations. More recently, Mike Brumm, Terry Mader, Tom Hunt, David Shelton, Don Levis and Stevan Knezevic have traveled to numerous foreign countries on five continents to conduct research, consult with producers, and make professional presentations. Mader currently holds an adjunct appointment on the faculty of the University of Queensland in Australia where he co-advises graduate students doing research on the impact of environmental stress on beef cattle. Foreign visitors from all corners of the world are frequently seen at Concord interacting with HAL faculty and staff.

Crop Production and Management Early Research Focus at HAL

Applied agronomic research at the Haskell Ag Lab has focused on crops typically grown in northeast Nebraska: corn, soybeans, oats and alfalfa. University researchers have studied the performance of different seed varieties, best practices for managing weeds and insects, and ways to manage soil fertility in a cost effective and environmentally friendly manner.



Aerial photo of HAL test plots Sept. 1969. The use of small test plots allows researchers to investigate multiple variables in replicated field trials.

Soil Fertility

The first superintendent of the Northeast Experiment Station was Dale Flowerday (1957-1964), a recent Ph.D. graduate in agronomy from UNL. In 1965, a soil fertility specialist was added to the staff. Ulverd Alexander's (1965-1969) research focused on sulfur in Nebraska soils. From 1969 to 1983 George Rehm directed the soil fertility program at HAL and added fertilizer recommendations to the sulfur research. Rehm and other UNL researchers started the Soil Test Comparison study in 1974 that brought national recognition and a USDA Unit Award for Superior Service to the UNL Soils Group in 1987. The current soil fertility specialist at the Haskell Ag Lab is Dr. Charles Shapiro (1984-present). Shapiro's research focus is managing soil nitrogen and land application of manure. Shapiro is also leading efforts to establish a certified organic farm on HAL grounds.

Weed Science

In 1966, a weed science specialist joined the HAL staff. Russell Moomaw (1966-1992) focused on weed control in specific crops using different techniques such as banding and weed control in dual-cropping systems. Since 1998, Dr. Stevan Knezevic has directed the weed science program. His research focuses on control of invasive species in cropland, rangeland, pasture and aquatic habitats; glyphosate resistance; and timing of weed control in corn and soybeans. The newest addition to the weed science program is weed control in organic cropping systems.

Insect Pest Management

Dr. John Witkowski was hired as the first HAL entomologist in 1974. The entomology research and Extension program focused on the most prevalent insects in corn and soybeans in northeast Nebraska at that time, the European corn borer and the bean leaf beetle. As technology advanced, so did the entomology program. This included significant contributions to chemigation technology, practice, and the grower education program and the first

European corn borer management software. Witkowski's research on corn borer control in Bt transgenic corn was included in integrated resistance management (IRM) procedures adopted by the EPA and included as part of the IRM label on every Bt corn hybrid seed sack in the United States.

Current entomology specialist is Dr. Tom Hunt. Hunt's research focuses on the insect pests of corn, soybean, and alfalfa. They fall in the general categories of economic threshold development, resistance management, insect pest biology & behavior, and emerging problems. Although the research focuses on issues important to northeast Nebraska, many of the projects have a broader application and impact crop production across the U.S. corn and soybean growing regions. The results of entomology research are funneled directly into Extension programming.



Entomology research technologist Jerry Echtenkamp calibrates a pesticide sprayer. Best practices recommendations suggest producers check sprayer calibration annually.

Some of entomology's most current projects concern the newly introduced soybean aphid which can cause 20 to 30 percent yield loss. Economic thresholds have recently been developed, and research continues, including projects that examine soybean aphid population dynamics, and biological and chemical control.

Future entomology projects also will address changing agronomic practices associated with the ethanol industry and other new-use related issues, the increasing risk of insecticide resistance, and organic crop production.

HAL Crops Research Results In Economic and Environmental Savings

Crop production and management research has served as the basis for best management practices recommendations delivered to ag producers through Extension education and through academic credit courses. Some of the key Extension delivery channels include pesticide and chemigation training, Crop Protection Clinics, Crop Management and Diagnostic Clinics; published variety test results; fertilizer rate recommendations; field scouting; pest treatment threshold calculations; and numerous Extension publications. Other educational venues include online courses bearing continuing education or academic credit for organizations such as certified crop advisors and for graduate students.

The economic and environmental impact on northeast Nebraska has been substantial. Some key impacts include:

- Extension's Pesticide Safety Education Program (PSEP) has been adopted by the state's De-

partment of Agriculture and completion of the course is required for certification and licensing for both private and commercial pesticide applicators. As a result of the PSEP program, two thirds of participants reported behavioral changes in the ways they checked and calibrated their spray equipment and increased use of personal protective equipment. Participants also reported saving an average of \$2,566 as a result of changes made after training.

- In a three-year period, 270 private and public land managers received educational information on controlling purple loosestrife, a rapidly spreading, invasive noxious weed found on more than 18,000 acres of wetlands and streams in Nebraska. As a result of implementing best practices for controlling the spread of purple loosestrife, participants anticipated saving an average of \$20 per acre or more than \$27 million. Participants included agribusiness representatives, county noxious weed superintendents, and Natural Resources District, Fish and Wildlife agencies, Nature Conservancy and Nebraska Games and Parks Commission staff.

- Since 1983, the Northeast Nebraska Integrated Pest Management (IPM) Newsletter has informed growers and crop advisors about potential crop pest problems and growing conditions. In addition to alerting readers to conditions, the weekly newsletter recommends management practices to address anticipated problems. Documented through 2005, readers reported saving more than \$3.4 million by reducing fertilizer rates, reducing irrigation costs, timely weed control, and the use of economic thresholds for insect pest management.

- The CRP to Crops project identified best practices for returning an estimated 1.4 million acres of Nebraska Conservation Reserve Program (CRP) land back to crop production. Soil fertility specialist Dr. Charles Shapiro led a research team of two dozen individuals representing 11 different agencies in conducting the five-year study.



HAL scientists lead an educational tour as part of CRP to Crops research and demonstration project.

- More than 35 agronomic professionals representing 35 Nebraska counties and 1.1 million row crop acres participated in UNL Extension Crop Management Winter training programs in 2005-2006. Topics included advanced level spatial data management, soil floral and fauna, pesticide application technology, managing corn for high yield using hybrid maize software, and crop scout training for pest managers. Participants indicated the value of the knowledge gained or changes to be made had an impact of \$9.25 million dollars.

**Make plans to attend the
HAL 50th Anniversary Field Day
Tuesday, August 14
8:30 a.m. — 4 p.m.
1.5 miles east of Concord, NE**



Child care providers conferences held in South Sioux City, Columbus, Norfolk and other locations across the state provide continuing education to 4,150 Nebraska licensed child care providers.



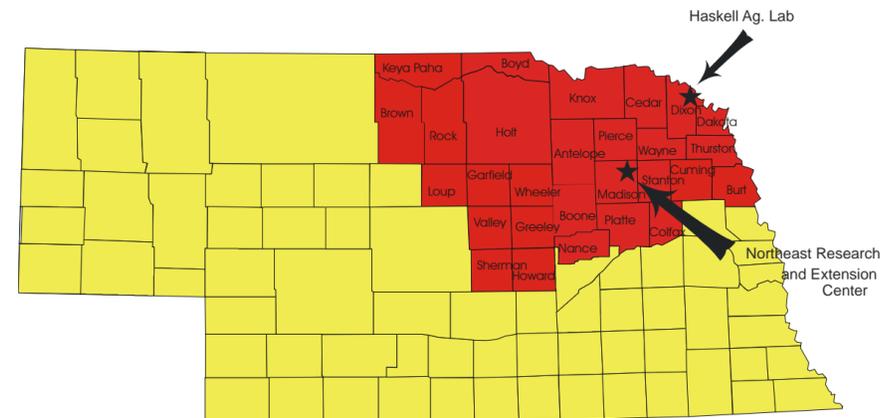
The Nebraska 4-H program serves more than 120,000 youth between the ages of 5-19 and more than 20,000 adult volunteers.



In 2005 alone, cattle producers saved between \$10-27 million by implementing preventative measures to minimize performance and cattle deaths, which were based on environmental stress research conducted at HAL.



More than 4,800 people in 40 states and several foreign countries have used the Beef Basics home-study courses to improve their cow/calf management and save approximately \$15 per head annually.



The Northeast Research and Extension Center serves 28 counties. The district represents 28 percent of the state's land mass, 13 percent of the population, 35 percent of the crop production, 33 percent of the cattle inventory and 54 percent of the hog inventory.



In an effort to battle childhood obesity, Extension educators developed Nutrition Mission, an educational program for youth in grades 4-6 and their families. Based on a space mission theme, the program emphasizes the importance of good nutrition and physical activity.

Using distance education technology, the Northeast Nebraska Para Educator Career Ladder program helps rural school districts "grow their own" pool of diverse teachers to serve the growing English as a Second Language (ESL) population.



1950s

- 1955
 - Northeast Experimental Farm Association established. Raises \$40,000 to establish the Northeast Nebraska Experimental Farm.
- 1956
 - Nebraska legislature appropriates funds to establish the Northeast Nebraska Experimental Farm.
 - C.D. Haskell family of Laurel donates 320-acre tract east of Concord.
 - Dale Flowerday named first superintendent.
- 1957
 - University takes possession of donated land.
- 1958
 - Name changes from Northeast Nebraska Experimental Farm to Northeast Nebraska Experiment Station.
 - Extension forestry program added; Dick Gavitt hired.

1940s

- 1943
 - Bill introduced in Nebraska legislature to establish northeast experiment station. Bill not enacted.

1960s

- 1962
 - Dairy Extension program added; Don Kubik transferred from Pierce County.
- 1963
 - Area home economists hired to serve 5-county area; Myrtle Anderson, Mary (Doyle) Gross, Anna Marie (Kreifels) White.
 - Farm Management Extension program added; Hugo Zimmerman hired.
- 1964
 - First joint Extension/Experiment Station administrative appointment made; Denzil Clegg.

1965

- Swine research/Extension program added; Robert Fritschen hired.
- Soil fertility program added; Ulverd Alexander hired.
- Office building construction completed and building occupied.
- Area Extension programs consolidated in the new office building: Extension forestry program moved from Pierce; Dixon County Extension program moved from Allen; three area home economists, dairy, and farm management program relocated from Wayne.

1966

- Weed science research and Extension program added; Eugene Schwartz hired.

1967

- Cal Ward named Superintendent and Area Supervisor.

1968

- Ag Engineering program added; Wayne Fischer hired.

1969

- 4-H Youth Development specialist added; Roy Stohler hired.

Research at HAL developed recommendations to ease transition for CRP to crops in the late 1990s.



Following a 3-year transition period, 2008 will mark the beginning of formal research trials on a 120-acre certified organic farm



In 2006 UNL researchers confirmed the first glyphosate-resistant weed species in Nebraska — marestail, also known as horseweed.

1970s

- 1970
 - Nutrition education program added; Gladys Stout hired.
- 1972
 - Phil Menke hired as Extension livestock development specialist.
- 1974
 - Entomology program added; John Witkowski hired.
- 1975
 - Second Ag Engineering program added, Irrigation Management. Tom Dorn hired.

1980s

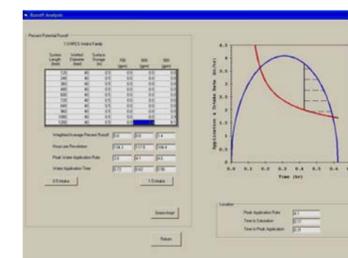
- 1982
 - Experiment Station celebrates 25th Anniversary.
- 1984
 - Experiment Station renamed Northeast Research and Extension Center.
- 1986
 - Don Hudman named District Director.
- 1988
 - Northeast Arboretum established.

1990s

- 1990
 - Human Nutrition program added; Darlene (Martin) Pohlman hired.
- 1992
 - Robert Fritschen named District Director.
- 1993
 - Northeast Extension District expanded to 16 counties. New counties were Boone, Nance, Platte and Colfax.
- 1994
 - Northeast Arboretum becomes part of Nebraska Statewide Arboretum.
- 1997
 - Administrative office moved to Lifelong Learning Center in Norfolk.
 - Extended Education program added; Vicky Jones appointed coordinator.
 - John Witkowski named District Director.
 - New shop building constructed at HAL.
 - NEREC research farm renamed Haskell Agricultural Laboratory.

2000s

- 2001
 - 23 acre conservation buffer established.
 - Northeast Extension District expanded to 28 counties. New counties were Brown, Keya Paha, Rock, Loup, Garfield, Wheeler, Valley, Greeley, Sherman, Howard, Burt, and Cuming.
- 2006
 - 120-acre statewide certified organic farm established, 23 acres at HAL.
 - \$250,000 invested to upgrade farming equipment.
- 2007
 - Dennis Bauer named Interim District Director
 - HAL 50th Anniversary celebrated.



CPNOZZLE has been adopted by the Natural Resources Conservation Service nationwide to document the suitability of sprinkler irrigation package designs receiving federal cost share dollars.



Protecting water quantity and quality is a major research and extension theme for HAL researchers and district Extension educators.

Future

- Pending future funding allocations, the following infrastructure and programs/positions would enhance the research and Extension efforts of the Northeast Research and Extension Center and Haskell Ag Lab:
- Infrastructure:**
- 160 acres for a sandy soils research lab
 - 160 acres additional farm ground near HAL
 - Rebuild swine research facilities
 - Renovate HAL office building to provide handicap accessibility and additional office space
 - Plant handling and analysis laboratory
 - Feedmill and feedlot upgrade
- Staffing:**
- Ag Economics/Farm Management Specialist
 - Nutrition, Health/Physical Activity Specialist
 - Community Development Specialist
 - Focused educator to work with diverse populations
 - Family Life Specialist

Environmental Research and Extension Education

Forestry

Dick Gavit was the first forestry Extension educator in the Northeast District. Hired and located in Pierce County in 1958, the forestry Extension program moved to the Haskell Ag Lab in Concord upon completion of the office building in 1965. Gavit worked with area farmers in the establishment of farmstead and field windbreaks.

Current district forester Steve Rasmussen (1984-present) uses the HAL grounds as a demonstration site for such projects as windbreak renovation, establishing tree plantings as a living snow fence, and other conservation uses for trees. Rasmussen was instrumental in establishing the Northeast Arboretum at HAL. The Northeast Arboretum was initiated in 1988 and currently has over 100 species of trees, shrubs and perennial flowers including a collection of 15 species of oak trees; fruit orchard; living snow fence with a complete collection of trees and shrubs for conservation use; and the growing vines collection on the two cinder block cribs.



The Northeast Arboretum is an affiliate site of the Nebraska State-wide Arboretum and is one of the few sites that has an active membership and regular meet-

ings. Work days, special events, Arbor Day celebrations and membership activities occur at the Northeast Arboretum throughout the year.

Soil Conservation

Soil conservation was one of the primary concerns leading to the creation of the Northeast Experiment Station. The first agricultural engineer added to the HAL staff was Wayne Fischer in 1968. In addition to conducting till planting demonstrations, Mr. Fischer's research on steep backslope terraces compared the effectiveness of tilled waterways, conventional terraces and unterraced land on soil erosion control. In 1975, the ag engineering program was split into two positions, one focusing on soil conservation and the other on irrigation management. Biological Systems Engineering specialist David Shelton's (1978-present) early work studied the soil conservation impact of various tillage practices. With the wide spread adoption of conservation tillage practices in the 1980s, Shelton moved into crop residue management work where he conducted some of the first research in the nation evaluating the influence of tillage systems and crop residue cover on soil erosion control. Shelton's pioneering research evaluated how residue cover was reduced by tillage and manure application equipment.



Erosion control remains a significant issue impacting water quality in area watersheds.

Irrigation Management

In the 1970s irrigation became an important area of research and Extension programming in the Northeast District. Adoption of center pivot systems in the sandy soils of the western portion of the district helped producers shift range land into crop production uses. Today, nearly 23,000 wells irrigate approximately 1.9 million acres in the district.



Irrigation management work in the 1980s concentrated on matching center pivot sprinkler packages to field soils and slope. Work initiated by Tom Dorn evaluated the impact of tillage practices on soil surface runoff. This early work led to additional work by Dr. Bill Kranz who investigated ways to alter soil infiltration characteristics to allow lower pressured sprinklers to be installed without causing surface runoff on the rolling terrain of northeast Nebraska. These two projects and work by colleagues in the Biological Systems Engineering department in Lincoln resulted in criteria for matching sprinkler packages with field conditions.

In the 1990s Kranz led the effort to develop a computer program that compares sprinkler water application patterns with field soils and slope to determine the potential for surface runoff. The result was the CPNOZZLE model that was recently converted from a DOS-based program into a MS Windows-based program. CPNOZZLE is currently being used by the Natural Resources Conservation Service nationwide to document the suitability of sprinkler package designs receiving federal cost share dollars.

The latest addition to the irrigation management research program at Concord is a subsurface drip irrigation system that was installed this summer. Drip tape lines with emitters spaced at 12-inch intervals along the tape and 60-inches between tape lines were installed 12 inches below the soil surface. This system allows water application regardless of climatic conditions and at uniformity much greater than the solid set system that was used previously. The focus of the initial work will be to determine the impact of corn hybrid selection on crop water use and grain yield. Soil water content will be intensively monitored to establish daily water use rates on corn hybrids with different drought tolerance ratings.

Interdisciplinary Research

While each researcher at the Haskell Ag Lab is responsible for his/her own specialty area, much of the work done at HAL is interdisciplinary in nature. Water quantity and quality is an area of concern to citizens across the state and an issue best served by collaborative research. Addressing groundwater nitrate concentration is one example. Feedlot manure, swine lagoon effluent, fertilizer usage, soil conservation practices, and irrigation usage all factor into the amount of nitrates entering the groundwater supply. Researchers work to find ways to reduce nitrate infiltration of the water system in a way that is balanced among multiple goals of production and profit maximization and environmental

protection.

Examples of interdisciplinary projects include:

- Work by Shapiro, Kranz, Brumm and others studied the use of manure applied through center pivots as a source of soil nutrients. Early work in this area concentrated on evaluating alfalfa as a crop for utilizing the nutrients in swine manure. It was found that alfalfa would use up to 250 lbs of nitrogen applied as liquid manure without resulting in water quality problems. Later work determined how much the lagoon effluent needed to be diluted to be applied to corn and soybeans at various reproductive stages. This work led to recommendations adopted as part of Comprehensive Nutrient Management Plans (CNMP) required of confinement animal feeding operations.

- Establishment of a state-wide, 120-acre certified organic farm. With HAL scientists Shapiro and Knezevic as the lead researchers for the organic farming project, scientists at various locations across the state will use certified test plots to examine priority concerns for organic producers, such as weed management, crop varieties and soil fertility. Each site will focus on different aspects of organic production while the network will enable collection of statewide information. This project also includes wildlife researchers who will focus primarily on birds in extensive field studies to develop a Healthy Farm Index as well as Nebraska Indian Community College's Santee site to incorporate Native American wisdom about land use. The Haskell Ag Lab's contribution to the project is a 23-acre certified organic field and research studies in the areas of soil fertility and controlling weeds through flaming.

- Protecting surface water from nonpoint source pollutants. David Shelton is leading a 23-acre riparian buffer research and demonstration project at HAL. The buffer strip, 75 feet on either side of the stream running through the HAL property, is designed to intercept and reduce the amount of agricultural runoff carrying sediment, nutrients and pesticides. Experiments in the buffer are designed to evaluate buffer design and different plant materials, to identify buffer plants as a potential alternative income source, and to evaluate the effectiveness of different plant materials in filtering water carrying nonpoint source pollutants.



A typical warm-season grass mixture used in a filter strip planted between cropland and a stream to protect water quality.

- In the 1980s, a federally funded water and energy conservation project in Holt County found that through the use of scientific irrigation scheduling, producers could save up to two inches of water during the growing season and have a net savings of over \$250 per center pivot. Irrigation management tools included using tensiometers to monitor soil water content and pumping plant adjustment to minimize pumping costs. With the rise in energy costs that have occurred since then, the savings are approaching \$1000 per pivot today.

Youth, Families and Communities

Youth Development

Positive youth development has always been a part of Extension work. 4-H programs were in place in each county Extension office prior to development of the Northeast Experiment Station. In 1969, Roy Stohler transferred to HAL as a half-time Dixon County Extension agent and a half-time area 4-H agent coordinating multi-county youth programs. Today more than 122,000 youth ages 5-19 participate in the Nebraska 4-H program which is supported by more than 20,000 volunteers.

In 1987, Vickie (Genoff) Greve was hired as a 4-H youth development specialist located in the Northeast District. As a specialist, Greve has responsibility for 4-H volunteer recruitment, development, and retention as well as 4-H staff development. Most recently, Greve's work has been in the area of youth protection and risk management and children, youth and families at risk.



Unidentified 4-H photos from HAL archives.

Today's 4-H programs are significantly different from the program offered in 1957. The photos above illustrate the common stereotype of early 4-H: boys participated in livestock projects and girls completed cooking and sewing projects. Today, 4-H is committed to the development of life skills such as setting and following through on goals, communicating effectively, leadership, and group dynamics. However, these skills are taught through projects such as robotics, entrepreneurship, and public speaking. Four national themes of healthy lifestyles, science and technology, developing life skills, and communication reflect today's areas of emphasis in 4-H.

While the 4-H Club program is one of the most visible elements of Extension, it is not the only 4-H delivery method. Others include:

- 4-H School Enrichment programs
- Workshops and conferences such as Character on the Job, Kids College, water festivals, and Youth Leadership Conference
- Camps such as Makin' Money Entrepreneurship Camp and Big Red Academic Camps
- Career development
- After school programs
- Online programs including QuiltQuest and Cyber-Camp

In 1999, more than 1,200 Nebraska 4-H members, alumni and parents were polled as part of a national 4-H impact assessment. Respondents said involvement in 4-H increased their service to others (86%); ability to think on their feet (88%); leadership skills (89%); appreciation of diversity (89%); team member skills (90%); communication skills (91%); and organizational skills (92%). Judging from its past success and continuing commitment to youth, it is clear that 4-H will continue to do what it has done so well for the past decades ... make the best better.

Families

Much of the Extension programming designed to improve rural life fell under the collective category of home economics. Now more commonly known as Family and Consumer Sciences, subjects covered by "home agents" included nutrition, consumer economics, and human development. Three home economists were hired in 1963 to serve Cedar, Dixon, Dakota, Thurston and Wayne Counties (Mary (Doyle) Gross, Anna Marie (Kreifels) White, and Myrtle Anderson). Their offices were moved to the new HAL facility in 1965.

Nutrition Education

Nutrition education was the first specialist-led programmatic emphasis at HAL following agriculture and youth. Through the federally funded nutrition education program (NEP), Gladys Stout offered focused nutrition programs from HAL beginning in 1970. The federally funded NEP program continues to provide health and nutrition information for culturally diverse, limited-resource audiences in select locations today. Four educators located in Cuming, Dakota, Madison and Platte counties provide NEP programming in the Northeast District.

Close to 100,000 Nebraska families have participated in Extension nutrition education programs. Program evaluations found 88 percent of participants reported spending their food dollars more wisely; nearly 50 percent reported making food choices using nutrition information on food labels; and a third stated they ran out of food before the end of the month less often than before they participated in the training program.

Darlene Pohlman (1990-2005) joined the HAL staff as a university-funded human nutrition specialist. Her statewide focus was on child nutrition. She pioneered the district's first home-study course offered on a "for sale" basis using digital technology. Initially distributed on compact disk and later via the Internet, the Independent Study Course for Child Caregivers provided continuing education credits for licensed caregivers. More than 500 caregivers from nearly every state have completed one or more training modules from the program.



Margaret Ann (Stahly) Hansen (home agent 1965-1968) leads a cooking lesson in the HAL demonstration kitchen.

Family and Consumer Sciences

Extension educators deliver educational programs in the areas of food safety, health and wellness education, and building strong families. Some key programs impacts include:

- In 2006, over 400 northeast Nebraskans participated in Extension diabetes education programs and learned more about self-managing their disease. The program resulted in medical savings estimated at \$900 per person or more than \$350,000 annually.

- ServSafe classes educate 150 restaurant and institutional foodservice managers annually who in turn educate an average of 1500 personnel about food safety. With Nebraskans eating half of their meals away from home, trained foodservice personnel can reduce the risk of food borne illnesses which cost consumers millions of dollars each year.

- Pay Down Debt, a web-based tool to help individuals manage a budget, use credit wisely, and save for retirement, has been used by more than 3,000 people. Eighty-two percent of participants reported they planned to use the site to help reduce debt and 75 percent expected to repay debt in excess of \$18,000.

- More than 1,000 divorcing northeast Nebraskans have participated in the court-mandated Parents Forever program. Parents Forever helps couples improve communication, keep children out of the middle of disputes and work out a parenting plan for their child. The courts report couples who are trained in Parents Forever spend less time and money in court litigation over custody issues.

Community Development

Community sustainability is dependent on having adequate levels of, and interaction between, multiple types of capital. Northeast District Extension staff work to support rural communities by offering educational programs to enhance human, social, and financial capital. Key programs include:

- **Technology Education**—Extension has increased its focus on technology education to help clientele use the Internet to make wise purchases and investments and to help businesses compete in a world of global customers. Some technology programs have included Master Navigator, Farming With Computer Technology, and E-Commerce.
- **Leadership Development**—More than 150 people in six counties have participated in Leadership Plenty training. Participants reported finding social networks that empowered them personally and further invigorated them to instigate community action. Additionally, nearly 1,000 high school students participated in a youth leadership program learning how to plan and implement a community improvement project.
- **Community Planning**—Extension educators work with communities to identify assets, develop strategic plans, and engage youth in community leadership. For example a UNL Extension Educator in Antelope County facilitated community mobilization that resulted in development of a \$30 million ethanol plant and UNL Extension in Holt County provided information and education to help facilitate the approval of a new 45,000-head capacity feed yard which will employ 45 individuals resulting in over \$1.2 million payroll.
- **Education**—Extension staff have been involved with a number of programs which impact the formal educational level of citizens in the Northeast District. Some examples include an after school tutoring program in which more than 85 percent of participants reported learning new skills and completing homework; career exploration and campus tours to encourage attendance at UNL; more than 400 northeast Nebraskans have enrolled in UNL distance education courses; and the educational achievement of English Language Learners has been impacted by offering English and GED classes for adults, increasing the number of ESL-endorsed teachers in high-need school districts, and increasing the number of culturally and linguistically diverse certified elementary teachers.



**Celebrating 50 Years ...
Of Pioneering New Frontiers in Northeast Nebraska**



University of Nebraska-Lincoln
Northeast Research and Extension Center
Haskell Agricultural Laboratory

Public Field Day
Tuesday, August 14, 2007
8:30 a.m. – 4 p.m.

**All Activities Are Free
and Open to the Public!**
Something for Everyone
Partial list only

Schedule of Events	
Morning	
8:30	Registration
9:00	Tours
9 - 11:30	Booths and Activities
Lunch/Program	
11:30	Prime Rib Sandwich Lunch
12:30	Program
Afternoon	
1:45	Tours
1:30 - 4	Booths and Activities



UNL Haskell Ag Lab
57905 866 Road
Concord, NE 68728
1.5 miles east of Concord
(402) 584-2261

Extension is a Division of the Institute of Agriculture and Natural Resources at the University of Nebraska-Lincoln cooperating with the Counties and the United States Department of Agriculture.

University of Nebraska-Lincoln Extension educational programs abide with the nondiscrimination policies of the University of Nebraska-Lincoln and the United States Department of Agriculture.



Study: IANR is 'Primary Engine' for Nebraska Economy

LINCOLN, Neb. — The Institute of Agriculture and Natural Resources at the University of Nebraska-Lincoln annually returns at least \$15 in benefits to Nebraskans for every dollar of state support, making it "a primary engine for economic and social sustainability," a new study says.

The study, by Battelle of Columbus, Ohio, was commissioned to capture the benefits of IANR's teaching, research and Extension work in Nebraska and to provide solid guidance for setting future priorities. Results are published in a new "At Work for Nebraska" study.

The "At Work for Nebraska" report notes the increasing importance of agriculture in Nebraska, citing a recent finding by the Nebraska Policy Institute that agriculture and agribusiness account for nearly one-third of the state's jobs – up from 25 percent in 1990. As the university's primary arm dedicated to "sustaining, growing and improving agriculture and agriculture-related enterprise in the state," IANR "is key to the long term competitive sustainability of Nebraska's high standard of living," Battelle said in the report's executive summary.

"Much of what is required for 21st century success ... is directly addressed through the mission and operations of IANR," the study says.

IANR was created by the Nebraska Legislature in 1973 as a defined component of the University of Nebraska. It includes the College of Agricultural Sciences and Natural Resources, the Agricultural Research Division and UNL Extension. Headquartered on UNL's East Campus, IANR has Extension offices in 83 of Nebraska's 93 counties, research and Extension centers in Norfolk (parent site of the Haskell Ag Lab), Lincoln, North Platte and Scottsbluff and the Agricultural Research and Development Center near Mead.

Battelle did not investigate the economic impact of every research and Extension program at IANR – hundreds are under way at any one time – but it did delve into a few projects, focusing on IANR's mission areas of agriculture, food production and natural resource systems; nutrition, health and food safety; environmental sustainability; community and entrepreneurial development; building strong families; and youth development.

The "At Work for Nebraska" report captures the economic impact of IANR programs. It points out that the state's investment in IANR pays off many times over – conservatively estimated at 15 to 1. For example, IANR received \$71.6 million in state funds in the 2005 fiscal year. Here's what taxpayers got in return:

– More than \$750 million in annual benefits from the institute's research, teaching and extension activities. That's measured in improved economic output and savings – in other words, real money in real Nebraskans' pockets.

– About \$338 million in annual benefits through the economic ripple effects of IANR doing business in Nebraska – paying employees, buying products and supplies and having that money multiply throughout the state's economy.

According to the study, "IANR has been, is and will continue to be a primary engine for economic and social sustainability and growth in the state of Nebraska.

"Based on the impact examples examined by Battelle, it is the conclusion of this study that the state of Nebraska is receiving an excellent return on its investment in IANR," the study reported.

The complete report is available online atworkfornebraska.unl.edu.

Excerpted from a February 16, 2007 IANR News article by Dan Moser.

**You've always said someday
you'll give something back.
How about now?**

The Haskell Ag Lab needs your support for:

- Swine research
- Fellowships for research
- Funds for technology upgrades
- Funds for further expansion

Please contact Ann Bruntz
IANR Director of Development
402-458-1176
abruntz@nufoundation.org



**Thank You for Sponsoring
the HAL 50th Anniversary Field Day!**

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