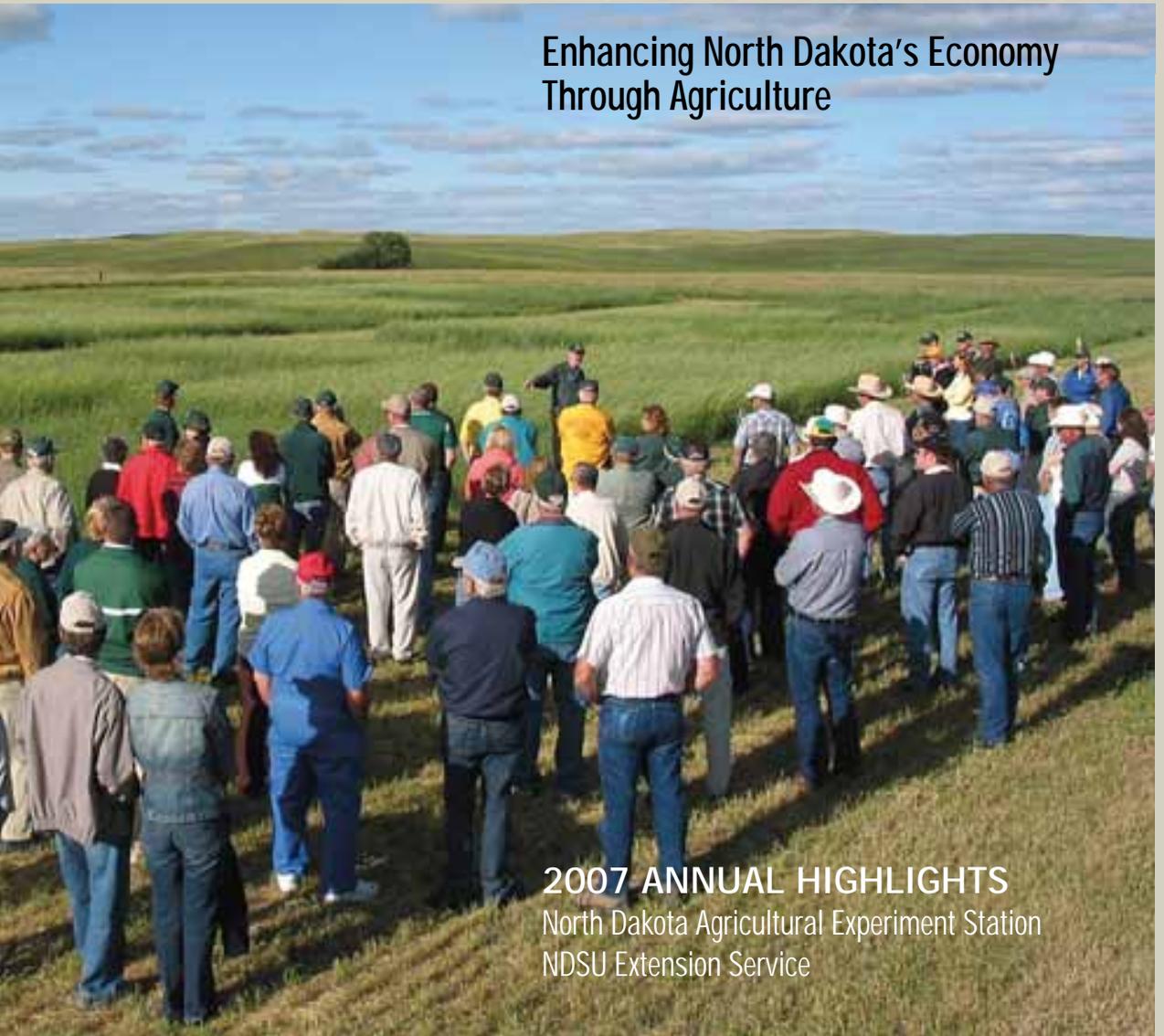


Grow 21:

Enhancing North Dakota's Economy
Through Agriculture



2007 ANNUAL HIGHLIGHTS
North Dakota Agricultural Experiment Station
NDSU Extension Service

NDSU
North Dakota State University



This publication was produced by NDSU Agriculture Communication.
Writers: Richard Mattern, Ellen Crawford, Mary-Anne Fiebig
Graphic Designer: Deb Tanner
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Duane Hauck, D.C. Coston and Ken Grafton

Grow 21: Enhancing North Dakota's Economy Through Agriculture

Although agriculture and rural communities will face serious challenges in the coming years, agriculture will remain an important underpinning of North Dakota's economy.

However, finding and supporting additional economic opportunities in rural areas that build on the land's productivity and the creativity of farmers and ranchers is vital for the future of agriculture in North Dakota.

We understand the focus of this Grow 21 effort must be on communities because the success of farms, ranches, agribusinesses and communities is intertwined. Successful farms and ranches lead to strong agribusinesses, which, in turn, support healthy communities.

A healthy community has these three essential attributes: a diverse, resilient economy; effective, efficient infrastructure; and leadership.

The North Dakota Agricultural Experiment Station and NDSU Extension Service are leaders in researching new economic opportunities and providing educational and other services that citizens need to take advantage of those opportunities.

This publication provides a glimpse of our efforts in the past year. It also demonstrates our commitment to continuing to provide the technology and knowledge to support the efforts of farmers, ranchers, agribusinesses, families and communities.

Grow 21

Diverse,

Nearly

90 percent

of North Dakota's
land area is in
farms and ranches

North Dakota is

No. 1

in honey production
in the U.S.

resilient economy

Continuing to enhance agricultural production will be essential, but not sufficient. Communities need multiple sources of income to provide a buffer when one sector's economy is down. We are well-positioned to help uncover opportunities to add value to raw products, explore new enterprises, discover additional markets, develop renewable energy and byproducts, manufacture new devices for agricultural uses and find additional uses for agricultural land, such as tourism and recreation.

NDSU released

7

new crop varieties
in 2007

North Dakota cows
produce

1 billion

glasses of milk
each year





GLENN WHEAT

good for producers/end users

In 1997, fusarium head blight (scab) cost North Dakota's farm economy \$176 million. It also was in 1997 that a cultivar was recognized by Richard Frohberg, NDSU hard red spring wheat breeder at that time, as having good scab resistance. That cultivar became Glenn, which today is the leading hard red spring wheat variety planted in North Dakota. Producers planted more than 1.3 million acres to Glenn in 2007.

However, the road to finding a cultivar with good scab resistance and releasing it to producers is a long and bumpy one. From that start in 1997, Frohberg and Mohamed Mergoum, current NDSU hard red spring wheat breeder, had to find, develop and improve other characteristics, such as good milling and baking qualities and yield. It took from 1997 through 2005 to finish the process.

"What Glenn and some of its predecessors, such as Alsen and Steele-ND, did was restore producer confidence in growing hard red spring wheat instead of other crop alternatives," says Neal Fisher, North Dakota State Wheat Commission director. "Glenn and others were very accepted across the region, particularly by producers in northern-tier counties that were most susceptible to scab, at least at that time."

"Scab-resistant varieties, in combination with fungicides, have made a difference," says Fran Leiphon, a producer near Crary. "I think we've turned the corner a little bit, but research on newer and better varieties needs to continue, especially through NDSU. Glenn is a good example of a variety that is good for the producers and the end users."

"In Glenn, we have a variety that does what Alsen does in fighting scab, but also has good yields and is highly regarded by millers, processors and bakers," Fisher says.

The Wheat Quality Council is an organization that advocates the development of cultivars that enhance end-use wheat quality. Many organizations, such as the American Bakers Association, Biscuit and Cracker Manufacturers Association and American Society of Bakery Engineers, cooperate with the WQC.

As an example of how well Glenn has been received by the WQC, the organization is using Glenn as a benchmark that other wheat varieties have to match.

"Glenn, with its scab tolerance, yield ability and acceptance by end users, such as bakers, is a real home run for North Dakota producers," Fisher says.

Glenn was named for Glenn Smith, the second of only four hard red spring wheat breeders that NDSU has had in almost 90 years. Smith also was the first graduate school dean of the North Dakota Agricultural College, now NDSU.

For more information:

Mohamed Mergoum, (701) 231-8478, mohamed.mergoum@ndsu.edu

Neal Fisher, (701) 328-5111, ndwheat@ndwheat.com



Livestock Industry **Expanding**

Efforts by the North Dakota Agricultural Experiment Station and NDSU Extension Service to expand North Dakota's livestock industry are paying off. The number of feedlot permits the state issued nearly tripled in the last five years, from 18 in 2002 to 52 in 2006, and 83 facilities expanded the number of animals they handle. This represents an increase of about 210,000 animals, including 67,000 swine, 50,000 beef cattle, 6,700 dairy cattle and 500 sheep.

Three out-of-state dairy operations relocated in North Dakota, and a South Dakota-based farmer/investor-owned dairy network took over a closed dairy. NDSU also is involved in plans to build a 5,000-sow farrow/nursery operation near Bottineau that is expected to create 18 jobs and a 5,000-sow farrowing operation north of Edmore, as well as training producers in the Devils Lake area on finishing hogs in low-impact hoop facilities.

For more information: Ken Grafton, (701) 231-7655, k.grafton@ndsu.edu
 Duane Hauck, (701) 231-8944, duane.hauck@ndsu.edu



Building Profits\$ Through New Crop Varieties

The North Dakota Agricultural Experiment Station, Research Extension Centers across the state, Main Experiment Station in Fargo and various NDSU departments continue to work collaboratively to develop new crop varieties.

Releases this year included:

- Faller hard red spring wheat
- Sheyenne soybean
- RG7008RR Roundup Ready soybean
- Pinnacle two-row barley
- Lariat pinto bean
- Stampede pinto bean
- Riveland lentil

Three new corn varieties — NDBSK(HI-M)C3, NDBS11(FR-M)C3 and NDBS1011 — were approved for release and six elite inbred lines — ND2001, ND2002, ND2003, ND2004, ND2005 and ND2006 — also were released.

"Developing and releasing a new variety gives the state's producers more opportunities to compete in a global market," says Al Schneider, NDSU Department of Plant Sciences chair. "Whether it's to fight disease or various weather conditions, or improve yields, developing new varieties will improve efficiency and benefit the state's economy."

For more information: Al Schneider, (701) 231-8137, albert.schneider@ndsu.edu





New Greenhouse Facility Becoming a Reality

Plans have been finalized for a new greenhouse facility at NDSU. The complex will be an addition to the greenhouse facilities on campus and will provide a state-of-the-art facility to advance research capabilities and enhance student training and education.

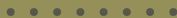
The North Dakota Legislature provided \$9 million in state funding with a mandate for NDSU to raise an additional \$5 million to complete Phase 1. This phase includes full support and service areas for more than 30 greenhouse research rooms. As funds permit, 15 to 30 research rooms will be added in Phase 2.

The overall plan is to complete a \$25 million to \$30 million facility that will serve scientists, students and stakeholders well into the future.

“This additional greenhouse facility is essential to maximize North Dakota’s future potential in agriculture and be at the forefront of innovative research and technological research expertise,” says Ken Grafton, director of the North Dakota Agricultural Experiment Station and dean of the NDSU College of Agriculture, Food Systems, and Natural Resources.

The facility will be on 18th Street North on the west side of campus and opposite the Student Living Learning Center. Groundbreaking is anticipated as early as May 2008.

For more information:
Ken Grafton, (701) 231-7655
k.grafton@ndsu.edu



Governor Signs Funding Bills for NDSU

Governor John Hoeven visited NDSU in April to sign the bill that increased the general fund appropriation for NDSU agriculture. The governor also signed several additional bills that create a statewide strategy for renewable energy. Several area legislators joined Hoeven at the ceremony. The total two-year agriculture budget for NDSU is \$186 million.



Canola:

Fueling the Future

NDSU's Oilseed Development Center of Excellence has made great strides toward its goals of identifying improved canola genetics and expanding canola production and processing.

The center has leveraged \$11 million in private-sector investments from \$2 million in state funding and developed partnerships with Monsanto Corp. and Archer Daniels Midland Co. The center also has created a multidisciplinary and multicollge research team to evaluate existing and new canola varieties. As a result, the center has:

- Launched a canola breeding program at NDSU
- Improved technology at the NDSU Pilot Plant lab
- Received several hundred canola germplasm lines from Monsanto for testing, plus the company's commitment to furnish additional lines
- Planted and evaluated about 200 new canola lines
- Identified germplasm lines that can increase oil content by 5 percent to 7 percent and oil content per area planted by 16 percent to 18 percent
- Learned that canola can be straight combined
- Determined that even 100 percent canola-based biodiesel works well in diesel-powered farm tractors
- Developed a plan to advance and release new canola lines in three to four years

For more information:

Bill Wilson, (701) 231-7472, william.wilson@ndsu.edu



Beefing Up Cattle Diets

NDSU Animal Science researchers have determined that corn condensed distillers solubles (CCDS), an ethanol byproduct, can be used as a protein supplement in forage-based beef cattle diets. Their study shows CCDS increased dry-matter intake and fiber digestion of low-quality hay when the byproduct was fed with the hay as a totally mixed ration or the CCDS contained higher levels of nutrients. Cow-calf producers are interested in CCDS because the ethanol industry is expanding, which is making byproducts available.

For more information: Joel Caton, (701) 231-7653, joel.caton@ndsu.edu

REDUCING Crop Disease Losses

Research at the NDSU Langdon Research Extension Center is focusing on improving fungicide applications because crop diseases, such as fusarium head blight (scab), cost North Dakota producers millions of dollars each year. New crop varieties are released by NDSU to build resistance, but total genetic resistance probably never will be available, so other management strategies need to be used, says Scott Halley, NDSU Langdon Research Extension Center crop protection specialist.

“In the case of scab, the use of fungicides has reduced the impacts of the disease in the range of 50 percent to 60 percent,” Halley says. “One of our goals is to improve on that percentage by doing a better job of applying fungicide to the grain head. We have identified parameters for use with hydraulic sprayers to maximize efficiency. Now we are evaluating the application parameters of air delivery sprayers.”

Air delivery spraying eliminates the effects of the wind. Wind will determine which side of the grain head receives the fungicide unless the air speed of the delivery system is greater than the wind speed, which is what an air delivery system can do.

“We are conducting studies on barley and hard red spring wheat to find the most effective parameters,” Halley says. “Our research evaluates coverage using a dye, visual disease severity, yield, test weight and toxin level by each of the parameters. By maximizing the efficiency of a fungicide application, growers will be able to maximize their investment in fungicide and increase crop production.”

For more information:

Scott Halley, (701) 256-2582, scott.halley@ndsu.edu





Turning Grass into ENERGY

Preliminary data from a study to evaluate perennial grasses for biofuel production suggest warm-season grasses, such as switchgrass, grow well in areas with adequate moisture. However, cool-season grasses, such as tall and intermediate wheatgrass, appear to grow better in years or areas with limited moisture.

Researchers planted seven perennial grass species alone and in combinations in plots at the NDSU Central Grasslands (Streeter), Hettinger, North Central (Minot), Williston and Carrington Research Extension Centers in 2006. Irrigated Williston plots and dryland Carrington plots were the top producers in 2007, yielding more than 6 tons of switchgrass or switchgrass mixed with Altai wildrye.

For more information:
Paul Nyren, (701) 424-3606, p.nyren@ndsu.edu



Pulse Crop Breeding Program to Begin

NDSU will establish a breeding program to meet the rising demand for new varieties of pulse crops, such as peas, beans, chickpeas and lentils. The nation's only other pulse crop breeding program is at the USDA's Agricultural Research Service facility in Pullman, Wash.

North Dakota produces about 75 percent of the nation's dry-pea crop and is the No. 1 lentil grower.

"Producers are excited about the NDSU breeding program because varieties will be developed that are specific to our region," says Larry White, Northern Pulse Growers Association marketing director.

NDSU Carrington Research Extension Center studies indicate peas are a good alternative in the ration mix for cattle.

"Producers are also finding that pulse crops are good additions to their crop rotations because pulse crops can break disease and weed cycles in cereal grains," White says. "Pulse crops are nitrogen building and do not need fertilizing, which makes them even more valuable mixed in cereal grain rotations, and also are good for the environment."

For more information:
Al Schneider, (701) 231-8137, albert.schneider@ndsu.edu
Larry White, (701) 222-0128, white@northernpulse.com



Value of Fire

Western North Dakota's fire history is helping today's land managers decide how often to burn the combined forest/rangeland. NDSU Extension Service forester Joe Zeleznik and NDSU graduate student Jesse Beckers spent the last two years studying fire in Badlands ponderosa pines. They used tree rings to calculate and date fire damage and determine how often fires occurred before and after settlement began in the late 1800s.

They discovered presettlement fires occurred every 13 years, on average, while during the 20th century, the interval between fires was nearly five times longer. They also found modern fires tend to be harder to control because the fuels – needles, grass, twigs and small branches – have accumulated in large quantities. This information helps shape recommendations on how often land managers should ignite controlled fires and the size of the area to burn to maintain a balance between rangeland and valuable pine forest.

For more information: Joe Zeleznik
(701) 231-8143, joseph.zeleznik@ndsu.edu





Field Days:

A Learning Experience

More than 3,600 people attended the NDSU Research Extension Centers' summer 2007 field day programs.

Many of them also attended NDSU President Joseph Chapman's "Conversations Across the Land" tour, which often was held in conjunction with field days.

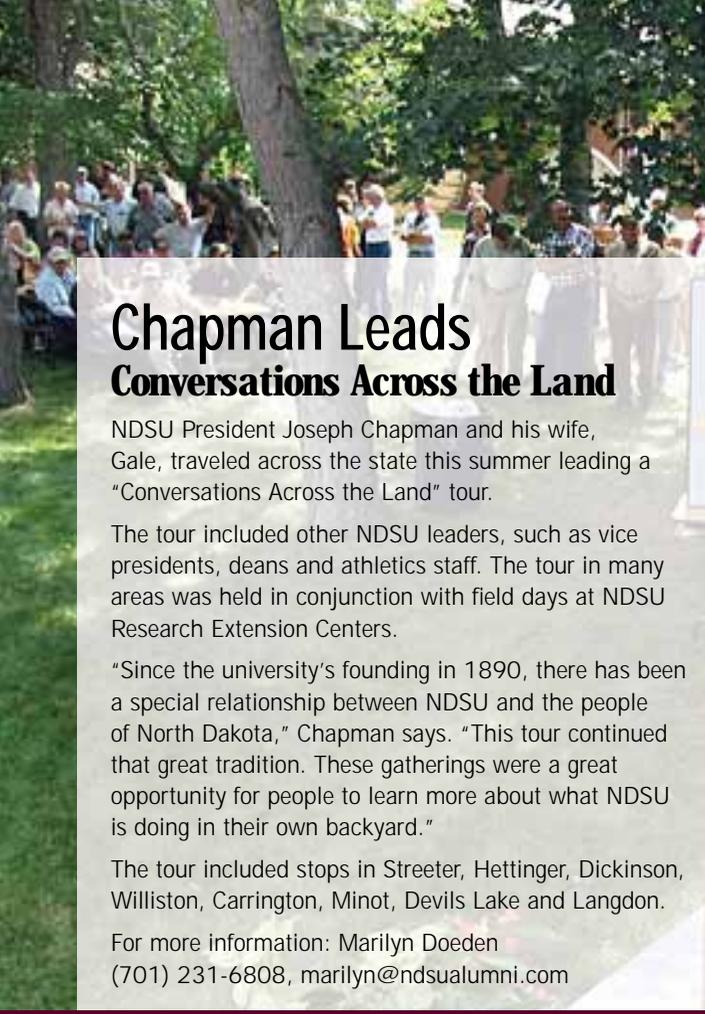
Field days provided opportunities for attendees to:

- Review research on the development of crops for biofuel production
- Take tours focusing on new herbicides and application technology, small-grain crop production and new crop varieties
- Learn about nutrient management, water quality, new crop insect pests and diseases, the role of global positioning system technology in agriculture, pasture stocking rates, beef production, cattle identification and the growing ethanol industry's impact on agriculture

Those attending also helped center staff and university officials dedicate the new agronomy research laboratory and greenhouse at the North Central Research Extension Center near Minot and the office addition at the Central Grasslands Research Extension Center near Streeter.

For more information: Ken Grafton
(701) 231-7655, k.grafton@ndsu.edu





Chapman Leads Conversations Across the Land

NDSU President Joseph Chapman and his wife, Gale, traveled across the state this summer leading a "Conversations Across the Land" tour.

The tour included other NDSU leaders, such as vice presidents, deans and athletics staff. The tour in many areas was held in conjunction with field days at NDSU Research Extension Centers.

"Since the university's founding in 1890, there has been a special relationship between NDSU and the people of North Dakota," Chapman says. "This tour continued that great tradition. These gatherings were a great opportunity for people to learn more about what NDSU is doing in their own backyard."

The tour included stops in Streeeter, Hettinger, Dickinson, Williston, Carrington, Minot, Devils Lake and Langdon.

For more information: Marilyn Doeden
(701) 231-6808, marilyn@ndsualumni.com



Adding Value to N.D. Beef

NDSU's Beef Systems Center of Excellence is putting the university on the cutting edge of meat science research and helping add value to the cattle produced in North Dakota.

The center:

- Helped generate \$8.8 million in private equity and financing toward developing a coordinated beef processing industry in the state
- Partnered with North Dakota Natural Beef LLC, which in summer 2007 broke ground on a plant in Fargo to process and package beef and bison meat raised without the use of antibiotics and growth-promoting implants
- Enhanced NDSU's meats laboratory with the addition of three meat scientists: Robert Maddock, Eric Berg and Kasey Maddock Carlin



NDSU will lease space in the plant for a meat lab where university scientists can conduct research, plus space for related Extension programming, such as short courses on carcass traits or retail meat cuts.

For more information:

Greg Lardy, (701) 231-7660, gregory.lardy@ndsu.edu
www.ag.ndsu.edu/research/BeefSystemsCE.htm

Commercializing Biobased Composites

Someday your vehicle could have body parts made of wheat straw.

The NDSU/MBI Biomaterials Initiative is working to develop and commercialize technologies to produce material and fuels from biomass feedstocks, specifically wheat straw. The initiative is a partnership between NDSU and MBI International of Lansing, Mich. Initial efforts have focused on technology to produce a biobased nanocomposite material that could substitute for fiberglass and petroleum-based composites in the auto industry, for example, or recreation, where biobased materials could be used to build a canoe.

Next-generation biorefineries using wheat straw as a feedstock will produce cellulosic ethanol and nanofibers (very small fibers) and have the potential to develop other high-value products. The cellulose nanofibers would be combined with biobased resins to make biocomposites. Nanofibers have the potential to make biocomposite materials twice as strong as their petroleum-based counterparts.

A 50 million-gallon biorefinery would make an estimated annual contribution to North Dakota's economy of more than \$50 million, most of which would be in-state payments to farmers, custom balers and transportation firms. Adding nanofiber production to a wheat straw ethanol plant adds an estimated \$770,000 in direct economic impact, according to a study by Larry Leistritz and his colleagues in the NDSU Agribusiness and Applied Economics Department. The construction of a pilot plant is the next step in the commercialization process.

In related research, Chad Ulven, assistant professor in Mechanical Engineering and Applied Mechanics, is working with composites made with biobased polymers and natural fibers. Continuous flax fiber is used to strengthen epoxy plastic.

For more information:

Larry F. Leistritz, (701) 231-7455, f.leistritz@ndsu.edu
Nancy Hodur, (701) 231-7357, nancy.hodur@ndsu.edu
Chad Ulven, (701) 231-5641, chad.ulven@ndsu.edu





Center to Coordinate Bio-related Activities

The North Dakota State Board of Higher Education approved the NDSU Bio Energy and Product Innovation Center in November 2007.

The center is the result of the NDSU Biomass and Bioproducts Initiative activities during 2007. Its purpose is to serve as a single site within NDSU to develop, coordinate and promote the development of bio-related activities at NDSU and in North Dakota.

The multidisciplinary and multidepartment center will be headed by two co-directors, Ken Hellevang, a professor in the Department of Agricultural and Biosystems Engineering, and David Saxowsky, an associate professor in the Department of Agribusiness and Applied Economics. They were instrumental in the development of the center.

For more information:

Ken Hellevang, (701) 231-7243, kenneth.hellevang@ndsu.edu
David Saxowsky, (701) 231-7470, david.saxowsky@ndsu.edu



Ensuring Renewable Energy Development

A newly organized consortium of 12 north-central states has unveiled its plans to coordinate policy and research efforts to ensure the region plays an even greater role in the production and distribution of renewable energy and biofuels.

The North Central Bioeconomy Consortium (NCBEC) is a collaborative effort of the directors of the departments of agriculture, Extension Services and university Agricultural Experiment Stations in North Dakota, Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, Ohio, South Dakota and Wisconsin.

"We are committed to making sure the north-central region leads the way in renewable energy while protecting our natural resources and boosting our rural economies," says Roger Johnson, North Dakota agriculture commissioner.

"The NDSU Extension Service has a long history of working with local communities and producers on adopting new, research-based technologies so that all will benefit," says Duane Hauck, NDSU Extension Service director. "This role becomes increasingly important for today's emerging bioeconomy."

"Research conducted at NDSU in collaboration with other land-grant institutions in the north-central region that focuses on the emerging bioeconomy will have tremendous impact on the state and region," says Ken Grafton, North Dakota Agricultural Experiment Station director. "Our long-term commitment to improving the state's economy through agricultural research will transcend from traditional food production to include fuel and other bioproducts. This effort will ultimately enhance communities throughout the state."

For more information: Duane Hauck, (701) 231-8944, duane.hauck@ndsu.edu
Ken Grafton, (701) 231-7655, k.grafton@ndsu.edu



Changing Byproducts into “Superfeeds”

Processing plants across North Dakota provide an abundant feed supply of coproducts, such as wheat midds, distillers grains, malt sprouts, corn gluten, beet pulp, oilseed meal and peas. But could a little research make them better?

“We feel these feeds can be improved by combining coproducts and grains into pellets that would have superior physical and nutritional characteristics,” says Vern Anderson, NDSU Carrington Research Extension Center animal scientist.

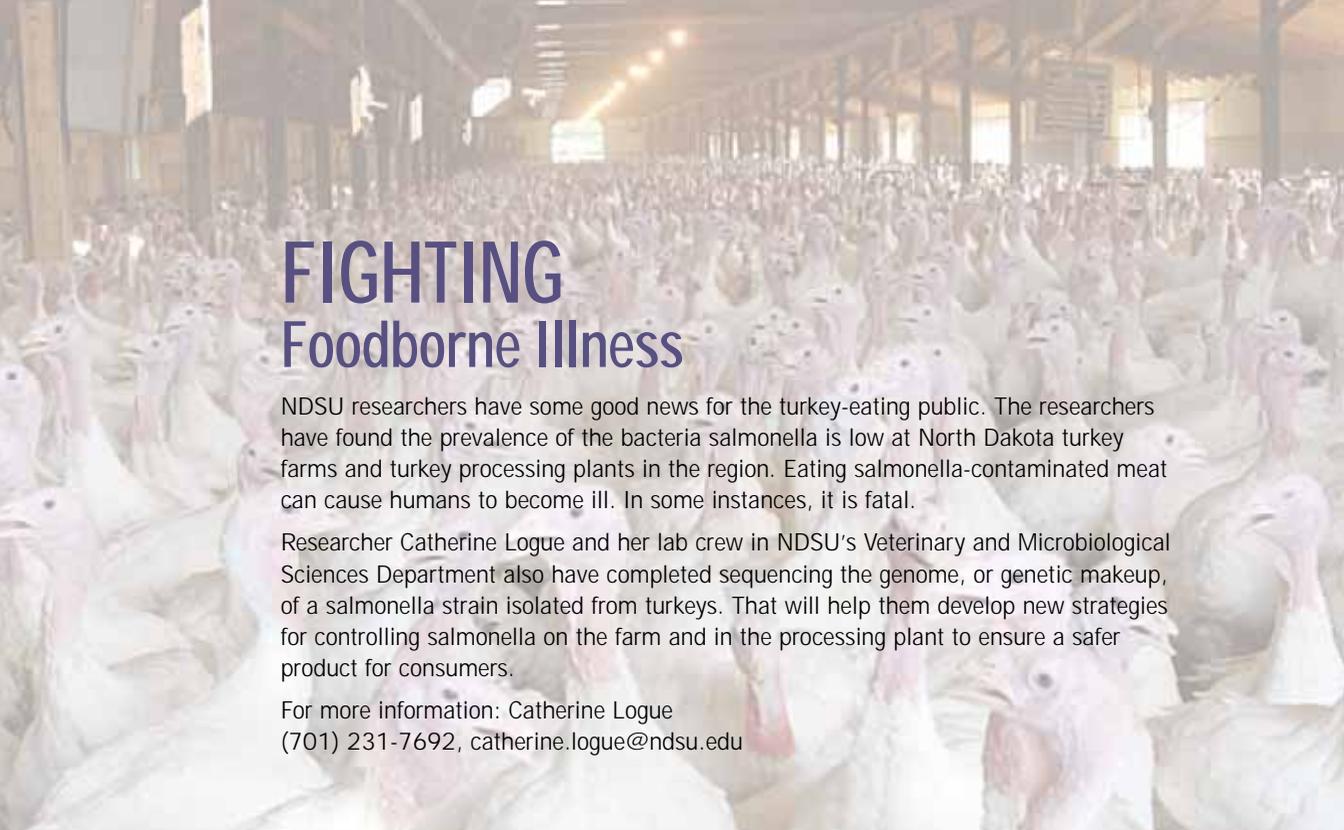
Anderson, along with other scientists at the Carrington REC; Kim Koch, Northern Crops Institute Feed Production Center manager; and Tim Dodd, Dakota Growers Pasta manager, started a project to create “superfeeds.” They started with two combinations of pelleted durum wheat midds, distillers grains and field peas.

Steers fed at the Carrington REC to market weight using the two formulations had excellent weight gain and improved carcass value.

Anderson says pelleted formulations with multiple coproducts and peas have many advantages: a more balanced nutrition, increased palatability and safety, longer shelf life, improved handling and logistics, fewer ingredients to store and simplified feeding.

“We will continue to explore various formulations and marketing opportunities for the growing coproducts industry, which also will benefit the livestock industry,” Anderson says.

For more information: Vern Anderson
(701) 652-2951, vern.anderson@ndsu.edu

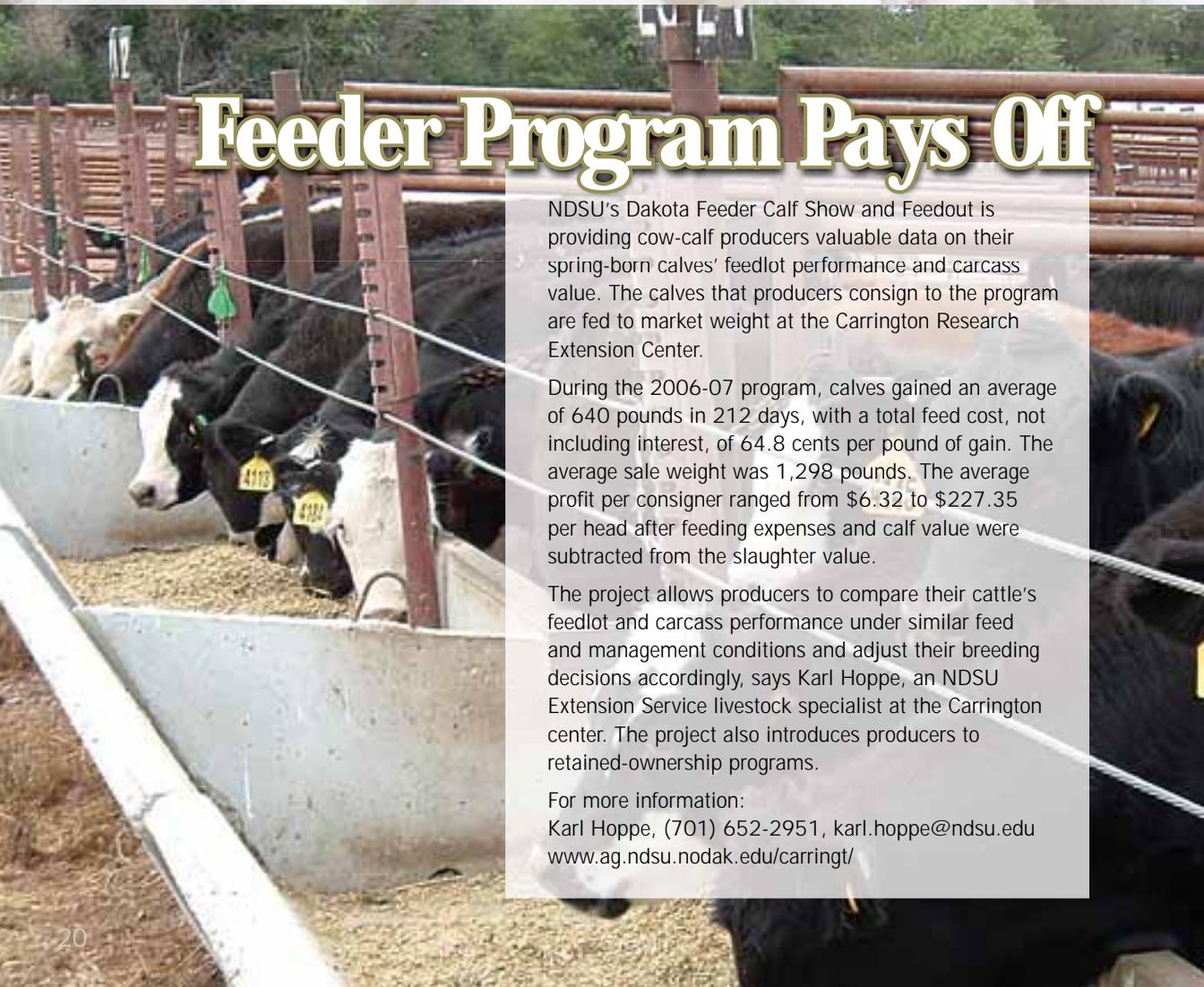


FIGHTING Foodborne Illness

NDSU researchers have some good news for the turkey-eating public. The researchers have found the prevalence of the bacteria salmonella is low at North Dakota turkey farms and turkey processing plants in the region. Eating salmonella-contaminated meat can cause humans to become ill. In some instances, it is fatal.

Researcher Catherine Logue and her lab crew in NDSU's Veterinary and Microbiological Sciences Department also have completed sequencing the genome, or genetic makeup, of a salmonella strain isolated from turkeys. That will help them develop new strategies for controlling salmonella on the farm and in the processing plant to ensure a safer product for consumers.

For more information: Catherine Logue
(701) 231-7692, catherine.logue@ndsu.edu



Feeder Program Pays Off

NDSU's Dakota Feeder Calf Show and Feedout is providing cow-calf producers valuable data on their spring-born calves' feedlot performance and carcass value. The calves that producers consign to the program are fed to market weight at the Carrington Research Extension Center.

During the 2006-07 program, calves gained an average of 640 pounds in 212 days, with a total feed cost, not including interest, of 64.8 cents per pound of gain. The average sale weight was 1,298 pounds. The average profit per consigner ranged from \$6.32 to \$227.35 per head after feeding expenses and calf value were subtracted from the slaughter value.

The project allows producers to compare their cattle's feedlot and carcass performance under similar feed and management conditions and adjust their breeding decisions accordingly, says Karl Hoppe, an NDSU Extension Service livestock specialist at the Carrington center. The project also introduces producers to retained-ownership programs.

For more information:
Karl Hoppe, (701) 652-2951, karl.hoppe@ndsu.edu
www.ag.ndsu.nodak.edu/carringt/

BATTLING the Moth

NDSU Entomology researchers have made headway against the banded sunflower moth. They have helped identify one sunflower hybrid and eight sunflower germplasm lines that appear to have a high degree of tolerance to the moth. The moth can cause yield reductions of 30 percent to 60 percent. The research is a collaborative effort involving NDSU Extension Service entomologist Janet Knodel and scientists from Kansas State University, South Dakota State University and the USDA's Agricultural Research Service.

NDSU researchers also developed an egg sampling procedure to monitor for the moth and estimate its potential damage to crops. It is simpler and quicker than monitoring for adult moths and gives producers more time to apply insecticides if necessary.

For more information:

Janet Knodel, (701) 231-7915, janet.knodel@ndsu.edu

Larry Charlet, (701) 239-1313, larry.charlet@ars.usda.gov
www.ag.ndsu.edu/pubs/plantsci/pests/e823w.htm



Center Organically Certified

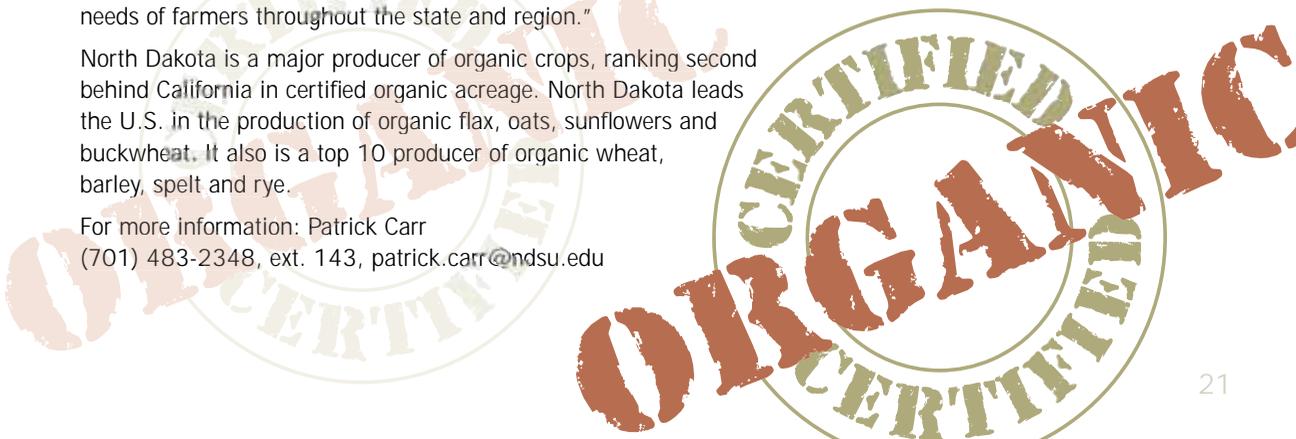
A 10-acre tract of land at the NDSU Dickinson Research Extension Center has been certified by two major organic farming certifiers, according to Pat Carr, DREC sustainable agriculture agronomist.

The certification means the DREC will be able to conduct research on organic farming methods at the center. The land has been certified by the Organic Crop Improvement Association International in Omaha, Neb., and International Certification Services Inc. of Medina, N.D.

"Receiving organic certification for this land heralds a new era in agricultural research at NDSU," Carr said. "For the first time, experiments can occur on land within the NDSU system that has been certified organic. It will allow NDSU scientists to initiate a sustained and thorough program of investigating organic farming methods to serve the needs of farmers throughout the state and region."

North Dakota is a major producer of organic crops, ranking second behind California in certified organic acreage. North Dakota leads the U.S. in the production of organic flax, oats, sunflowers and buckwheat. It also is a top 10 producer of organic wheat, barley, spelt and rye.

For more information: Patrick Carr
(701) 483-2348, ext. 143, patrick.carr@ndsu.edu



Grow 21

Effective,

NDSU's Pesticide Program certifies

13,000

private and

7,900

commercial pesticide applicators

Every dollar invested in nutrition education in North Dakota reduces limited-resource families' health-care costs by

\$8.82

efficient infrastructure

While traditional infrastructure — roads, water, electricity, phones — continues to be critical, access to adequate health care, high-speed broadband digital communications, capital, local planning, and youth and family development information will be equally important in the future. We are a highly respected source of technology, products and information North Dakota needs to remain competitive in the global market.

3,017 people have logged
1.19 billion
steps in NDSU Extension's
Walk North Dakota
program

32,581
youth participated in
4-H programming
in 2007

NDSU



BioOpportunities

a work in progress

Involvement in biobased research and product development is not new for NDSU. Beginning in 1905, NDSU research in polymers and coatings centered on using linseed oil as a base for paint. Today, with the emphasis on alternative fuel and energy sources and the use of the total plant for an increasing array of products, such research is even more vital.

More than 15 departments on campus and Research Extension Centers throughout the state are researching answers to various aspects of energy and biobased production. Recognizing the need to coordinate these activities, NDSU formed the Biomass and Bioproducts Initiative to coordinate and integrate renewable energy and bioproduct activities at NDSU and throughout North Dakota.

“What we’ve been looking at is to effectively pull together the full set of capabilities within the North Dakota State University system and position ourselves to be partners with other organizations and companies looking to grow and emerge in North Dakota,” said D.C. Coston, vice president for Agriculture and University Extension.

This process began with a series of forums to raise awareness of research achievements and directions, and promote interaction and collaboration. At each forum, four or five researchers or Extension specialists from various departments and colleges showcased their work in the biobased arena. Group discussion followed.

The series culminated in the NDSU BioOpportunities Workshop. This daylong workshop included several breakout discussions involving about 150 people: NDSU faculty, researchers and Extension personnel; invited guests from private industry and government; producers; and stakeholders.

The initiative’s objectives are to continue developing technologies in the biomass and bioproducts arena, coordinate research strategies and activities, utilize biomass and bioproducts to eliminate waste and increase efficiency, energize business and industry investment, stimulate student interest and learning, and revitalize communities throughout the state and region.

“We are convinced that BioOpportunities is very much an interdisciplinary effort,” said David Saxowsky, associate professor in the Department of Agribusiness and Applied Economics. “The reason NDSU is in such a strong position is because we have this wide range of discourse well-established.”

Continuing research involves converting plant material into biobased products, as well as producing a healthy plant and improving the plant’s performance for that process. As a result, the NDSU Oilseed Development Center of Excellence has found new and improved canola germplasm (genetic materials) with increased oil content of 16 percent to 18 percent. This alone has an estimated value to North Dakota of \$22 million per year, calculated on current acreage. If the demand increases as anticipated, it could escalate to approximately \$110 million per year.

NDSU also is preparing tomorrow’s engineers and scientists in biofuels and bioprocessing-related areas. In addition, faculty work with groups across the state to advance support and recommendations for research, legislation and action for the future of renewable energy.

With the momentum gained from the NDSU BioOpportunities Workshop, the initiative gained approval to form the NDSU Bio Energy and Product Innovation Center (see page 18) to continue its goal to enhance and promote a sustainable future for generations to come.

For more information: D.C. Coston
(701) 231-7656, d.c.coston@ndsu.edu
www.ndsu.edu/bioopportunities



Western 4-H Camp Continues to Grow

The Western 4-H Camp continues to grow, says Brad Cogdill, chair of the NDSU Center for 4-H Youth Development.

“Our goal for the season was to increase camping registrations by 50 percent,” he says. “That goal was exceeded and we will continue to build on that success.”

Military Youth Survivor Days and I Wish I Had a Horse were two popular camps this year.

Military Youth Survivor Days was conducted in cooperation with the North Dakota National Guard. Children of active-duty military personnel received scholarships to attend the camp and learned survival tactics in the wilderness.

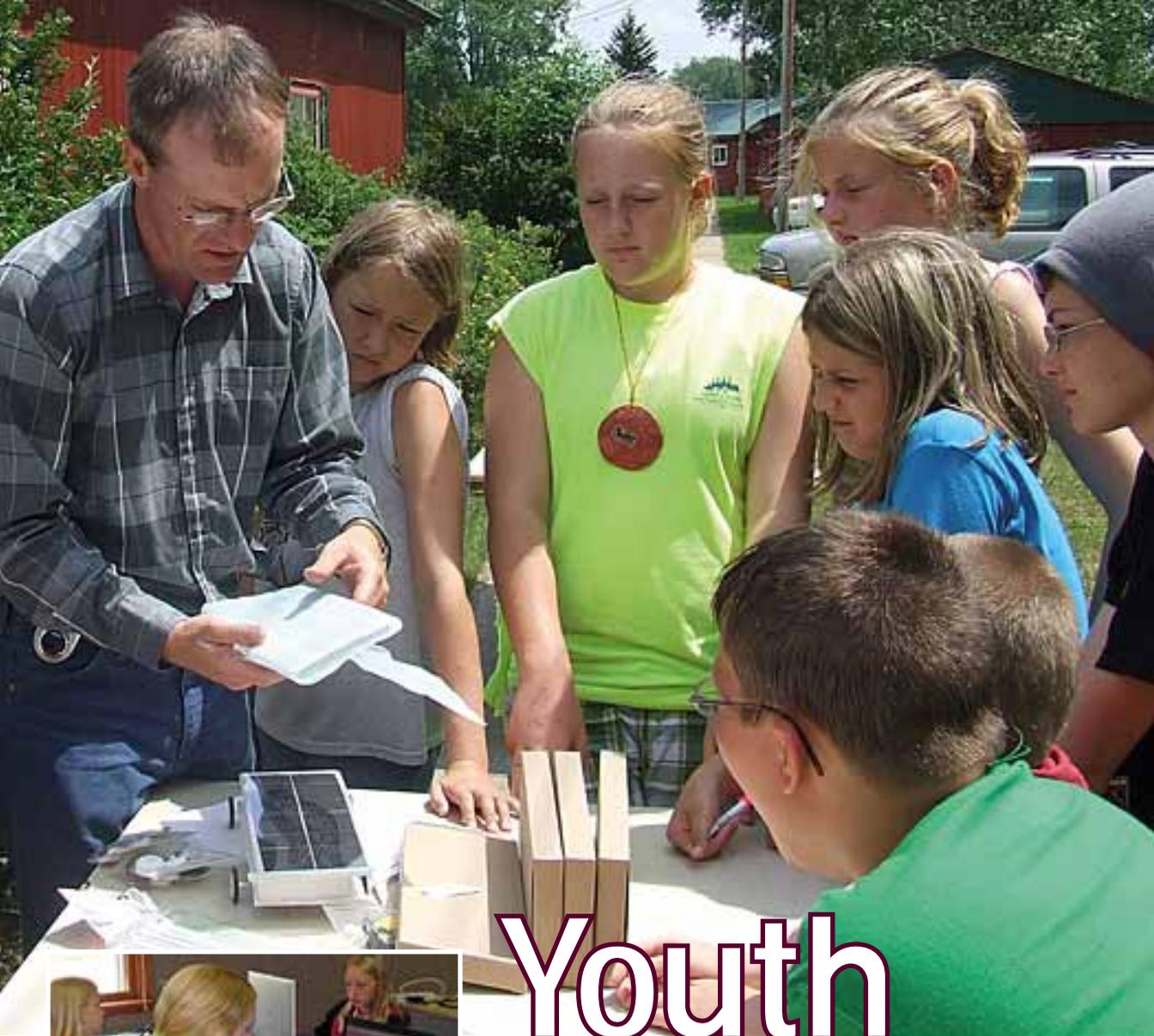
The Wish I Had a Horse Camp was designed to appeal to youth who like horses, but do not have access to one.

“We are forming a statewide 4-H camping committee to identify new types of camps that will appeal to youth across the state,” Cogdill says. “Research shows that camping is a good method to reach youth and have a positive impact because the camps provide opportunities to practice mastery, belonging, independence and generosity.”

Children taking part in the camps do not have to be enrolled 4-H members to participate.

For more information: Brad Cogdill
(701) 231-7253, brad.cogdill@ndsu.edu
www.western4hcamp.com/





Youth SET for the Future



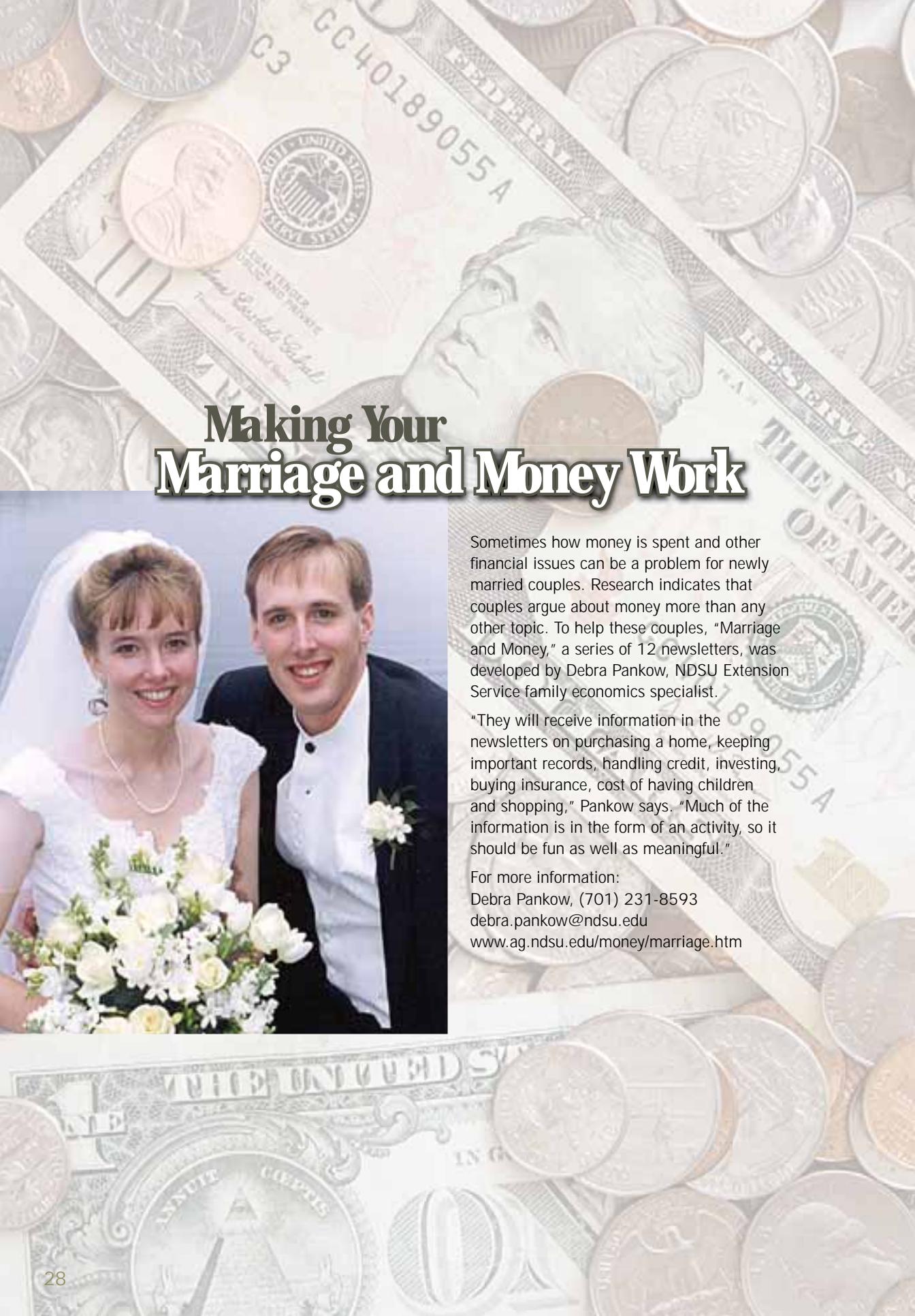
 **4-H**  **SET**
Science, Engineering & Technology



About 30 youth engaged in hands-on science, engineering and technology (SET) activities during the NDSU Extension Service's first World of Wonder Camp. The youth learned about computer animation, building and programming robots, and taking digital photographs, which they used to create Web sites and PowerPoint presentations. Other activities included geocaching, solar car challenges, blogging, stargazing and a scavenger hunt using global positioning system technology.

The five-day program, held at the Western 4-H Camp near Washburn, is one component of the North Dakota SET for the Future programming to introduce youth to the skills they'll need to compete in the 21st century work force.

For more information: Linda Hauge
(701) 231-7964, linda.hauge@ndsu.edu
www.fourhcouncil.edu/scienceengineeringtechnology.aspx



Making Your Marriage and Money Work



Sometimes how money is spent and other financial issues can be a problem for newly married couples. Research indicates that couples argue about money more than any other topic. To help these couples, "Marriage and Money," a series of 12 newsletters, was developed by Debra Pankow, NDSU Extension Service family economics specialist.

"They will receive information in the newsletters on purchasing a home, keeping important records, handling credit, investing, buying insurance, cost of having children and shopping," Pankow says. "Much of the information is in the form of an activity, so it should be fun as well as meaningful."

For more information:

Debra Pankow, (701) 231-8593

debra.pankow@ndsu.edu

www.ag.ndsu.edu/money/marriage.htm

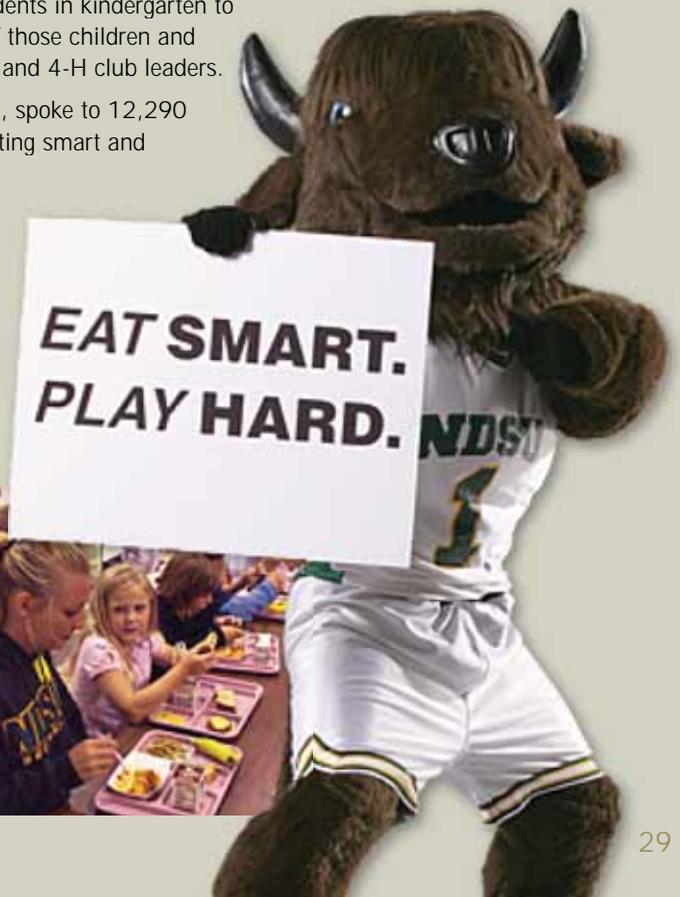
EAT SMART. PLAY HARD.

North Dakota youth are getting the “Eat Smart. Play Hard.” message. As a result of the NDSU Extension Service/Bison Athletics statewide campaign to build awareness about the importance of making healthier food choices and getting physically active:

- 630 youth in 33 4-H clubs received a certificate for completing at least six nutrition and fitness activities as a club, such as eating a healthy snack at meetings, demonstrating healthy recipes and going bowling or sledding.
- About 840 fourth-graders in 14 counties participated in NDSU Extension’s “Banking on Strong Bones” program, with “Eat Smart. Play Hard.” pencils, bookmarks, tattoos, folders and posters as incentives. In a survey following the program, 66 percent of the students reported drinking three or more glasses of milk the previous day, compared with 50 percent before the program, and 25 percent said they’d choose soda pop instead of milk, compared with 39 percent on a presurvey.
- 202 students competed in “Eat Smart. Play Hard.” essay and poster contests.
- Extension distributed 48,000 pocket folders with information on nutrition and physical activity to all of the state’s students in kindergarten to grade five, 45,000 newsletters to parents of those children and 5,000 copies of 16 minilessons to teachers and 4-H club leaders.
- Annette Olson, Miss North Dakota 2006-07, spoke to 12,290 elementary students in 46 schools about eating smart and playing hard.
- 38 Bison athletes visited five Fargo area elementary schools and ate lunch with the kids through a local radio station’s “Eat with the Bison” contest.

For more information:

Julie Garden-Robinson, (701) 231-7187
julie.garden-robinson@ndsu.edu
www.ndsu.edu/eatsmart/



Grow 21

Extension's Horizons program led to nearly 30 North Dakota communities gaining

146

moderate-income housing units

About 150 donors contributed

\$162,000

to Extension's 2005-07 Rural Leadership North Dakota program

Leadership

Communities won't be successful without citizens with the skills and confidence to make a difference. We are preparing a cadre of citizens to have the knowledge and feel empowered to effectively plan and carry out programs and activities that will lead to the bright future North Dakota communities desire.

NDSU's Institute for
Business and Industry
Development assisted

130

North Dakota companies

Extension leverages a
\$200,000 investment
in its Center for Community
Vitality into about

\$1 million

in community, economic
and leadership development



LEADERSHIP

making a difference

Three years ago, Watford City faced a severe housing shortage.

Businesses left when they couldn't expand because this west-central North Dakota community of about 1,400 lacked affordable housing for more workers. Young families wanting to move there also had trouble finding adequate housing.

At the same time, several residents felt the community needed a modern playground with equipment meeting current safety codes.

Residents Rene Johnson and Vicki Monsen stepped up to lead efforts to help their McKenzie County community. Monsen spearheaded the construction of an eight-plex multifamily housing unit and continues to work on meeting the community's housing needs. Johnson led a community effort to build a handicapped-accessible playground.

Mayor Kent Pelton credits their participation in the NDSU Extension Service's Rural Leadership North Dakota program for their projects' success.

"I think that it really teaches leadership skills and the ability to learn how to organize and get things accomplished," he says.

RLND is a two-year program. Participants from farms, ranches and rural communities throughout the state attend 10 in-state workshops and take a six-day study tour to Washington, D.C., learning to become effective leaders with the skills to overcome challenges that face rural North Dakota. They learn to think critically and creatively, communicate effectively, use technology, and understand agricultural and rural policy. They also implement a project that benefits their organization, community or region.

Johnson and Monsen are among 41 graduates of RLND, which began in November 2003. Two other McKenzie County residents also are graduates. Peggy Hellandsaas, Watford City, created a youth/adult mentor program. Janel Lee,

Grassy Butte, produced a video to attract tourists and residents to the county.

Watford City mother Leah Voll says her children, ages 2 and 5, love to spend time at the playground. But for her, the most amazing aspect of this project is how it came together. Johnson and her committee raised the \$250,000 needed to build the playground, and more than 100 residents turned out to help build it.

"It really brought the community together," Voll says.

Some semiretired residents have moved into the new multifamily housing, freeing single-family homes for the young professionals just starting a family who are moving to town.

Gene Veeder, McKenzie County's economic development director, says these projects show what can happen when someone takes the initiative to become a leader.

"RLND opened my eyes to what I am capable of, and showed me that confidence in oneself can make a difference, not only in yourself, but the community you live in," Hellandsaas says.

RLND projects that have enhanced other communities across the state include a new swimming pool in New England, visitors center in Dawson, campgrounds and marked trails for horse riders in Stutsman County and a new service center for an electric cooperative in Arthur.

Many more communities will reap the benefits of the RLND program, thanks to its first financial boost from the state.

"We are very pleased that the 2007 North Dakota Legislature provided funding support for the RLND program," says NDSU Extension Service Director Duane Hauck. "Not only are participants provided the opportunity to enhance their leadership skills, but they're also put in a better position to help their communities grow, both economically and socially."

For more information: Marie Hvidsten
(701) 231-5640, marie.hvdisten@ndsu.edu
www.ag.ndsu.edu/rlnd/

Art as REVITALIZATION



Some small North Dakota communities are using cultural arts to improve the quality of life for residents and attract visitors. Building on what they learned during NDSU Extension Service Center for Community Vitality workshops on building community vitality through arts and heritage, Walhalla residents began remodeling the town's only movie theater so it can be used for concerts, school plays, graduation ceremonies and other community events, as well as showing movies. In Ellendale, the arts council hosts monthly showcases featuring local artists and the historic buildings where their art is displayed.

For more information:
Kathleen Tweeten, (701) 328-9718
kathleen.tweeten@ndsu.edu



Improvements on the Horizon



The 21 North Dakota communities taking part in the NDSU Extension Service's 2007-08 Horizons program already are seeing benefits. Here are some examples:

- Lidgerwood – obtained free, high-speed Internet access
- Gackle – started a farmers market to give area produce growers a place to sell their products
- Rolette – created a hiking/biking trail
- Steele – started a nonprofit board to enable the food pantry to receive grants and donations
- Walhalla – gained a cell phone tower to improve communication and received a tourism grant to develop a site to dock canoes along the river

Horizons is a collaborative effort with the Northwest Area Foundation that assists small communities struggling with poverty, population loss and dwindling resources.

For more information: Lynette Flage
(701) 265-5200, lynette.flage@ndsu.edu
www.northdakota.communityblogs.us

SBARE Celebrates 10th Birthday

In 1997, the State Board of Agricultural Research was established to be responsible for budgeting and policymaking for the North Dakota Agricultural Experiment Station. In 1999, the law was expanded to include responsibility for the NDSU Extension Service. The name also was changed to the State Board of Agricultural Research and Education (SBARE).

"It is very rewarding that SBARE has been able to contribute, through NDAES and Extension, some very positive impacts on North Dakota," says Jerry Effertz, chair of the 17-member SBARE board. "What SBARE has been able to do since its inception 10 years ago is be the tool that brings the various agricultural interests together to work collaboratively with the Legislature to improve the state's economy."

A major part of SBARE's work is to gather proposals for research and Extension and then prioritize the list. The prioritized list then is given to legislators for review.

"Fortunately, the SBARE board is a diverse and broad-based group of people who can deal with a variety of issues before making the final decisions," Effertz says. "I believe the work SBARE has done through the years by collaboratively coming up with a priority list has served the Legislature and NDSU very well."

For more information:

Jerry Effertz, (701) 624-5136, ebba@srt.com
www.ag.ndsu.nodak.edu/sbare/sbare.htm

2007 SBARE Members

The North Dakota State Board of Agricultural Research and Education (SBARE) is responsible for overseeing agricultural research and Extension at NDSU.

Ole Aarsvold, N.D. House, Blanchard
Robert Bahm, Minot
John Bollingberg, Bremen
Tom Borgen, Langdon
Joseph Chapman, President, NDSU
Randel Christmann, N.D. Senate, Hazen
D.C. Coston, Vice President, NDSU
Jerry Effertz, SBARE Chair, Velva
Carol Goodman, Langdon
Ken Grafton, Experiment Station, NDSU
Duane Hauck, Extension Service, NDSU
Rodney Howe, Hettinger
Doyle Johannes, Underwood
Roger Johnson, Ag Commissioner, Bismarck
Paul Langseth, Barney
Larry Lee, Velva
Doyle Lentz, Rolla

Agriculture and University Extension at North Dakota State University

The North Dakota Agricultural Experiment Station consists of seven Research Extension Centers placed strategically throughout the state and the Main Station in Fargo. We work to develop techniques and technology to enhance the production and use of food, feed, fiber and fuel from crop and livestock enterprises.

The NDSU Extension Service provides the people of North Dakota with the research-based information they need to succeed in today's increasingly complex world and be prepared for the future. We have offices serving all of North Dakota's 53 counties and Fort Berthold.

If you would like more information on the programs in this publication, contact the faculty and staff listed. If you would like more information about our other programs or have questions, comments or suggestions, please contact one of us.

D.C. Coston

Vice President for Agriculture and University Extension

Ken Grafton

Director, North Dakota Agricultural Experiment Station
Dean, College of Agriculture, Food Systems, and Natural Resources

Duane Hauck

Director, NDSU Extension Service

314 Morrill Hall
Box 5562
North Dakota State University
Fargo, ND 58105-5562
(701) 231-7656
Fax (701) 231-7566
vpag@ndsuxt.nodak.edu



www.ag.ndsu.edu