Updates From Our Research Locations

This is always an exciting time of the year for me as I work on coordinating the publication of the annual North Dakota Beef Report. Seeing all the great work that is being done in beef cattle research in North Dakota and helping get this information out to our producers and industry is enjoyable for me.

For this year's report, I thought providing an update from our research locations on new happenings, such as new hires, updates in facilities, renewed focus on improving cattle quality and facilities, etc., would be a nice addition. Many new, exciting things are going on at our research locations aside from just the research results (see updates below from our research locations in no particular order).

I believe we are working hard toward improving our beef cattle research program to be one of the best in the country. We have much momentum and are aggressively improving and moving our program forward.

I am taking this opportunity to thank Ellen Crawford and Deb Tanner for their great contributions in editing and formatting the reports so that we can publish a great statewide combined report. I also thank the contributors to the North Dakota Beef Report, and thanks to all the employees and students who help with all of the research, teaching, and Extension activities related to beef cattle.

Our goal is to make this a comprehensive report describing research from across the state so readers have one report that provides results they can use to improve their operations or improve their business. I feel this statewide report has improved greatly during the first few years of its publication.

If you should have any questions about the research reported in this report, please do not hesitate to contact me or any of the authors of the individual reports. Thanks for your encouragement and support of beef cattle research in North Dakota.

Kendall Swanson
North Dakota Beef Report Editor and Professor
Department of Animal Sciences
Phone: 701-231-6502
email: kendall.swanson@ndsu.edu

NDSU Beef Teaching and Research Unit

The Beef Teaching and Research Unit has undergone some changes within the past year. It has been one year since my full-time employment, and we have made strides in strengthening our interdepartmental communication and upgraded livestock-handling equipment, and are progressing toward our ultimate cow-calf production goals.

Our Beef Committee, or "B Team," as I like to call it, is made up of a group of staff and faculty members from the NDSU Animal Sciences Department, including me, who are passionate about NDSU's beef program. This committee acts as the hub for ideas and concerns to be discussed to help solidify our beef program goals.

The committee is co-chaired by Kendall Swanson, an expert in beef cattle nutrition and physiology, and Gerald Stokka, who specializes in livestock stewardship and beef cattle health. This committee has become more active to assist the beef unit manager in management decisions and deciding future directions for the program.

As a committee, we have developed a mission statement: "The NDSU Beef Teaching and Research Unit provides facilities and beef cattle to integrate research, teaching and Extension to serve the NDSU beef program, NDSU Animal Sciences and the community." We also are working on better defining our vision for improving cattle genetics, nutrition programs, health programs and other management strategies.

We have been privileged to upgrade our livestock-handling equipment this past year. Having a safer, more modern handling system will aid in the flow and improve the safety of our animals, staff and students, as well as allowing handling of the animals to be completed more diligently.

We have our herd of 200 breeding-age females broken into three separate groups of cattle: Purebred Angus, Purebred Simmental and 100 Commercial cows. I have approached managing these cattle the way the average North Dakota producer would, by expecting the cow to do her job.

With the utilization of NDSU's beef experts, we have put in place a strict nutrition and health program in which I can provide the cow with everything she needs to be successful and provide us with a healthy calf every year.

With my background in agricultural economics, I also have started better tracking production costs and returns per cow and calf to aid in improving our management and genetic selection programs.

Billy Ogdahl
NDSU Beef Teaching and Research Unit Manager
Phone: 701-799-0528
email: william.ogdahl@ndsu.edu

NDSU Beef Cattle Research Complex

I can hardly believe that as of May this year, we have been in operation for five years!

We are in the midst of our 20th experiment at the NDSU Beef Cattle Research Complex. This summer, we are implementing a heat watch system that assists animal handlers in identifying behaviors (signs of estrous) of cycling heifers. This project is a cooperative effort utilizing heifers from the NDSU Dickinson Research Extension Center.

Combining the heat-detection information with data from our Insentec feed troughs, scientists hope to gain insight on cycling females' feeding behaviors/efficiency during periods of estrous. This project is a multiyear study investigating the impact of frame size, efficiency and longevity in the commercial beef cow herd.

During the last five years, we have conducted research in heifer development, fetal programing with gestational cows, and backgrounding/finishing studies with growing cattle.

Utilizing the advanced technology of the Insentec feed system, NDSU animal scientists continue to invest their research energies in the sustainability of the North Dakota beef industry.

Trent Gilbery
NDSU Beef Cattle Research Complex Manager
Phone: 701-356-3284
email: trent.gilbery@ndsu.edu

Carrington Research Extension Center

The Carrington Research Extension Center (CREC) has a new animal scientist – Dr. Uchenna Anele. He joined from Agriculture and Agri-Food Canada, Lethbridge Research Center.

The primary research efforts at the CREC are focused on applied and interdisciplinary research on cow-calf and feedlot cattle. Anele is undertaking some studies on the use of exogenous enzymes to improve fiber digestion of several coproducts and crop residues generated in North Dakota and use of pre- and probiotics (synbiotics) in the feedlot. Anele is looking at maximizing the value and use of byproducts generated in the state with the intent of reducing the cost of finishing cattle.

The livestock unit at Carrington recently expanded its research capability with the addition of an in vitro gas fermentation technique and six cannulated steers for in situ assessment of the nutritional quality of feeds. These two techniques are being used to screen different synbiotics for use in feedlot trials this fall.

Uche Anele
Animal Scientist
Phone: 701-652-2951
email: uchenna.anele@ndsu.edu

Central Grasslands Research Extension Center

The Central Grasslands Research Extension Center (CGREC) has research responsibilities covering range science, forage agronomy and animal sciences. Historically, the range sciences research program has focused on long-term changes to plant communities in response to grazing management. The forage agronomy program has focused efforts toward variety testing and, recently, cropping systems utilizing cover crops.

The animal science programs are led by two scientists, Michael Undi and Bryan Neville. Undi's research has focused on winter grazing systems, including grazing of crop residues, bale grazing and inter-seeding cover crops into growing corn, as well as supplementation practices to improve animal performance and forage digestibility of low-quality forages. Undi has further interest in quantifying forage intake under winter grazing systems.

Neville's research has focused on utilizing dried distillers grains with solubles (DDGS) as a supplement to yearling beef cattle grazing native rangelands and has explored the possible implication of supplementation on subsequent feedlot performance as well as meat quality. More recent research is aimed at exploring the impacts of grazing intensity and advancing the season on forage intake and digestibility of yearling steers supplemented with DDGS.

In addition to the work conducted by scientists at CGREC, a number of collaborative efforts are ongoing with scientists from NDSU's Animal Sciences Department, as well as scientists from the School of Natural Resources. Some of these efforts include:

- Management strategies to improve the utilization of artificial insemination in beef cows (Carl Dahlen)
- Understanding the effects of maternal nutrition on early gestation (Joel Caton)
- Evaluating temperament in beef cattle as it relates to genetic and genomic merit (Lauren Hanna)
- Methods to control Kentucky bluegrass invasion of native rangelands (Ryan Limb)

The Central Grasslands REC also has an area Extension specialist located at the center. Fara Brummer leads the Extension efforts at the CGREC. Brummer has worked to establish a number of events, most notably a Winter Grazing Workshop, which was held in the fall of 2015. Brummer also conducts a number of applied and on-farm research activities with county agents from the area, including a bale-grazing project conducted during the winter of 2015-2016.

Bryan Neville
Director and Animal Scientist
Phone: 701-424-3606
email: bryan.neville@ndsu.edu

Dickinson Research Extension Center

Where is beef research at the Dickinson Research Extension Center? Perhaps a look at agriculture in general would be good.

Ideally, production agriculture will continue in its present role, but too often the words "sustainable" and "appeasement" are used side by side. The status quo is sufficient.

However, given current data and trends, the sustainability of current systems is a subject of spirited discussion, particularly if community and population trends are added to the equation. Expandable and, we hope, more sustainable systems need to be evaluated to assess current trends.

In the future, all avenues for additional compensation need to be explored to enhance the economic viability for beef producers and the rural areas associated with beef production. This compensation may come from not only beef but synergistic crop production.

For example, small-grain production systems that integrate rotational cropping practices, high-residue management and annual forages, with attention to wildlife habitat enhancement, could be used to diversify income while opening the door to other value-added opportunities for beef production in concert with crop production.

The Dickinson Research Extension Center, as part of NDSU, takes seriously the need for sustainable beef systems. The center is striving to develop sustainable and integrated production strategies that match conditions of western North Dakota and surrounding regions. The inclusion of forages into traditional cropping systems can provide the resources necessary for the development of integrated production strategies that increase sustainability and profitability.

Forage-based cropping systems come closer to the climax native plant community present when homesteaders first arrived in this region. A need exists to develop agro-ecosystems that optimize the balance between forage-based and grain-based crop/livestock systems reflective of the many individual ecosystems. These integrated systems must be synergistic to, or enhance the native and agronomic plant communities, thus providing the base for future beef production.

In addition, enhanced value for commodities produced from forage-based systems is key. As the general population requires protein, a need met by meat and high-protein crops, meeting this demand is a unique opportunity that a forage-based system integrated with crop production can respond to, in addition to current cropland use.

These thoughts are changing how the Dickinson Research Extension Center addresses the future. Previous work certainly has set baseline production for high-residue cropping systems, grassland systems and livestock systems. However further definition, integration and refinement of these system efforts is critical. Beef production needs to think outside the box and the center also needs to do the same.

Challenging the limits of conventional thinking by linking the components of agricultural management systems with value-added opportunities to ensure long-term sustainability of beef and cropping systems within the environment is critical. In response, a new approach needs to be embraced, a concept of integrated agricultural systems that truly entwines crop, beef and forage production as a working unit for betterment of all.

Kris Ringwall
Director and Extension Beef Specialist
Phone: 701-456-1103
email: kris.ringwall@ndsu.edu

Hettinger Research Extension Center

The Hettinger Research Extension Center (HREC) is in southwestern North Dakota, four miles from South Dakota and 80 miles from Montana. The range, wildlife and livestock research scientists include Ben Geaumont (range and wildlife scientist) and Christopher Schauer (animal scientist).

Our livestock research facilities include a 200-head calf backgrounding feedlot, 1,000-head lamb finishing feedlot, and a cow herd and sheep flock that are utilized not only at the HREC but in collaboration with the U.S. Department of Agriculture Agricultural Research Service's Northern Great Plains Research Lab in Mandan, N.D., a research project near Fort Yates, N.D., and the Central Grasslands REC and the Carrington REC.

Geaumont's research focus is on evaluating grazing systems with cattle and sheep and their impact and synergies with wildlife, pollinators and rangeland

ecology. His current research projects are evaluating the interactions of wildlife and livestock on prairie dog-impacted grasslands, the utilization of cover crops and sheep grazing in winter wheat production systems. He also is starting a project this year to evaluate the impacts of patch burning in sheep and cattle grazing systems on Conservation Reserve Program lands and the associated impact on rangeland health, pollinators and wildlife habitat.

Schauer's research focus is on nutritional management of cattle and sheep in the feedlot, nutritional impacts on male and female reproduction, and livestock management on the grazing systems research conducted by Geaumont. In addition to the previously mentioned collaborative research with Geaumont, Schauer's current research is evaluating the impacts of dried distillers grains with solubles (DDGS) on male reproduction traits, and a variety of applied lamb finishing research projects evaluating DDGS, particle size, lasalocid, and the interactions of these on lamb growth and production.

Our newest addition to the HREC staff will be of interest to all livestock producers in the region, especially cattle producers. Through the support of the North Dakota Stockmen's Association, the North Dakota State Board of Agricultural Research and Education, and the HREC Advisory Board, the HREC was funded this biennium for an Extension livestock specialist who will focus on beef production systems.

Janna Kincheloe will start at the HREC this winter as the Extension livestock specialist after she completes her Ph.D. at South Dakota State University under the direction of Ken Olson at the West River Ag Center in Rapid City, S.D. She is a former Extension agent from Montana and has spent her graduate career evaluating beef cattle production systems and working with livestock producers in Montana and South Dakota.

She is our first Extension specialist in the 107-year history of the HREC, and we are excited to add her to our staff. Feel free to contact us if you have questions about her upcoming programs as she begins a new and exciting period for the HREC. She is looking forward to working with the Extension agents and livestock producers of the region.

We look forward to seeing everyone at the North Dakota Stockmen's Association meeting this fall.

Christopher Schauer
Director and Animal Scientist
Phone: 701-567-4323
email: christopher.schauer@ndsu.edu