Dear Ranch Hand Subscribers,

While some of us may be dreaming of a white Christmas, others may be enjoying the benefits of plentiful moisture during the summer, good forage growth and the ability to extend the grazing season well beyond that of a “typical” year. Around the state, many producers are still grazing cattle on dormant pastures. If you happen to be one of these producers, keep in mind that the protein content of standing forage in January likely will be below the requirements for all classes of cattle. Consider a supplement to meet the needs of cattle because the effects of insufficient protein can extend not only to the cow grazing, but also to the calf she is carrying.

In herds that have been brought off of pasture and are being fed stored feed, producers have many different ways to manage cattle, their feed and feed deliveries. Inverted tires are rugged and make good structures for delivering feed. An article in this issue discusses a problem that can be associated with wire ply tires. The article also provides information on a bit of routine maintenance that may be required to keep cattle that eat from the tires in optimum health.

Additional articles remind producers to participate in the 2011 Beef Quality Audit survey and introduce a visiting scientist at NDSU. Many producers in this region background their calves, and this month’s Research Corner article talks about a project that is evaluating the inclusion level of distillers grains in backgrounding diets.

Families who have high school or college students may have a few extra things to think about during the holiday season. Time together can be time to talk about choices that students need to make in the future. For students and families who are evaluating their college choices, Greg Lardy discusses an effort the NDSU Animal Sciences Department made recently to ensure our classes meet the future needs of our industry. Several programs were designed to expand the traditional production agriculture curriculum into many areas of student interest that don’t immediately come to mind when we hear “animal science.”

Something you may hear from current college students is that NDSU is launching a new program that focuses on global food production systems. An article describes the program, its goal and its destination. Regardless of whether, where and what students decide to study, they always should have the future in mind and make deliberate choices that can help them achieve their dreams.

For additional questions on the material covered in this newsletter or any other concerns on your operation, contact your county, area or state Extension personnel. We look forward to serving you!

Sincerely,

Carl Dahlen, Ph.D., Editor
NDSU Extension Beef Cattle Specialist
Watch Your Tires!
Carl Dahlen, NDSU Beef Cattle Extension Specialist

Inverted tires can make great structures to hold cattle feed and water, but regular maintenance is required. If the tires you are using on your operation have wire in the walls, this wire can break off and subsequently be consumed by cattle. Cattle ingesting these pieces of wire can develop a condition known as hardware disease.

Once wire is swallowed, it goes into the digestive system and often gets trapped in the chamber of the stomach called the reticulum. The reticulum is the chamber that has honeycomb-shaped structures on the walls and functions to trap foreign materials. If the wire punctures the reticulum wall, digesta and other stomach contents can leak through the wall and cause a condition called peritonitis. Peritonitis can lead to general unthriftiness and also may cause systemic infections. Both of these conditions may be observed, and cattle with a continually declining health status eventually may need to be culled.

Metal, wire and other foreign materials in the reticulum also can lead to sudden death. The diaphragm is the thin muscle that divides the abdominal cavity (which contains the stomach, intestine, liver, etc.) from the thoracic cavity (which contains the heart and lungs). The anatomy of cattle is such that the reticulum and the heart are close to each other, separated only by the diaphragm.

In instances when cattle experience severe abdominal contractions (for example, while delivering a calf), foreign material in the reticulum can be forced through the reticulum wall and into the heart. If this happens, the animal will die shortly thereafter. Alternatively, the metal may pierce only the protective layers around the heart and cause inflammation and/or infection. Either way, it is not a good situation!

To attempt to avoid hardware disease, perform regular maintenance on your tire feeders. Cut or grind off exposed wire and make sure to pick up pieces and remove them from the cattle-feeding area. This also highlights the importance of cleaning any wire, nails or other metal scraps from areas to which cattle have access and including powerful magnets in feed mixers to prevent hardware disease in your cattle.
Are you the parent or grandparent of a junior high school or high school student? Do you have nieces, nephews or neighbors who are junior high school or high school students? If you know students who are beginning to think about their future careers, I want to encourage you to have them take a second look at agriculture and specifically a major in Animal Science at North Dakota State University.

As the world’s population continues to explode, the need for people skilled in agriculture and livestock production will grow. On Oct. 31, 2011, the world’s population surpassed 7 billion. Current projections show the population continuing to climb to 11 billion by the year 2050. Given this rapid pace of population increase, food production certainly will have to increase at a comparable rate to ensure everyone on the planet is properly nourished. Careers in a variety of areas related to agriculture will increase along with the population.

Our department recently completed an overhaul of our Animal Science curriculum. We now have five Animal Science options: Meat Science; Livestock Media; Biomedical Science/Pre-Vet; Animal Production, Management and Husbandry; and Animal Agribusiness. The curriculum revamp reflects recognition among our faculty that the needs of our students and those who employ our graduates continue to evolve. More students now come to us without the benefit of having grown up on a farm or ranch, yet they are just as interested in livestock production. That is one of the reasons we implemented a mandatory internship requirement for our majors. Internships allow students to experience a career and gain valuable experience in different careers prior to embarking on their first full-time job.

Our students are in great demand. I attended the annual NDSU Ag Career Fair this fall and had the opportunity to visit with a number of the more than 40 employers present. They all had an opening (or multiple openings) they were trying to fill, and they were seeking our students because of their reputation for being well-trained, hardworking and highly skilled.

The future looks very bright for Animal Science majors. The industry and society will need high-quality students working toward careers in a variety of areas to meet the projected need for food. All of us need to actively encourage prospective students toward these career opportunities. If you know of students interested in careers related to Animal Science, please have them contact me at gregory.lardy@ndsu.edu or (701) 231-7660 or go to the Animal Sciences website (www.ag.ndsu.edu/ansc/) to learn more. I’d be happy to visit with them and discuss their future opportunities at NDSU.
Global Food Systems Course Slated
Carl Dahlen, NDSU Extension Beef Cattle Specialist and David Newman, NDSU Extension Swine Specialist

The NDSU Animal Sciences Department, through the College of Agriculture, Food Systems, and Natural Resources, has developed a new student opportunity, the Global Food Systems Study Abroad Program. This is a faculty-led program for students involved in agriculture. It will help develop world-class graduates ready to take on the global challenges affecting our future.

Now, more than ever, students involved in agriculture and business must have a deep understanding of global factors affecting the world food supply, including production, processing, marketing and increased demand for agricultural goods. The definition of agriculture is “the science of cultivating land, producing crops and raising livestock.” This program would cultivate the minds of our students to become global leaders.

We have developed an itinerary for a faculty-led program in China to be held during the summer of 2012 and annually thereafter. Our destination will change annually, giving each group of students a unique insight into regional factors that affect agriculture in different parts of the world. This program focuses specifically on agriculture and food systems but is open to all students on campus. It will provide them with a cultural and agribusiness prospective that can be applied across many disciplines.

China was chosen as our first destination because of the major influence the country has on the global economy, which can be traced back to our local producers and commodity markets. Furthermore, this destination was chosen to expose students to the sheer complexity and size of China’s agricultural business environment. Although roughly the same size as the U.S. in terms of land mass, China has four times as many people.

The logistics of agricultural production, product movement and feeding a population of 1.3 billion is unfathomable in the minds of many people. We feel that the opportunity to explore this diverse, dynamic environment would heighten student awareness of the global economy, open minds to alternative ways of thinking and break down barriers unnecessarily imposed by the mainstream U.S. production systems. In other words, this type of program will help our students understand the need for change and that they will be responsible for maintaining our competitive position as a global leader in supplying a safe, abundant food supply.

Travel to China will take place during a 15-day period in late May and early June. During this time, students will observe the continuum of agricultural production systems. We will start with commercial production of animals and follow these animals from birth to growing facilities, feeding facilities and sale at commodity markets. We will visit commodity markets and study the intricacies of marketing options producers have for their goods. Next we will visit meat processing facilities and study processing methods and the movement of meat from processing facilities into domestic retail or additional processing markets, or to export markets. Included in the visits/discussion will be an emphasis on external factors influencing production cost, efficiencies and global marketing.

A visit to the Chinese Agricultural University is included in the itinerary so students can learn how the university and political system in China interact with and influence its domestic agriculture sector. Visits with U.S. corporate and trade offices in China will give students the opportunity to understand the global impact of Chinese markets, including imports and exports and the traceability of goods and services back to North Dakota and the surrounding region. The emphasis of these industry and trade tours will be to expose students to market conditions and the culture and lifestyle of working with multinational companies. This will include seminars by employees from U.S. companies with active business in China.

In addition, the students will obtain a valuable cultural experience. We will make stops at historic landmarks in Beijing, Xi’an, Shanghai and Hangzhou, including the Forbidden City, the Great Wall of China and the Terracotta Warriors.

Registration for the program will be open through Feb. 14, 2012. For additional details on program itinerary or other information, contact us at (701) 231-5588 (Carl Dahlen) or (701) 231-7366 (David Newman). We encourage members of the production agriculture community to support students interested in the program and to convey their thoughts about the importance of gaining a thorough understanding of global food production systems.
Goulart is Visiting Scientist at NDSU

Carl Dahlen, NDSU Extension Beef Cattle Specialist

Brazilian researcher Rodrigo Goulart will spend six months working in the NDSU Animal Sciences Department as a visiting scholar.

Goulart is from the state of Goias in central Brazil. Prior to coming to North Dakota, he worked for the University of Sao Paulo, developing research projects in the area of feedlot nutrition.

Goulart's academic career includes receiving D.V.M., M.S. and Ph.D. degrees from different universities in Brazil. Examples of research conducted by Goulart include evaluating physically effective fiber requirements for feedlot cattle, determining performance and energy requirements of different crossbred Nelore cattle compared with purebred Nelore cattle, and conducting a survey of manure management practices in Brazilian feedlots.

While at NDSU, Goulart will work on research efforts with Kendall Swanson and Carl Dahlen. Projects include examining the impact of feeding distillers grains to backgrounding calves and gestating cows, evaluating the impacts of maternal diet on offspring characteristics, and determining the fate of net wrap eaten by cattle. In addition, Goulart will lead efforts to develop an in vitro starch assay in the NDSU nutrition laboratory and conduct a research project aimed at improving intake of poor-quality forages in cattle.

Goulart also will present a seminar to the Animal Sciences Department that summarizes the current feedlot industry in Brazil and the role that Brazilian university research plays in advancing that industry. If you have questions about the Brazilian cattle industry, feel free to email Goulart at RodrigoSilva.Goulart@ndsu.edu.

Producers Reminded of 2011 Beef Quality Audit

Lisa Pederson, NDSU Extension Beef Quality Assurance Specialist

Cattle producers are encouraged to provide their input to the 2011 National Beef Quality Audit by taking a short survey at www.cattlesurvey.com. The survey can be completed in approximately 10 minutes.

The 2011 National Beef Quality Audit, led by scientists from Colorado State University and Texas A&M University, is designed to collect and analyze information from cooler audits in the packing sector and face-to-face interviews with beef supply chain partners. For the first time, cattle producers, including feeders, stockers, cow-calf operators and seedstock producers, also will be surveyed. Producer input is being sought to strengthen the measurement of quality-based practices implemented on farms and ranches that support consumer confidence in beef products and production systems.

The checkoff-funded National Beef Quality Audit has provided important benchmarks for the U.S. beef industry since 1991. The audit has been conducted approximately every four years, with the historic focus centered on quantifying the performance of beef carcasses for a number of value-enhancing characteristics. Previous surveys have assisted in identifying challenges and opportunities for cattle producers.

The researchers conducting the study “hope to quantify the current adoption level of quality-driven management practices by the industry and develop a benchmark against which to measure future performance. Our goal is to provide a foundation from which to direct future educational initiatives to improve the competitiveness of beef and beef byproducts. By collecting input from cattle producers, we will help consumers and decision influencers better understand beef production and the commitment of cattlemen to producing safe and wholesome beef products.”
The Effect of Supplementation of Distillers Grains to Calves on Hay Intake, Feeding Behavior and Growth Performance

Research in Progress

Kendall Swanson, Associate Professor, NDSU
Department of Animal Sciences

Feed costs represent a large proportion of the total costs of production and greatly influence profitability of beef production (either in feedlot cattle fed high-concentrate diets, backgrounding cattle or cows grazing or fed forage-based diets). Therefore, developing strategies to improve the efficiency of feed utilization and reduce feed costs is important.

Significant research has been conducted on supplementation programs for grazing or forage-based feeding programs. In general, supplementation usually improves performance by increasing the digestibility and intake of the forage and/or supplying additional energy or protein. The use of ethanol byproducts, such as corn dried distillers grains plus solubles (DDGS), as a supplement source for forage-based feeding/grazing systems has increased in recent years. Research projects have concluded that DDGS can be an effective supplement for forage-based systems.

However, less is known on the effects of supplementation on feeding behavior. The feeding system at the new NDSU Beef Cattle Research Complex allows us to measure every feeding event throughout the day, giving us the opportunity to gain a better understanding of how dietary or management treatment influences feeding patterns. Changes in feeding behavior may be associated with differences in performance because of potential differences in digestive function and efficiency.

Additionally, interest has increased in determining what genetic and physiological factors influence feed efficiency in cattle because of the potential impact improvements in efficiency could have on profitability. Much of the recent research on factors influencing feed efficiency has been conducted with feedlot cattle fed grain-based diets. The factors contributing to differences in feed efficiency are likely different between cattle fed forage-based diets and high-forage diets. Data is limited on the physiological factors influencing feed efficiency in cattle receiving forage-based diets. Also, limited information is available on why specific animals may respond to supplementation better than other animals.

Seventy steer calves are housed in three pens equipped with Insentec feeders in the NDSU Beef Cattle Research Complex. Within each pen, calves are assigned to one of three dietary treatments: 1) medium-quality grass/alfalfa hay offered for ad libitum intake, 2) supplementation of DDGS at 0.5 percent of body weight (dry-matter basis) and medium-quality hay offered for ad libitum intake and 3) supplementation of DDGS at 1 percent of BW (DM basis) and medium-quality hay offered for ad libitum intake.

Insentec feeders allow for offering specific amounts of feed (or ad libitum access) to individual animals out of common feeding stations and recording the amounts and times of all feeding events.

Calves will be fed experimental diets for 112 days. Body weights will be taken every 28 days to examine growth traits. Feed intake and behavior traits (time at feeder, time per meal, meal size, eating rate, number of meals and visits to the feeder) will be assessed and feed efficiency calculated. Real-time ultrasound measurements (backfat, rumpfat, longissimus muscle area and longissimus muscle marbling) will be taken on day 0, 56 and 112 to assess body composition changes that may be associated with differences in feed efficiency. Blood samples will be collected by jugular venipuncture every 28 days and analyzed for metabolites to provide information on metabolic processes that may influence feed efficiency.

This experiment should provide producers with information on the impact of supplementation of distillers grains to growing cattle fed medium-quality forage on performance and feeding behavior. It also should increase our understanding of the variability in feed utilization among animals and what is contributing to this variation in supplemented and non-supplemented animals.
Upcoming Events: January 2012

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<tr>
<th>Event</th>
<th>Location</th>
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<tr>
<td>Lake Region Roundup</td>
<td>Devils Lake</td>
<td>Jan. 3-4</td>
<td>(701) 662-7027</td>
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<tr>
<td>Dakota Cow/Calf Clinics</td>
<td>Multiple locations*</td>
<td>Jan. 13</td>
<td>(701) 652-2951</td>
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<tr>
<td>Heifer Classic</td>
<td>Stanley</td>
<td>Jan. 18</td>
<td>(701) 628-1676</td>
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<tr>
<td>Hettinger REC Beef Day</td>
<td>Hettinger</td>
<td>Jan. 19</td>
<td>(701) 567-4323</td>
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<tr>
<td>Walsh County Livestock Improvement</td>
<td>Park River</td>
<td>Jan. 20</td>
<td>(701) 284-6248</td>
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<tr>
<td>NDSU Feedlot School</td>
<td>Carrington</td>
<td>Jan. 24-25</td>
<td>(701) 652-2581</td>
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<tr>
<td>SW ND Beef Day</td>
<td>Medora</td>
<td>Jan. 25</td>
<td>(701) 872-4332</td>
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<tr>
<td>SW ND Beef Day</td>
<td>Killdeer</td>
<td>Jan. 25</td>
<td>(701) 764-5593</td>
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<tr>
<td>Central Grasslands REC Field Day</td>
<td>Streeter</td>
<td>Jan. 25</td>
<td>(701) 424-3606</td>
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<tr>
<td>SW ND Beef Day</td>
<td>Bowman</td>
<td>Jan. 26</td>
<td>(701) 523-5271</td>
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*See Article “Dakota Cow/Calf Clinics Set” in the November 2011 Ranch Hand.

To get your events included on the Ranch Hand's upcoming events list, email event name, location, date and contact number to Carl.Dahlen@ndsu.edu.

The Ranch Hand

TOP 10

Management strategies to consider in the coming month:

1. If cattle still are grazing, monitor pasture conditions, feed protein supplement when needed and remove the cattle when available feed supply is gone
2. Consider stage of pregnancy when delivering cow and heifer diets; 90 days before calving nutrient requirements start to increase
3. Increase feed deliveries in cold weather and consider feeding in the afternoon; heat produced while cattle digest feed can help during cold nights
4. Review 2011 calf performance and health, compare with previous years and set herd production targets for 2012
5. Evaluate price protection strategies for feedlot and backgrounding calves
6. Pre-calving vaccinations should be given according to label instructions up to two months prior to calving; heifers may need a booster one month prior to calving
7. Secure seed and fertilizer purchases for planting in spring 2012
8. Meet with bankers, financial planners, Farm Business Management program instructors, etc., for income tax planning
9. Schedule date for carcass ultrasound sessions to scan yearling cattle
10. Review existing bull inventory, reflect on 2011 calf crop and determine needs for 2012 breeding season because bull sales will start soon

For more information on this and other topics, see www.ag.ndsu.edu

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