Extended Visions, September/October 2007
Embracing the Future
by Daniel J. Duncan, ARDC Director

Recently, I participated in a meeting to discuss new paradigms in planning the direction for some of our research projects. In essence, our assignment was to determine what would be the important issues 15 years from now and begin planning research programs to meet those needs. During the meeting, the following quote was shared:

“A good past is positively dangerous if it makes us content with the present and unprepared for the future.”

Charles Eliot

This quote began to stick in my head like one of those commercial jingles. I kept thinking about the ARDC and how the authors meaning really serves as a reminder that we cannot ever rest on past successes. When we think about the ARDC, we can all take great pride in what we have accomplished during the past year. Crops look excellent, we have made improvements to livestock facilities, and research projects have gone very well. If we think about the past several years, we can say the same things...we have done well, very well in most cases...we have had “a good past.” As good as our past has been, I believe we can have a brighter future if we continue to improve facilities, employee training, equipment and management schemes to avoid the dangers complacency could breed for our future. I am not sure what those dangers are, but I know we must meld everyone’s talents, ideas and energy in such a manner that we are as prepared to change as humanity possible. Our challenges will be great and we must change to meet those challenges. Sometimes we have an “internal inspiration” that lights a spark and leads us to a brighter future. Sometimes we are so close to a situation we need assistance to become inspired and see our world in a different light. I believe we are at the point where we need an external spark, a fresh perspective, from experienced outsiders to help us think about how we can change operations at the ARDC to prepare for future research needs. We will soon be announcing the formation of an outside review team to help us see the ARDC in a different light and help us prepare for the future. We need to embrace this activity and not fear potential changes the review team may suggest. We must not be content with our current successes...we must prepare for the future.

Barnhill Recognized for Service at ARDC

A reception was held for Darryl Barnhill, a long-time employee at the ARDC. Darryl is now working with the U.S. Meat Animal Research Center (USMARC) at Clay Center as Swine Unit and Feedmill manager. He had worked at the Swine Research Area since June 1986 and will be missed.

Feedlot Research Important to Beef Industry

T he University of Nebraska research feedlot at the ARDC is utilized to test new feeds, new management, and research emerging issues that are important to Nebraska and the Plains feeding regions. Beef cattle and the feedlot industry in particular, is the largest segment of the agriculture industry in Nebraska. Each year, Nebraska finishes approximately five million head of cattle. There are approximately 4,500 feedlots in Nebraska with approximately 770 larger than 1000 head capacity. The beef industry accounts for $6.5 billion in cattle sales with an estimated total economic impact of $12.1 billion which is the main reason agriculture is the #1 industry in Nebraska.

There are many strengths in the beef nutrition and management area at the University of Nebraska. The feedlot and equipment at the ARDC continue to improve, renovate, and expand. However, the most important asset to the research feedlot is the employees at the ARDC. The employees are outstanding, work on numerous projects, and have stringent work hours. Because of animal care, employees are needed daily, including holidays and weekends to care for cattle. Faculty oversight of that facility at the ARDC is by Galen Erickson and Terry Klopfenstein.

Currently there are 118 feedlot pens utilized for research. A 48-pen expansion is currently under construction near the individual feeding barn. Eighteen pens have been completed. A new cattle handling facility was recently added by renovating the barns near the individual feeding facility. Current pens and infrastructure are also continually renovated. Future plans include finishing the expansion by building the fences, purchasing new feeding equipment as needed, and renovating existing pens at the south feedlot.

It will also be necessary to enhance commodity storage of feeds, particularly wet byproducts. There are more and more options for different feedstuffs in commercial feedlots, which means the University will need to continue to be able to test many different types of feeds and combinations.

The facility renovation was possible mainly through the use of grant dollars, with some financial support from the university foundation and donations. The facility is run using grant dollars from industry and government sponsors that provides operating dollars and helps offset the added expenses of conducting research. Each year, 2,500 steers are purchased in the fall as weaned calves for research conducted throughout the year.

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Summary Analysis of Grazing Yearling Response to Distillers Grains

Supply of distillers grains will triple or quadruple in the next few years as the Nebraska ethanol industry grows. The price of DG at the plant has ranged from $70 to 85 cents per ton dry matter ($60 as feed) and can be arranged by contacting us.

Research articles are posted in an easy-to-read format in the annual beef report publication. http://beef.unl.edu. Research articles are posted in an easy-to-read format in the form of the annual beef report publication. Members of the research group include: Terry Klopfenstein, Galen Erickson, Dillon Feuz, and Jim MacDonald.

Yearlings had higher daily gains compared to calf-feds. However, calf-feds were more efficient (i.e., dry matter intake, gains, and feed efficiencies). But, if researchers want to test five different treatments, 5 to 6 pens are needed for each treatment. Therefore, for each study, 25 to 40 pens are required depending on the number of treatments. If 10 steers are required in each pen, 250 to 400 steers are needed per experiment.

Generally, there are 3 or 4 large experiments being conducted simultaneously. 120 steers are also individually fed daily in the individual feeding barn, which adds to the workload.

Questions on feedlot research or extension questions related to feedlots should be directed to Galen Erickson at 402-472-6402 or email at gerickson@unl.edu. More information can also be obtained by visiting the beef website at http://beef.unl.edu. Research articles are posted in an easy-to-read format in the form of the annual beef report publication. Members of the research group include: Terry Klopfenstein, Galen Erickson, Dillon Feuz, and Jim MacDonald.

Eight grazing experiments were summarized reflecting yearling performance when supple-mented with 4.0 to 12.0 percent of the diet as distillers grains. Subsequent feedlot performance was not influenced by distillers grains supplementation on grain.

In a six-trial summary, each 1.0 lb. of distillers grains decreased forage intake by 0.5 lb. Economic return for each $1.00 spent on distillers grains yielded returns from $1.41 to $1.94.

Comparison of a Long Yearling System and Calf-fed Performance and Economics

There are two major types of cattle production systems. One is an extensive system where cattle are placed in a backgrounding program after weaning and before finishing. The other is an intensive system where cattle are weaned and fed a high concentrate diet until slaughter.

Heavier calves are suited for intensive finishing systems which results in acceptable carcass quality at a good grade of Choice. If larger framed animals are placed in an extensive production system, animals may become too heavy and produce overweight discounts.

In contrast, lighter, smaller framed animals can be grown for a period of time in an extensive system and still be slaughtered at acceptable weights. Smaller framed animals can enter intensive production systems. However, this leads to lighter carcasses and decreased profitability because of the amount of weight sold. Therefore, the objectives of a study conducted by William Griffin, Todd Klopfenstein, Lyle Lomax, Dale Blais, Don Adams, Walter Schacht, Sarah Morris, Kristin Blasi, Don Adams, Walter Schacht, Sarah Morris, and Marc Epp.

A UNL research group estimates that DG can be delivered to yearlings on pasture for about $138/ton dry matter ($120 as feed) and can be arranged by contacting us. Therefore, DG at the plant has ranged from $70 to 85 cents per ton dry matter ($60 as feed) and can be arranged by contacting us.

It is critically important to have replicated pens in a research feedlot. For example, generally pen size is only 8 to 10 steers because that is the number required to gather critical performance measures (i.e., dry matter intake, gains, and feed efficiencies). But, if researchers want to test five different treatments, 5 to 6 pens are needed for each treatment. Therefore, for each study, 25 to 40 pens are required depending on the number of treatments. If 10 steers are required in each pen, 250 to 400 steers are needed per experiment.

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Effect of Feeding a By-product Combination at Two Levels or By-product Alone

Wet corn gluten feed (WCGF) has been shown to have 100-110% the energy content of dry rolled corn that it replaces in feedlot diets (2000 Proceedings American Society of Animal Science) and decreased acidosis challenges. Wet distillers grains with solubles (WDGS) has been shown to have a higher energy content compared to corn ranging from 110-160% (2006 ‘brazuka Beef Report, pp. 35-37). However, the energy content of WDGS declines at dietary inclusion levels greater than 40% DM, possibly due to high dietary fat levels. A UNL research group consisting of Crystal Buckner, Galen Erickson, Terry Klopfenstein, Rick Stick, Kyle Vander Pol hypothesized that combining WCGF and WDGS could result in an associative effect and higher dietary inclusion levels may be fed to utilize more by-products. Therefore, the objective of this trial was to determine if feeding a WDGS: WCGF combination would be beneficial compared to each by-product alone and if a high by-product blend inclusion would result in better performance than corn-based diets. A finishing cattle study was conducted to evaluate feeding a by-product combination at two inclusion levels. It was compared with the by-products fed alone or a corn-based diet without by-products. Treatments consisted of 0% by-products (corn gluten feed), 15% WCGF (corn gluten feed), 15% with 15% WDGS (wet distillers grains with solubles), 30% WDGS, and 30% WCGF with 30% WDGS (dry matter basis). Final body weight, average daily gain, and feed:gain ratio were improved for cattle fed by-products, including the 60% Blend. No associative effects resulted from feeding WCGF and WDGS in a blend compared to these by-products fed alone. Feed conversion was similar for feeding a 30% by-product blend at 30% did not have any additive effects, while a blend at 60% had comparable feed:gain ratios at a blend with 30% with higher gains than the corn diet.

Study Experiments BRD Control and Receiving Systems

A general trend, the percentage of feedlot cattle fed as ‘calf-feeding’ relative to yearlings has increased in recent years. The increased trend of calf feeding can be a health management challenge for many feedlots. Administration of antibiotic toats to control Bovine Respiratory Disease (BRD) in cattle that are at high risk of developing the disease may be an important management option for producers. Often feedlots observe their greatest health challenges 10 to 14 days after receiving. In addition, calves transitioning from a pasture-based ranch system to a feedlot can experience multiple stressors that weaken immune function. Receiving calves with stressors with an environment rich with challenged environments can reduce calf receiving stress. Therefore, receiving calves with a pasture-based system has the potential to be a stress less system than feedlot pen receiving. Virgil Bremer, Galen Erickson, Terry Klopfenstein, David Smith, Kyle Vander Pol, Matthew Greenquist, Dee Griffin, Gary Sides, and Lonty Bryant conducted two experiments in this study. The objective of Experiment 1 was to determine the effect of Exercise at arrival or at revaccination (16-27 days post arrival) on morbidity, mortality, and gain of calves in both feedlot and pasture receiving systems. The objective of Experiment 2 was to determine the effect of pasture vs. feedlot receiving on morbidity and growth performance of freshly arrived calves.

In Experiment 1, no treatment differences were observed for initial or final body weight, or average daily gain. Initial body weight, treatment, receiving system (pasture or feedlot), and buyer of cattle explained the cumulative incidence of bovine respiratory disease (BRD). The incidence of BRD in this study was 4.7%, 11.0%, and 13.8% for arrival, control, and revaccination treatments respectively. The arrival medication effectively reduced BRD incidence. BRD was less (P<0.02) for pasture receiving than feedlot receiving, averaging 7.4% and 11.8% respectively. In Experiment 2, BRD was less for pasture receiving than feedlot receiving with 23% and 53% treated for BRD respectively.

About the People

He employees at the feedlot have busy schedules keeping research projects on track and cattle cared for. Josh Benton has been the Feedlot Manager at the ARDC since January 2007. He works with faculty in Lincoln to setup and design research trials and with the feedlot crew to make sure that after a trial is started, the research is carried out correctly. Benton helps coordinate projects and daily activities, gives tours, and also performs other many assorted tasks at the feedlot.

He has worked with UNL since 2003. While working on his Masters Degree, he was the lab technician in the Ruminant Nutrition Lab and in January 2006 became Lab Manager. Benton has a Bachelor’s Degree in Animal Science from the University of Tennessee-Martin and a Masters Degree in Ruminant Nutrition from UNL. He is currently in the second year of his Ph.D. studies in Ruminant Nutrition while he is managing the feedlot.

He lives near Waverly. He and his fiance, Jenny Ingwerson, are planning a December 2007 wedding. Benton enjoys hunting birds, ducks, and geese in his spare time.

Doug Watson has been Assistant Manager at the feedlot since fall 1999. Watson has a Bachelors Degree in Animal Science from the University of Nebraska-Lincoln. While at UNL he managed the feedlot where he obtained his Bachelor’s Degree. Watson is responsible for the day-to-day management of the feedlot. Much of his time is spent planning projects and ordering supplies. Watson ensures that the feedlot is ready to start new research projects, conducts follow-up and keeps current projects moving along.

Ken Rezac, Head Feed Truck Driver, started in the fall 1978. He and his wife, Carolyn, live in Fremont and have two daughters. Rezac is responsible for cleaning the hay out of the feedlot. This job duty also includes the task of watching the other cow and when they are on their own individual barns. In his spare time, Rezac enjoys competitive running and spending time with family.

The animal health technicians at the feedlot are responsible for the day-to-day health of the animals at the feedlot. Each day they observe the animals and treat any that may be sick at the feedlot.

Matt Sillivan started working at the feedlot in the fall of 2001. He treats sick cattle, runs the feed truck on weekends, and assists with construction at the new feedlot. He and his wife, LeAnn, and make their home near Morse Bluff. When not at work, Sillivan assists with the family live-stock operation.

Dan Maloosek also checks for and treats sick cattle. He started at the ARDC in the fall of 2006. He and his wife, Rachelle, live near Prague. Maloosek enjoys team roping and working with horses in his spare time.

Bryan Machovec joined the feedlot crew this summer and oversees the feedmill at the feedlot and also operates the feed truck. He has an associates degree in Diesel Technology from Southeast Community College at Milford. He lives on a farm near Wahoo and enjoys hunting, fishing and farming with his father.

More information on the feedlot studies in this issue and other can be found at: http://beef.unl.edu/reports.shtml

Calendar of Events

October
3 Promoting Positive Peer Relationships 8-45-3
3 4-H Council Meeting 7-9 pm
10 Ag Awareness Festival 10-1:30
10 Ag Awareness Festival 10:30
10 Ag Awareness Festival 10:30
13 Unit Managers Meeting 1-3
17 P3AT Wahoo High School 8-Noon
November
4 Administration Team Meeting 9-11
7 Onsite Wastewater Certification Training 8-5
8 Onsite Wastewater Certification Training 8-5
8 Hushar Beef Nutrition Conference 8-5
14 Unit Managers Meeting 1-3
16 UNMC Agr Medicine Conference Tour and Biofuels Update 9:30-10:30
19 Saunders County Extension Board Mtg 7-10 pm
Can a Flavor Enhancing Compound Improve Finishing Performance?

The response from increased production and improved feed to gain ratio of many common feed additives results in a return on investment that is favorable for cattle producers. As new feed additives are introduced it becomes critical that biological responses and determinations are made in situations that closely simulate industry settings. CRINA RUMINANTS AF is a flavor enhancer derived from essential oil compounds with various claims such as appetite stimulant, digestion stimulant, and antioxidant. A research group consisting of Nathan Meyer, Galen Erickson, Terry Klopfenstein, Matthew Greenquist, Peter Williams, and Ricardo Losa conducted a study to determine the effects of Ruminans®, Tylan®, and CRINA on performance measurements and carcass characteristics of finishing beef steers. Three-hundred seventy-six crossbred yearling steers were fed one of four treatments: (1) Control (CON), (2) CRINA RUMINANTS AF (CRINA), (3) CRINA RUMINANTS AF plus Tylan® (CRINA + T), or Tylan® (T). The objective was to determine the potential of an essential oil additive to improve steer growth performance and carcass characteristics. There were no differences in Final body weight or average daily gain between treatments.

Steers fed RUM + T had lower dry matter intake than other treatments and feed:gain ratio was improved for the CRINA + T and RUM + T fed steers compared with CON steers. Treatments containing CRINA resulted in lower average daily gains and carcass characteristics of finishing beef steers. The addition of CRINA RUMINANTS AF plus Tylan® or Rumennex® plus Tylan® improved feed:gain ratio and decreased liver abscesses compared to no additives.

Effect of Distillers Grains Composition and Level on Steers Consuming High-Quality Forage

Supplementing forage with dried distillers grains (DDG) decreases forage dry matter intake and increases average daily gain (Morris et al., 2005 Nebraska Beef Report, pp. 18-20; Morris et al., 2006 Nebraska Beef Report, pp. 30-32). This allows for a greater crop of forage, decreases the carrying capacity of pastures, and expand current production without increasing the amount of land devoted to grazing. Although the forage replacement value of DDG has been researched, the importance of supplemental DDG composition has not. Of concern is the variability of DDG produced both between and within ethanol plants and its impact on animal production measures.

The goal of the current study conducted by Mark Corrigan, Galen Erickson, Terry Klopfenstein, Kyle Vander Pol, Matthew Greenquist, Matthew Luebbe, Kip Karges, and Matt Gibson was to examine the effects of DDG composition at increasing levels of DDG supplementation in steers fed high quality forage. An experiment was conducted to determine the effects of DDG compositions (DDG) supplementation level and composition on growing steer performance and forage intake. Factors included DDG supplementation level (0.25, 0.50, 0.75 or 1.00% of body weight), and DDG solubles level (0, 5.4, 14.5, 19.1, or 22.1% DM). Final body weight improved and forage intake decreased with increasing levels of DDG. An interaction between DDG supplementation level and solubles level was observed on average daily gain and feed:gain ratio and was likely related to supplemental fat levels. Supplementation of forages with DDG improves performance while decreasing forage intake when fat levels are not too high.

Performance Profile and Carcass Characteristics of Steers Fed Optaflexx

Optaflexx (racetampane hydrochloride) is a growth promoting feed additive approved for use with cattle the last 28 to 42 days immediately prior to slaughter. The expected increase in final body weight of feeding 200 mg/steer daily of Optaflexx from Elanco’s post approval studies is 14.8 to 17.6 pounds. Market shifts and environmental factors, such as weather, make optimal slaughter dates challenging to predict prior to the start of feeding Optaflexx.

The ability to predict performance changes during the late part of finishing period is important to justify feeding and management changes to improve performance and carcass characteristics. Currently, there are limited data to evaluate the effects of feeding Optaflexx over time, or to evaluate the effects of Optaflexx when cattle are fed past their projected slaughter date. The data collected was part of a feeding study conducted by Matthew Greenquist, Kyle Vander Pol, Galen. Erickson. Terry Klopfenstein, William Platter, and Michael Van Koevering were to evaluate Optaflexx (ractopamine hydrochloride) feeding studies.

Feedlot studies include a various byproducts feeding studies.

A group of residents from University of Nebraska Medical Center’s family medicine program visited the ARDC this summer to learn about ag safety issues. Most of the residents did not have an agricultural background, but anticipated practicing in rural communities as part of UNMC’s Rural Health Education Network (RHNEN) program. The visit enabled them to learn about various types of injuries that could happen in an ag setting. Dave Morgan, UNL Extension Safety Engineer, is shown (left) discussing auger and grain bin injuries. And Mark Schroeder, ARDC Associate Director and Farming Safety Manager, is pictured (bottom photo) discussing farm equipment with a second group from UNMC. This group included undergrad students from schools across Nebraska (pre-medical, pre-physician assistant, and pre-nursing students). They earn college credit through a week-long ag-medicine program that introduces them to issues in providing health care in rural communities. The groups also visited the feedlottery, and cow/calf research areas at the ARDC.

This issue of Extended Visions was produced and edited by Debra Pillsman, Marketing & Promotions Manager. Extended Visions is produced biannually by the University of Nebraska-Lincoln ARDC & University of Nebraska-Lincoln Extension in Saunders County, 1071 County Road G, Room A, Ithaca, Nebraska, 68033-2234. For more information, call 402-624-8000 or 1-800-529-8100. Check out our website at http://ardc.unl.edu. E-mail: dpillsma1@unl.edu. Copyrighted 2004. ARDC, University of Nebraska-Lincoln. Cooperative Extension in Counties. Beef Feedlot research introductory article and research article content provided by Galen Erickson, Associate Professor, UNL Department of Animal Science.