UNL Beef Cow/Calf Herd
Plays Vital Role in Teaching and Research

The Animal Science department is fortunate to have a great resource in the Cow/Calf Unit at the ARDC. The Unit maintains approximately 440 beef cows on three and one-half sections of pastureland.

Recent improvements at the Cow/Calf unit include the renovation of the TV tower facility with a generous donation from Behlen Manufacturing. These facilities have been updated to facilitate safer and easier handling of heifers that we are developing as replacements for both the teaching and research herds. The unit maintains two separate cow herds, a teaching herd and a Physiology Research herd.

Calving is in full swing as this issue of ARDC Today goes to press. The first calf arrived February 20. UNL cow-calf herds at the ARDC are working to make significant contributions to the beef cattle industry.

Field Notes...
Who’s Visiting Us?

Over 7,600 people visited the ARDC in 2012. While many were from Nebraska and other areas of the United States, visitors also came from Argentina, Brazil, Russia, and Vietnam.

Adult programs and visits focused on: Beef production, profitability, and nutrition, beekeeping, BQMS training, farm safety, grasslands and pastures, grain production and marketing, irrigation management, manure application, nitrogen management, no-till practices, on-farm research, organic farming, onsite wastewater training, pesticide application, planter training, pork quality assurance, and turf management and production.

Some of the specialized tours and programs included: Conservation Agriculture Tour, Excellence in Ag Science workshop, Farm Beginnings® farm enterprise training, UNMC Ag Medicine for Occupational and Environmental Health, CENUSA Bioenergy collaborator, Crop Management Diagnostic Clinics, judging contests throughout the year, and the ARDC in 2012. While many were from Nebraska and other areas of the United States, visitors also came from Argentina, Brazil, Russia, and Vietnam.

Various 4-H programs draw youth to the ARDC throughout the year. And the Fall Ag Awareness Festival continues to provide ag education for over 800 fourth-grade students.

The teaching herd consists of 220 heifers and 440 beef cows that utilize 3 1/2 sections of pastureland. The remaining cows are Husker Red and Husker Black composites. The Herd hosts AI services for replacements and also supplies breeding bulls and semen to other cow-calf operations within the University system, including the Physiology herd at ARDC and herds at the University of Nebraska-Lincoln and other universities. The cow herd also supplies breeding bulls and semen to other cow-calf operations within the University system, including the Physiology herd at ARDC and herds at other universities and in the surrounding area.

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On April 12, 1962, the United States Department of Health, Education, and Welfare transferred land and former Nebraska Ordnance Plant buildings to the University of Nebraska for the purpose of education and research. A September 23, 2012 open house at the ARDC celebrated these endeavors and also recognized another momentous milestone — the Merrill Act’s 100th anniversary. Thank you to everyone who helped us celebrate! The open house drew more than 500 visitors.

Activities, exhibits and presentations appealed to visitors of all ages and focused on UNL research, education and extension. Bus tours provided visitors with a glimpse of research at the ARDC. Faculty and staff involved in the research were available at tour stops for further discussion. Tour stops focused primarily on crop and livestock production, research and technology. Other tour stops included horticulture research, honeybee research, remote sensing aerial robotic demonstrations and fire equipment reconditioned for rural districts by the Nebraska Forestry Service Fire Shop. Tour participants also learned about the history of the research site by touring a load line used during the Nebraska Ordnance Plant.

There was plenty to keep all ages busy. UNL Extension and local 4-Hs provided hands-on activities for children and demonstrated LEGO®-based robotics. Southeast Research and Extension staff introduced visitors to interactive equipment providing information about agriculture, ecosystems, wildlife and other topics.

Many visitors enjoyed the Backyard Farmer panel presentation, as well as UNL ARDC Director, Mark Schroeder’s, presentation on the progress and history of the ARDC. Hungry guests enjoyed UNL Extension’s Beef Vaca Catin demonstration complete with samples straight from the grill.

Ag commodity organizations and UNL departmental staff and students will help to conduct educational activities while the Saunders County Livestock Association assisted with lunch. A bench was also dedicated honorarily in honor of the late Warren Sahs, former ARDC director from 1962-1991. It was a day that will go down in history.

Cow/Calf Herd Management

Two long-time employees are integral to the function of the cow/calf unit, tending to the daily care and management of the herd, as well as assisting with research and teaching projects. Karl Moline, manager, started with the University in 1981 and Jeff Bergman, ag technician II, has been with the University since 1990. In addition, students from the University are also hired to assist as needed according to the various seasonal demands associated with a cow/calf operation.

Jeff Bergman (left) and Karl Moline (right) tend to the day-to-day operations of the cow/calf herd and assist with research and teaching projects.

Connecting with Schools

The Agricultural Education classes at Mead High School were recently visited by a guest speaker from UNL’s College of Agricultural Science and Natural Resources (CASNR). Jill Peterson, a representative from the college, came to Mead High School to introduce the students to the many different agricultural majors that CASNR has to offer.

Students were engaged in many activities throughout the day and were informed that 1 in every 3 jobs in the state of Nebraska involves agriculture. Students learned that agriculture is truly the #1 industry in our state and they also learned how they could pursue a career in this ever-growing industry. This was a very educational day for the students and we are thankful for the support our program gets from the University of Nebraska.

This January, students in Mead High School’s 9th grade Introduction to Agricultural Science and Technology class learned how the monogastric digestive system of swine works. The objective of the lesson was to identify and dissect the major organs of the digestive tract in fetal pigs. The students gained knowledge about the different types of digestive systems of livestock both polygastric (ruminant) and monogastric (non-ruminant). Students also learned about the 7 other body systems that contribute to the well-being of a livestock animal. This activity was a great learning tool for the students to learn about animal science.

Students in the Wildlife and Natural Resource Management class at Mead High School dissected a small perch and discovered all of the internal and external body parts of a fish. Guests discovered how many parts there really are to a fish and learned valuable information about aquaculture and natural fisheries. Activities like these help create a greater awareness and connection to life sciences and agriculture.

- Thomas Dix, Mead Agricultural Education Instructor
The cow/calf research herd is used to conduct basic and applied research in beef cattle reproductive physiology and maintains 220+ cows. Dr. Andrea Cupp, a professor in beef reproductive physiology, has supervised the research herd since August of 2000 when she began her employment in UNL's Department of Animal Science.

Current research projects have implications to the beef cattle industry and involve developing indicators of reproductive longevity in the cow herd. Longevity of a beef cow is related to reproductive success and number of eggs produced within her ovary (ovarian reserve). Females with greater ovarian reserve have been shown to have increased fertility as well as maintained in the cow herd longer.

Cupp's laboratory, along with several collaborators - Matt Spangler (UNL Department of Animal Science) and Robert Cushman (U.S. Meat Animal Research Center – U.S. MARC, Clay Center, Nebraska), are determining how indicators of ovarian reserve (number of eggs present in the ovary) may not only affect fertility, but other traits associated with their progeny and grand progeny (grandchildren). Ultrasonography is used to determine the number of follicles (follicles contain the eggs) as a predictor of ovarian reserve.

They have determined that females with greater numbers of antral follicles also have greater progesterone with greater birth weight, and increased pregnancy, and that cows that have low numbers of antral follicles in their ovary. In addition, heifers born to females with high antral follicle numbers also had progesterone with greater birth weight. Cupp’s laboratory is looking into the factors that influence how the ovarian reserve is established and possible links to growth and development of other tissues within the fetus.

A second project involves determining indicators of fertility in females at an early age so females can be selected prior to developing them as replacements in the herd. Within the physiology research herd, there is a population of females that have excess production of a steroid hormone called androstenedione. This steroid is a derivative of testosterone and is a male hormone. A majority of these females appear not to get pregnant as heifers, have lower antral follicle counts and have gene expression patterns similar to Polycystic Ovarian Syndrome which is a leading disorder of infertility in women. Cupp is working with collaborators, Dr. Jennifer Wood (Department of Animal Science, UNL) and Dr. Robert Cushman (U.S. MARC) to determine how the excess androstenedione affects genes regulating development of the egg and female fertility. The scientists are using populations of genotyped cows at U.S. MARC as well as the population at the UNL research herd to develop potential female fertility and longevity markers which may ultimately be used by producers to influence their decisions about retention of females in their herd resulting in greater economic impacts and productivity. - Dr. Andrea Cupp, UNL Department of Animal Science

Ask a scientist...How has the drought affected cow/calf research? Dr. Andrea Cupp states, “We, like other producers in the state, are trying to find enough feed resources to ensure that our cows have enough for the coming year. With the lack of hay and expense to buy more last year, we culled more cows than normal and have continued to remove cows at the beginning of the 2013 year. How does this affect our research? Since we are conducting trials on longevity as well as characterizing subpopulations of cows that have excess androgen and these factors affects longevity—it limits our abilities to fully utilize cows when we have to cull additional ones. So the numbers of cows that we have for our research purposes become more limited.”

Teaching Herd - Continued from Page 1

ing herd has never been static and strives to be progressive in adopting new nutritional, reproductive, and genetic research in order to stay current and better serve commercial cattlemen and students alike.

Dr. Matt Spangler, University of Nebraska–Lincoln Extension Beef Genetics Specialist, supervises the Teaching herd. Spangler assumed this role in 2008. A native of Kansas, Spangler received his bachelor’s degree in animal science from Kansas State University, master’s in animal breeding and genetics from Iowa State, and a Ph.D. in animal breeding and genetics from the University of Georgia.

- Dr. Matt Spangler, UNL Department of Animal Science

Ask a scientist...What type of resources are available to assist cattle producers with bull selection? Dr. Matt Spangler states, “There are several online resources that aid in understanding genetic selection tools such as EPDs, Economic Index Values, and Genomic Information. Among these are several MAP programs and virtual reality. UNL beef webinar as well as many helpful websites such as www.nbce.org, www.beefgen.org, and beef.unl.edu.”

When the Nebraska Sheep and Goat Producers met at the ARDC, John Holman from the Nebraska Stock Dog Association provided a herding demonstration with his dog and several ducks.

Congratulations to Don McClure on his retirement. McClure started with the University in 1972. Ruby Urban (right) presented Don with a certificate at his retirement reception. Deloris Pittman (pictured below with ARDC director, Mark Schroeder) was named recipient of the 2012 ARDC Employees of the Year Award. The award is sponsored by the ARDC Social/ Benefits Committee. Fellow employees nominate candidates and supervisors, employees and the committee score the nominees on several categories. Pittman is Marketing and Promotions Manager at the ARDC. Also nominated were Cheryl Dunbar and Rich Gooding.

In addition to receiving a plaque, Pittman was also honored with prizes donated by Micro Beef, Mead Cattle Company, and the Hilltop Country Club in Wahoo. Pittman will also be recognized on a plaque displayed indefinitely at the ARDC August N. Christensen Research and Education Building. This is the eleventh year the award has been presented. Past recipients can be viewed online at http://ardc.unl.edu/eoy.shtml.

Dr. Matt Spangler

Field Notes - Continued from Page 1

Graders each fall. Area schools and college classes often visit the ARDC for hands-on educational experiences.

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