



"The mission of the CRLRC is to enhance the understanding of woody brush invasion, hydrology, livestock production, wildlife management and discover innovative solutions to improve economic development in rangeland bound communities."

CRLRC is a collaborative effort between animal, range and wildlife scientists, economists, land and wildlife agency personnel and ranchers.



Southwest Grazing Land Innovations

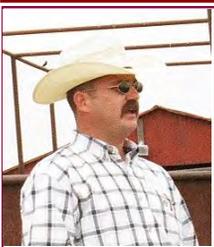
CORONA

Range and Livestock Research Center

December 2015

Volume 10, Issue 1

Ranch Update



Shad Cox
CRLRC Superintendent

I hope this newsletter finds you in the Holiday Spirit with great plans through the Christmas Season and the New Year. We are sincerely thankful for the moisture we had in 2015. Our early growing season was exceptional, however we were very dry during the mid to late season. As I begin my 22nd year here at the ranch, I am not convinced we will ever see a "normal" year again because as I reflect back no two years have ever been the same.

This is our first newsletter of the year as I completely skipped the June issue and did not remember it until early September. As my boys have gotten older and busier, so has the activity at the ranch, and my scheduling and pre-planning has started to slip a bit. I will not bore you with all the day to day ranch work, but I would like to mention a few events we hosted this year. We averaged 41 attendees at each of our new Beyond the Roundtable programs, starting with Solar

Water Pumping & Off-Grid Lighting in April, Livestock Health, Immunity and Vaccination in May, Brush and Weed Control in June, two intensive Ruminant Nutrition sections in July and August, and we finished the series in October with Range Management and Forage Assessment. We snuck in some other programs as well; in April, we hosted a 3 day New Mexico Department of Game and Fish annual meeting; in May, we conducted a Sheep and Goat Reproductive Technologies Seminar; in June we hosted a Range Grasshopper Update program, followed by hosting 88 regional scientists and graduate students at the 2015 Western Section American Society of Animal Science Beef Cattle Symposium; and in July we became the permanent host of the United States Beef Academy (more information on page 2). This year's events put us over 2000 guests in 4 years. Since beginning the Southwest Center for Rangeland Sustainability in 2012 we have had 2,117 guests and served 2,698 meals during our programs and hosted events. Most of our guests have been from New Mexico traveling about 96 miles to attend, however we have also seen guests from 10 states and 4 countries.

With the help of the NM State Legislature we continue to improve our facilities and have just completed the construction of our first cabin to accommodate overnight guests. Our plan is to add additional cabins to help host more intensive, multi-day educational programs in the future, such as the U.S. Beef Academy.

As always, I hope you enjoy the information presented within and please do not hesitate to contact me with any questions you may have or getting you in touch with an expert who can help your bottom line.

Shad

Understanding the Effects of Rate and Time of Gain on Heifer Fertility



Adam Summers, Ph.D.
Reproductive Physiology

Reproductive efficiency is one of the main contributors to cow-calf producer profitability. Thus, identifying ways or measures that improve reproductive success is important for producers developing replacement heifers. One measurement currently being utilized by scientists to determine heifer reproductive potential is antral follicle counts (AFC). Antral follicle counts are a prediction of ovarian reserve, or the number of follicles in the ovary, based on ultrasonographic images. A trained technician counts individual follicles visible on both ovaries and based on total count, classifies the heifer as low (<15 follicles), moderate (16-24 follicles) or high (>25 follicles). Not only do heifers classified as high AFC have increased weight gains and body weights from weaning to prebreeding; but also have a 10 percentage point increase in pregnancy rate at the

end of the breeding season compared to low AFC. Although follicle number is believed to be established during gestation, factors such and post-weaning nutrition have been reported to impact follicle activation, which in turn may impact pregnancy rates. In a study



conducted at the US Meat Animal Research Center, heifers fed 60% of their maintenance requirements from 8 to 11 months of age and then 120% of their requirement from 11 to 13 months of age had a greater number of primordial folli-

cles than control heifers, fed 100% maintenance requirements during the study. Working with Drs. Robert Cushman at US MARC and Ky Pohler at the University of Tennessee, we are conducting studies measuring the effects of heifer growth rate on follicle quality. Heifers will be fed to gain 1.1 lbs/d (Control) for 90 days prior to breeding, or 0.5 lbs/d for 45 d followed by 1.65 lbs/d for the final 45 d prior. Following the 90 d supplementation period, follicles will be aspirated and follicular fluid and oocyte quality measured to determine the impact of growth rate (ADG) on reproductive potential. Through these studies we plan to identify strategic supplementation windows and levels to aid producers in developing replacement heifers to optimize reproductive performance and economics.

For more information contact your county extension office or Adam Summers directly at (575)646-1549 or email: asummers@nmsu.edu.

More information at www.corona.nmsu.edu

New Mexico State University is an equal opportunity/affirmative action employer and educator. NMSU and the U.S. Department of Agriculture cooperating.

In 2015, the U.S. Beef Academy moved to a permanent home at the Corona Range and Livestock Research Center in Corona, NM. This will allow the Academy to be involved in developing facilities at Corona that will enhance the educational experience for the students. The Academy has strong national corporate support and will expand in 2016 to include students from other states, thus evolving into a national program for young men and women interested in the beef industry. The opportunity for NM students to interact with students from outside NM will greatly enhance their educational experience and hopefully provide an opportunity for them to form friendships with students that have a different background, experience and viewpoint of the beef production industry. The Academy hopes that the future leaders of the beef industry will have received a portion of their knowledge in Corona, NM at the US Beef Academy.



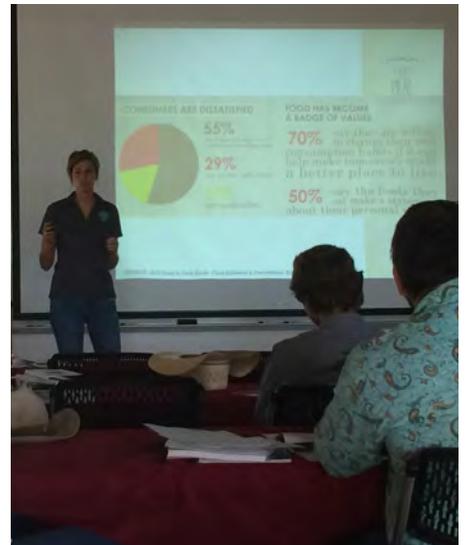
provide a unique, intense educational experience for the students that attend. The faculty of the Academy consist of the specialists in the Department of Extension Animal Sciences and Natural Resources, professors from the Department of Animal and Range Sciences and specialists from Texas AgriLife Extension. The academy is a five day, intensive educational opportunity for young men and women aged 18-21 years. This academy focuses strictly on current methods and technology used in beef production. Each day of the Academy focuses on a different area of beef production.

Day one focuses on the consumer of beef, and their desire to purchase a safe and wholesome product. We have several speakers on food safety, proper cooking methods, how genetics and production methods can influence the quality of the product, and have a taste panel for the students to witness for themselves these differences can make on the final product. Day two focuses on animal health and welfare, with topics such as low stress cattle handling techniques, preventative health care, immune function and how the immune function can be enhanced with proper husbandry practices. Day three focuses on beef cattle reproduction. Topics include anatomy and physiology of the reproductive tracts of the cow and bull, the estrous cycle, production practices

that can influence reproductive function, current technologies that are employed in industry and cutting edge technology such as genomics information and how to use it. Day four focuses on nutrition. Topics include feeds and feeding, anatomy and physiology of the ruminant animal, the role nutrition plays in production and how to maximize nutrition in an arid environment. Day five focuses on marketing and the global picture of US beef. Topics include



The United States Beef Academy (USBA) is an educational event for young men and women who are motivated to learn about the beef industry. This event is under the direction of New Mexico State University Department of Extension Animal Sciences and Natural Resources, and Texas Agri-Life Extension. It was designed to be a follow-up educational program for young men and women who have completed another New Mexico extension program, the NM Youth Ranch Management Camp. The US Beef Academy was formed to pro-



value added marketing programs and the role US beef plays in the global demand for beef.

For more information contact your county extension office or John Wenzel directly at (575)646-3019 or email: jwenzel@nmsu.edu.

facebook Follow us on Facebook

www.facebook.com/nmsucorona

UPDATES • INFORMATION • EVENTS

Offspring Response to Maternal Bypass Protein Supplementation



Eric Scholljegerdes,
Ph.D.
Range Nutrition

Proper supplementation programs exist to alleviate nutrient deficiencies in forage. These supplementation programs have historically been focused on meeting the needs of the dam, however, new research is showing that proper nutrition during gestation can impact fetal development, even in late gestation and may have lasting impacts on the lifetime productivity of the offspring. Work conducted at the University of Nebraska has demonstrated that when dams are fed protein supplements during late gestation compared to unsupplemented controls, performance of the resulting progeny is improved. However, understanding protein nutrition in ruminants can be complex, in that protein is partitioned

within the rumen as either protein that is readily degradable by rumen microbes or protein that by-passes the rumen and is absorbed in the small intestine. While at NMSU, Dr. Mark Petersen conducted a number of experiments investigating the use of supplements high in by-pass protein packaged in a small supplement. Dr. Petersen and his graduate students reported that steer progeny feedlot health was improved.

However, more work needs to be conducted to see the benefits on female offspring in regards to reproductive success and ovarian development. The work out of Nebraska demonstrated that heifer progeny



from protein supplemented dams calved in the first 21 d of their first calving season and had greater overall pregnancy rates. Therefore, a new project is being initiated at Corona that builds upon this work and seeks to investigate the impacts of late gestation by-pass protein supplementation on female progeny. Specifically, dams will be fed a high by-pass supplement during late gestation and all female progeny will be monitored for ovarian follicular development, reproductive success, and longevity in the herd. Steers will be shipped to campus and individually fed to slaughter to monitor feed efficiency and carcass characteristics.

For more information contact your county extension office or Eric Scholljegerdes directly at (575)646-1750 or email: ejs@nmsu.edu.

Recent CRLRC Publications

Downloadable Copies of These Publications Will be Available for Six Months on our Homepage: www.corona.nmsu.edu

"Performance of beef cattle as influenced by controlled and uncontrolled populations of horn flies (Diptera:Muscidae)," Brandon Smythe, Mark Wise, Eric Scholljegerdes . WSASAS Proceedings, July 2015.

CRLRC participated in companion study comparing *Juniperus monosperma* to *J. pinchottii*

"Effects of feeding ground juniper to gestating ewes on pre-and postpartum ewe performance, serum metabolites, and progeny preweaning performance," Whit Stewart, T. Whitney, Eric Scholljegerdes, Dennis Hallford, Sergio Soto-Navarro, H. Naumann . WSASAS Proceedings, July 2015.

"Do movement patterns of GPS-tracked cattle on extensive rangeland pastures suggest independence among individuals?" Mitch Stephenson*, Derek Bailey, Adrienne Lipka and Steven Lunt . SRM Proceedings, January 2015.

"Effect of terrain heterogeneity on feeding site selection and livestock movement patterns." Derek Bailey, Mitch Stephenson and Marco Pettarello. SRM Proceedings, January 2015.

"Heifer body weight gain and reproductive achievement in response to protein and energy supplementation while grazing dormant range forage," Richard Waterman, Jason Sawyer, Kim Kane, Dean Hawkins, and Mark Petersen. 2014. *Agricultural Sciences* 5:1296-1304.

"Effect of late gestation bodyweight change and condition score on progeny feedlot performance," Travis Mulliniks, Jason Sawyer, Flint Harrelson, Clay Mathis, Shad Cox, Clint Loest and Mark Petersen. 2015. *Animal Production Science*.

Other Publications of Note

"Health, performance, and ovalbumin-specific immunoglobulin titers of feedlot receiving calves in response to intranasal or subcutaneous vaccination programs," Eben Oothuysen, Mike Hubbert, James Graves, Amanda Ashley, Clint Löest. WSASAS Proceedings, June 2015.

"Assessment of supplemental trace mineral level and source on liver and serum mineral concentrations after feeding cattle a diet deficient in trace minerals," Margaret Garcia, E. Oosthuysen, M. Hubbert, M. Branine, C. Larson, C. Löest, E. Scholljegerdes. WASAS Proceedings, June 2015.

"Effect of Stocking Rate and Feeder Design on Hay Waste", Britt Hicks, OSU CES Beef Cattle Research Update, November 2015.

New or Revised NMSU CES Publications

NMSU Publications available at www.aces.nmsu.edu or at your local cooperative extension service office.

EBook: Troublesome Weeds of New Mexico.

Guide B-222: Cattle Vaccination and Immunity.

Guide B-223: Calf Vaccination Guidelines.

Guide B-224: Cow Herd Vaccination Guidelines.

Guide B-230: Trichomoniasis in Beef Cattle.

Guide B-819: Mesquite Control: Aerial Application.

Guide B-231: Estimating Water Intake for Range Beef Cattle.

Guide B-229: Immunity and Serum Neutralization Titers for Cattle.

Circular 597: Chemical Weed and Brush Control for New Mexico Rangelands.

Guide B-225: Preventing Persistent Infections of Bovine Viral Diarrhea Virus in Beef Cow Herds.

RTIF Report 82: Elk and Livestock in New Mexico: Issues and Conflicts on Private and Public Lands.



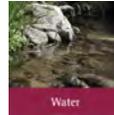
Livestock & Range



Agricultural Mechanics and Engineering



Wildlife



Water



Look For Exciting New Programs This Spring!

New Most of our programs are now recorded and available at www.corona.nmsu.edu!

