

### Ranch Update



**Shad Cox**  
Ranch Manager

I hope everyone has had a great holiday season and wish you much luck in the new year! In December I attended the Joint Stockman's Convention in Albuquerque and had a great time. It was enjoyable seeing friends and acquaintances from across the state, as well as, meeting many producers that I had not had the opportunity to meet before. I am looking forward to the Southwest Beef Symposium in January. If you have not had the chance to attend in the past, I encourage you to take time out of your schedule to attend one or both days. At the symposium, I receive good information about current topics, especially the financial and marketing material. I have included information on the Southwest Beef Symposium later in the newsletter. Also, remember the CRLRC 2nd Triennial Research Field Day is July 18th, 2008. We hosted over 200 people during the last one in 2005 and this year looks to be even more exciting with many new results to report.

In 2007, the year started off great. We had great spring moisture and it helped stock and wildlife recuperate after coming out of such a poor year in 2006. However, the summer was dry, with occasional small rains that would only wet the topsoil, then dry out again. We had our first real rain in September while I was at state fair and when we returned home it was nice and green. Then it got cold for a short spell and that was it for our growing season. The ewes had a tough time of it and we weaned light, we have started feeding them for the first time in many years. Our cows fared much better, with average calf weaning weights, the mature cows are going into the winter in great condition and a 97% bred up. The yearlings and two-year olds both bred about 90%.

We spent the first part of December recapturing deer and pronghorn for repeated body condition and nutritional measurements and added a few more electronic tracking collars at the same time. It went really well and most of the work was completed before the helicopter had to go. I am looking forward to a preliminary report on the last two years of work this spring.

Throughout the past year, the CRLRC Advisory Committee has been targeting funding for a new educational complex for the research center. Through their efforts we were appropriated \$525,000 from the legislature to design and start construction of a center that will be named the Southwest Center for Rangeland Sustainability (SWCRS). Through these efforts the SWCRS will include modern electronic classroom and meeting area, offices, research library and laboratories, as well as, meeting accommodations to house CRLRC, NMSU and other outreach activities. Fundraising is underway through the College of Agriculture and Home Economics' Development Office and the NMSU Foundation as well. If you would like further information about the SWCRS or research at the CRLRC please feel free to contact me with any questions or comments you may have at (505)849-1015 or shadcox@nmsu.edu.

*Shad*

### CAN SHEEP AND GOATS HELP KEEP JUNIPER AT BAY



**Andres Cibils, Ph.D.**  
Grazing Management and Ecology

Graduate student Santiago Utsumi tested the efficacy of targeted grazing with sheep and goats in a mechanically cleared pasture that had been reinvaded by juniper saplings. We used goats alone or goats + sheep in two grazing density treatments at a heavy stocking rate of approximately 21Ac/AU. The intensive grazing treatment was tested over a 6 day period in summer 2006 and spring 2007. All goats and sheep were fed a protein supplement that was intended to boost juniper intake. High density treatment consisted of placing ten goats or five goats and four ewes in a 100 m<sup>2</sup> area for approximately 12 hours and moving them to a different plot every day. Low density treatment, on the other hand, consisted of placing the same number of animals in a 600m<sup>2</sup> area for six days. Goats spent similar amounts of

time feeding on juniper in summer and spring, although plant parts consumed differed among seasons. During summer, animals consumed more twigs and needles, while in spring they tended to consume more bark. Use of herbaceous vegetation was similar in spring and summer. Allotting small daily grazing areas or mixing sheep and goats induced higher intake of juniper by goats. Low density grazing, on the other hand, resulted in heavier use of the herbaceous understory. Although it is still early to tell, it appears that survival of browsed saplings was high. Many defoliated saplings resprouted during the summer and fall of 2007. Overall, debarked saplings ap-



peared to suffer more than saplings that were intensely defoliated. Goats

maintained their body weight throughout the study, in spite of the fact that some of them consumed high quantities of juniper. We plan to continue monitoring sapling survival and herbaceous vegetation recovery in these plots to determine the longer term impacts of this vegetation management tool. So far, our results suggest that the use of targeted grazing to control juniper saplings may be most effective when applied in conjunction with other proven vegetation management tools.



*For more information contact your county extension office or Andres Cibils directly at (575)646-4342 or email: acibils@nmsu.edu.*

### AVAILABLE RESOURCES AS AFFECTED BY WOODLAND HERBICIDE AND DEFOLIATION



**Sam Fernald, Ph.D.**  
Hydrology Water Quality

If we clear the trees, will we get more water? If we graze invading junipers in the dormant season will we reduce invading trees but grow less grass? These questions were addressed at CRLRC by masters student Hector Ramirez.

The use of herbicide treatment to clear pinyon-juniper woodlands led to increased under-canopy total herbaceous vegetation and perennial grass. In inter-spaces, herbicide treatment led to increased perennial grass. Except for late 2006, there was no difference in soil moisture between herbicide treated and untreated plots. In essence, thinning trees provided more water for grass

growth, but only in a very wet rainy season was there sufficient water to pass through the grass rooting zone for deep soil and groundwater recharge.



Grazing to control juniper seedling invasion, as simulated by clipping in the dormant season, did not affect biomass production in intercanopy plots. Under-canopy plots did show an effect of defo-

liation. Total, perennial grasses, blue grama, and sand dropseed biomass diminished in defoliated plots beneath dead trees. Considered overall, there is potential to use small ruminant grazing to control juniper seedling invasion, with mixed effects on non-target plant production.

Hector notes that these results are important in areas where pinyon juniper woodlands are encroaching, however, results must be interpreted with care before applying the treatments mentioned in this study.

*For more information contact your county extension office or Sam Fernald directly at (575)646-1041 or afernald@nmsu.edu.*

## USE OF METHYLGLYOXAL AS A TOOL IN PREDICTING RUMINAL NITROGEN STATUS



Shanna Ivey, Ph.D.  
Ruminant Nutrition  
Rumen Microbiology

A three year study was conducted to determine the effects of protein supplementation to cattle grazing dormant winter forage on ruminal production of methylglyoxal (MG). Methylglyoxal is a toxic compound produced by rumen microbes in response to excess carbohydrate and insufficient nitrogen (N) in the diet, as is often the case when ruminants graze dormant forage. Six ruminally-cannulated cows were assigned to two treatments. Treatments consisted of: 36% CP cottonseed meal supplement fed 3x / week (900 g head<sup>-1</sup> • feeding<sup>-1</sup>) and no supplement (salt and mineral only).

### Results

Treatment did not affect ruminal ammonia, pH, or MG ( $P = 0.17$ ). The year (yr) the study was conducted, influenced ammonia, pH, and MG concentrations. Ruminal pH values for yrs 1, 2, and 3 were

5.89, 6.33, and  $5.59 \pm 0.096$ , respectively. Ruminal ammonia in yr1 was 57.0% higher than yr2 and 61.7% higher than yr3. Methylglyoxal was 55.6% higher in yr2 than yr1 and 48.8% higher in yr3 compared to yr1. Ruminal MG differed by day and was lower for collection 1 than 5 (0.87 vs. 2.27 mmol). These data indicate that yearly forage quality is important for ruminal bacteria metabolism. In yr 1 carbohydrate and N were better balanced compared to yrs 2 and 3. This was supported by greater MG production in year 1 vs. yrs 2 and 3. Additionally, MG production differed by day which may be indicative of MG being a more sensitive indicator of declining forage quality during the grazing season than ammonia.

### Future Work

These results indicate MG production is associated with a nutrient imbalance of carbohydrate and protein. Further research is necessary to determine the origin of MG in the ruminant model. More in-



formation regarding the conditions conducive to MG production and MG's improved sensitivity, may potentially lead to development of a cost effective, producer friendly method of MG quantification. This would be advantageous to the producer, offering yet another tool to aid in diet and supplement formulation, which could augment their bottom line.

For more information contact your county extension office or Shanna Ivey directly at (575)646-4650 or email: [sivey@nmsu.edu](mailto:sivey@nmsu.edu).

New updates to the website happen all the time. Please check often to see what's new at the CRLRC.

For more information or directions to the CRLRC contact:  
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Directions to CRLRC Headquarters: Turn east off of Hwy 54 (north edge of town), travel under the tunnel. Follow county road (under tunnel) for 8 miles. Road ends gate.

## CORONA.NMSU.EDU

### New climate database available!!!

Almost 20 years on site plus close to 100 years of Corona area historical data.

Newsletter Archives

Maps and Images

Events and Announcements

Flora of the CRLRC Ranch

Past Field Day Proceedings

Climate and Precip Archives

Past Half Day of College Handouts

Viewable Research Publications

**Southwest  
BEEF  
Symposium**

January 16-17, 2008  
Roswell Convention &  
Civic Center



### DON'T MISS THE SW BEEF SYMPOSIUM IN ROSWELL!

Wednesday, January 16th 1:00 pm - 5:00 pm

Managing costs in the face of high feed and fuel prices

Wednesday, January 16th 8:00 am - 12:00 pm

Current Topics: Exports, Policy issues, etc.

Wednesday, January 16th 1:00 pm - 5:00 pm

Managing for improved calf health beyond the ranch

**BY FAR THE BEST EDUCATIONAL EVENT OF THE YEAR!**

<http://cahe.nmsu.edu/ces/swbeef/>

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