

The Rimrock Report



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Quantity or Quality? That is the question...

OK, so that is a pretty lame twist on Billy's most recognizable line but at least it gives us a place to start our discussion. Yes, I know that this topic has been mentioned in previous issues of this newsletter but after spending a week recently traveling Arizona as part of the Range Livestock Nutrition School program, you all convinced me it is still a matter of some interest. So, what do you think? When it comes to grazing animal nutrition, which is more important? Do we as managers need to make sure our animals have a sufficient amount of forage each day? Somewhere in the neighborhood of 2 to 3 % of their body weight on a dry matter basis should do it. Monitoring forage conditions and using this information to adjust stocking rates accordingly is the basis for good grazing management. "Hollow belly" is a bad thing, so obviously quantity is the most important aspect to consider in grazing animal nutrition.



Not so fast my friend! (did that sound like Lee Corso?) Have you ever heard of "rabbit starvation"? Basically this term refers to a situation in which a person can eat all they want of rabbit or any other very lean meat and still be undernourished, especially in cold climates. The undernourished state results from insufficient energy due to a lack of fat in the meat and to an increased caloric requirement to

maintain body temperature. Herbivores can face a somewhat similar dilemma if they are consuming a high volume of low nutritional value feed. I overheard this in the coffee shop once: *"I don't understand, my cows are full as dog ticks but they keep losing condition... I keep hay in front of 'em all the time..."* A whole lot of a little bit is not going to do the job, so obviously quality is the most important aspect of grazing animal nutrition, right? Not necessarily.

Let me tell you a little story. I worked with an individual once who was convinced that the diet quality values (protein and digestibility) I sent him were too high. The cattle in question were losing weight when my analysis said they should be gaining. I re-did the

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"A whole lot of a little bit is not going to do the job..."



Quality or Quantity? That is the question..., Continued...

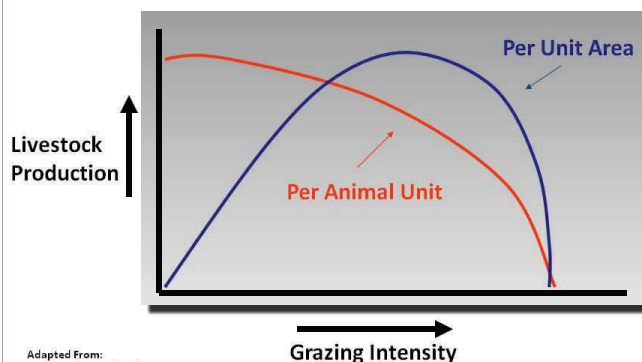
samples, checked everything I could think of and kept getting the same answers. We went back and forth on the phone quite a few times trying to figure out the problem and I finally said “*There is just no way that these cattle are losing weight on this quality of diet if they are eating ~25 lbs a day!*” The reply was “*well they are probably not getting 25 lbs a day, they have the pasture grazed off to a nub...*” I did not throw my hat but I wanted to, although to be fair I should have asked the quantity question first. The point is that we could discuss whether quantity or quality is most important for a month of Sundays... the answer is that obviously both are important but may be important at different times for different reasons for different animals. Clear as mud?

The key concept is that animal nutritional needs will vary with such factors as species, class, physiological state, or environment. Generally ruminants have a “*hold on to it and get the most you can from it*” nutritional strategy; monogastrics tend to take a “*pass it through and get what you can while you can*” approach. Lactating females have higher nutritional requirements than non-lactating females. Temperature, precipitation, and wind affect basal metabolism. On the plant side of things; year, season, and location affect a particular landscape’s ability to produce forage. High precipitation areas are more productive than drier areas. [Plant cell structure is important](#): young growing plants are more nutrient dense than older ones, stems are generally less nutritious than leaves. The bottom line is that the nutritional status of a grazing animal is a complex culmination of the interaction between its needs and the quantity of quality forage it can harvest.

Figure 1 is a graph you will probably have seen before. It represents the effect of grazing intensity on animal performance as measured on an individual animal versus a unit of land area basis. Fewer animals on a given area will perform at a high individual level but the production per unit of land will be low. Adding more animals means that they will eventually compete for resources and so individual performance suffers. Conversely, more animals means more total production (to a point). I think this really summarizes what we have been talking about. Nutritional management of grazing animals can be thought of as trying to optimize production per animal and per unit of land in a sustainable manner. Neither production per animal or per unit

area will be maximized in this scenario. The animal must work through the tradeoffs between quality and quantity on a daily basis, for example weighing the cost:benefit of venturing a long way from water for that thick patch of vegetation over the hill where it can fill up in a short period of time. Or deciding to stay near the creek where everything is nice and lush but the competition is high. Our job as grazing animal managers is to match animal needs with range productivity in our unique location and circumstances. So in the vernacular of the day, we are just facilitators. Sounds simple enough...

Figure 1. Forage Quantity/Quality versus Production/Animal and Production/Area





John's Plant of the "week"

Happy New Year! This year I resolve; 1) to not quote Shakespeare while writing about plants, 2) not go into long diatribes about species name changes. With that out of the way, I have decided to discuss a plant with an appropriate name for this time of year, winterfat. The difficulty in writing about winterfat, a common rangeland plant, is to impart new or helpful information for you, the reader.

When most of us think about winterfat, we know it as a forage, it is good for sheep, pronghorn, elk and mule deer; fair for cattle, and is most valuable in winter, hence the name. Winterfat has crude protein levels between 7 and 11 percent, and is relatively high in calcium, phosphorus, and potassium. It grows on hillsides, mesas, and plains and is most abundant in subalkaline or chalky soils. Winterfat is a long lived (up to 130 yrs) perennial that reproduces through seeds. Did you know the seeds are blue? Most don't because they are typically covered by the bract that protects the seed from damage. I find that rather humorous since researchers have found a unique ability of winterfat seeds to withstand damage.

The seeds of winterfat are able to withstand "daggers" of ice crystals and remain viable. Winterfat seeds are able to germinate even after these "daggers" of ice crystals form in the embryos, when temperatures drop down to 22 degrees F. These crystals quickly kill embryos of most domestic plants; therefore researchers wonder if it is possible to bring that trait to domestic plants. Maybe that is why the seeds are blue?



Winterfat is very drought tolerant due to its leaf characteristics and its deep taproot with numerous, extensive lateral roots. Roots are often 3 times as deep as the plant is tall. Leaves are linear or lance-shaped (lanceolate), with inrolled margins and grow alternately along the stems and branches ranging from 3/8 to 1 inch long. This plant is found in the West, from eastern Washington to western North Dakota, and south to Kansas, New Mexico and southern California. Winterfat is also found in Canada up to the Yukon. The plant occurs below 8,000 feet in elevation. Since European settlement in the 1860s the abundance and distribution has declined due to increased grazing pressure.

Winterfat will decrease under heavy, continuous grazing. Grazing season can have more influence on winterfat than grazing intensity. Late winter or early spring grazing is most detrimental to winterfat. It can tolerate winter use of 50% if it is rested occasionally. Spring and summer use should not exceed 35%. Early winter grazing may actually be beneficial. In one study, fall grazed plants grew an average of 61% more than those grazed in the summer, or those not grazed. Another factor in decreasing stands of winterfat on rangeland is soil compaction. Excessive soil compaction reduces seedling establishment.

Winterfat is a prized component of rangelands, so much so that the USDA-NRCS Plant Materials Center, Bridger, Montana developed a hybrid version for seeding in restoration work. It is cultivated and seeds harvested for seeding projects. Out of thirty two different accessions of winterfat, NRCS selected three for their seedling vigor, forage production, seed production and uniformity. Winterfat is an important pioneer species and establishes fairly easily on drastically disturbed sites or poorly developed soils such as those commonly found on mine lands. Winterfat is a good erosion control plant when planted in a mixture to provide greater plant density. Its deep taproot and an extensive fibrous root system near the soil surface help stabilize soils.

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Winterfat is becoming more popular as a horticultural plant in xeriscapes. It is well adapted to dry conditions and does not need fertile soils. Many find it visually appealing through its different phenological stages, especially the fluffy seed heads that look like cotton when they are mature.

In today's economical difficulties you may want to soak the leaves of winterfat in warm water to make a hair wash like the Blackfoot Indians. Or you can parboil the leaves and eat them to relieve the coughing of blood as the Navajos were reported doing. Winterfat was one of several plants thrown onto hot stones in sweat lodges for aroma.

Finally, the scientific name of this plant as I learned it is *Ceratoides lanata*. *Ceratoides* means "like horns" and refers to the horny tips in the flowers that enclose the seeds. *Lanata* means "wooly" in reference to the hairy appearance of the branches, leaves and fruits. The family name *Chenopodiaceae* is derived from *chenos* meaning "goose" and *pod* meaning "foot" and refers to the shape of the leaves of some members of this family, which includes beets, Swiss chard and spinach—to name a few cultivated plants.

Oh, by the way they changed the scientific name, no big surprise. It is now *Krascheninnikovia lanata*. I am not sure what that means... during my search for interesting facts on the internet I found many sites that offered tips on assisting one in the effort to shed the winter fat you may have accumulated over the holidays. Winterfat.com offered free music from an Alternative/Progressive/Rock band of the same name that sounds pretty good. One song, titled *Been Better*, reminisced of times when things were better.

At the start of this New Year, I pray that we can remember the good times and look ahead with eager anticipation, spring is around the corner and the plants will be flowering soon.



See our [Top 10 pictures](#) for the range program for 2008



The view from the Rim

This has been a long football season for a bleed maroon Texas Aggie, but here are a few football related quotes as you enjoy the rest of the bowl games:

“It is not the size of the dog in the fight that matters; it is the size of the fight in the dog” Bob Lilly (that’s who I remember hearing it from...)

“What’s the difference between involved and committed? Well when it comes to breakfast, chickens are involved and hogs are committed ...” Spike Dykes (former Texas Tech coach)

“We need somebody who can make a play even if it’s third and Navasota...” R.C. Slocum, (former TAMU coach; for non-Aggies, it is about 20 miles from College Station to Navasota...)

“Well maybe he was the only man open” Don Meredith, (to Howard Cosell on Monday Night Football, after a quarterback threw the ball straight to a defender...)

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Just me talking...



Has it really been a year? Yes it has. This time last year I was unpacking boxes, learning my way around the area and getting used to the altitude. The first week I was here in Arizona we got a truck stuck at about 6000 ft. Trying to dig it out made me realize that I had spent way too much time behind a desk the last few years and also, how much I love oxygen... The first time I helped gather cattle horseback at the V Bar V last winter was interesting too. We only rode about 2 hours but I had not been on a horse in 4 years so as you might imagine I was a bit saddle sore when I got home that night. Then there was the time we got snowed out and couldn’t clip grass in May, and the time we got hailed on, and... *Whatever you do, don’t throw me back in that briar patch...*

This has been a productive year in the range program at the V Bar V. We have attended and helped put on several meetings and clinics; I especially enjoyed the Natural Resource Conservation Workshop for Arizona Youth, Ranch Explorers Day, and the Lifelong Learners, a group of “seasoned veterans” who spent a day at the ranch last spring. We conducted numerous vegetation transects on the V Bar V and around the Coconino NF and have been privileged to help out with monitoring on several other ranches in northern and central Arizona. We have started several research projects: protein supplementation on weeping lovegrass, NIRS/Nutbal validation with 2 breed-types of cattle, uterine manipulation to improve reproduction in heifers, and diet quality of pronghorns, for example. Two primary extension projects have been initiated: Blue Collar Plants, a web site and plant collection which documents range plants at various seasons, growth stages, and levels of grazing. John Kava and the Yavapai County Master Gardeners are spearheading that one. The other is Range Rocks!, our youth oriented program to provide real-world, in the field rangeland ecology and management experience to high school students. And I have not forgotten about that drought management plan, maybe someday...

Let me know what you think about the “multi-media” version of this newsletter. We included a video discussion (9.5 min) of [plant cell structure and forage quality](#) in the opening article and a [Top 10 Pictures](#) from our first year here. Just click on the blue text. If this is something that you all enjoy and find useful, we will continue incorporating such additions to the Rimrock Report. I hope you and your family had a Merry Christmas and a Happy New Year.

Till next time... Doug

