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Montana Grazing Lands Conservation Initiative

FACT SHEET 2002-01

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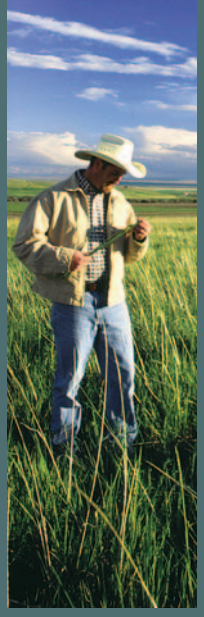


"Strengthening partnerships and encouraging diversification to maintain or improve private grazing land resources through grassroots efforts and interagency technical assistance."

Feed Less, Earn More

Matthew J. Ricketts, Area Rangeland Management Specialist USDA-NRCS.

Grazing longer and feeding less is key to improving ranch income. Here are profit improvement strategies to consider.

Feed and feeding is the number one cost of maintaining a cow herd. Producing, harvesting, baling, stacking, and then unstacking and feeding hay is not inexpensive. If the amount of hay fed could be reduced, the profitability of many ranches could be improved.

Feeding too much hay can often put you in a bind financially. Producing cattle that wean large calves often means selecting bulls and cows on the basis of what they can produce. This generally means selecting for a larger framed cow and/or higher milk production. But eventually, both of these traits can translate into higher nutrient requirements. If these requirements outpace the ability of the rangeland or pasture to provide needed nutrients at critical stages of production, the cow may come up dry or have related health problems. This translates into lower weaning percentages (the number one economic indicator for a cow/calf operator).

Are we spending big dollars for bulls that over the long-term produce replacement animals that require more nutrients than the rangeland is able to provide year in and year out?

If profit equals production multiplied by price minus costs, how do we optimize production at the least cost? (OPTIMIZE is the key word.) We need to conduct nutritional assessments of our least expensive and most abundant feed source - rangeland.

Nutritional Assessment Is Key

Managing feed resources to attain a consistently high reproductive rate at a low cost is essential in order to maintain profitability. Nutrition is the most important factor in fertility, good health, and high reproductive rates. Most problems with reproduction are associated with insufficient nutrition, particularly protein and energy (Spitzer 1986).

In the spring of 1995, we began assessing the nutritional value of the least expensive and most abundant feed source available to ranchers in the West - rangeland.

We sought to examine if feed costs could be cut and sufficient nutrition provided by shifting calving dates and conducting nutritional assessments.

This project centered on fecal profiling to predict livestock energy and protein intake (Stuth *et al.* 1989, Coleman *et al.* 1989, Lyons and Stuth 1991, Lyons *et al.* 1992, 1993, Coates 1998). Thirty ranchers in the sedimentary plains and the foothills regions of Montana collected fecal samples.

Livestock performance was then evaluated based on forage quality, environmental conditions, breed type, age, sex, physiological stage, body condition, and performance goals using the Nutritional Balance Analyzer (NUTBAL) computer program (Ranching Systems Group 1993). With this computer program, a rancher can make more informed feeding or supplementation decisions or adjust his or her grazing system to improve the overall economic and resource conditions on the ranch.

Knowing what nutrition is being provided to our range livestock by season is essential in order to improve ranch income and sustainability. Conducting nutritional assessments is key.

The sedimentary plains are characterized by rolling grassland intermixed with occasional rocky bluffs and ponderosa pine. Precipitation in this region is between 12 and 14 inches on average. Characteristic plants include bluebunch wheatgrass, western and thickspike wheatgrass, needleandthread grass, blue grama, prairie junegrass, green needlegrass, fringed sagewort, dotted gayfeather, and scattered Wyoming big sage.

The northern Rocky Mountain foothills are characterized by steeply to gently slop-

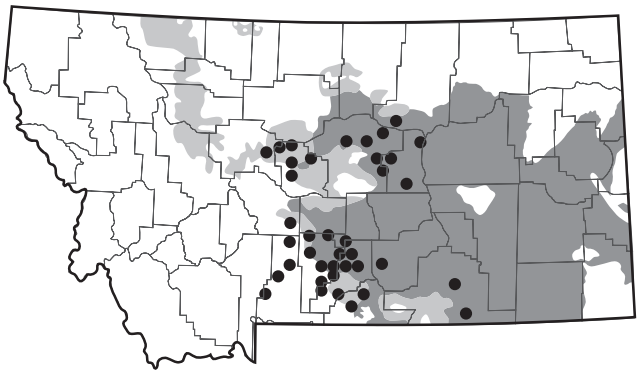
ing grassland leading up to the mountains. Precipitation in this region is between 15 and 20 inches on average. Characteristic plants include bluebunch wheatgrass, Idaho fescue, Cusick's bluegrass, thickspike wheatgrass, green needlegrass, prairie junegrass, Sandberg bluegrass, lupine and daisy species, and scattered pockets of mountain big sage.

Both regions receive 70% of their total precipitation in the growing season, with 35% falling during the months of May and June. Temperatures vary from -35 degrees F in the winter to 95 degrees F in the summer for both regions.

We plotted the fecal sample results for protein and total digestible nutrients (TDN), and compared them to livestock requirements.

Utilize the Forages Available

Nutritional assessments help you to know the quality of forages growing on your ranch each season. This information can help you match grazing and calving dates so as to optimize the use of the available forage protein (Ricketts 1994) and still maintain high reproductive rates and weaning percentages.



Dots indicate location of ranches participating in rangeland quality assessments. Light gray represents the foothills region and dark gray represents the sedimentary plains region.

When range condition declines, animal performance is impacted.

Range producing close to its greatest potential forage quality provides a greater total amount of energy and protein than range that is far below its potential.

In the Montana foothills, rough fescue can dominate (high TDN and about 5% crude protein in the winter). Bluebunch wheatgrass can also dominate in the foothills or plains (high TDN and between 3% and 4% crude protein in the winter). Both of these species are tall statured and can provide excellent winter forage.

Shrubs are nutritionally important in the sedimentary plains. Palatable shrubs help maintain protein at proper levels in the animal's diet when grasses and forbs are deficient in protein. This enables rangelands on the plains (that have these shrubs) to maintain animal performance at levels similar to rangelands in the foothills.

Greasewood is a palatable shrub that contains about 12% crude protein (CP) in the winter. Nuttall's saltbush is around 13% CP, and winter-fat is around 13% CP in the winter. Both are very palatable.

Forbs are also important. Purple prairie clover and dotted gayfeather are palatable warm season forbs containing around 25% CP when green. These forbs are like little protein blocks scattered on the landscape.

Sampling for intake protein and energy intake can help with strategically supplementing protein. Fecal sampling (Stuth *et al.* 1989) is a cost- and time-effective means for assessing protein intake of range livestock.

By not over or under supplementing protein, optimum herd productivity can be maintained while cutting wintering costs, optimizing summering costs, and maintaining adequate forage intake.

Quality and quantity affect the productivity and profitability of livestock operations. Cattle pictured here are grazing in the sedimentary plains region near Billings, Montana.

Foothills region in the spring near Livingston, Montana.

Consider Matching Calving Dates to Forage Quality

Two important factors to take into consideration are the TDN and protein available in standing forages. Overall, TDN was not deficient in either the sedimentary plains or the foothills. However, protein was deficient at various times of the year.

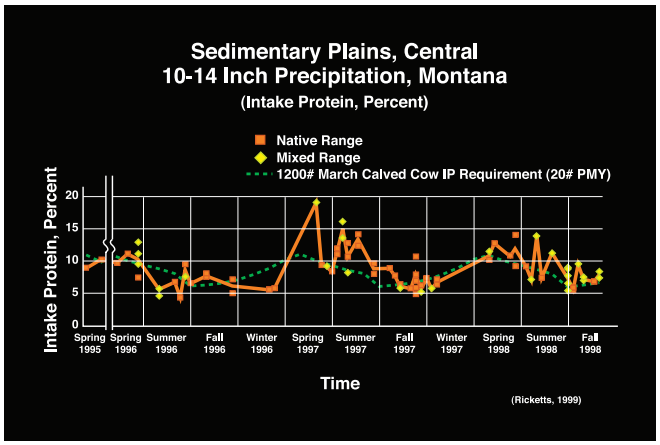
In the sedimentary plains, intake protein could be less than optimum at any time of the year. Winter was the most likely time for deficiencies to occur, followed by summer, fall, and then spring.

Many ranchers in the plains calve in March. If producers shifted calving dates two to four weeks to mid-March or April, feeding costs could be cut significantly and profitability would rise. Profitability would improve because nutrients available in standing forage available later in the spring are better matched with the cow's nutrient requirements, so less supplemental feed is needed.

Energy was not a problem in the sedimentary plains as long as sufficient standing forage was available and protein and energy were properly balanced in the diet.

The digestible organic matter/crude protein ratio is the ratio of digestible organic matter (or energy) to protein in the animal's diet. Animal performance is generally affected negatively when the ratio falls below four or rises above eight. In the plains, we found it to rise above eight quite often. This was associated with dry periods and protein deficiencies. It almost never fell below four (a washy forage condition with high rumen degradable protein), which may account for Montana's so-called 'hard grass'.

The typical cow body condition score for the plains was from 4 to 6. On a 1 to 9 scale, with 1 being extremely thin and 9 sloppy fat, a body condition score of 5 or 6 at calving time is recommended to maintain a productive herd (healthy calves and timely breed back) (Richards *et al.* 1986).



Shifting calving two to four weeks later in the spring would better match livestock nutrient requirements with forage nutrient availability in the sedimentary plains. (The graph reflects a March calved 20# peak milk yield cow).

Dotted gayfeather and similar forbs are like little protein blocks scattered across the range. They provide needed nutrients to assist animals in digesting the associated high-energy grasses that may be deficient in protein.

In the foothills, intake protein could also be less than optimum at any time of the year. Winter was the most likely time for protein deficits, followed by early spring, fall, and summer.

Many ranchers are calving in February in the foothills. If calving dates were shifted eight weeks to April, feeding costs could be cut significantly in this region on the same premise outlined for shifting calving dates in the sedimentary plains region.

Again, energy was not a problem as long as sufficient standing forage was available and protein and energy were properly balanced in the diet. Tall statured forages are necessary when snow cover is deep to prevent energy shortages.

The digestible organic matter/crude protein ratio never fell below four and rose only on occasion above eight. Protein deficiencies were a much lesser problem than in the plains.

The typical cow body condition score was between 5 and 8. Many ranchers are maintaining expensive body conditions on their cows. Feed bills could be cut if nutritional assessments were conducted, allowing producers to better match gazing dates with forage quality and still maintain herd productivity.

In Nebraska, a reduction in the cost of keeping a cow by synchronizing grazing dates with feed resources and cow requirements has been achieved (Proceeding of the Range Beef Cow Symposium 1997). This reduction in costs was more than enough to offset the reduced income from lighter weaning weights due to later calving.

By making some changes to match grazing dates to feed resources and cow requirements, some cost cutting changes could be made. For instance, the hayland once being used to raise winter feed could be shifted to summer pastureland. If haying less, expensive machinery will not wear out as quickly and may not have to be replaced as often.

Five Strategies to Consider

In summary, to graze longer and feed less, five management areas should be considered:

1) Cattle should be bred for moderate frame and moderate milk production, and conditioned to rustle (work the hills, not the feed bunk). The cows have to fit the environment, the resources, and the management practices on the ranch.
2) Shift calving later to about mid-March or April.
3) Conduct nutritional assessments on a regular basis.
4) Balance management decisions such as grazing dates, calving dates, and supplements with forage availability and livestock requirements.
5) Overall, good range management that promotes a productive, vigorous, and diverse plant community can improve the long-term profitability and sustainability of livestock operations.

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