



## The Use of Self Fed Supplements for Cows

### John Paterson, Extension Beef Specialist

On a worldwide basis, cattle production systems rely primarily on grazed and conserved forages to supply dietary nutrients. Dormant range forage is high in fiber and may be deficient in both crude protein (CP) and energy for cows during late gestation and early lactation. Limited forage quantity and (or) quality may necessitate supplemental feeding to maintain a desired level of productivity. A survey of beef cattle producers from 18 states in the USA

indicated that 94% of producers utilized pasture or crop residue. Eighty-three percent of these producers fed hay from November to March, while 49% fed supplements during this time period. The feeding of dry protein supplements may increase labor requirements, and in order to reduce labor expenditures, producers have increased the use of liquid and dry self fed supplements.

#### Effect of Protein Supplementation on Forage Intake and Gain

When forage protein falls below 6 or 7%, intake and gain has been stimulated by supplementation with protein or NPN. Enhanced performance in response to protein supplementation may be attributed to: 1) increased intake of digestible dry matter from the supplement directly; 2) increased intake of digestible forage dry

matter in response to increased rate and (or) extent of digestion, 3) increased gut fill or increased rate of passage, or 4) increased efficiency of nutrient use. Increased intake of digestible forage dry matter can explain most, if not all of the enhancement in performance.

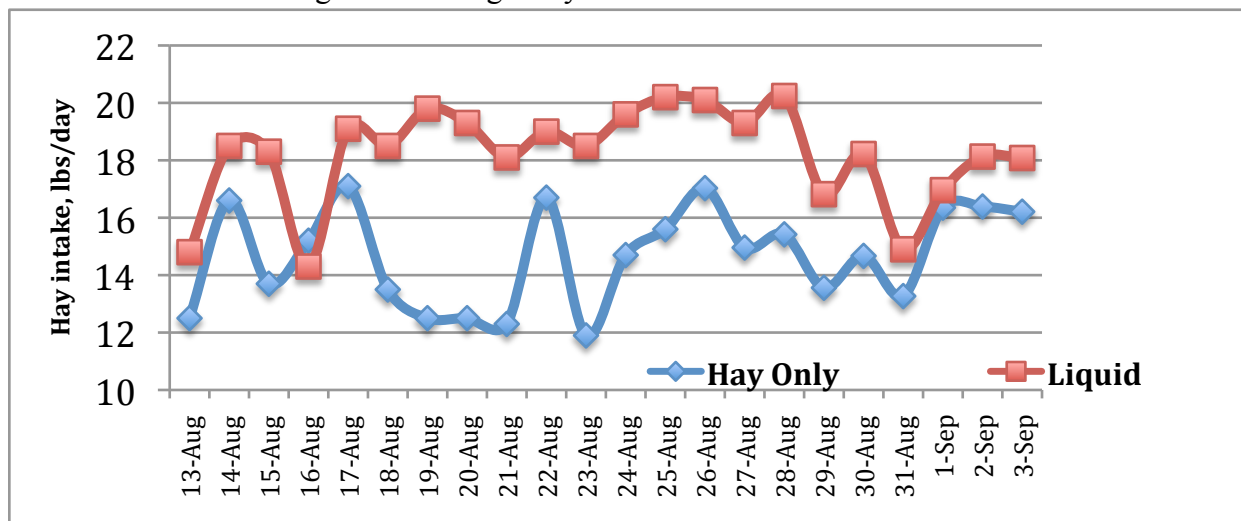


Figure 1. Changes In Dry Matter Intake When Heifers Were Fed Millet Hay Alone Or Millet Hay Plus A Liquid Supplement

Figure 1 demonstrates how forage intake increased when a liquid supplement containing 27% protein was fed to first calf heifers. Supplemented animals

averaged 18.2 lbs of hay intake/day compared to 14.7 lbs/day for heifers fed hay alone. (This work was conducted at MSU with GrowSafe feeders which measures individual forage intakes.)

### Liquid Supplements

Liquid supplements containing molasses, nonprotein-nitrogen (NPN) and natural protein can be fed free choice and may be more profitable than conventional supplements under range conditions. The primary attributes of molasses-based liquid supplements include; (1) supplying readily available energy for the rumen microbes to synthesize microbial protein from NPN, (2)

self-feeding systems to reduce labor costs associated with supplementation, (3) providing a method of mixing dietary ingredients with forages to prevent sorting, (4) improving palatability when mixed with low-quality forages, and (5) providing a delivery method for micronutrients and feed additives .

### Factors Affecting Consumption of the Supplement.

Bowman and others from Montana State University, reported that the type of supplement offered to cattle and sheep, the conditions under which it is fed, previous experience with supplements, social interactions, and forage quality and availability influenced the amount of supplement consumed by individual animals.

Older, more dominant animals typically consume more supplement than younger animals, but this may be altered by changes in supplement delivery methods.

**Animal-Related Factors.** A number of factors influencing livestock acceptance of feeds appear to be independent of palatability. Livestock are sometimes reluctant to sample new feeds initially, but usually overcome this reluctance with time and experience. Animals fed in groups often consume less feed, but have lower variation in intake than animals fed individually.

**Frequency of Consuming Liquid Supplements.** Research from Australia and the United States suggested that factors such as amount of precipitation, forage quality, topography, placement in the pasture, supplement composition, form of supplement, hardness of block supplement, number of animals/feeding station influenced consumption. Observations by Ernst (1973) and Sowell (1995) are presented in the following table showing results of two studies:

Table 1. Frequency of Liquid Supplement Consumption

Study	Avg number visits to feeder/day	Avg. time at feeder, min
Ernst (1973)	6.5	3.2
Sowell (1995)	1.1	14
2-yr old cows	1.0	8
3-yr old cows	1.6	17

Sawyer and Mathis from NM attempted to further determine which supplemental protein delivery system would be selected by a rancher based upon (A) formulation cost, (B) labor and

delivery costs or (C) flexibility in feeding location (Table 2). The authors ranked a dry supplement delivery supplement number one when considering cost of formulation and flexibility in feeding

location but liquid feeds were ranked number one when labor and delivery

costs were a major concern by the producer.

Table 2. Ranking (1=Best) of Different Forms of Supplement Delivery Systems Based on Three Criteria (Sawyer And Mathis, 2000 )

<b>A. Flexibility of least cost formulation</b>	<b>B. Labor and delivery costs</b>	<b>C. Flexibility in feeding location</b>
1.Cubes or meals	1.Liquid feeds, dealer filling feeders	1. Cubes
2.Pressed blocks	2.Hardened molasses blocks	2. Small package meals
3.Hardened molasses Blocks	3.Small package meals (e.g. minerals)	3. Blocks (any type)
4. Liquid feeds	4.Pressed blocks	4. Liquids
	5.Hand-fed cubes	5. Large package meals (protein or energy)

A good time to increase cow body condition in a spring calving herd is in the fall while the quantity and quality of grass is still good and cold stress is not severe. This may be accomplished by weaning calves at an earlier age or provide some protein supplementation to allow

maximum utilization of energy from the grass. Results presented by Adams (1991) in Table 3 show the effects of weaning date and protein supplementation on cow weight and body condition score changes.

Table 3. The Effect Of Weaning Date And Protein Supplementation In The Fall On Cow And Calf Performance (Adams,1991)

Weaning date Protein supplement:	<u>September</u>		<u>December</u>	
	No	Yes	No	Yes
Cow weight change, lbs				
Sept to Dec.	-23	80	-130	-25
Cow condition score change	.13	1.3	-1.4	0.6
Milk production, lbs	6.0	6.2	3.0	4.8

When calves were left on the cows and the cows were not fed supplement, for each 1 lb the calf gained, the cow lost two pounds. When the cows were supplemented, for each pound the calf gained, the cow lost .30 lbs. Cows that had calves weaned in September and were supplemented gained 80 lbs from September to December, while those not supplemented lost 23 lbs.

Results of a 2000 survey conducted by King and others of Montana beef producers showed that approximately 76% of ranchers balanced

their cattle rations using either published or analyzed values and 91% provided a supplement. Ranked from most purchased to least purchased were: 1) dry supplement; 2) tub supplement; 3) alfalfa or grass hay; 4) grain only; 5) liquid supplement and 6) a coproduct feedstuff. When these ranchers were asked who assisted them in making nutritional decisions, they ranked in order the: 1) extension agent or specialist; 2) feed salesperson or retailer; 3) producer magazines, books or newsletters; 4) veterinarian; 5) private nutritionist or 6) other producers .



## **2009 Beef Study Tour to Brazil**

***JANUARY 15 – 26, 2009***

Sign-up is progressing for the Beef Study Tour to Brazil set for Jan. 15-26, 2009. The tour sponsored by Montana Beef Quality Assurance and Beef Magazine will focus on beef cattle production systems in west-central Brazil.

“In today’s global marketplace cattlemen need to know what the competition is up to and how they’re doing it,” says Clint Peck, director of Montana’s Beef Quality Assurance program. “We’ve developed an itinerary that’ll give beef producers around the U.S. the best possible look at Brazil’s beef systems and assess their strengths and weaknesses as competitors in international markets.”

Peck and Joe Roybal, editor of Beef Magazine, will be leading the tour along with travel coordinator Renata Stephens of Brazilian Liaison. Stephens is a Brazilian native who has extensive experience in agricultural tours and South American excursions. Peck has participated in several beef study tours to South America.

Tour participants will experience a variety of cattle ranching and feeding operations in Brazil’s west-central Brazil’s subtropical cattle farming regions. Highlights include a two-night stay at a working family ranching operation that caters to guests and tour groups. Among the

other stops will be a federal beef cattle research center and a high-tech cattle seedstock operation.

“Beyond learning about the challenges and opportunities facing Brazilian ranchers, we’ll interact with local farming families, experiencing their day-to-day lifestyles,” Peck adds. “South Americans are very gracious hosts and fully enjoy their American guests.”

Mixed with the agricultural setting are world-class tourist sites like the Brazilian Pantanal and Bonito Springs – and two nights in Rio de Janeiro.

The tour package price of \$4,995/person (double occupancy and based on 25 participants) includes international airfare to and from Brazil, in-country air and motor coach transportation, nine nights of business-class lodging and most meals – along with local guides and translators. Deadline for registration is Nov. 3, 2008.

For more information contact Peck at [cpeck@montana.edu](mailto:cpeck@montana.edu) / 406-896-9068; Joe Roybal at [joe.roybal@penton.com](mailto:joe.roybal@penton.com) / 952-851-4669 or Renata Stephens, Brazilian Liaison, [renatas@BrazilianLiasion.com](mailto:renatas@BrazilianLiasion.com) or 763-972-8080. A tour itinerary can be viewed on the Montana BQA website: [www.mtbqa.org](http://www.mtbqa.org) or [www.beef-mag.com](http://www.beef-mag.com).

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– Lacey Hunter (06 MSU Collegiate Livestock Judging Team)

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– Collin Gibbs (04 MSU Collegiate Livestock Judging Team)

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– Mike True (MSU Rodeo Coach)

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– Marc King (MSU Livestock Judging Team Coach)

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### Top Rate of Gain

- Steer must be at MSU prior to Nov. 26, 2008.

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\*These three groups are separate MSU organizations and recognize donors in different ways (clothing, event privileges, etc.) depending on the amount donated. All donors present will be introduced during Ag Appreciation Weekend.

Contact John Paterson for more information:  
(406) 994-5562 or johnp@montana.edu

### Thank you for your support!

Send this form and any checks to:

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