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Reducing Costs of Delivering Feed to Cattle – Supplementation Frequency

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Winter supplementation of beef cattle is an important economic and production decision that producers make each year. Supplementation is often necessary to overcome nutrient deficiencies to allow adequate cattle performance. However, supplementation is an expensive input cost, particularly with current high feed prices and delivery costs. The initial decision is about the correct type and amount of feed to use as the supplement, with the goal to provide the needed nutrients at the least feed cost. After this decision, opportunities for reducing other costs of supplementation should be considered. One option that can have a major impact on input costs is how often supplement is delivered. Reducing the frequency that supplement is delivered can reduce fuel, labor, and machinery costs. The important concern is creating the right balance between frequency of delivery and cattle performance.

PROTEIN SUPPLEMENTATION FREQUENCY

There is a great deal of flexibility with frequency of protein supplementation. Numerous studies have evaluated differences between daily, three times per week, two times per week, and once a week supplementation. Research from Oregon indicated that supplementation frequency did not affect cow body weight or body condition score when cows were supplemented with cottonseed meal daily or every 6th day while grazing low-quality forage (Schauer et al. 2005).

These data are supported by additional studies done in Texas that evaluated daily, every third day, and once-a-week supplementation, which indicated that supplementing as infrequently as once a week reduced losses in body weight and body condition score when compared to non-supplemented cows, and was as effective as daily supplementation (Huston et al. 1999).

Another consideration is variation in supplement intake among individual cows in a herd, which is influenced by the amount of supplement provided at each feeding. This, in turn, is directly related to frequency of supplementation. Daily supplemented cattle have a smaller amount of feed allocated per head, the dominant cows will typically consume a larger portion of supplement than their allotment, and the timid cows may not consume their required amount, if they consume any. By providing supplement on a less frequent basis, there is a larger quantity of feed delivered, which gives all cows an opportunity to consume supplement, as the quantity is too large for the dominant cows to consume in a short period of time. For example, if feeding 100 cows a 30% CP range cube at 2 lbs/head/day, then 200 lbs of range cubes would be distributed every day. In this situation, the timid cows may wait until feeding has finished, while the dominant cows may have the feed nearly eaten by the time the others have made their way to the feed. If supplement is delivered every 3 days, the amount of feed

Input Costs	Daily Delivery Example	Your Daily Costs	Every 3rd Day Delivery Example	Your Every 3rd Day Costs	Weekly Delivery Example	Your Weekly Costs
Fuel ¹	\$105		\$30		\$15	
Labor ²	\$87.50		\$30		\$17.50	
Allocated cost of machinery purchase or upgrade ³						
Machinery depreciation ⁴						
TOTAL	\$192.50		\$60		\$32.50	
¹ \$0.50/mile in examples ² \$10/hour in examples ³ Include machinery costs specific to your operation. Two sources to help with this are EC-499, "Custom Farm Work Rates on North Dakota Farms, 2007, by North Dakota Farming Regions," and the 2009 Iowa Farm Custom Rate Survey. ⁴ See <i>Farm Management</i> , by Ron D. Kay and William M. Edwards, McGraw-Hill Companies, Inc., pg 58-64. Chapter 22, "Machinery Management."						

Figure 1. Worksheet for calculating delivery expenses for one week with varying frequency

provided would increase to 600 lbs, which, in most cases, if fed on the ground, would mean the feed would be delivered over a larger area, and the timid cows will have more of an opportunity to consume their allotted amount of feed without competing with other cows. Results from the previously mentioned research trials in Texas and Oregon support this; there was less variation in supplement intake and performance among cows in herds that were supplemented less frequently than those that were supplemented daily.

To determine the feeding frequency that works best, calculate costs to deliver supplement. Take into consideration mileage to and from the cows, time and labor to feed them, and equipment availability. For example, if the cows are 15 miles from the feed and it takes 1 hour and 15 minutes to feed when fed daily, what is the cost to feed those cattle on a daily basis, every 3rd day and once a week (given you have the necessary equipment available)? Let's use \$0.50/mile and \$10.00/hour for labor in this example. For daily feeding, the cost to deliver the feed would be \$192.50/week ($\$0.50/\text{mile} \times 30 \text{ miles per round trip} \times 7 \text{ trips/week} = \105.00 , plus $\$10.00 \text{ per hour} \times 1.25 \text{ hours} \times 7 \text{ trips} = \87.50 , for a total of \$192.50). For every 3rd day feeding, the cost of delivery would be \$60.00/week. This includes an additional 15 minutes of labor for the added time in loading and unloading the extra feed.

For once-a-week feeding, delivery cost would be \$32.50/week, with an additional 30 minutes of labor compared to daily feeding. To compare the daily versus weekly feeding strictly on an economic basis, the savings would be \$160/week by supplementing once a week. Once-a-week supplementation may not work in all situations, but frequency should be considered as a possibility to decrease input costs and help deal with high feed costs. Greater distances of delivery will increase the probability that infrequent feeding will pay. Customize these numbers and calculations to evaluate your specific situation, but be certain to account for labor when determining the most efficient program. Don't forget to add in equipment costs if new equipment must be purchased or if current equipment must be upgraded to handle the supplement. Costs incurred for new equipment or for significant equipment upgrades should be allocated over their useful life and the appropriate amount charged (for a given time period) to the cost of supplement feeding.

ENERGY SUPPLEMENTATION FREQUENCY

Although infrequent supplementation works well with protein supplements, it is not effective with energy supplements. The most typical feedstuffs used to supplement energy are various grains, such as corn or barley. This is true regardless of the form of the grain, whether it is pro-

cessed or whole, including ear corn. The primary constituent of grains is starch, which is an excellent source of energy, but starch interferes with digestion of fiber from forages and ultimately decreases forage intake. Additionally, increasing amounts of supplemental starch proportionately increases the magnitude of the negative effect. As a result, increasing the amount of grain fed at infrequent feedings increases the interference with forage utilization. It also is more disruptive of digestion when it is not fed daily. The problem is that the rumen organisms do not have the opportunity to adapt to the starch in the diet because starch is not available every day. In fact, excessive amounts of starch in cattle that are not adapted to high-grain diets can lead to serious digestive disorders such as bloat or acidosis. These problems would then result in decreased production, and ultimately in increased cost of production, due to decreased efficiency.

Research in Montana using four-year old cows grazing winter range indicated that cows only gained half as much weight (69 vs. 142 lb.) when supplemented with corn grain every other day compared to those fed corn daily (Kartchner and Adams 1982). The cows supplemented daily gained body condition, while those supplemented every other day only maintained body condition.

Use of fiber-based byproduct feeds such as soyhulls and sugar beet pulp will lessen the negative effects of infrequent energy supplementation compared to starchy feeds, but they should still not be delivered less frequently than daily unless they are being supplemented at extremely low levels.

SUMMARY

Energy supplements should be provided on a daily basis to decrease the chance of causing digestive upset, which will increase the overall feeding costs, due to daily delivery. With protein supplementation, efficiency is similar between daily supplementation, two to three times per week, or once a week. When determining what is best for your operation, evaluate the economics, the available equipment, and specific management practices. Typically more infrequent protein supplementation will help offset high feed costs.

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