Livestock Nutrition Center®
Better Feed, Better Results

WINTER 2022

NEWS

COMMERCIAL CATTLE PRODUCER NEWSLETTER

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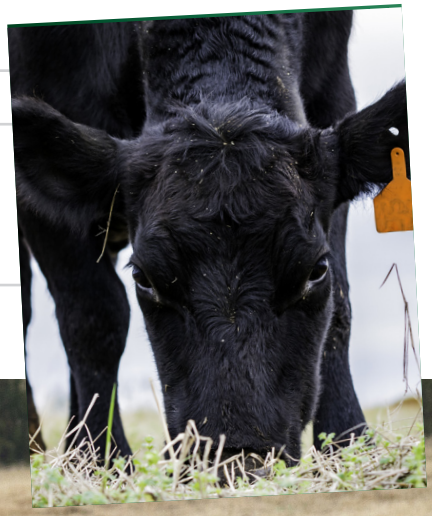

HOW MUCH SHOULD I BE FEEDING MY COWS?

By: Levi Trubenbach, Ph.D
Nutritionist, Livestock Nutrition Center

It's a question we are asked regularly: "How much should I be feeding my cows?" It is a valid question with meaningful tradeoffs – on one hand, we want to minimize the largest variable cost in a cow-calf business, while on the other, we yearn for maximum reproductive efficiency. The truth is: finding yourself on either side of this delicate balance can have profound impacts on financial performance. Our goal for this article is to describe our approach in building optimal supplementation strategies for commercial cow herds.

Defining Nutrient Requirements - The first step in designing any cow supplementation program is to define nutrient requirements. The first question we will ask is, "What stage of production are they in?" Generally, what we need to know is an average timeframe during which cows are expected to calve, rebreed and wean a calf so we can estimate nutrient requirements through the current or future months. Immediately after calving, milk production increases demands for nutrients beyond basic maintenance needs. Approximately eight weeks post-calving, milk production peaks, declining slowly until calves are weaned. In a typical production system, cows rebreed approximately 80-90 days after calving, resulting in additional nutrient demands for fetal and maternal support tissues. While gestational nutrient requirements are relatively low during the first two trimesters, these requirements increase exponentially during the last two months of pregnancy. Figure 1 illustrates the dramatic differences in protein requirements throughout the reproductive cycle; a curve describing energy requirements would follow a similar pattern. At peak lactation, protein and energy requirements can be 80-100% greater than the period immediately following weaning.

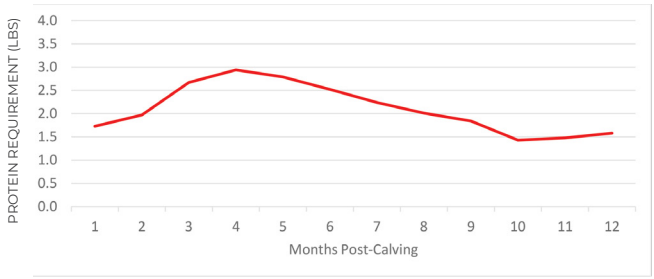

Figure 1. Total crude protein requirements during each month post-calving for a 1,200-lb cow with average genetic potential for milk production

While the stage of production is the primary variable we use for estimating nutrient requirements, several additional factors can affect nutrient requirements, including cow age, weight, breed and, genetic potential for milk production. Under special circumstances (first-calf heifers, non-beef breed types, extreme body size, poor previous plane of nutrition, etc.) we will adjust nutrient requirements, but under most conditions, using average values is an appropriate approach. For additional information on estimating nutrient requirements, we would refer you to one of two extension articles produced by the University of Arkansas and Oklahoma State University: https://www.uaex.uada.edu/publications/pdf/MP391.pdf
https://extension.okstate.edu/fact-sheets/print-publications/e/nutrient-requirements-of-beef-cattle-e-974.pdf

Continued on page 2

Estimating Nutrient Intake - Step two is determining nutrient intake, which is determined primarily by forage quality in two ways: 1) its effects on dry matter intake (Figure 2), and 2) its relationship with nutrient concentrations (Table 1). In general, the higher the forage quality, the more cows will eat of it, and the more nutrients are supplied per unit of intake.

Often the second question we ask when designing a supplementation program is, "What is forage quality and availability, and are there other supplemental forage sources available to the cattle (hay, silage, cotton burrs, etc.)?" Understanding the answer to the question will help us estimate total nutrient intake.

For example, a lactating cow on average-quality forage would be expected to eat approximately 30 lb of dry matter. If we assume (or measure) that forage contains 7.5% crude protein, then we would estimate forage crude protein intake to be: 30 x 7.5% = 2.25 lb per day.

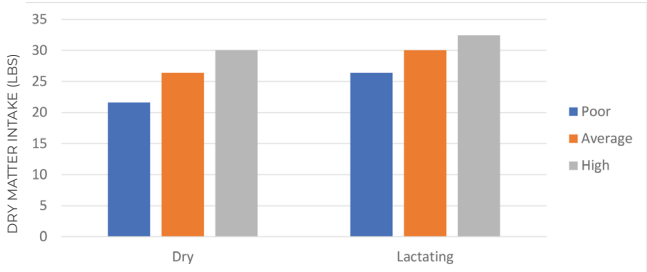

Figure 2. Effects of forage quality on dry matter intakes for a 1,200-lb cow during dry and lactation production stages.

	Crude Protein, %	Net Energy for Maintenance, Mcal/lb
Poor	4.5	0.37
	6.0	0.41
Average	7.5	0.45
	11.8	0.55
High	16.0	0.65

Table 1. Protein and energy concentrations in forages of various quality.

Nutrient Balance - Once we have defined nutrient requirements and estimated supplies, the final step in our process is to calculate nutrient balance, which is nutrient supply less demand, with a negative balance suggesting deficiency and a positive value representing excess. In our example above, we assumed a lactating cow on average-quality forage would consume 2.25 lb of crude protein daily. For the first few months after calving, average crude protein requirements are approximately 2.80 lb/d, leaving a balance of -0.55lb/d. In this scenario, our objective would be to correct this deficiency with supplemental protein in the most cost-effective method we can logistically accomplish. With average-quality forage, we would also expect a deficiency in net energy during early lactation (Table 2).

Crude Protein Balance, 1,200-lb Cow								
	Low Forage Quality				Average Forage Quality			
	Early Lactation	Late-Lactation	Mid-Gestation	Late-Gestation	Early Lactation	Late-Lactation	Mid-Gestation	Late-Gestation
Protein concentration, %	4.5%				7.5%			
Forage dry matter intake, lb/d	26.4	26.4	21.6	21.6	30	30	26.4	26.4
Forage protein intake, lb/d	1.19	1.19	0.97	0.97	2.25	2.25	1.98	1.98
Crude protein requirement, lb/d	2.80	2.26	1.58	1.85	2.80	2.26	1.58	1.85
Protein balance, lb/d	-1.61	-1.07	-0.61	-0.88	-0.55	-0.01	0.40	0.13

Net energy balance, 1,200-lb Cow								
	Low Forage Quality				Average Forage Quality			
	Early Lactation	Late-Lactation	Mid-Gestation	Late-Gestation	Early Lactation	Late-Lactation	Mid-Gestation	Late-Gestation
Net energy concentration, Mcal/lb	0.37				0.45			
Forage dry matter intake, lb/d	26.4	26.4	21.6	21.6	30	30	26.4	26.4
Forage net energy intake, Mcal/d	9.8	9.8	8.0	8.0	13.5	13.5	11.9	11.9
Net energy requirement, Mcal/d	15.5	13.5	10.0	11.9	15.5	13.5	10.0	11.9
Net energy balance, Mcal/d	-5.7	-3.7	-2.0	-3.9	-2.0	0.0	1.9	0.0

Table 2. Estimating nutrient balance during different production phases on low- and average-quality forage.

Importance of Body Condition- The most basic, yet important, assumption in all our programs is that we have attained adequate body condition. This leads us to the next question we must ask to be successful, "What is the right body condition (BCS) for my herd to be the most profitable?" There is a delicate balance between under-feeding resulting in lower profitability due to reduced reproductive performance and maintaining sufficient body condition for the resumption of estrus and conception.

Although we do our best to estimate nutrient balance as accurately as possible, the reality is that we are not always right; sometimes, we must adjust based on subjective observation. Once a "baseline" supplementation strategy is identified, we suggest managing that program such that the average BCS is at least 5.0 at the start of calving. Figure 3 illustrates the need for adequate body condition: in well-managed herds with healthy, reproductively

sound cows, well over 90% resume estrus 80 days post-calving when BCS is at 5 or better at calving.

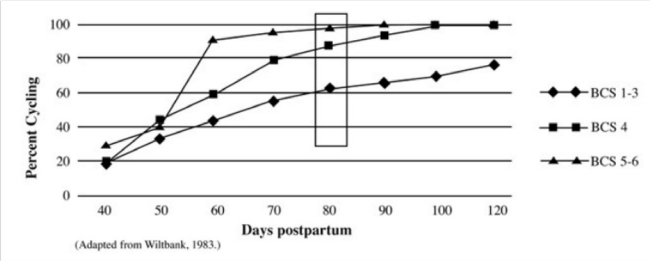

Figure 3. Effects of body condition score at calving on estrus resumption.

Therefore, when BCS is below 5.0 at calving, we lose profit potential in a cow/calf program by lengthening the time to rebreed cows and reducing overall reproductive efficiency. Conversely, when BCS is greater than 6.0 at calving, research would indicate that overall profitability may be reduced if additional money was spent on feed resources to achieve this level of body condition. A well-managed cow/calf program will invest in supplemental feed resources to maintain cow BCS between 5.0 – 6.0 at calving in order to maximize both short and long term profitability.

The dynamics of nutrient supply and demand, and their effects on reproduction, can certainly be complicated; in practice, we use a fairly complex model to refine our calculations with various adjustments for effects of ionophores, metabolizable energy adjustments, etc. However, regardless of how specifically we define our assumptions, the basic mathematics of deducting nutrient supplies from demands is at the root of our supplementation programs.

To help answer the original question, "How much should I be feeding my cows?", Table 3 provides general guidelines for feeding rates during each stage of production for cows consuming low- or average-quality forages. In order to better understand the correct answer to this question for your specific situation, a member of our Sales or Nutrition staff would be eager to walk through this process with you to help determine the best way to provide for your cows nutritional requirements.

Low-quality forage (Dormant pasture, straw, etc.)		
	DDG-based Cube	Commodity Cube
Early Lactation	4.5-6 lb	7 lb @ 22%
Late Lactation	3-4 lb	4-5 lb @ 20-25%
Mid-Gestation	1.5-2 lb	1.5-2 lb @ 38%
Late-Gestation	2-4 lb	4-5 lb @ 18-22%

Average-quality forage (7+% Protein; 42+ NEm)		
	DDG-based Cube	Commodity Cube
Early Lactation	1.5-2 lb	2.5-3 lb @ 20-22%
Late Lactation	-	-
Mid-Gestation	-	-
Late-Gestation	0-1 lb	0-2 lb

Table 3. Guidelines for supplementing cows on low- and average-quality forage during various production stages.

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MEET THE TEAM

LNC takes great pride in sourcing our employees. Each issue we will introduce you to one of our own.

Ronnie Castlebury, Ph.D.
Vice President of Sales, Nutrition & Marketing

Dr. Ronnie Castlebury leads the sales, marketing, and nutrition teams at Livestock Nutrition Center. After joining LNC in 2007, Ronnie has been instrumental in building LNC's consultative nutrition approach and custom blended feed programs. In over 15 years with LNC, Ronnie has personally provided feed management expertise, formulation, and nutritional consulting. Before LNC, Dr. Castlebury worked independently and as part of Purina's Beef consulting group. Dr. Castlebury holds Masters and Doctorate degrees in Ruminant/Beef Cattle Nutrition from Texas Tech University.

JOIN OUR TEAM

Do you know someone that would be interested in joining our team?

At Livestock Nutrition Center we are always looking for qualified, hard-working individuals. All of our positions offer a competitive salary, full benefits and uniforms.
https://www.lnc-online.com/careers/

GET AHEAD OF FLY SEASON WITH THE 30/30 APPROACH TO HORN FLY CONTROL

By: Paul Kropp
Central Life Sciences

As cattle producers, our ultimate goal is to efficiently raise as many pounds of beef per acre as genetically possible. Without a fly control program in place, horn fly populations can swell up to 4,000 flies per animal. The impact of flies can be directly seen in cattle performance.

Using an insect growth regulator, like Altosid® IGR or Clarifly®, is one of the most powerful ways to limit the impact of flies. Working as a feed-through fly control product, the active ingredient is passed through to the manure, where horn flies lay their eggs—ultimately interrupting the fly life cycle.

An Oklahoma State University Study by Dr. Justin Talley showed that insect growth regulators (IGRs) leading to improved weight gain and feed efficiency. The cattle group fed the IGR gained 0.33 more lbs/day as compared to the control group.

Keep in mind, fly activity is influenced heavily by weather, and spring time means fly time. The warmer temps mark the start of fly season when overwintering horn flies start to emerge, ready to feed on cattle with painful bites and the ability to spread disease-causing bacteria within the herd.

To achieve the best results with insect growth regulators and limit flies on cattle, we recommend following the 30/30 approach with just 3 easy steps:

1. Ideally start feeding FortiGraze® or RangeMax® tubs with an IGR, approximately 30 days before the average daily daytime temperatures reach 65°F. This is when overwintering flies emerge. We want to ensure the manure is adequately treated before flies emerge.

2. Continue feeding the IGR through the fall and an additional 30 days after the first frost has been recorded. his step will reduce overwintering pupae, giving you a jump start on the next fly season.

3. It is important to monitor fly populations, mineral intake, and cattle size to ensure sufficient product is consumed to minimize fly populations. In cases of periodic spikes in populations you can supplement your efforts with a horn fly insecticide such as insecticidal spray to reduce the adult fly population and allow the herd to stay on track.

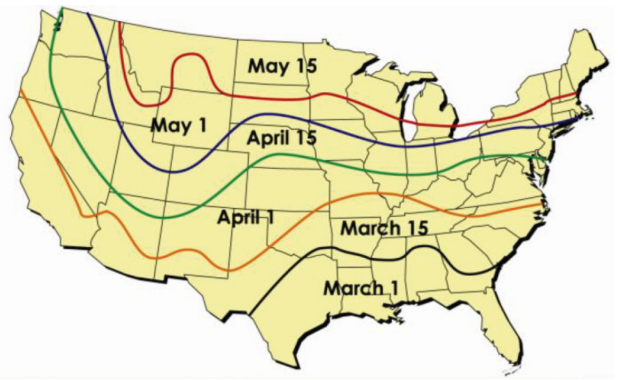

Figure 1. Last Frost Map (Start up to 30 days before this date)

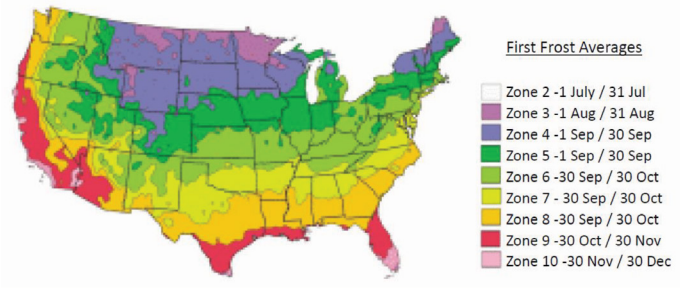

Figure 2. First Frost Map (End 30 days after this date)

COMMODITY OUTLOOK

By: Procurement Manager, Livestock Nutrition Center

Market volatility continues in grain and oilseed markets. March Corn futures have seen a $.65 range from the last writing of this article in late October while soybean meal is up $55/ton in the past 2 weeks and $125/ton since October.

Demand and weather are driving volatility currently. Ethanol margins have pulled back which is beginning to lower corn usage along with Chinese old crop cancellations. On the opposite side of these two demand factors, the world is watching South American weather closely. Current weather patterns are resulting in reduced yields in both Argentina and Brazil.

Feed ingredients have not been a big mover amongst the swings in Corn and Soybean Meal futures. Those more liquid commodities that more closely tie with corn, such as DDG, have moved with futures. Other more illiquid ingredients such as corn gluten and wheat midds have stuck more closely with supply and demand factors of those individual plants. Run times have not been good of late, but we are on the downhill side of demand in our trading area, keeping those markets relatively quiet. Although ethanol margins have pulled back, soy crush remains strong and will be demand-dependent as we move into the spring. Stronger corn futures and late cold snaps will keep demand up and values firm, but as we move forward expect to see soy by-products begin to search for homes. Others will follow suit, we are just watching production closely.

Demand will continue to drive ingredient prices from here. We are inching closer to the spring and green grass,

which will apply pressure to these products. Even though demand will begin to back off for our geography, most everything we feed still ties in some way shape or, form to corn. At this time, there is little to suggest corn has a big downside, which will continue to play a role in the prices of the ingredients we blend and feed.

CUSTOMER *affirmations*

"To have a good relationship, you have to have trust. I trust LNC to have the right feed to deliver the right quality to my cattle without worrying. That means everything to me. I don't have to worry about looking at everything and for that, I can get my horses worked. Being able to trust LNC is everything. They make me feel like they are on my team."

- Michael Cooper, NCHA Horse Trainer

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