

# Nutrition 101

*Extension specialists give insights on beef cattle nutrition.*

*by Madi Baughman, editorial intern*

Nutrition can be an intimidating topic in the beef cattle industry. With every producer having pastures and forages unique to their operation and a list of products that can be used for supplementation a mile long, figuring out what to feed cattle can be a frustrating and time-consuming topic. To shed some light on the area, extension agents from across the United States offer their knowledge and insight.

## The basics

When thinking about the basics of the bovine diet, the most essential

nutrient is water, says Lisa Pederson, North Dakota State University (NDSU) extension beef quality specialist. Though often taken for granted, Pederson says underlying problems often hint to a water quality or quantity issue.

After water, another area of importance not always on the forefront of producers' minds is their forage program, says Jason Banta, Texas A&M (TAMU) extension beef specialist. He believes a good forage program can lay the foundation for most cow-calf operations in the United States in terms of

maximizing grazing days and maintaining forage quality.

"What I think is going to be important for new producers to realize is when that forage is green and growing well, those cattle don't likely need any protein or energy supplementation at that time," Banta says. "All we likely need is a vitamin mineral mix out there for cattle. So understand that we're not wanting to supplement protein and energy 365 days a year. We're going to use that good grass when we have it."

When determining the quality of your grass, Travis Meteer, University of Illinois (U of I) beef cattle extension specialist, suggests taking a cutting of grass and sending it to a lab for a nutrient analysis. This will allow producers to see the exact nutrient contents of their forage. The process typically only costs between \$20-\$30.

"Pretty much every extension agent is going to tell you to test your forage, and then any supplementation program for protein and energy is going to be based off of that nutrient analysis results," Meteer says.

## Supplementation counts

In the case of cattle needing supplementation, David Lalman, Oklahoma State University (OSU) extension beef cattle specialist, recommends a four-step approach he teaches in OSU's Master Cattlemen's program when deciding what products to use for their herds.



Estimate nutrient requirements of the cow based on the stage of production; estimate forage quality during the same time period; compare the two calculations; and then determine if there is a deficiency or excess in any of the herd's nutrient requirements. Alternative solutions should be explored to fill any gaps found.

"Most people when they call me start with number four," Lalman says. "They'll call me and ask 'Should I feed with 14% cubes or should I feed 38% cubes?' and then I have to back them up and say, 'Let's start at the top.'"

Once producers have determined the nutrient needs of their cattle that have to be met with supplement, the next step is heading to the feed store. Selecting a supplement can be extremely overwhelming to producers because there are so many different products, Banta says.

When determining which product will best meet the needs of their herd, Banta says two of the most important contents are protein and energy. While protein is displayed as Crude Protein (CP) on a feed tag, the energy content, measured as Total Digestible Nutrients (TDN), is not shown.

Crude Fiber (CF) must be examined instead, Banta explains. If CF is high on a tag, the lower the energy content of the feed is going to be, he adds.

"There's a lot of different options that can all be used to do the same things, is what they want to realize, and they don't need to be feeding multiple products at the same time if they pick the right one to start with," Banta says.

When implementing their selected supplement into the diet of their cattle, Banta notes it is important to remember cattle are ruminants designed to eat grass.

## *Nutrition 101: What producers need to know*

*Extension agents address frequently asked questions surrounding beef cattle nutrition.*

*Jason Banta, Texas A&M Extension Beef Cattle Specialist*

**Q: What do I need to feed and how much do I need to feed?**

**A:** From a nutrition standpoint, the three things I think about are forage quality, what are the nutrient requirements for those animals, and what is the current Body Condition Score (BCS) of those animals? Based on those three things, that will give us a good idea of where we need to move forward with our nutrition and supplementation program.

**Q: How do I know when my cattle need a feed supplement?**

**A:** We need to think about those three things [mentioned above], and then when we think about supplements for beef cattle, I tend to break those into three groups: feeds that we would use primarily as a protein supplement, feeds that we would use primarily as an energy supplement, and then feeds that would be a good source of both protein and energy.

**His piece of advice for producers:** The number one thing I want to start talking to them about that's not always on the forefront of their minds is their forage program, because a good forage program is going to be the base of the majority of cow-calf operations in the United States. So we want to talk about their forage program in maximizing days of grazing days and what's going to impact that forage quality.

*David Lalman, Oklahoma State University, Extension Beef Cattle Specialist*

**Q: What should I consider when adding a supplement to my nutrition program? ?**

**A:** I have a little system that we teach in our Master Cattleman Program to

beginners, and basically there's four steps in that system considered the big picture of the basics when determining supplementation.

Step 1: Estimate the nutrient requirements of the cow based on the stage of production.

Step 2: Estimate forage quality during that same time period.

Step 3: Compare the two above to see if there are any deficiencies or excesses in nutrients.

Step 4: Explore the alternative to solve any of the gaps that you find.

**Q: Should I use plant-based protein supplement? Can I use a product that's high in urea? What are the differences?**

**A:** In our supplementing beef cow fact sheet, we go through that. We try to work them through ways to make a good decision, an informed decision on protein source that might fit their situation the best. The source of protein creates a lot of confusion, and so they need to go find the information.

**His piece of advice for producers:** My advice at the beginner level would be to get familiar with and develop a relationship with a group of experts that are available to you. They can help a tremendous amount because they know where the resources are available to help people educate themselves. They can help guide people through use of tools.

*Lisa Pederson, North Dakota State University Extension Beef Quality Specialist*

**Q: Which mineral should I use?**

**A:** This is an individual answer and not one that's easy to give. A lot of times I think we can do things better if we don't take the easy route. And I'm not saying those

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“Unless we are talking about specific protein supplements, we need to start off slow and gradually build up the level of that supplement to allow time for those rumen microbes to adapt, so we can prevent subacute acidosis, founder and foot abscesses,” Banta says.

Meteer recommends being extra attentive to the herd when transitioning from one ration to another as well.

“I recommend that producers don’t make abrupt changes to the diet,” Meteer says. “That can really cause bloat issues or throw an animal off where they’re more susceptible to disease and health issues and some other stressors.”

## Minerals matter

Another critical aspect of the diet, often overlooked, is the mineral

products are bad, in some cases they are our best option, but I would look at other options.

### Q: What is causing a production problem in my herd?

**A:** When I see these issues show up, it almost always leads back to winter nutrition of some type. And then it’s super hard to put body condition on a cow when she’s milking. Especially when we’ve gotten into some pretty high milk genetics across all breeds. It’s hard to put that weight on. We’re running more cows, we’re trying to do more with less, we probably don’t have as good windbreaks.

**Her piece of advice for producers:** Get some good advice. Talk to a county extension agent. Talk to a veterinarian. All of those people are good mentors. Ask them who’s a good producer to get

content cattle are receiving and supplementing to meet those requirements, says Carla Sanford, Montana State University (MSU) extension beef cattle specialist.

“You can have differences in mineral content coming from not just the hay that we’re feeding but also the forages that they’re

grazing, the water that they’re drinking,” Sanford explains. “All of this contributes to the minerals that they’re either getting or that’s lacking in their diet.”

After taking these elements into consideration, Meteer says it is also important to note the mineral content of the feed.

“They [feedstuffs] may require some changes to our mineral supplementation program, so we don’t get in trouble with mineral

as a mentor. Most producers are willing to share their knowledge, they’re just so humble they won’t share unless somebody asks.

*Travis Meteer, University of Illinois Beef Cattle Extension Specialist*

### Q: How much of a byproduct feed can I include in my ration?

**A:** In our area we have a lot of byproduct feed, whether it’s corn gluten feed or distillers’ grains. We still get a lot of questions about how much of that to feed, and whether or not to change their mineral program. Those all vary from producer to producer, but in general those feeds have higher levels of phosphorus and sulphur, so we may need to be mindful of those levels. While those feeds are really

“Pretty much every extension agent is going to tell you to test your forage, and then any supplementation program for protein and energy is going to be based off of that nutrient analysis results.” — Travis Meteer

**LONGRANGE®**  
(eprinomectin)

Extended-Release Injectable Parasiticide

5% Sterile Solution

For the Treatment and Control of Internal and External Parasites of Cattle on Pasture with Persistent Effectiveness

Not for use in female dairy cattle 20 months of age or older, including dry dairy cows. Not for use in calves to be processed for veal.

Not for use in breeding bulls, or in calves less than 3 months of age.

Not for use in cattle managed in feedlots or under intensive rotational grazing.

CAUTION: Federal law restricts this drug to use by or on the order of a licensed veterinarian.

INDICATIONS FOR USE

LONGRANGE, when administered at the recommended dose volume of 1 mL per 110 lb (50 kg) body weight, is effective in the treatment and control of the following internal and external parasites of cattle:

Gastrointestinal Roundworms	Lungworms
<i>Bunostomum phlebotomum</i> – Adults and L <sub>4</sub>	
<i>Cooperia oncophora</i> – Adults and L <sub>4</sub>	<i>Dictyocaulus viviparus</i> – Adults
<i>Cooperia punctata</i> – Adults and L <sub>4</sub>	
<i>Cooperia surrabadia</i> – Adults and L <sub>4</sub>	<b>Grubs</b>
<i>Haemonchus placei</i> – Adults	
<i>Oesophagostomum radiatum</i> – Adults	<i>Hypoderma bovis</i>
<i>Ostertagia lyrata</i> – Adults	<b>Mites</b>
<i>Ostertagia ostertagi</i> – Adults, L <sub>4</sub> and inhibited L <sub>4</sub>	
<i>Trichostrongylus axei</i> – Adults and L <sub>4</sub>	<i>Sarcoptes scabiei</i> var. <i>bovis</i>
<i>Trichostrongylus colubriformis</i> – Adults	

Parasites	Durations of Persistent Effectiveness
<b>Gastrointestinal Roundworms</b>	
<i>Bunostomum phlebotomum</i>	150 days
<i>Cooperia oncophora</i>	100 days
<i>Cooperia punctata</i>	100 days
<i>Haemonchus placei</i>	120 days
<i>Oesophagostomum radiatum</i>	120 days
<i>Ostertagia lyrata</i>	120 days
<i>Ostertagia ostertagi</i>	120 days
<i>Trichostrongylus axei</i>	100 days
<b>Lungworms</b>	
<i>Dictyocaulus viviparus</i>	150 days

#### DOSEAGE AND ADMINISTRATION

LONGRANGE® (eprinomectin) should be given only by subcutaneous injection in front of the shoulder at the recommended dosage level of 1 mg eprinomectin per kg body weight (1 mL per 110 lb body weight). Each mL of LONGRANGE contains 50 mg of eprinomectin, sufficient to treat 110 lb (50 kg) body weight. Divide doses greater than 10 mL between two injection sites to reduce occasional discomfort or site reaction.

Do not underdose. Ensure each animal receives a complete dose based on a current body weight. Underdosing may result in ineffective treatment, and encourage the development of parasite resistance.

LONGRANGE is to be given subcutaneously only. Animals should be appropriately restrained to achieve the proper route of administration. Inject under the loose skin in front of the shoulder (see illustration) using a 16 or 18 gauge, ½ to ¾ inch needle.

Body Weight (lb)	Dose Volume (mL)
110	1
220	2
330	3
440	4
550	5
660	6
770	7
880	8
990	9
1100	10



Sanitize the injection site by applying a suitable disinfectant. Clean, properly disinfected needles should be used to reduce the potential for injection site infections.

#### Withdrawal Periods and Residue Warnings

Animals intended for human consumption must not be slaughtered within 48 days of the last treatment. This drug product is not approved for use in female dairy cattle 20 months of age or older, including dry dairy cows. Use in these cattle may cause drug residues in milk and/or in calves born to these cows. A withdrawal period has not been established for pre-ruminating calves. Do not use in calves to be processed for veal.

#### Animal Safety Warnings and Precautions

The product is likely to cause tissue damage at the site of injection, including possible granulomas and necrosis. These reactions have disappeared without treatment. Local tissue reaction may result in trim loss of edible tissue at slaughter.

Observe cattle for injection site reactions. If injection site reactions are suspected, consult your veterinarian. This product is not for intravenous or intramuscular use. Protect product from light. LONGRANGE® (eprinomectin) has been developed specifically for use in cattle only. This product should not be used in other animal species.

#### When to Treat Cattle with Grubs

LONGRANGE effectively controls all stages of cattle grubs. However, proper timing of treatment is important. For the most effective results, cattle should be treated as soon as possible after the end of the heel fly (warble fly) season.

#### Environmental Hazards

Not for use in cattle managed in feedlots or under intensive rotational grazing because the environmental impact has not been evaluated for these scenarios.

**Other Warnings:** Parasite resistance may develop to any dewormer, and has been reported for most classes of dewormers.

Treatment with a dewormer used in conjunction with parasite management practices appropriate to the geographic area and the animal(s) to be treated may slow the development of parasite resistance.

Fecal examinations or other diagnostic tests and parasite management history should be used to determine if the product is appropriate for the herd/flock, prior to the use of any dewormer. Following the use of any dewormer, effectiveness of treatment should be monitored (for example, with the use of a fecal egg count reduction test or another appropriate method).

A decrease in a drug's effectiveness over time as calculated by fecal egg count reduction tests may indicate the development of resistance to the dewormer administered. Your parasite management plan should be adjusted accordingly based on regular monitoring.

Macroyclic lactones provide prolonged drug exposure that may increase selection pressure for resistant parasites. This effect may be more pronounced in extended-release formulations.

#### TARGET ANIMAL SAFETY

Clinical studies have demonstrated the wide margin of safety of LONGRANGE® (eprinomectin). Overdosing at 3 to 5 times the recommended dose resulted in a statistically significant reduction in average weight gain when compared to the group treated at label dose. Treatment-related lesions observed in most cattle administered the product included swelling, hyperemia, or necrosis in the subcutaneous tissue of the skin. The administration of LONGRANGE at 3 times the recommended therapeutic dose had no adverse reproductive effects on beef cows at all stages of breeding or pregnancy or on their calves.

Not for use in bulls, as reproductive safety testing has not been conducted in males intended for breeding or actively breeding. Not for use in calves less than 3 months of age because safety testing has not been conducted in calves less than 3 months of age.

#### STORAGE

Store at 77° F (25° C) with excursions between 59° and 86° F (15° and 30° C). Protect from light.

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