At the FEEDER with new-life mills

Eastern BEEF Edition
Fall 2020

In this Issue...

How Does Nutrition Impact Beef Cow Reproduction?

Company Update

Know Before You Feed: Nitrates in Forages

Brooder Cow Premix

Backgrounding Cattle Programs

How Does Nutrition Impact Beef Cow Reproduction?

Written by: Kristin Thompson, MSc., PAg, Ruminant Nutritionist

It has been understood for decades that beef cow nutrition plays a critical role in her reproductive success. Under- or over-nourished cows are at increased risk for metabolic issues, calving difficulties, poor conception rates, extended postpartum intervals and poor embryonic survival. Three important nutritional components to consider are energy, protein and trace mineral status.

Energy

Energy is the primary nutrient regulating beef cow reproduction. It is required for growth, maintenance of pregnancy and milk production. Cows that are not provided with adequate energy have difficulty returning to estrus, reduced conception rates, along with poor colostrum quality and subsequent calf performance. Average energy requirements pre- and post- calving are 60-63% TDN, although requirements will vary depending on animal size and body condition. Monitoring body condition score (BCS) is a good method of assessing the energy requirements of the herd. It is recommended to maintain cows at a BCS of 3.0 at calving and prior to breeding to increase her chances of conceiving on the first cycle. If she loses condition in late gestation or after calving, it is difficult to gain it back prior to the breeding season due to the higher nutritional demands of lactation.

Typically, a high forage-based ration is adequate to meet the cows energy demands. However, feed quality should be tested regularly, whether this is stored forages or pasture, and supplemented with grains or protein feeds if required. For moderate to low BCS cows (<2.5), it may be necessary to provide extra supplementation to meet requirements.

Protein

Low dietary protein has been associated with an increased postpartum interval and reduced conception rates in beef cows. Protein is the main building block of most tissues. In situations of short-term protein deficiency, fat and muscle are broken down to supply energy to the body. However, over the long term, this compensatory mechanism results in a loss of body condition, leading to poor performance and reproductive losses.

For cows with good body condition, protein requirements are 9% pre-calving and increase to 11-12% post-calving while the cow is still lactating. Depending on the quality of feedstuff provided, supplemental protein sources may be necessary to meet this requirement.

Trace Mineral Nutrition

Trace mineral nutrition is critical for reproductive success. They are key regulators in enzymatic pathways which directly impact reproductive performance. When a deficiency occurs, these enzymatic systems are unable to take place. Numerous research studies have reported that copper deficiency results in reduced first service conceptions, lowered embryonic survival and decreased overall pregnancy rates. Similarly, manganese deficiency has been linked to reduced conception rates, abortions and abnormal fetal growth. There is also strong evidence that manganese influences hormone synthesis and ovarian development. This means that these deficiencies will lead to delayed onset of puberty in heifers and suppression of estrus in mature cows.

Due to the cows' ability to store trace minerals within the body, evidence of a deficiency may not be observed until symptoms become critical. For example, a slight deficiency in copper may cause altered estrus behaviour, but the cow continues to cycle normally. A long term deficiency in copper, however, will stop ovulation and the cow will show no estrus signs.

It is recommended to have a year-round mineral program in place on your operation. The type and concentration of mineral fed can be adjusted throughout the year. For example, an inorganic 2:1 mineral can be fed through the winter months along with forages and grain. However, strategic feeding of chelated trace minerals is recommended during calving and breeding. Chelated sources increase the availability of copper, zinc and manganese during this critical period. Feed chelated trace minerals until breeding is over, at which point an inorganic source can be fed. It is also important to keep in mind that the inclusion of chelated trace minerals might be necessary at other stages of production to prevent deficiencies if antagonists are present in the feed, water or environment.

Company Update

By: Phil Roberts, National Sales and Marketing Manager

Over the past six months, we have experienced firsthand how connected our world is and how dependent supply chains are on each step in the process. Thankfully, agriculture is a remarkable sector to work in and is quite familiar with being adaptable and flexible while working through challenges. New-Life Mills took numerous steps, through various practices to ensure we were able to meet the needs of our clientele, while ensuring the well-being of our staff, our clients, and their businesses.

Today we continue to navigate the diverse challenges the pandemic has created, and I am overwhelmed with how the New-Life Mills team came together and demonstrated their ability to be creative in finding ways to meet the needs of our clients and the industry. Looking ahead through the ongoing challenges, our mission continues to remain front of mind. We are committed to building long-lasting business relationships, where we exceed your expectations and work alongside our clients to add value to their business. We are continuously striving to provide the best combination of people, products, and services to meet your on-farm needs and support you in the development of your business.

Points to remember!

- Monitor BCS to ensure the cow is not losing condition pre- and post-calving.
- Remember to adjust dietary protein supply based on stage of production and body condition.
- A year-round mineral program is essential to prevent reproductive wrecks!
- Work with your nutrition team to properly formulate rations to meet cow requirements in every stage of production.

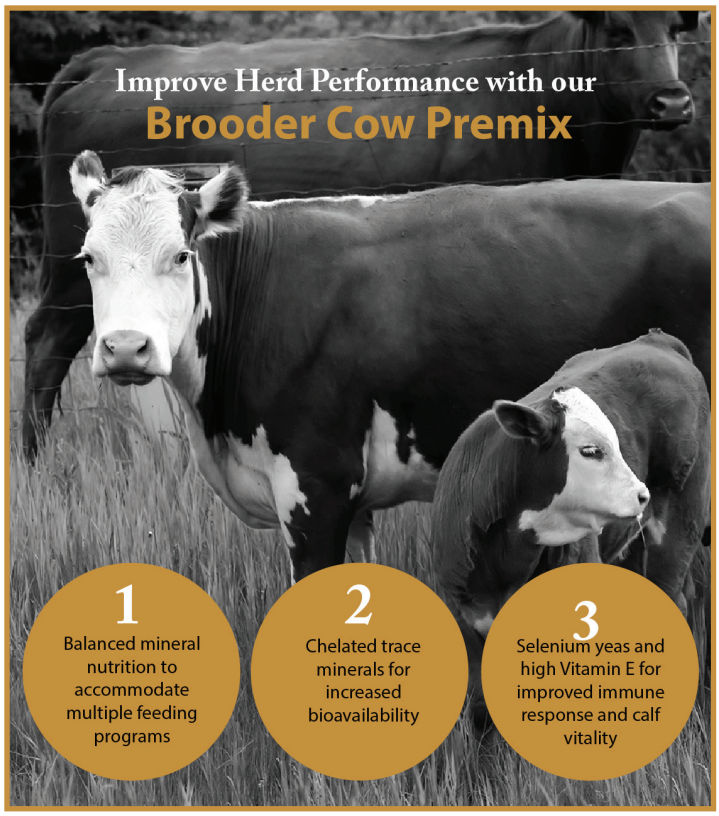
Know Before You Feed: Nitrates in Forages

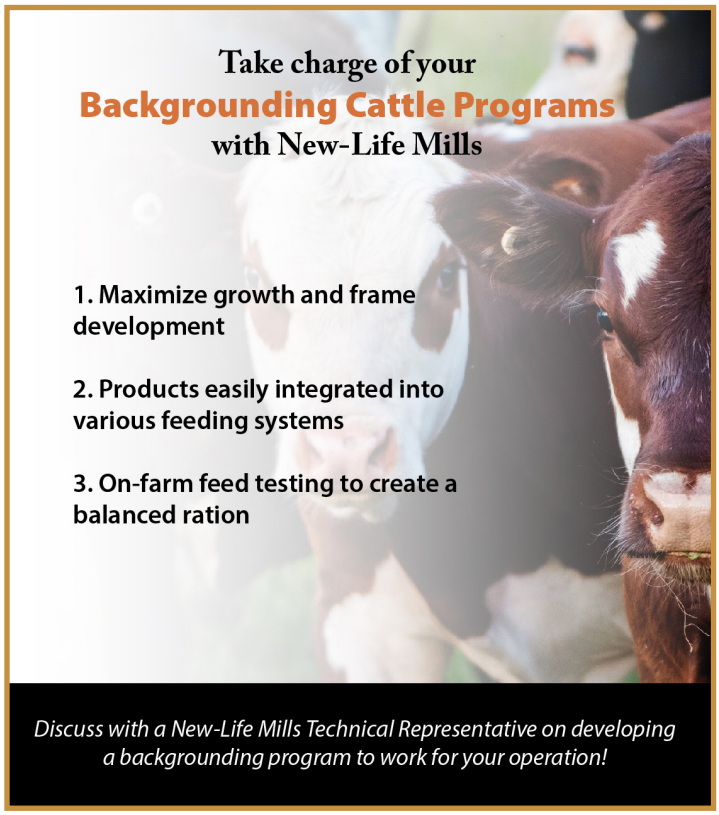
Written by: Maureen Bowman, BSc., MSc., Ruminant Technical Representative

Nitrates are compounds created by the combination of nitrogen and oxygen and are required for plant protein synthesis and growth. Plants have varying levels of nitrates. For example, annual crops tend to accumulate higher levels than perennials. Nitrogen is taken up from the soil for growth and gets stored within the plant. Under normal conditions for photosynthesis, the plants will convert the stored nitrates into plant protein and growth, but during periods of stress, such as drought or early frosts, the plant stores are not used fast enough and excess nitrates build up. Small grain annuals such as oats, barley and triticale will accumulate nitrates quicker than summer annuals such as corn, sudan grass, sorghum or millet. This is a concern when harvesting cover crops containing small grains in the fall when there are chances of frost occurring. It is important to note that it isn't just summer annuals that are capable of building up dangerous levels of nitrates. For example, brassicas such as tillage radish and turnips can build up nitrates in the right conditions, particularly drought stress, prior to freezing and can be a problem when they are grazed into the winter. Cool season grasses such as brome and orchard grass can also accumulate nitrates in the right conditions.

When harvesting crops to be utilized as forages for ruminants, it is important to take note of the weather patterns and crop pressures occurring. Stressors such as drought, disease, pests, excess soil fertility and application of herbicides can all play a role in the plants' ability to utilize nitrates. Time of day can also play a role in nitrate levels. As plants photosynthesize and rely on the sun to convert energy for growth, nitrate levels are lowest in the afternoon and highest in the early mornings. This also plays a role in wet summers as cloudy weather can also impact the crops' ability to convert nitrates into proteins and/or accumulate in the plant.

Nitrates are converted to nitrites in the rumen. Once nitrites are formed, they are converted to ammonia by the rumen microbes. Ideally, the ammonia is absorbed into the blood and transported through the body where excess is converted to urea and is excreted in the urine. When high levels of nitrates are consumed, the microbial nitrite conversion to ammonia is overwhelmed and nitrites accumulate in the rumen. Nitrites are directly leached through the rumen wall into the bloodstream where they combine with hemoglobin creating methemoglobin. Unlike hemoglobin, methemoglobin is unable to





carry oxygen to the body's tissues, starving them of oxygen. Groups more at risk include pregnant animals, with abortions being one of the first signs of nitrate toxicity. Nitrate poisoning can cause death quickly in cattle. If toxicity is suspected, contact your veterinarian to administer reversal treatments immediately.

Signs of nitrate poisoning include:

- Laboured breathing
- Muscle tremors and staggered gate
- Blue mucus membranes due to poor oxygenation of tissues
- High pulse rate
- Fast breathing
- Weakness
- Uneasiness
- Excessive salivation
- Frequent urination
- Dilated and blood shot eyes

Awareness of weather conditions, soil fertility and crop-sampling are good ways to monitor nitrate levels in forages. Most labs are equipped with tests that can quickly determine the presence of nitrates. It is important to take samples throughout the field as soil fertility can vary greatly. If levels in a crop are found to be high, waiting for the crop to become more mature and utilize those stored nitrates into growth can help lower the nitrate levels. If you do find yourself in a situation where forages are harvested with high levels of nitrates, the best way to work with it is to blend it with other feeds to lower the final concentration of nitrates in the diet. Proper fermentation can reduce the nitrate levels between 25-65%, so allow the harvest 3 to 5 weeks for fermentation in haylages. Nitrate levels are more stable in hay and not expected to be reduced as much in bales. Work closely with your nutrition team to determine the appropriate plan to best utilize your forages.

Contact Information

Sales & Nutrition Office
1-800-463-1196
info@newlifemills.com
www.newlifemills.com

Inkerman Mill
1-800-565-5175
Wyoming Mill
1-800-265-7507

new-life mills
Feeding Your Future
A division of Parrish & Heimbecker, Limited