**Beef Cattle Nutrition**

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Beef Cattle producers often question the need to feed their cattle. But the bottom line is, adequate nutrition impacts the ultimate performance of a cow’s calf and her ability to get rebred, both of which directly impact profitability. Typically the producer has spent a lot of time and money on improving the genetics in their herd and without adequate nutrition those animals will not reach their full genetic potential. When developing a feeding strategy it is important to understand your production system; fall calving, spring calving or year round calving and how that matches up with your pasture availability. Do you have adequate forages available when your cow herd’s nutrient requirements are at their highest or are you feeding hay? Cattle need adequate amounts of energy, protein, minerals, vitamins and water. Of course water is the most important, but this article will be focusing on energy and protein and how they affect the beef herd.

Energy is very important since it is required in every stage of production. Total Digestible Nutrients (TDN) is used as a measure of energy in a feed or forage. Third trimester gestation and lactation increase energy requirements since 95% of fetal growth occurs in the least trimester and because it takes a lot of energy to make milk. When feeding energy think about feeding a bucket of energy and each compartment meeting a cow’s specific needs. The first thing that must be filled is the maintenance compartment, second comes growth (only first calf heifers have this additional compartment), next is to build up the reserves compartment, then once she has adequate reserves she will put energy towards lactation, and finally only after all the other compartments are full will she reproduce. In short, self-preservation is first and foremost, then preserving the life of the calf she has on the ground and then lastly she will put energy to making a new life. There are many problems that can occur if there is insufficient energy intake in late gestation. Calves will be born small and weak, lacking vigor to stand and nurse, resulting in higher death rates in newborns. Calves that do live, have a higher risk of developing scours and respiratory disease resulting in a decreased overall performance at weaning, at the feedlot, and even affecting carcass grade. Not only does insufficient energy intake in late pregnancy affect the calf but it also affects the cow. She will have lower milk production, an increased postpartum interval (PPI - the number of days after a cow calves that it takes her to get rebred) and poor conception rates which will both cause calves to be born later in the calving season which will decrease profitability of the next calf crop.

Protein is also an important nutrient since it is the building blocks of all tissue, including hormones which are critical for getting bred back. Crude Protein is used as a measure of protein on the feed tag or forage analysis. Protein requirements are the greatest in growing calves to support muscle growth and frame size. Creep feeds or forages for nursing claves should contain at least 15% crude protein. For brood cows, additional protein is often required to properly balance diets for young growing cows and lactating cows. This is especially true when low quality hay make up the majority of the diet. Grains can be used to supplement protein but high quality forages can supply calves and cows with extra protein. Cool season forages contain higher crude protein levels than warm season forages but remember that crude protein levels decrease with increasing forage maturity and decreasing nitrogen fertilizer rates. When feeding grain or hay make sure that it contains at least if not more than 10% crude protein. Problems can arise when there is too much or not enough protein in cattle diets. Excess protein can lead to embryonic loss since high bypass protein leads to higher blood urea nitrogen (BUN) levels. High BUN will lower the pH of the uterine environment making it toxic to the growing embryo. On the other hand, insufficient protein results in calves being born weak. Higher protein intake in the third trimester has shown to result in higher weaning weights in calves. This is known as fetal programming, protein deposition in-utero is going towards the calf’s frame size, setting it up for its ability to grow after it hits the ground.

As mentioned earlier, nutrition directly effects a cow’s reproductive efficiency. Reproductive efficiency is the most important factor affecting profitability in a beef cattle operation. A cow’s gestation is around 280 days and the typical management goal is for cows to calve every year. That leaves 85 days (365 days in a year – 280 day gestation) to get that cow rebred after calving. Feeding adequate energy and protein have both been shown to shorten the post-partum interval. This is especially important in first calf heifers. Remember they have an extra compartment in their energy bucket, growth, which must be filled before even thinking about reproducing. This has an effect on their conception rates, since it takes them 10-20 days longer to recycle and subsequently rebreed.

In conclusion, strive to fill all the energy compartments of your brood cows, program calves to reach their genetic potential through maternal nutrition and determine calf performance through both genetic decisions and maternal nutrition. Improving the genetics of your herd takes time to see the results but increasing the nutrients available to your cattle will give you immediate positive results. Consult your veterinarian or livestock agent to help you develop a nutrition plan for your herd.