



The Secret Is Out

Utilizing dietary fat in a nutrition plan can increase reproductive success and performance.

by Kayla Jennings

Increasing reproductive success and performance in a cattle operation is at the forefront of ranchers' minds today. After all, increased reproductive success leads to more calves on the ground, which leads to a higher profit margin come sale day. To achieve this goal, cattle producers strive each day to maximize the value of their cow herd by means of improved environment, health protocol, cattle handling and nutrition. From the nutrition perspective, producers are beginning to identify one secret to success — dietary fat.

Clay Burson, Ph.D., Purina Animal Nutrition consulting nutritionist for West

Texas, New Mexico and Arizona, has seen the proper utilization of fat in the beef cattle diet as a positive in many ways — namely reproduction. From his perspective, adding fat into the diet, through whichever avenue makes the most sense monetarily and from a management standpoint, can pay dividends later.

“Not only does fat contribute to the energy balance of the cow, but also dietary fats serve as a precursor to cholesterol and have the ability to stimulate other endocrine factors that will really encourage cattle to breed back,” he explains. “We know if you are in the cow/calf business, fertility really

drives the bottom line. Getting more cows bred and getting them bred early on in the breeding season can really benefit every producer's operation.”

Why fat?

Stepping back to view the wider picture yields an explanation of why this ingredient can be helpful in cow-calf operations. Fat is approximately two and a quarter times more energy dense when compared to its carbohydrate or protein contemporaries. With this phenomenon in mind, the primary reason to aim for increased energy is to experience an uptick in productivity of cattle regardless of whether they are in a feedlot or part of a cow-calf system.

While this phenomenon has clear merits in the beef cattle industry, the majority of the data behind it can be found on the dairy cattle side. While there can be some variations when comparing each segment, the general concept maintains the same. Even so, universities are continuing to build the body of data within their beef cattle herds.

“There have been a handful of studies that have been done on the beef side,” Burson notes. “They have shown some positive benefits where fat can improve reproduction independent of its energy contribution. That has been a key finding.”

One such study from the University of Wyoming in 2005 indicated feeding fat to beef cows for approximately 60 days before calving improved pregnancy rates in the upcoming breeding season. This success is replicated throughout the literature. Likewise, some studies indicated increasing fats postpartum was less successful in increasing conception rates in a beef cow herd.

While there may be some variation in results across experiments because of the types of fats used and experimental conditions present, Burson says, “Generally speaking,



Dietary fat is the secret to success when it comes to increasing fertility in the cow herd.

the findings indicate that fats improve reproduction on the brood-cow side.”

Take action

When it comes to applying this knowledge, there is no one-size-fits-all answer. Based on the availability of resources from a financial standpoint as well as geographic location, there is a lot of variation in the types of fats a producer can incorporate. Burson points to supplements or plant-derived commodities as a good place to start.

“Generally speaking, the plant-derived oils are the ones most of the research indicates would be effective for stimulating reproduction,” he advises. “Ones that are high in linoleic acid are really showing a positive response.”

Based on the region and the producer’s ability to handle commodity ingredients from a facilities perspective, different commodities achieving the same goal may be available. Distillers’ grains are an example of a fat source to which many regions would have access. In West Texas, cottonseed is a viable source many producers choose to incorporate, but the source may be different for a producer in the Midwest. No matter the choice, Burson advises producers to consult with their nutritionist to research how different sources may affect other facets of productivity, as well

“There are some differences in those commodities,” he explains. “For example, cottonseed is not quite as digestible as some of the other sources of high fat commodity ingredients, so there are things you have to consider when you are looking at different commodity ingredients that would be cost effective to deliver fat.”

Commercially available products are also an option for producers without the ability or desire to handle commodity ingredients. While these products may cost more initially, the extra cost may be worth it. Many of these products are rumen protected or rumen bypass fats. Put simply, supplemental high-fat feed products allow increased energy densities in ruminant diets without having to add more starch, which could potentially lead to digestive upsets and reduced fiber digestibility in the rumen.

“High-fat supplements that are commercially available would be more expensive, but perhaps you get more value out of the product when you are using something that is specifically designed for efficient digestion and utilization by the cattle,” Burson advises. “There are a lot of different options for increasing the fat intake in your diet. You will see a lot of companies across the country market a high-fat feed supplement. There is certainly variation in the quality of commercially available feed supplements, but there are a number of those products available whether you are looking into a cube, a block or a liquid form.”

Balancing act

While fat in the diet is proven to be a good thing, it is no surprise too much of a good thing can have adverse effects. In fact, exceeding 4 to 6% of the dietary dry matter in terms of fat content can create negative effects — yet another advantage to seeking out a rumen protected product to combat the risk.

From a scientific perspective, Burson explains diets with excessive fat content can trigger reduced intake and poorer fiber



An operation with the ability to store commodity ingredients may use regionally available plant-derived sources as a fat supplement, while commercial products may be another good option for those who do not.

digestibility. “Those are two things we talk about when you put an extreme amount of fat into the diet,” he explains. “Some of that fat can coat the fiber particles in the rumen and prevent the microbes from accessing those fiber particles for digestion, in addition to other deleterious effects on digestive function.”

In short, when there is a lot of fiber in the rumen not being digested, the cattle will not consume as much feed, and there will be less passage and intake. The same goes for cattle on a feedlot diet. “You just have to keep it in check and make sure you are not getting so much fat in the diet you reduce feed intake and impair fiber digestion to a point where you will decrease performance,” Burson advises.

In tandem, no matter the fat source producers utilize, it is extremely important for them to ensure it is of the highest quality they can get their hands on. Animal fats or other poorer quality fats may have a tendency to go rancid, creating a loss in profits and nutrition quality in the end. Additionally, some of those lower quality options have a fatty acid profile less favorable for stimulating reproduction — creating a less than desirable outcome.

As far as commercial supplements go, Burson advises doing the homework to ensure the technology is up to par. “For example, if you are using any liquid supplement, you have to make sure that the product has effective suspension technology to ensure the fat is evenly distributed throughout the product,” he explains.

All things considered, if used properly, incorporating appropriate levels of high-quality fats into the diet will undoubtedly increase the productivity of the herd from a reproductive standpoint. In fact, Burson has customers who have begun utilizing commercially available products in a high-fat block form and have seen success. He recalls those customers increasing their artificial insemination (AI) conception rate by 10 to 15%. Likewise, they have seen a significant increase in the number of transferable embryos in the embryo transfer (ET) programs. Success stories such as these are seen across many operations after making this small change in their cattle nutrition program.

At the end of the day, Burson advises producers to subscribe to the nutrition program that best fits their goals and needs

financially and geographically — whether that is a commodity or a commercially available product supplement. With any fat source utilized, the producer should always consider the quantity, the timing and the cost-to-profit ratio. Producers interested in adjusting their nutrition plan to incorporate fat should consult a nutritionist in their area to develop a plan best suited for their business. **HW**

Editor’s Note: Resources used for this article are: *Effects of Fat Supplementation on Reproduction in Beef Cattle*, Rick Funston, University of Nebraska and Shelby Filley, Oregon State University; *Influence of Supplemental Fats on Reproductive Tissues and Performance of Lactating Cows*, C.R. Staples, J.M. Burke, and W.W. Thatcher, University of Florida; and *Nutritional Controls of Beef Cow Reproduction*, B.W. Hess, S.L. Lake, E.J. Scholljegerdes, T.T. Weston, V. Nayigihugu, J.D.C. Molle, and G.E. Moss, University of Wyoming.



When exploring the idea of increasing dietary fats in the cattle diet, producers should consider the quality and the quantity to achieve the most desirable results.