



## **Speeding Fresh Cow Recovery** **With Calcium, Magnesium, Potassium, Live Yeast and Effervescence**

Fresh cows are the most vulnerable animals in your operation. Giving them a good start after calving has profound impact on both short-term and long-term herd profits. As they transition to lactation, nutritional requirements for fresh cows soar, while their dry matter intake is low. In addition, demands on body fat and energy reserves are high. Health and metabolic issues such as retained placenta, udder edema, milk fever, displaced abomasum, ketosis and fatty-liver syndrome are rampant. These metabolic disorders can be costly and may result in lost milk production, veterinarian fees, replacement heifer costs and more.

At TechMix, we believe the key to success is getting fresh cows drinking and eating more quickly after calving. Our founder, Dr. Peter Franz, DVM, knew that replacing water, nutrients, trace elements and energy lost during the birthing process was critical to accelerating the recovery of fresh cows. He also believed that stimulating and speeding the development of fiber-digesting bacteria in the rumen would help increase energy and get them on feed more quickly. This led him to develop one of the dairy industry's first-ever total fresh cow recovery products in 1998.

### Replacing Lost Nutrients and Trace Elements

The loss of nutrients and trace elements such as calcium, magnesium and potassium for dairy cows after calving has been well-documented. Because most metabolic issues occur within the first two weeks of lactation, it is important to quickly provide supplemental trace elements,

A fresh cow's requirement for calcium triples after calving. Boosting blood calcium levels to prevent ketosis is critical. Much has been written about soluble sources of calcium and how they increase blood calcium for 6 to 10 hours after dosing.<sup>1</sup> Calcium chloride represents a source of highly soluble calcium and has an efficiency of

absorption coefficient of 95 percent.<sup>2</sup> Another approach to prevention is oral calcium supplements around calving. A study in the *Journal of Dairy Science* discusses how calcium chloride may be particularly beneficial as an oral supplement because it is a more potent acidifier than other anion sources.<sup>3</sup>

While calcium plays an important role in fresh cow recovery, other trace elements play essential roles for the reduction of metabolic diseases. Two of these trace elements are magnesium and potassium. Insufficient absorption of magnesium and an increased amount of potassium from the transition period can also contribute to hypocalcemia. A 2008 *Veterinary Journal* study, describes how meta-analysis has revealed the important roles of dietary Ca, Mg (Magnesium), and P (Phosphorus), as well as the duration of exposure to the precalving diet in milk fever control strategies.<sup>4</sup> Dr. Franz recognized the importance of magnesium and potassium in calcium absorption, which supports the maintaining of fluid balance and appetite stimulation, while also examining the role of live yeast.

#### Harnessing Live Yeast to Accelerate the Rumen

Active dry yeasts are increasingly used in ruminant nutrition as feed additives to improve feed efficiency and performance and, at the same time, to prevent health disorders. Animal science studies have shown them to be particularly useful in high-producing ruminants whose digestive microbial balance can be altered by high-dietary energy input.<sup>5</sup> Overall, the results show that live yeast supplementation tended to improve meal patterns and rumination, rumen temperature, and milk fat production.<sup>6</sup>

Another important factor influencing dry matter intake of fresh cows is jumpstarting the rumen mucosa and papillae, in both length and texture. This is important as the papillae typically lengthens and increases its surface area for absorption after calving. This in turn leads to the absorption of various nutrients that are required for energy and ultimately, milk production. This was profiled in a study by Nocek, Holt and Oppy in which live cell yeasts were shown to exert a more direct and accelerated effect in the rumen, usually associated with oxygen scavenging or reduction of ruminal redox potential.<sup>7</sup>

In addition to overall health for the fresh cow, yeast supplementation during early lactation significantly improved dry matter intake, milk yield, crude protein digestibility,

and acid detergent fiber digestibility for cows.<sup>8</sup> It has also been noted that supplementation of live yeast increased milk yield and milk protein yield percentage without a significant increase in feed consumption.

A 2017 study in the *Journal of Applied Animal Research* by Rossow, Riordan and Riordan theorized a connection between greater milk and milk protein yields and improved rumen function due to feeding live yeast products.<sup>9</sup>

In 2012, a study published in *Journal of Dairy Science* discussed how the addition of supplemented live-cell yeast in a high-starch diet increased total-tract digestibility and tended to increase milk fat content.<sup>10</sup> Additional studies have shown that fat-corrected milk was 4 percent greater in live yeast groups, concluding that live yeast supplementation to dairy cows improved the rumen environment in a way that increased dry matter intake, thereby enhancing productivity and efficiency.<sup>11</sup>

Additional research has shown that live yeast removes oxygen from the rumen, leading to increased anaerobic bacterial viability. Increased bacterial viability means greater microbial population turnover, cellulose digestion, and microbial protein production potentiating a greater influx of post-ruminal substrates essential for hepatic glucose production.<sup>12</sup>

### Using Effervescence to Improve Bio-Availability

Effervescent delivery technology presents some interesting opportunities to enhance bio-availability of critical nutrients. At TechMix, we see great opportunity for effervescent formulation with fresh cows. Effervescence increases the surface area within the digestive tract for key ingredients. The result is increased absorption, speed of absorption and overall bioavailability. In addition, effervescent technology provides an ideal environment for any moisture-sensitive trace elements such as potassium.

### Wrapping It Up

Minimizing treatment and the time spent managing fresh cows can be costly. Getting fresh cows off to a good start is critical. The question is how to get fresh cows drinking, eating and producing more quickly. At TechMix, we believe this is best accomplished by recognizing the importance of replacing lost nutrients and trace

elements and by stimulating the development of fiber-digesting bacteria in the rumen to increase energy

For more information, visit: [www.techmixglobal.com/transition\\_cow\\_resources](http://www.techmixglobal.com/transition_cow_resources)

## References

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