

# Unlocking The Secret Potential Of Calf Feed



By Dan Leiterman

It may be surprising just how important a good calf feed can be in the health and development of a calf. Many times calf feed is taken for granted as a commonplace or simple feed and may not get the recognition it deserves relative to its important contribution in calf development. Often the definition of quality or value for a calf feed is over simplified and reduced down to price per bag, palatability, and whether it has the right amount of molasses for easy winter feeding. Considering the fact that calf feed is the first solid food a dairy calf receives during its young formative age, and that it is the primary source of dry matter in the pre-weaning and early post-weaning period, it has the ability to significantly impact the development and health of a calf; in either a positive, or a negative manner, depending on how well it is formulated.

Let's explore calf feed formulation a little deeper to uncover some key points that research has shown to be important in a well designed calf feed.

## Well Texturized vs. Pelleted or Poorly Texturized Calf Feed:

The goal for a well made calf feed is to stimulate rumen development, enhance daily gain, improve immune function and support muscle and skeletal growth. A well texturized calf feed has significant advantages over a fully pelleted calf feed in meeting these goals. Texturized calf feed is much better at stimulating rumination, saliva production and rumen development; yet it needs to do so while minimizing the risk of acidosis in the calf. Research shows that a properly texturized calf feed provided these advantages:<sup>1,2</sup>

- 1) Enhanced calf starter intake
- 2) Improved daily gain
- 3) Helped rumination begin at an earlier age
- 4) Increased time spent ruminating (21% for texturized vs. 9% for pelleted)
- 5) Promoted a higher ruminal pH and better papillae development and health
- 6) Advanced dry matter and fiber digestibilities by 5 to 15%

However, if the grains in a texturized calf feed are overly processed, they can become too digestible,

similar to those in a fully pelleted calf feed. This can result in less rumination, less saliva production, an increased risk of acidosis and slower rumen development. An example of over processing a grain for calves is fully flattened, steam-flaked corn or oats, which improves digestibility, but makes it more similar to grains in a fully pelleted calf feed. Calves being fed a fully pelleted calf feed as the sole dry feed, typically have a ruminal pH of 5.0 to 5.2, which is an acidotic condition and is not beneficial to rumen development. Calves being fed a texturized



calf feed with overly processed grains can have a similar ruminal pH<sup>1,2</sup>. The grain in a highly texturized feed requires chewing, significant rumination, and saliva production to buffer the rumen and reduce the risk of acidosis. Grains like whole oats, slightly rolled corn, and slightly cracked corn are better grain sources to have in a texturized calf feed. Even whole corn provides more texture and is a better option than steam flattened flaked corn for calves.

## Low to Moderate Starch Levels In Calf Feed Is Desirable:

When a calf is on milk replacer or whole milk, it is generally not recommended to feed hay in the first 6 weeks of age. Hay does not help with ruminal development and can actually hinder intake and daily gain if fed too early and incorrectly. Consequently, calf feed is the first dry feed the calf should intake. If the starch level is too high in the calf feed, over 40% starch, there is an increased risk of the calf developing acidosis or a low ruminal pH of < 5.2. Research shows that calves fed a moderate starch level of 34% have a lower risk of developing acidosis<sup>1,2</sup>. The Crystal Creek® Swift Start® Texturized Calf Feeds have approximately 30% starch and are very compatible with good rumen development, while at the same time, minimizing the risk of acidosis in calves.

## A Cleaned Sourced Of Phosphorus:

Crystal Creek® uses only cleaned sources of mono-calcium and di-calcium phosphorus in product formulation. This is true with the Swift Start® Texturized Calf Feeds. Our cleaned source of phosphorus has significantly lower levels of contaminants such as iron, fluoride, and aluminum, all of which can tie up phosphorus and interfere with calorie utilization/feed efficiency. From my perspective, it is an incomplete approach to formulate with a focus solely on total calorie intake (or gross starch levels) without taking into consideration whether or not the calf makes optimum use of the calories. Every calorie used in the body requires a phosphorus molecule to be available to complete the digestion of the calorie. If phosphorus availability is compromised, then the calf will not be able to utilize its feed in an optimal manner.

## A Natural Coccidiostat That Maintains Fiber Digestion:

Coccidia is a one celled protozoan parasite that can significantly reduce the performance and feed efficiency of pre-weaned calves, post-weaned calves, and older heifers. It is common in the industry to add an antibiotic, or an ionophore to the calf feed to effectively reduce coccidia populations in the digestive tract.

These compounds are also effective in killing other undesirable ruminal protozoans that feed on beneficial bacteria. Unfortunately, these compounds are not specific to coccidia and other

protozoans. They are also lethal to bacteria in the rumen, many of which are beneficial and specific to fiber fermentation. Ionophores were originally introduced into the beef feedlot industry where the goal was to enhance ruminal starch fermentation (increasing propionic acid levels), and reduce the fiber fermentation (reducing levels of acetic acid). This may be convenient for feedlot steers that get very little fiber and have a very short life span. However, for replacement calves and heifers, where the goal is to have long lived animals that are efficient in utilizing fiber, it seems counterproductive to feed an additive that kills fiber digesting bacteria in the rumen.

From my perspective, a high grade form of *Yucca schidigera* provides a much better alternative to feeding synthetic antibiotics or ionophores. *Yucca schidigera* is well known in the livestock industry as being an effective coccidiostat<sup>6</sup>. I emphasize the classification 'high grade' forms of *Yucca schidigera* because not all sources of *Yucca schidigera* on the market have high function<sup>4</sup>, (see Brian Hoffelt's article on Dairy Glow™ in this newsletter).

## Advantages To Feeding *Yucca schidigera* To Calves And Heifers:

There are many key advantages to feeding *Yucca schidigera* to calves and heifers in place of an antibiotic or an ionophore. Listed below are some reasons why Swift Start® Texturized Calf Feeds contain *Yucca schidigera* instead of an antibiotic or ionophore:

*Yucca schidigera*:

*Is an effective coccidiostat, comparable to an ionophore.*<sup>4,6</sup>

*Yucca schidigera* is widely used in the livestock industry for its effective function as a coccidiostat.

*Supports Fiber and Starch Fermentation.*<sup>1,3</sup>

Research shows that when *Yucca schidigera* was fed to young calves acetic acid in the rumen did not drop, while at the same time propionic acid levels in the rumen increased. This indicates that *Yucca schidigera* increased the ability to ferment starch, while at the same time allowing normal fiber fermentation to continue. *Yucca schidigera* appears to do a better job of addressing the common sense goals for raising replacement

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heifers by having a balanced improvement in starch fermentation, while maintaining good fiber fermentation. It seems to me that this should be the goal for both dairy and beef calves and heifers.

**Is an Immuno-Stimulant:<sup>9,10,13</sup>**

*Yucca schidigera* has been shown to increase immune function in calves, resulting in better resistance to viral infections.

**Improves Lower Tract Digestion And Nutrient Absorption:<sup>1,3</sup>**

Feeding *Yucca schidigera* has been shown to improve lower tract absorption of nutrients. *Yucca schidigera* soothes the intestinal tissue, reducing inflammation, reducing the need for excessive mucal production, and improving access to absorption sites for better feed utilization.

**Improves ADG and Feed Conversion Efficiency:<sup>4,7</sup>**

*Yucca schidigera* is used in the feed industry to support better daily gains and feed efficiency.

**Improves Protein Utilization and Reduces Nitrogen Loss:<sup>8</sup>**

This is beneficial to reducing protein feed costs and improving reproductive performance. *Yucca schidigera* captures free nitrogen in the rumen for improved lower tract protein utilization. Calves get more protein from their diet. Reduces the risk of excess free nitrogen entering the body as blood urea nitrogen (BUN's). High levels of BUN's can impair reproductive performance and suppress immune function.

**Improves Microbial Protein Synthesis:<sup>4,11</sup>**

Higher populations of rumen bacteria means more microbial protein for the calf to digest in the lower tract.

**Reduces The Risk Of Liver Abscesses:<sup>4</sup>**

It is critically important that the liver functions at an optimum level for good calf growth, performance, and feed efficiency. *Yucca schidigera* has been shown to significantly reduce the incidence of liver abscesses and supports good liver function, even in extreme conditions like high grain intake, or acidotic conditions.

## Supplementation of Key Trace Minerals With 100% Polysaccharide Chelates:

Key trace mineral formulation in all of the Swift Start® Calf Feeds is done solely with chelated polysaccharide trace minerals. We do so because chelated polysaccharide trace minerals are nearly 100% bio-available to the animal and support the trace mineral requirements of the rumen micro-flora. The less desirable option is to formulate with oxide and sulfate sources of trace elements that are generally lower than 10% and 50% bio-available respectively. Also, research shows many significant benefits to the animals with this formulation strategy, such as improved ADG, feed efficiency, and immune support.<sup>12</sup>

## 100% Selenium Yeast Fortification:

Selenium Yeast is nearly 100% bio-available to the animal where as other common selenium sources like sodium selenite are less than 25% bio-available. Selenium is important for immune function, muscle growth, the prevention of white muscle disease, and feed efficiency. Formulating with 100% Selenium Yeast is consistent with the entire Swift Start® calf program strategy of fully supporting optimum performance with excellent nutrition.

## Strong Vitamin Fortification:

The Swift Start® Texturized Calf Feeds are fortified with vitamin levels that will support calves, even in the most challenging conditions. Strong vitamin levels support optimum immune function, growth performance, and help reduce the risk of challenges such as ringworm, pinkeye, and respiratory issues.

The Swift Start® Texturized Calf Feeds are designed to compliment and continue the high performance standards set by the Swift Start® Calf Milk Replacer program. Feeding calves properly has been shown to have significant economic returns in life time feed efficiency, production, and longevity in the herd.<sup>7</sup> Swift Start® Texturized Calf Feed is a well formulated calf feed that will support these goals. Feed Swift Start® Texturized Calf Feed and prepare your calves for a lifetime of improved economic returns.

1 Porter et al. (2007)  
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3 Rambozzi, et. al., Journal of Animal and Veterinary Advances, (2011) Vol. 10, Issue 3, p. 391-394  
4 Goodall, Feedstuffs, (October 17, 2011)

5 Galyean, (2000)  
6 McAllister et. al. (2001)  
7 Mader and Brumm, (1987), Silwinski et. al. (2002)  
8 Hussain and Cheeke, (1995)  
9 Oda et. al. , (2000)

10 G. Francis, (2002)  
11 Zinn et al. (1983)  
12 Qualitech, Inc.  
13 P.R. Cheeke, (2001)