

Managing Dairy Cow Foot Health With Nutrition



By Dr. John Popp, PhD.

A cow with poor foot health eats less, produces less milk and is less profitable. Throughout the course of the year, as many as half of the cows on a farm can experience some form of lameness, be it mild or severe. While

not all forms of lameness can be prevented, it is important to realize that causes can be multiple and sometimes cumulative. What starts as a simple 'ouch' on a foot...perhaps even a slight aggravation, which could take little recovery, may be exacerbated by stress, low immune function, poor cow comfort, lack of proper supportive management or nutrition. Regular foot care and good footing are also important to the formula for good foot health. The intent of this article is to discuss how specific nutrients and ration strategies can best support good foot health.

Growing up, I always heard stories of the cows that got into grain somewhere and never did the story have a good ending. Initially the cows got acidosis, generally followed by significant foot problems. The old practical message was always to make sure the cows got hay before grain and never over-feed grain.

Proper nutrition management can significantly lower the number of foot problems in a dairy herd. Laminitis can arise from many contributing factors. However, a well-designed and properly managed feeding program can go a long way to supporting good foot health. Even if a herd has a well designed diet on paper, it may not matter if the cow sorts her feed, if the feed is not mixed

well, if the feed heats in the bunk reducing dry matter intake, or if the feed is not pushed up in the bunk regularly; the cow's foot health will suffer, along with production and profitability.

Many typical modern diets for dairy cows attempt to deliver a significant amount of energy with low forage, concentrated diets in order to secure high milk yields. This type of increased energy delivery to a cow is generally through increased grain/starch and secondly by adding bypass fat. An over-supply of highly digestible carbohydrate (starch) results in the production of excess lactic acid, which in turn becomes a driving force toward causing laminitis

and reduced liver function. In order to secure good foot health, it is critical to optimize rumen fermentation in such a way as to reduce the risk of excessive lactic acid production. The first band-aid commonly applied to this type of problem is to free choice, or directly feed, sodium bicarbonate to the milk cows.



Rather than increasing energy intake through concentrating the diet, a better option is to stimulate higher dry matter intake of the total diet, especially the forage portion. Stimulation of higher dry matter intake is the focus when using the Crystal Creek® Dairy Nutrition Model (CCDNM) strategy for ration balancing. Some of the key points in the CCDNM are the utilization of good quality forages, high quality Crystal Creek® minerals and restructuring the protein profile of the ration to match carbohydrate profiles to better support forage digestion. Forage, by nature, is what cows are meant to eat, and supports better foot health when it is utilized in the ration properly.

Supporting Good Foot Health:

- 1. Avoid abrupt changes** in energy supplied in the milking cow rations - generally by no more than 10% at a time. Keep starch levels in the milk cow's diet well below 30% and work closely with your nutritionist to target appropriate starch levels based on digestibility factors and total carbohydrate balance of the diet.
- 2. Provide ample bunk space** at all times (24" per lactating cow and 30" per dry cow) to insure proper dry matter intake (DMI). Along with that comes the need for good bunk management... making sure that feed is always available, fresh and pushed up frequently. This helps to guarantee optimum access and prevent heating.
- 3. Prevent transition period acidosis by managing the intake of dry matter.** Acidosis, a major trigger to poor foot health, can be prevented by feeding a diet to the close-up dry cow that targets 0.67 Mcal/lb. of dry matter, with a typical daily intake of 14 to 15 Mcal of energy per day for Holstein sized close-up dry cows. Start-up/early fresh cow diets should be at approximately 0.72 Mcal/lb. of dry matter in their diet and supplemental fat feeding should be avoided.
- 4. Minimize stress.** Stress can be a significant contributing factor in derailing hoof health and cow comfort is crucial to help reduce stress levels. Again, the most important period of high stress exposure is during the transition period for cows. Make daily fresh cow checks a priority on your operation to ensure a good appetite and health status for fresh cows. Getting cows off to a good start in the first 21 days of lactation is pivotal to a good lactation performance. Use strategic nutritional support products at freshening to help ensure a smooth transition process and get cows on feed quickly. Crystal Creek® offers a comprehensive line of quality products for fresh cow support. They have calcium supplements such as, Opti-Peak™ powder, Fresh-N-Drink™ powder, Fresh-N-Easy™ boluses and Saf-Cal™ liquid. Also, there are appetite support supplements like Super Boost™ boluses and Cow Quench™ liquid (a better alternative than propylene glycol). These excellent products allow for a reduction in the stress associated with the transition period. Lower stress levels will support good immune function and reduce the incidence

of heel warts. When stress is unavoidable, utilize Crystal Pellets™ in the diet to minimize the negative effects of stress hormones on the cow.

5. Maximize amino acid levels from microbial protein produced in the rumen, such as cysteine, histidine and methionine. These key amino acids play important roles in hoof/horn production. Optimum levels of microbial protein produced in the rumen, can be supported by a sound forage based diet as recommended by your Crystal Creek® nutritionist.

6. Feed a well constructed mineral. Both macro and micro minerals are important to foot health. Macro minerals such as calcium in the epidermis is essential for activation of the enzyme process for the creation of horn/hoof cells. High quality sources of phosphorus and the fortification of Vitamin D will also support calcium usage and good hoof health.

Along with proper Macro mineral supplementation, it is important to feed a properly formulated, highly bioavailable trace mineral that will directly support sound hoof health. Zinc and iodine are just two examples of trace elements that are needed for good foot health. Crystal Creek® livestock minerals are formulated with polysaccharide trace minerals, that are over 90% bioavailable (able to be utilized by the cow). Many typical livestock minerals are formulated with lower-grade trace minerals in oxide and/or sulfate form, which are generally less than 10 and 50% bioavailable respectively. The advantage to improved profitability for the producer with this approach can be significant.

There is more to good foot health than meets the eye, or can be determined fully by just looking at a feed label. The combination of a good nutrition strategy, a balanced ration utilizing a forage based strategy, the availability of high quality feedstuffs and highly bioavailable macro and trace minerals are all important to good foot health. Along with a proper nutrition strategy, it takes good feeding and bunk management practices to properly deliver the desired ration. When all of the pieces are implemented correctly, the results are a strong support program for good herd foot health.

Give Crystal Creek® a call today and develop a foot health program specifically designed for your herd!