



# DAIRY INFO

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*Taking service to another level!*

## Feed Management & the Hoof

In addition to insuring that cows consume diets with adequate amounts of effective fiber and acceptable amounts of non-fiber carbohydrate (NFC), dairy producers need to implement management practices that minimize “slug” feeding, especially in early lactation. Rate of pH decline following a meal increases as meal size increases and as dietary NDF concentration decreases (*Allen, 1997*). Research conducted at Michigan State University (*Dado/Allen, 1995*) indicated that when given free access to feed, cows fed a lower fiber diet (25.7% NDF vs. 35.2% NDF) consumed smaller, more consistently-sized meals throughout the day, moderating the extent and duration of low ruminal pH.

Another group of cows that tend to “slug feed” are heat stressed cows (*Hall, 2002*). These cows tend to eat larger meals during the evening hours, while smaller meals are consumed during the hot, daylight hours. Furthermore, heat-stressed cows tend to pant and exhale more carbon dioxide, reducing the buffering capacity of their systems and bicarbonate recirculated into the rumen (*Hall, 2002*). *Mishra et al., (1970)* found that rumen pH was lower (6.3 vs. 5.8) for cows maintained under high temperatures (84°F/29°C) than cows maintained under moderate temperatures (64°F/18°C) even though both groups of cows received the same diet. Dairy managers need to strive to minimize heat stress in cows by minimizing physical exertion and exposure to radiant heat during periods of high temperatures. Working cattle and forcing cattle to walk through mud or excessive distances should be avoided on hot days. Shade, fans and sprinklers are all effective means of heat abatement for dairy cows.

## Effect of Protein

Research examining the association between quality and quantity of protein on hoof integrity has been limited. *Manson and Leaver (1988)* examined the effect of feeding two levels of protein (19.8 vs. 16.1% CP) on hoof integrity. Dietary level of crude protein was increased by adding rumen degradable protein to a 16.1% CP diet. Cows fed the higher level of crude protein had increased incidents and duration of lameness. In addition, cows fed the higher crude protein diet had higher locomotion scores. It is believed that products of protein degradation in the rumen may be the causative agents for increased incidents of lameness (*Nocek, 1997*).

Increasing the supply of sulfur-containing amino acids has been suggested to improve hoof quality as methionine has been identified as one of the first limiting amino acids in diets of lactating dairy cows and the hoof horn has high cysteine content. *Galbraith et al. (1998)* found that goats fed rumen-protected methionine had harder hooves and higher cysteine content of the abaxial wall. However, hoof growth was not affected. Additional research is needed to determine the relationship between sulfur amino acid supply and hoof integrity.

## Effect of Vitamins & Minerals

Vitamins play important roles in maintaining hoof integrity. Generally, cows in the United States are supplemented with vitamins A and E to insure an adequate supply of carotenoids and tocopherol (Vitamin Nutrition for Ruminants, 1994), both important in maintaining skin integrity and immunity. In addition, vitamin D is supplemented to maintain calcium metabolism.

In the past, B-vitamins have not generally been fed to mature ruminants. However, recent research indicates that rumen microbes involved in the synthesis of biotin are sensitive to low pH. Therefore, cattle fed high grain or high quality pasture diets may develop a subclinical biotin deficiency. Biotin is a water-soluble vitamin essential for the formation and integrity of keratinized tissues such as skin and horn (*Seymour, 1999*). Its role in the formation and integrity of keratinized tissues is related to its role in the differentiation and keratinization of epidermal tissues that produce hoof horn and skin (*Seymour, 1999*). Biotin reserves drop dramatically during periods of stress and lameness, resulting in reduction in keratinization and production of intercellular cementing substance of the hoof horn. Horn produced during a biotin deficiency will be soft and weak (*Seymour, 1999*).

Results of numerous trials indicate that the biotin status of cattle appears to be marginal as evidenced by the improvements in hoof integrity in response to supplemental biotin. Feeding 10 to 20 mg/head/d of supplemental biotin resulted in a reduction in hoof disorders, such as white line separation, sole ulcers, sole hemorrhages and sandcracks.

Contact your Renaissance consultant for more information and how to help reduce the incidence and impact of lameness in your herd – for improved productivity and profitability all year-round.

(Edited from an article by Tomlinson & Socha, Zinpro Corporation)



*Interested in discussing topics in this newsletter, or to do a better job feeding and managing your cows? Call us today. Our goal and commitment is to help you!*

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**THE TEAM FOR RESULTS**  
**SOLUTIONS FOR SUCCESS**

# Plan Ahead!

Some like it hot and some like it cold, but we have to take whatever comes with the change of seasons! And it's time to start thinking about and planning for fall and winter. This includes the upcoming harvest, ensiling forages, considering use of a quality preservative/inoculant, ensuring sufficient forage inventories, adjusting feeding programs to accommodate new forages and much more. I can help you to review and plan for the coming months, sampling forages and checking inventories, making strategic recommendations on goals and targets, along with necessary purchases that can help your farm to operate at an optimum level year-round. Plan ahead. Call today!

## GETTING READY FOR THE HARVEST...

What is an ideal length of cut for chopping corn silage? Does the length of cut impact rations? There are several things to consider when it comes to best-length and maturity at cutting.

The length of chop affects packing density and ultimately silage quality. The value of fine chopping increases as the crop advances in maturity and when moisture content drops below 60-65%. Unprocessed silage is often chopped at 3/8-to-1/2-inch theoretical cut. It is equally important that knives are kept sharp and properly set so that forage is cleanly chopped. If blades are dull, especially with overly dry forage, stringy silage will result. These factors may cause poor packing and reduce consumption rates. Knowing the ideal cut-length and maintaining equipment is critical to the quality of your silage, and ultimately to the health and productivity of your cows.

Get the facts. Talk with me about maximizing this year's harvest and having a positive impact on rations throughout the coming fall and winter months. You and your cows will appreciate the difference!



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## Feed Management & the Hoof Getting Ready for the Harvest...

### Plan Ahead!

## CHECK IT OUT!