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Lameness II…

Housing and Management

In a 1996 study by *Vermunt and Greenough*, sole hemorrhages were observed in Holstein heifers several months before calving. Lesions were more severe in housed animals (freestalls) than in those raised on a dry lot. *Logue et al (2000)* scored sole lesions in heifers for several months before calving. Their report indicated a peak in white-line lesions two months after calving, with a peak in sole hemorrhages four months after calving, suggesting that environment had a cumulative effect on claw integrity.

Bergsten and Frank (1996$_a$) evaluated claw lesion development in early lactation first-calf heifers that were tied and standing on concrete floors or rubber mats. These cows were also challenged with high- or no-concentrate diets. No differences were observed in claw lesion development between the groups. However, these same heifers were grazed during the summer then regrouped and housed on concrete floors or rubber mats in the fall. They were also allocated to a high- or low-concentrate diet *(Bergsten and Frank, 1996$_b$)*. All claws were observed at trimming two weeks before and again 14 weeks post-calving. Animals housed on concrete floors had a significantly higher incidence of solar hemorrhages than those on rubber mats. *Webster et al (2001)* reported similar findings in animals housed in free stalls with concrete floors versus animals housed in straw-bedded yards, independent of diets. They reported an increased incidence of lesions about eight weeks after calving, suggesting that claw lesions may result from extended exposure to hard, unforgiving walking surfaces, along with the physiological changes that occur around the time of calving.

Recently, researchers have reported that connective tissues suspending the pedal bone in the claw capsule taken from cows close to calving have more elasticity than similar tissues collected in other stages of lactation *(Tarlton and Weaver, 2000)*. Increased elasticity allows greater movement of the pedal bone in the claw capsule, increasing compression of corium, resulting in increased sole and white-line hemorrhages, and ultimately, white-line and sole ulcers. Researchers theorize that the increased elasticity of connective tissue suspending the pedal bone is due to the hormone relaxin, which softens connective tissue, allowing for easier delivery of the calf *(Tarlton and Weaver, 2000).*

Management and housing systems are interrelated with respect to maintaining claw integrity and locomotion. The interrelationship between walking surfaces, housing, stall design and standing time was researched by *Bell and Weary (2000)*. They suggest that dairy managers must be keen to all areas of cow comfort to minimize the incidence of factors that increase the risk of lameness.

Nutritional Influences on Lameness

Poor or inadequate nutrition is thought to be one of the major factors resulting in dairy cow lameness. There is a lot of discussion about the relationship between nutrition and lameness as related to level of functional or effective fiber, amount of grain, fermentation rates of grain, forage-to-grain ratios in the dairy cow ration and a subsequent acidosis – laminitis link. It is very evident that certain feeding regimes, diets, metabolic upsets and infectious diseases facilitate significant and prolonged drops in rumen pH resulting in a dramatic increase in lameness *(Cricklow et al. 1985; Huber 1976; Huntington 1988; Nocek 1997; Nordlund et al. 2003; Stock, Britton 1993)*.

Nocek (1997) summarized the events that often lead to ruminal and metabolic conditions resulting in lameness in dairy cows. Key factors in this summary are feeding management, molds/mycotoxins (feed/forage quality), management of infectious diseases and metabolic disorders, environmental impact and genetics. Many of these variables lead to ruminal upsets resulting in death of gram negative bacteria and production of endotoxins, creating a vaso-constriction/dilation response within the claw. This upset in blood and nutrient flow results in production of inferior quality horn and, if severe enough, death of laminar horn tissue and acute lameness.

(edited from an article by *Drs. Tomlinson & Socha, Zinpro Corporation)*

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HEAT & HUMIDITY… it's coming!

Cool spring weather can trick us into thinking that heat and humidity are a long way off. Start preparing now for hot weather and its potential impact on your herd. Heat and humidity can adversely affect dry matter intakes, impacting productivity and profitability. It is important to maintain quality nutrition during summer months with a diet that is designed to counter the effects of heat stress. Ensure your cows are fed a highly digestible, yet rumen-friendly ration. A ration short on energy can lead to a decreased ability to manage times of high heat and humidity. This is often worsened by a reduction in dry matter intake, and depressed milk production follows. I can help you evaluate your rations now and throughout the summer. Products such as **MAXI-LAC SC**, **MEGALAC®**, **MEGALAC-R®**, ***MagNaKool*** and ***MagNaKool Plus***, or products containing ***CITRIA*** are valuable in counteracting the potential impact of heat stress this summer. Help your cows to "cool off" this summer… with Renaissance!

Interested in discussing topics in this newsletter, or want to do a better job feeding and managing your cows? Looking for research-tested corn hybrids for the coming year? Call me! My goal is to help you. That's Renaissance's commitment to you!

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RENAISSANCE… ***HELPING TO IMPROVE YOUR PRODUCTIVITY & PROFITABILITY!***

Thank You!

*I'd like to "**THANK YOU!**" for all you do in providing high quality milk for all kinds of dairy products each and every day. Your efforts are helping to feed America and in fact… the world! This month we honor your efforts and recognize the outstanding contributions you make to the economy. Everyone at Renaissance Nutrition joins me in saying thanks… for a job well done!*

WHAT'S IT LIKE AROUND THE FARM? Proper ventilation is critical throughout times of summer heat and humidity, as well as during winter months. Regardless of the season, there are four important considerations when it comes to ventilation in facilities. These include: air exchange, air control, flexibility and building construction. Air exchange is simply the replacement of inside air with outside air, either by use of fans or "naturally" with wind and a continual flow of air through a facility. Control is necessary when either external or internal conditions warrant it. This can be as simple as turning fans on or off… or controlling the position of sidewall curtains, etc. You also need flexibility to better accommodate cow comfort year-round, along with ensuring your facilities are constructed in such a way as to enhance ventilation and maintain a quality environment for your entire herd. Maximize ventilation this summer and help keep your cows cool. You will appreciate their continued performance all summer long.

(edited from an article on barn ventilation by Susan Wood Gay, Virginia Tech Extension – 2002

A POINT TO PONDER... School is out! The crops are planted. Hay-making is underway. It's time for summer activities and summer fun! Around the farm, it is easy to let yourself become too busy during the summer months, with an ever-increasing list of chores and necessities to accomplish around the farm. We often don't take time to relax… and be refreshed. This summer, plan to spend time on a regular basis enjoying your family and friends! Plan a picnic or an evening out, a BBQ or visit to a park. If you plan ahead, the chores will get done and you'll still have time for other activities. It can make a difference!

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June…

the impact of summer heat and humidity
lameness in cows ~ keep 'em moving!
productivity, profitability and more.

Check it out.