

## **DAIRY CATTLE LAMENESS: CAUSES AND EFFECTS**

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Lameness is recognized as a problem in most dairy herds throughout the world. Producers and herd managers agree, it is an ever-present challenge and with modern dairy management practices, lameness rates continue to rise. A recent University of Minnesota study observed 5,626 cows housed in 50 freestall barns. The average lameness rate was 24.6%. Surprisingly, this rate averaged 3.1 times greater than estimated by the herd managers. In addition, first lactation lameness was 12.8% and increased by 8% in each additional lactation. The overall lameness rates ranged from 5.4% to as high as 46.2% (Endres 2006).

In a study conducted by Dr. Chuck Guard in 1997, the average loss per case of lameness was estimated at \$302. Losses included lower milk production, reduced reproductive performance, replacement cost, and treatment cost. Referring to the Minnesota study and applying the estimated cost of lameness to the average lameness rate of 24.6%, a 100-cow herd would lose over \$7,400 annually. This alone is a substantial loss but on many dairies the overall loss is considerably higher.

The key to preventing lameness is understanding the causes. Equally important is making the correct lameness diagnosis. Hoof health problems can be categorized as claw horn diseases or infectious diseases.

### **CLAW HORN DISEASES**

Claw horn diseases have mechanical and or metabolic causes. There are five primary types of claw horn diseases: Sole ulcers, White line lesions, Toe ulcers, Sole fractures, and Heel horn erosion.

Mechanical causes of lameness relate to the shape of the hoof, conformation of the leg, and the cow environment. Conditions of the hoof such as horn overgrowth, claw imbalance, improper hoof angle, and incorrect hoof trimming cause lameness. Correct, functional hoof trimming along with leaving a sufficient amount of horn to protect the corium will keep hooves healthy. Other mechanical causes of lameness can be attributed to poor cow comfort, non-yielding walking surfaces, slippery floors, sloped walkways, harsh movement of cows, and long standing times, especially on hot days. These risk factors create more concussion in the hoof and lameness becomes prevalent. Field research conducted by Dr. Nigel Cook in 2001, shows lameness rates drastically improved when cows lay down 11-14 hours per day. In addition, giving cows time to adjust to concrete, using soft rubber in high traffic areas, and implementing a heat abatement system are key to providing a comfortable environment.

Metabolic causes of lameness develop within the cow's organ systems and emerge as laminitis. Laminitis is when the soft tissue between the hoof wall and underlying pedal bone becomes inflamed. Typical signs of laminitis are hardship grooves and red discoloration of the horn.

Most metabolic causes of lameness appear three to six weeks after the initial insult. When a cow has an improper hoof shape and there is a metabolic issue present, the onset of lameness accelerates. Manage cows so their diet is consistent from hour to hour, day to day, 365 days a year. Make the calving and social transition as smooth as possible. Maintain overall cow health by preventing mastitis, metritis, milk fever, and DA's. Prevention is the means to decreasing claw horn lesions.

### **INFECTIOUS DISEASES**

Infectious diseases represent some of the most critical causes of lameness. They are caused by bacteria that inhabit the soft tissue around the hoof and in between the claws. The three common infectious diseases are: Interdigital Dermatitis (Hoof rot), Digital Dermatitis (Foot Warts or Hoof Warts), and, Acute Foot Rot (Interdigital Phlegmon or Interdigital Necrobacillosis). Foot Warts are the most challenging to control and prevent. This disease is caused by up to three different bacterial spirochetes from the Treponema family. Foot Warts thrive where excessive manure is present on hoofs. Such conditions are commonly found in facilities with overcrowded freestalls, six-row pens, slatted floors, and barns that utilize automatic alley scrapers. Infectious diseases can be prevented with good hygiene and regular footbathing. Clinical lesions should be topically treated on an individual basis, however reoccurrence is extremely common.

### **HOOF HEALTH GOALS**

Although controlling lameness is challenging, it is important to strive for the following goals.

- Less than .5% lame cows, per month due to claw horn lesions in sand-bedded herds
- Less than 1% lame cows, per month due to claw horn lesions in mattress-bedded herds
- Less than 2% of cows infected with Foot Warts per month
- Less than .1% of cows infected with Foot Rot per month

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