

Identifying and Preventing Causes of Lameness in Your Dairy Herd



By Thomas Sumner and Donna M. Amaral-Phillips, Ph.D.

Preventing lameness and employing early intervention protocols for dairy cows that become lame is critical for the profitability and success of dairy operations. Lamely cows give less milk, which directly affects cash flow of the dairy. Research has shown that moderately lame cows (cows that walk with short strides and stand with a slightly arched back) produce 4% less milk and these milk losses increase to 15% or more in severely lame cows (cows have difficulty walking). These losses in milk production really hurt the bottom line, but they are just one area affected. In addition, lame cows have decreased reproductive performance due to poor estrus expression, increased likelihood of being culled, a depressed immune system, and increased labor costs associated with trimming and other treatment protocols. All of these losses directly impact profitability on dairy farms.

Start by Identifying Lame Cows

Before implementing an action plan designed to prevent lameness, it is important to go through and understand how much lameness is in your herd. The first thing is to identify which cows are lame. To do this, go through your herd and evaluate the number of cows that are in each of the 3 different locomotion scores. This can be done by an observer watching cows pass by when they are exiting the parlor or other location that all cows pass by calmly. A score of 1 is a cow that is sound, whereas a score of 2 is a moderately lame cow which has a sore foot and walks with short strides. A 3 is a severely lame cow which has an arched back, barely able to bear weight on the affected limb and excessive head movement when walking.

The new standards for lameness, as outlined in the FARM Animal Care Reference Manual, require 95% of milking and dry cows to score a 1 or 2 with 85% of cows scoring 85% or greater. . If your farm falls below this percentage, an action plan must be made to move towards compliance. However, veterinarians that specialize in preventing hoof problems recommend that cows which score a 2 also be closely evaluated by the foot trimmer or farmer to prevent lameness from progressing, resulting in a severely lame cow.

Next- Determine Cause of Lameness

Once you have a good understanding of the degree of lameness and which cows are affected in your herd, an action plan can be made to help correct and prevent lameness. By closely examining the hooves of lame cows, the kinds of lesions can be determined. Hoof lesions can be broken down into two broad categories, infectious or non-infectious. Infectious lesions are caused by microorganisms, such as bacteria, and include foot rot and digital dermatitis or hairy heel warts. Non-infectious lesions include

**Cooperative
Extension Service**

Agriculture and Natural Resources
Family and Consumer Sciences
4-H Youth Development
Community and Economic Development

MARTIN-GATTON COLLEGE OF AGRICULTURE, FOOD AND ENVIRONMENT

Educational programs of Kentucky Cooperative Extension serve all people regardless of economic or social status and will not discriminate on the basis of race, color, ethnic origin, national origin, creed, religion, political belief, sex, sexual orientation, gender identity, gender expression, pregnancy, marital status, genetic information, age, veteran status, physical or mental disability or reprisal or retaliation for prior civil rights activity. Reasonable accommodation of disability may be available with prior notice. Program information may be made available in languages other than English. University of Kentucky, Kentucky State University, U.S. Department of Agriculture, and Kentucky Counties, Cooperating. Lexington, KY 40506



Disabilities
accommodated
with prior notification.

sole or toe ulcers, thin soles, sole hemorrhages, or white line disease to name just a few. For a better understanding and help identifying hoof lesions on your farm, you can go to <https://www.zinpro.com/performance-solutions/production-optimization-tools/first-step/>.

Preventing Infectious Lesions

When infectious lesions are found on your farm, review these potential problem areas.

- **Hygiene:** Keeping cows' hooves dry with a minimal amount of manure improves hoof health. Daily scraping of manure multiple times from barn surfaces helps accomplish this objective. Cows with excessive dried manure on their hooves result in less footbath solution contacting the foot and decreased efficiency and potency of footbath chemicals. Routine use of footbaths is one component of a preventative program.
- **Footbath size and placement:** Footbaths should be sized such that all feet come in contact with the solution twice during each pass through the footbath. In order to get two immersions per foot, the footbath should be a minimum of 10 feet long, 19 to 24 inches wide to allow cows to comfortably walk through the footbath and to minimize the total amount of solution needed, and the solution should be a minimum of 4 inches deep. Footbaths should be placed in a readily accessible walkway that restricts flow of cattle to one at a time.
- **Footbath schedule:** The number of times weekly a footbath is used is determined by the cleanliness of the hooves and solution used. When the footbath schedule is not properly implemented and managed, foot lesions can be spread and not controlled by the footbath process.
- **Footbath chemical:** Numerous footbath chemicals are on the market. Some solutions are composed of generic compounds, such as copper sulfate, whereas others contain proprietary products. Before selecting a commercial product, review the research data for the product to make sure it is effective. Before using, read the label to determine the proper amount of solution/powder to add and the mixing directions for the volume of footbath. If you try and extend the footbath solution, you risk lowering the potency of the footbath chemical and possibly spreading hoof diseases. Beware of solutions mixed which result in a low pH (pH less than 3.5 to 4) as they increase the incidence of lameness.
- **Biosecurity:** When giving tours or allowing non-farm employees access to the cow lot, disposable plastic boots should be worn to prevent bringing outside diseases onto the dairy. Also, watch when bringing new cattle, including bulls, on the farm and check their hooves before allowing them contact with other cattle.
- **Nutrition:** Proper trace mineral nutrition influences the immunity of cows and helps minimize the severity and incidence of hoof diseases. Also, some trace minerals and B vitamins help harden the hoof and help decrease stresses caused by the environment.

Preventing Non-Infectious Lesions

Non-infectious lesions can be related to management practices on your farm that increase the risk of injury. Some areas to evaluate include:

- **Hoof trimming schedule:** Preventative hoof trimming to redistribute weight balance helps prevent cows from becoming lame. The inner and outer claws wear down at different rates and must be trimmed to evenly distribute a cow's weight. Cows should be evaluated and trimmed, if necessary, at least once a year and preferably twice a year at dry off and 90 to 120 days in milk. All moderately or severely lame cows should be trimmed as soon as possible. Cows should not become lame 3 to 7 days after hoof trimming.

- **Holding area:** Holding areas should be grooved in a diamond pattern to prevent slipping. Holding pens should be cleaned after each milking to minimize manure on hooves and allow the holding pen to dry between milkings, if possible, to prevent cows from slipping.
- **Walking surfaces:** All concrete should be grooved to prevent cows from slipping. If cows are allowed off concrete for exercise or grazing, lanes made with rock can increase lameness if they damage the bottom of the hoof.
- **Freestall comfort:** When stalls are not comfortable, i. e. too small or lack of lunge space, cows will spend more time standing instead of resting and lying down. This behavior increases the time a cow's weight is supported by the hooves, increases exposure of the hoof to manure, and reduces the time available for the hoof to dry, thus increasing chances for lameness.
- **Heat abatement:** When a cow is heat stressed, she spends more time standing to dissipate the heat load versus lying down. If the barn is not equipped with enough fans and sprinklers or they are not maintained properly, cows will spend more time standing instead of lying down and resting.
- **Transition period:** If cows lose too much body condition during early lactation (more than 0.5 body condition score within 60 DIM), they are more likely to become lame. Thus, good management practices for transition cows are critical for preventing lameness. In addition, dry cows should be observed to detect lameness problems early and make sure dry cows recover if they are lame at dry off.
- **Nutrition:** Feeding for a healthy rumen helps keep the rumen pH in check. This in turn assists in the prevention of lameness due to laminitis. Key management practices include proper TMR mixing, preventing cows from sorting their feed, feeding no more than 6 lbs of grain within 4 hours, and making sure cows chew their cud or ruminate. If cows do not get enough energy or go off feed, they can get too thin and have an increased chance of becoming lame. Thin cows have a thinner fat cushion between the foot bone and hoof wall. The fat cushion in the hoof is important to absorb shock.

Take Home Message

Prevention and early detection of lameness is important to prevent economic losses and animal discomfort. The first step is detecting if you have a problem and which cows are becoming lame. After determining if the cause is infectious or not, an action plan can be implemented to correct the source of the problem. Hopefully, by identifying areas to improve, the number of cases of lameness can be reduced and the potential negative effects on dairy cow performance and well being can be avoided.