

Lameness Information and Evaluation Factsheet

❖ What is it?

Lameness in dairy cattle refers to any painful condition, which causes a cow to change the way she walks in order to limit the amount of weight that affected limbs have to bear. It is a serious and costly welfare issue for dairy cattle and their owners.

❖ Why is it important?

Lameness decreases mobility, dry matter intake, production, and impairs reproduction.

Preventing lameness will:

- Optimize production
- Improve conception rates
- Improve the health of cows
- Reduce cow treatment costs
- Lower cow and owner stress

proAction requires that you evaluate the milking herd for lameness, keep records of the results, and take corrective actions if herd scores are in the yellow or red zones.

❖ Identifying Lameness

Early identification of lameness leads to more effective, early treatment. The 'gait scoring protocol' is the most accurate and preferred method for detecting lameness in dairy cattle, however an 'in-stall scoring protocol' is available for assessing cattle in tie-stall conditions. Assessments for proAction will accept either form of scoring.

*Source: Prepared by Dr. Steve Roche on behalf of the Dairy Research Cluster in consultation with the proAction Technical Working Group composed of farmers, scientists, veterinarians, and dairy industry specialists.
September 2015*

Gait or locomotion scoring is done for free stall herds

➤ Look for these 7 indicators of lameness ◀

<p>1. Reluctance to bear weight</p> <p>Painful cows redistribute weight to prevent weight bearing on the painful limb, resulting in a limp.</p>	<p>2. Asymmetric/irregular stepping</p> <p>Non-lame cows have a regular pattern and rhythm when walking; lame cows may have an uneven rhythm as they spend less time using a painful limb.</p>	<p>3. Poor tracking</p> <p>Rear hooves of sound cows generally follow in the tracks of the front hooves; hind hooves of lame cows may not as cows will be short-strided.</p>	<p>4. Jerky head movement</p> <p>Sound cows have a steady head carriage and move their heads up and down slightly and consistently; lame cows may show jerky head motions as they use their head to reduce weight bearing on sore limbs or feet.</p>
<p>5. Joint stiffness</p> <p>Limb and back movement of non-lame cows is smooth and fluid with good joint flexion and extension.</p>	<p>6. Rear leg lateral movement</p> <p>Viewed from the rear, rear legs of lame cows will sometimes move out or in in a semi-circular motion to avoid leg flexion or weight bearing on sore claws.</p>	<p>7. Arched back</p> <p>Non-lame cows tend to walk with a straight and flexible back. Lame cows may have a fixed upward arch to their back.</p>	

Note: Gait scoring assessments for proAction will focus on observing **four strides** and looking for the presence or absence of a limp, which is associated with the 7 indicators described here.

In-stall lameness assessments are done for tie-stall herds

➤ Look for these 4 indicators of lameness ◀

1. Weight shift	2. Standing on edge	3. Uneven weight	4. Uneven movement
<p>Painful cows will have regular, repeated shifting of weight from one foot to another, defined as lifting each hind hoof completely off the ground at least twice. The hoof has to be lifted and returned to the same location and does not include stepping forward or backward.</p>	<p>Painful cows place one or more rear feet on the edge of the stall back while standing stationary. This does not include times when both hind hooves are in the gutter or when the cow briefly places her hoof on the edge during a movement or step.</p>	<p>Painful cows will repeatedly rest one foot more than the other, indicated by the cow raising a part or the entire hoof off the ground. This does not include raising of the hoof to lick or during kicking.</p>	<p>Painful cows have uneven weight bearing when encouraged to move side to side by a gentle push on the hip. This is demonstrated by a more rapid movement by one foot than the other or by an evident reluctance to bear weight on a particular foot.</p>

Note: *In-stall assessments for proAction will focus on the presence of all four of the indicators described here.*

❖ What is causing lameness in your herd?

The common causes of lameness can be split into two main categories: (1) lameness caused by infectious foot disease(s), and (2) lameness caused by non-infectious foot disease(s).

Below are some of the key foot diseases in each category.

Infectious foot or claw conditions

Foot Rot (Pasture Foot rot)	Heel Erosion	Digital Dermatitis (Strawberry Foot, Mortellaro)
<p>Description: Specific bacterial infection of the soft tissue between and above the claws.</p> <p>Key Factors for Disease: Excessive exposure of feet to manure slurry, rough surfaces. Introduction of carrier cattle.</p> <p>Treatment: Clean affected area well. Systemic antibiotic as directed by the herd vet.</p> <p>Prevention: Maintain a clean, dry environment for cows. Don't introduce affected or carrier cattle.</p>	<p>Description: Mixed bacterial infection of the superficial skin between claws and heel bulbs.</p> <p>Key Factors for Disease: Excessive exposure to urine and manure resulting in skin damage (scalding).</p> <p>Treatment: Corrective trimming of heels and feet. Topical application of disinfectants or antibiotics as directed by the herd vet. Movement to a clean foot environment.</p> <p>Prevention: Maintain a clean, dry environment for the feet of cows.</p>	<p>Description: Specific bacterial infection, mainly of the interdigital space in the heel area.</p> <p>Key Factors for Disease: Exposure to carrier cows via bacteria in manure.</p> <p>Treatment: Clean area and treat topically according to vet directed protocol.</p> <p>Prevention: Maintain a clean, dry environment for cows. On endemically affected farms, effective foot-bathing according to a vet directed protocol, will be necessary.</p>

Non-Infectious conditions

Laminitis	Sole Ulcers	White Line Disease (Abscesses)	Physical Injury
<p>Description: Inflammation of the tissue (laminae) that join the hoof horn, sole and soft tissues of the foot.</p> <p>Key Factors for Disease: Associated with ruminal acidosis and/or the presence of other diseases (e.g. mastitis, metritis)</p> <p>Treatment: Treatment of underlying diseases. Pain medication as directed by the herd veterinarian.</p> <p>Prevention: Appropriate management to prevent ruminal acidosis and other peri-parturient conditions.</p>	<p>Description: Painful sole defect. Bleeds readily. Medial aspect of the lateral claw of the hind foot.</p> <p>Key Factors for Disease: Weight loss in early lactation, prolonged standing on concrete.</p> <p>Treatment: Gentle therapeutic trimming. Application of a block to opposite claw to relieve pain. Pain medication as directed by the herd vet.</p> <p>Prevention: improved periparturient and early lactation management to ensure weight loss is minimized. Stall improvements to increase lying times. Other facility modifications to provide more relief from concrete.</p>	<p>Description: Weakness of the junction of the hoof wall and sole allowing hemorrhage, separation and infection.</p> <p>Key Factors: subclinical laminitis damaging hoof horn, lack of trimming, wet feet and movement- related foot trauma on hard floors.</p> <p>Treatment: Therapeutic trimming.</p> <p>Prevention: Prevention of underlying conditions that damage foot horn. Facility modification to improve lying times. Preventive trimming at least twice annually. Gentler handling when moving cattle.</p>	<p>Description: Acute or chronic trauma of the feet or legs resulting in lesions, fractures or ligament injuries.</p> <p>Key Factors: Facility conditions including flooring, bedding type, bedding management and stall design.</p> <p>Treatment: Veterinary consultation regarding mitigation of specific predisposing factors.</p> <p>Prevention: Veterinary consultation regarding mitigation of specific predisposing factors.</p>

There are a number of important factors to consider, especially with non-infectious lameness. A combination of good handling (i.e. not rushing cows), employing a qualified trimmer regularly, limiting slippery/wet floors, reducing holding times, maintaining good nutrition/diet to ensure proper body weight, ensuring a balanced ration, properly designed housing and appropriate stocking densities are all key.

For more details and images of these conditions, <http://dairyhoofhealth.info/> - The information website on hoof health for farmers and their advisors.

Prevention, Detection & Control

Category	Type of Corrective Action	Description (Relevant section of the Dairy Cattle Code of Practice)
Management	Monitoring	Learn the behavioral changes and early signs of lameness. This will help you target those who need special attention and treatment. Addressing lameness early improves treatment response, helps lessen costs and maintains productivity. (Section 3.5).
	Foot baths	Provide adequately sized and situated footbaths. Obtain and use a protocol that is sufficient to control herd Digital Dermatitis problems.
	Handling	Encourage cows to move forward, but at their own pace. Slow and steady is always better in the long run. Eliminate fear and stress due to negative interactions; handle quietly and gently (Section 4.1).
	Technology	Technologies like force plate technology (looking at weight distribution by leg) or data loggers can help identify lame cows. These technologies will become more available and cost effective and will become useful for early detection.
	Record keeping	Keep individual cow health records to help understand the pattern of lameness occurrence in your herd, the impact of lameness and whether you are meeting your goals. Tabulating which cows are lame and when, the type of treatment and response etc. will help you benchmark for continuous improvement (Section 3.5, 4.9).
	Milking	At milking monitor your cows for signs of lameness. In milking parlours feet can be cleaned and inspected for visible signs of infection or pain. Minimize holding times during milking to optimize lying time and feed intake.
Service	Hoof trimmer	Employ a qualified hoof trimmer on a regular basis (no less than twice per year) to do preventive trimming. Lame cows need more frequent attention and attention between herd trims. Provide a suitable and convenient location for hoof-trimming. Encourage your veterinarian and your hoof trimmer to work together on your herd lameness issues. (Section 4.9).
	Veterinarian	Consult your veterinarian to assess your herd issues with lameness and provide advice regarding risks associated with your facility's design and management. Consult your veterinarian to set up preventive and therapeutic treatment protocols. Encourage your veterinarian and your hoof trimmer to work together on your herd lameness issues.
	Nutritionist	Talk to your nutritionist about ration formulation to lower your risk of non-infectious lameness.
	Staff	Communicate with your staff to make sure lame cows are a priority for attention and that the herd's protocols are being carried out consistently and accurately (Section 3.9, 4.1).

Housing & Environment	Pasturing	Research shows that cows with some access to pasture have fewer feet and leg problems. Strategic access to pasture for some groups of cattle may be useful where there is a high risk for lameness and injury.
	Barn Flooring Type	Floors need to be soft to lessen impact and stress on cows' feet and legs. Mimicking conditions of pasture is the target, making rubber flooring and mats ideal. Insert rubber flooring in high traffic areas (cross-over alleys, holding areas, feed alleys) to help keep costs low and still provide adequate flooring in key areas.
	Drainage & Scraping	Adequate drainage is essential to protect hooves from wetness. Ensure your flooring has proper slopes, eliminate any standing water, and ensure scrapers, if applicable, are run often enough to reduce excessive manure accumulation.
	Traction	Concrete flooring should be surfaced in a way that minimizes slippage and excessive foot wear.
	Number of Stalls	Provide at least 1 stall per cow of lying space. Overcrowding is a significant contributor to lameness (Section 1.5).
	Stall Size	Measure adult cows (hip height and hip width) and design stalls to accommodate the cows you have. Obtain stall dimension and design recommendations from your veterinarian.
	Bedding	Add sufficient bedding (at least 5 cm) to provide a clean soft lying surface. Well-bedded stalls allow cows to lie more than 10 hours per day. Remove manure, urine and replace soiled bedding at least twice daily to keep the entire stall surface covered with 5 cm (2 inches) of bedding. Seasonally more bedding will be needed.
	Bunk Space	Allow enough bunk space for all cows to eat at once and continuously throughout the day.
Nutrition	Ration Ingredients	Balance all rations to cow needs. Ensure consistent feed delivery and access. High concentrate, low fibre diets increase the risk of ruminal acidosis, predisposing cows to laminitis and other related foot issues. (Section 2.2.2)
	Ration Mix	Provide adequate effective ration fiber. A ration too finely ground may not provide enough 'scratch factor', which doesn't stimulate enough cud chewing prevents an ideal rumen pH. Larger sized particles can lead to sorting and nutritional imbalances. (Section 2.2.2)
	Housing	Ensure adequate bunk space so all cows can eat at once and continuously throughout the day.
Genetics	Selection	Select for cow traits that help with confirmation, proper weight distribution and locomotion. Select for these traits to help limit extent to which you will see abnormal claws and poor confirmation.