

Lameness is without question one of the most important health problems on today's dairy farms and one of the more difficult to manage. A 2002 survey of US dairy farms concluded that lameness and other injuries accounted directly for 16.3% of all culling. Several research trials have demonstrated that lameness has negative effects on both production and reproduction, two of the other primary causes of culling.

Lameness has a very characteristic pattern in cattle. Over 90% of lameness in dairy cattle involves the foot, and of that, more than 90% involves the rear feet, with the majority of disorders affecting the outside claw. The most common causes of lameness are sole ulcers and white line disease. This indicates that more than just nutrition and feeding management errors are responsible for lameness disorders. If all lameness were caused by conditions that predisposed to rumen acidosis, then risk and incidence of disease would be similar for all claws of each foot. Therefore, beyond ration adjustments and correction of feeding management errors, long term improvement of foot health requires attention to cow comfort and implementation of an effective foot care and trimming program.

Functional claw trimming, often referred to as 'the Dutch method', was developed by Dr. E. Toussaint Raven, a veterinarian with the University of Utrecht in The Netherlands. The following describes the Raven method. The objectives of preventive claw trimming are:

- ✓ Correction of the relative overgrowth that leads to overburdening of the claw (overgrowth is most significant for the outside claw of rear feet and the inside claw of front feet).

Functional and Corrective Claw Trimming

- ✓ Restoration of the weight-bearing surface within each claw.
- ✓ Correction of claw lesions at an early stage.

The following six-step work plan for trimming feet is recommended:

Step 1

Judge the length of the claws. Since the inner hind claw represents the more normal claw, this claw is used as a model for the more abnormal lateral claw. For the average Holstein-Friesian cow, the front wall of the medial (inner) claw should be 3 inches long from just below the coronary to the tip of the toe. Sole thickness should be a minimum of $\frac{1}{4}$ inch. Spare as much heel on the medial claw as possible so that weight may be transferred to this claw in the event of a lesion occurring in the lateral claw.

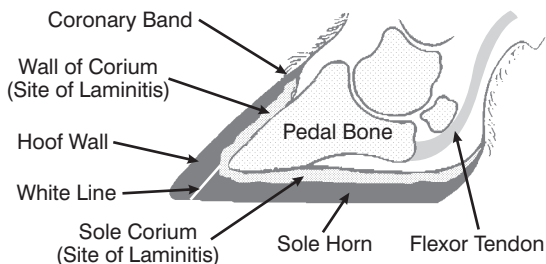
Next, reduce the length of the medial claw to the required length. The bearing surface (sole and wall but not the heel) is 'stabilized' on the inner hind claw. In other words, the bearing surface of the toe and wall is pared flat so that it will be at right angles to the long axis of the shin (cannon) bone in the standing position. This will ensure that the cow has a flat and stable weight-bearing surface on hard ground.

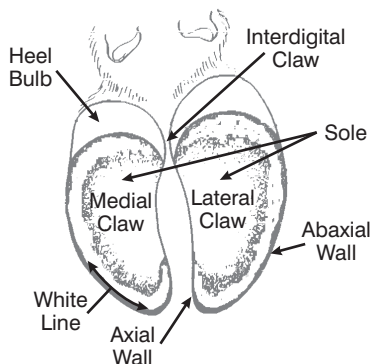
The heel of the medial claw is not trimmed down unless overgrown. Furthermore, since claw lesions in the lateral claw are more frequent, preservation of the heel on the medial claw is desired in the event that it is necessary to provide rest to the lateral claw by increasing weight-bearing on the medial claw heel.

The sole at the toe should not 'give' under pressure. If it does, it may indicate that the sole has been trimmed too thin. Thin soles subject the underlying corium to bruising or a greater potential to wear through, particularly at the white line. Exposure of the corium often leads to grave consequences for the foot.

Step 2

Using the medial claw just trimmed as a guide, trim the toe of the lateral claw (rear foot) to the same length. Next, pare the weight-bearing surface (of the sole) of the lateral claw to the same level as that of the medial claw. The lateral claw is trimmed to the





same level as the medial claw at both the toe and heel. Leaving a damaged lateral claw higher than the medial claw will probably lead to lameness. It is for this reason that the medial claw heel is preserved. When complete, the weight-bearing surfaces should be flat at the toe.

Step 3

Shape and slope the sole so that the innermost back portion of the sole slopes toward the centre of the claws. Care should be taken to avoid paring away important weight-bearing surface at the toe. Excessive cupping or sloping of the sole should be avoided because it reduces the weight-bearing surface area to the outside walls. This is one of the most common errors in foot trimming. Proper sloping of the sole in this region is designed to reduce pressure in the sole-ulcer site area and open the interdigital space between the claws. Overgrowth of the sole which occludes the interdigital space causes dirt and manure to be trapped between the claws. This increases the likelihood of interdigital disease.

Step 4

Balance the heels. Weight-bearing surfaces should be flat at the toes, along the walls, and across the heels. This assures an appropriate distribution of weight within and between the claws and completes the trimming process in feet where further corrective trimming procedures are unnecessary.

Steps 5 and 6 are 'therapeutic and curative trimming procedures'. They are applied as needed.

Step 5

Pare the damaged claw lower toward the heel to increase weight-bearing on the healthy claw. In most cases the damaged claw will be the lateral claw of rear and the medial claw of front feet. Specific indications for this trimming procedure would include conditions in which overgrowth has led to overloading (e.g. hemorrhage at the sole ulcer site) or excessive weight-bearing on the claw. Lowering the damaged claw reduces weight-bearing and thereby permits recovery and eventual return to normal function and health. In some cases it is necessary to apply a footblock to the healthy claw in order to reduce weight-bearing in the damaged claw.

Step 6

In the presence of hoof horn lesions, further corrective trimming is necessary. Remove all loose horn irrespective of how extensive it is (sole separation) and pare away hard ridges (heel horn erosion). Only healthy hoof horn should be left in place.

Never dig holes. Always slope horn towards the lesion. For example, trim the area around sole ulcers and remove the lateral wall when trimming out white line lesions. Trim carefully and DO NOT remove new healthy horn. Avoid damage to the corium—stop when trimming leads to bleeding of the corium.

Do not trim horn with cracks or hemorrhage of the sole excessively; unless there is pain or swelling. Once necessary horn removal has been accomplished, avoid cutting away more horn at each examination unless conditions (e.g. loose or damaged horn) warrant such measures.

Part of fixing a foot is trimming a foot. In other words, unless the defect that created the problem is corrected, the benefits from curative procedures are short-lived. If followed, the step-wise procedure outlined above forces one to observe and trim the healthy as well as the lame foot in a lame cow. Quite often, similar problems can be found in the other foot. Cows that do not respond or get worse within a couple of days should be re-examined.

source: Dr. Jan Shearer, University of Florida