

Lameness Control in Dairy Herds

Part 1 – Practical Foot Trimming by the “Dutch 5 Step Method”

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Ninety percent of lameness in dairy cows arises from conditions of the feet. Claw trimming can improve cow mobility (locomotion) if done correctly. Timely claw trimming can also prevent lameness. However, if performed incorrectly, then claw trimming may be a waste of time, or worse still it can exacerbate lameness. The Dutch 5 Step method of claw trimming (see right) is the internationally accepted approach to effective claw trimming, and should form a part any herd claw trimming regime.

Why is claw trimming important?

Concrete tends to be abrasive and concussive, increasing wear on the outside heel while stimulating horn growth in other areas (see fig 2). Bruising associated with concrete can contribute to altered load bearing during locomotion, resulting in further imbalance, eventually producing severe lameness. This creates a vicious circle as locomotion alters, and claw horn wear versus growth becomes increasingly unbalanced. A claw that is badly trimmed becomes unstable on concrete creating pain and discomfort for the cow and increasing the risk of lameness in the future.

Once a cow has chronic lameness, then the natural wear associated with normal mobility and locomotion are lost and imbalances between claw horn growth and wear becomes a permanent problem.

Cost-effectiveness of claw trimming

In the UK it is estimated that there are 55 cases of lameness per 100 cows per year, with the average case costing £178, and the “average” herd losing approximately £10,000 per 100 cows every year. A single case of lameness costs about the same as claw trimming 18 cows using a professional claw trimmer. This makes regular, claw trimming extremely cost-effective for most herds in the UK if done correctly, and may reduce other problems such as infertility. In addition to reducing lameness and improving mobility, claw trimming can improve grip on

Dutch 5 Step Method

Routine Foot Trimming

- 1) Trim toe length to 7.5cm approx.
- 2) Match untrimmed claw to this.
- 3) Dish soles

Corrective Trimming

- 4) Relieve weight off painful claw
- 5) Remove loose/under-run horn and hard ridges



Courtesy of Dr Becky Whay

Fig 1: A foot from an animal kept at pasture.



Fig 2: A foot from an animal kept on concrete the concussive forces increase horn growth (red arrow), increasing loading, with increased wear (blue arrow), particularly the outer wall of the heel of hind feet

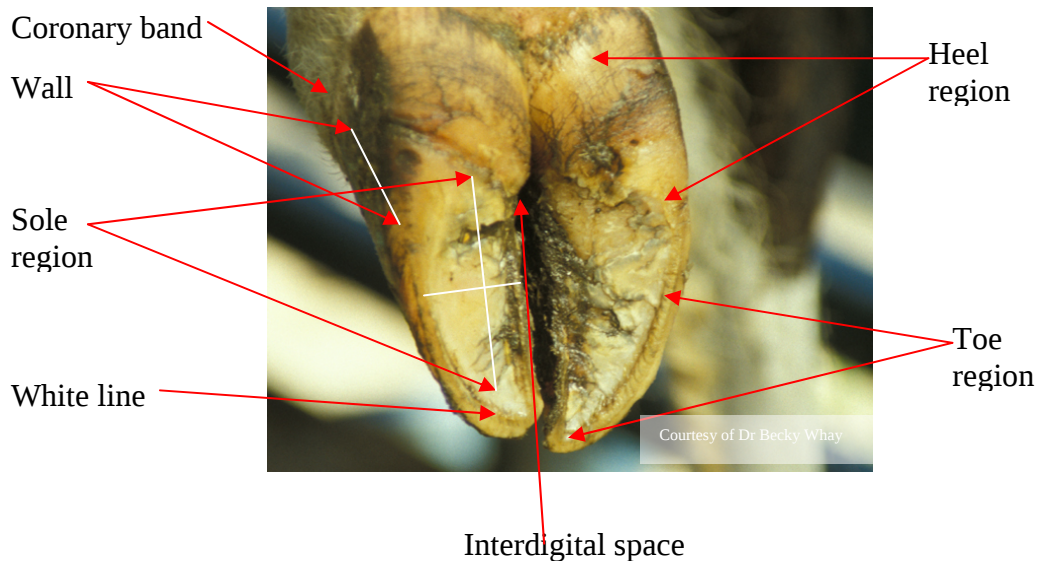


Fig 3: Note overgrown inner claw on hind limb

concrete, potentially reducing injuries and improving bulling activity. Once damage to claws and stretched tendons has occurred then

often it will remain for the lifetime of the cow, adding to the urgency of claw trimming for cows with the early signs of claw overgrowth.

Anatomical structures relating to the foot



Before you start – have the right equipment.

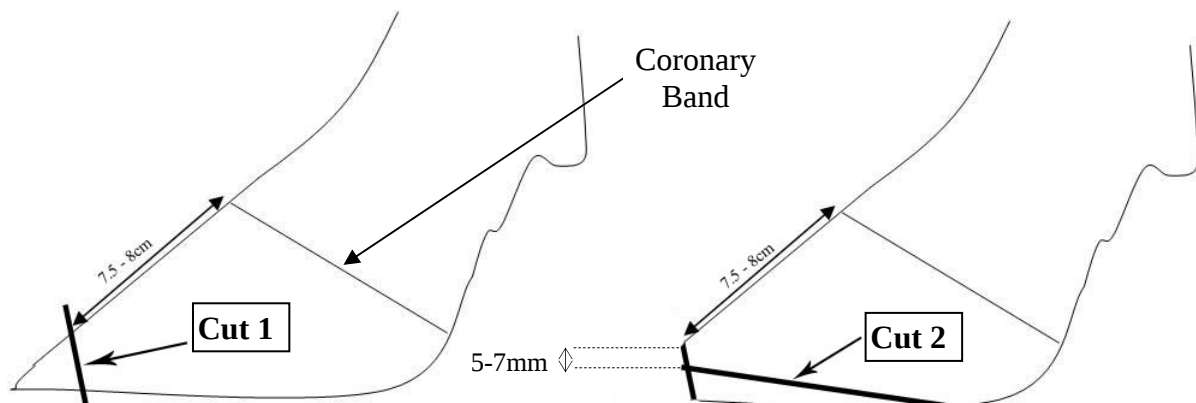
The right crush and race system should not take more than a few seconds to load and unload the cow. A system must be altered if it causes distress or injury to the herdsman or the cow.

Practical claw trimming instructions for Holstein-Friesians

Step 1. Trim toe 'length' to 7.5 cm (more or less in some cows)

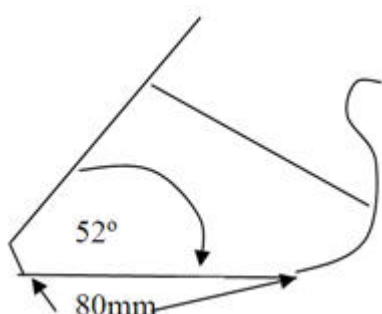
For hind feet, trim the inner claw (most normal).

For front feet, trim the outer claw (most normal)



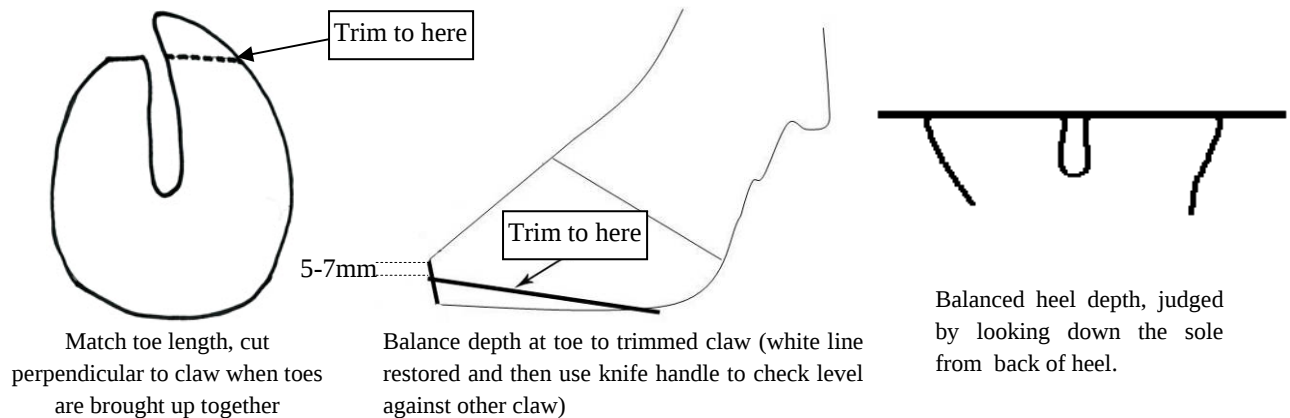
Cut 1 – measure 7.5cm from coronary band (placing fingers in interdigital space). Some large cows need 8cm. Cut at an angle similar to that in the above diagram

Cut 2 – trim sole so 80mm weight bearing (spare the heel), stopping before sole thinning ('give' on thumb pressure); trim until the white line just reappears at tip of the toe (5-7mm step at toe)

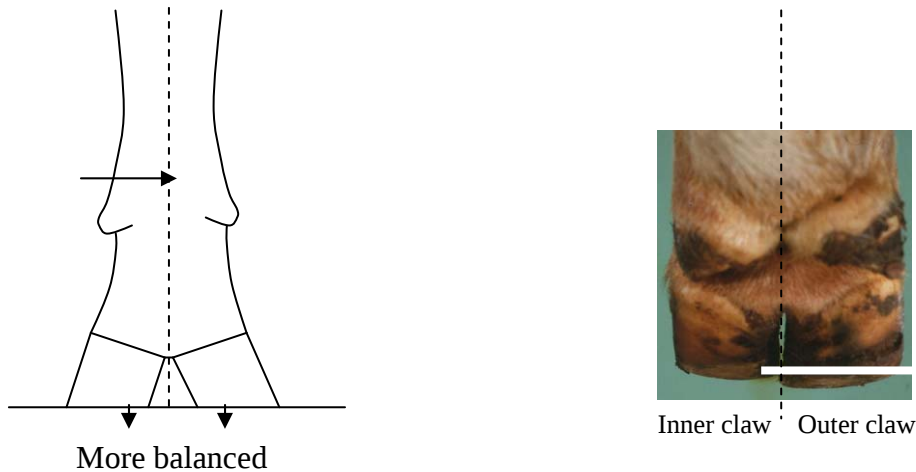


After cut 1 and cut 2 you should end up with a claw shape similar to the above

Step 2. Trim second claw to match trimmed claw - matched rather than measured

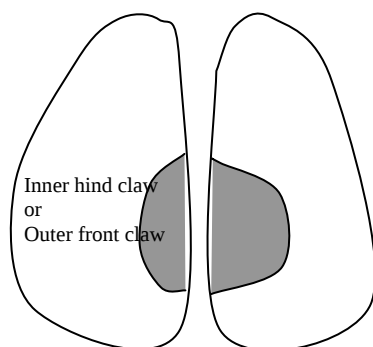


The outer hind claw has a longer natural toe length and so must not be measured to 7.5cm, but should be matched to the correctly trimmed inner claw. Step 2 corrects any obvious imbalances in weight bearing between inner and outer claws.



While equal weight bearing is probably ideal, for some animals a naturally shallow heel on the inner hind claw can leave the outer claw over-trimmed and exposed to bruising if completely equal weight bearing is attempted. Therefore, caution is advised when trimming down heels, with frequent checking of sole depth and slight imbalance preferred to thin soles in the heel of the outer hind claw.

Step 3. Dish out the ulcer site (shaded area)



The dishing on the inner hind claw need only be slight to help prevent dirt sticking between the claws. The dishing on the outer claw should be larger and shallower to relieve weight off the sole ulcer site. The combined dish should be enough to balance a chicken egg but should not produce a thin sole (no 'give' on thumb pressure).

This step transfers weight from centre of the sole onto the wall, toe and heel.

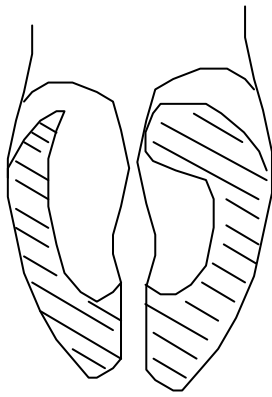


Figure – Natural weight-bearing (far right) takes place through the wall (hardest part of the claw) and the heel (most cushioned part of the claw). Abrasive concrete increases sole weight bearing. The aim of step 3 in the Dutch method is to dish out the central sole region (centre picture) to re-distribute weight to the wall and heel (left image)

The claw has evolved to absorb concussive forces and bear weight through the heel, wall and sole next to the wall. The heel acts like the suspension, absorbing concussive forces as the foot strikes the ground. The wall is the hardest and toughest part of the claw, able to withstand the wear and tear from harsh underfoot surfaces. Carefully dishing out the

central sole will aid this function. To be effective, a greater dished area by 2:1 is required for the outer hind claw compared with the inner.

That completes the functional trim. For the functional trim, only excess horn should ever be removed. It also prepares the foot for inspection prior to the corrective trim.

Corrective trim – Steps 4 and 5

For the corrective trim, functional shape of the claws must be preserved and lesions prioritised for corrective trimming. Many healthy cows receiving a routine trim will have no painful lesions or lesions likely to cause lameness. In these cases, claw trimming can move to the final step (5).

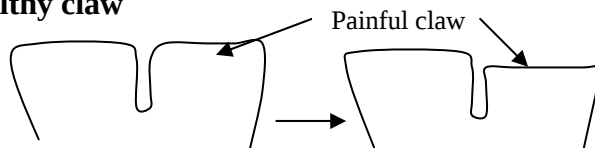
In lame cows it is possible to identify painful lesions by:

- Locating a lesion associated with exposed “quick”.

- Triggering flinch behaviour when light pressure is applied to the painful claw, either using thumb pressure, pressing on the skin next to the claw or by using blunt “pincers” to apply focal pressure. Similarly, the cow may ‘tense’ when the claw is gently twisted.
- Heat, swelling or redness affecting one claw or digit (one side of the foot).

By taking a thin ‘skim’ of horn from the sole surface of the painful claw, tracks of diseased horn may be identified and pain confirmed using blunt pincers (or thumbs).

4. Relieve weight off a painful claw – trim down the heel horn or fix a block to the healthy claw



See notes on sole ulcer and white line disease

Relieving weight off a painful claw can be achieved in two ways. If there is a good depth of heel horn on the unaffected claw, then the heel horn on the painful claw can be trimmed down (red arrows below). Alternatively, a plastic, rubber or wooden block can be applied to the healthy claw for

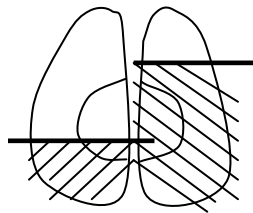
6-8 weeks. However, in some cases, bruising or under-run horn may be present on the non-painful claw, making it unhealthy and unsuitable for blocking. These cases require a straw yard or nursing paddock to aid recovery. If in doubt about a case, always ask your vet for advice.



Figure – The objective of step 4 is to relieve weight off a painful claw. This can be achieved through trimming down the heel on the painful claw (red arrow, left image) to achieve a 1-2 cm height differential with the healthy claw (central image). The quick should not be cut in doing this. If this cannot be achieved then a block should be applied.

5. Remove loose/under-run horn and hard ridges

In most cases only back 1/3 of inner hind claw should be tidied



In most cases only back 2/3 of outer hind claw should be tidied

As little serious disease occurs in the front 2/3rds of the inner hind claw, and front 1/3rd in the outer claw, then tracks or under-run horn should only be pursued in these regions if painful. Loose horn around the base of the sole ulcer, in the heel or around white line lesions should be removed (red arrows

below). However, cutting into the “quick” should be avoided at all costs to prevent unnecessary pain, scarring and severe infections spreading to the deeper tissues. The final stage is to ensure there are no sharp ridges that could injure the teats or legs, checked by running the hand over the claws.



Inner claw Outer claw



Figure – Step 5 is concerned with removing loose horn and sharp ridges. Heel erosion should be trimmed out. The collar of horn around the base of a sole ulcer should also be removed. White line lesions should be removed except in the regions marked ‘caution’ above, unless obviously causing problems.

Herd claw trimming regimes

Not all herds or animals benefit from routine claw trimming. In extended grazing systems (New Zealand style of dairy farming) then often only the lame cows require trimming and even then they may only require the corrective trim (not steps 1-3). Wall horn

grows at on average 0.5cm per month, although growth is slowest in the first 4 weeks after calving. Rate of wear depends on abrasiveness of floor surface and the activity of the animals.

Timing of claw trim	When to use it
When observably lame or overgrown	All herds. Mobility scoring will aid this approach.
At around drying off (not the same day as drying off due to mastitis risk)	All herds
Maiden heifers 2 months before calving	If visible overgrowth due to lack of concrete feed barrier (but better to have concrete exposure)
60-100 days in milk	Most useful for first calved heifers during the housing period to dish out soles
Mid-lactation	Above average yielding herds
6-10 months after calving	Herds with extended lactations – leaving until drying off is often too long
Mid-winter	Simpler system for autumn calving herds (instead of mid-lactation)
4-8 weeks pre-turn-out	Simpler system for Winter calving herds (instead of mid-lactation)

Routine claw trimming (excluding lameness treatments) should be avoided at certain times, especially:

- when cows are heavily pregnant (last 4 weeks of pregnancy).
- when cows are freshly calved (first 4 weeks of lactation), as cows are under strain and horn growth is less than wear, raising the risk of thin sole after trimming.
- when cows are about to be housed (again, there is a risk of thinner soles and bruising due to horn wear being greater than growth for a few weeks).
- when cows are turned out on very long or abrasive tracks (e.g. tarmac or concrete).

For some herds, the smoothness of the concrete and the high energy/protein diets means claw overgrowth is notable within 3-6 months of trimming.

Consequently, every herd is different. Similarly, every cow is different. Therefore, it is probably best to have a system tailored to the individual cows, built up from good records. If this is too complicated, then a regime that means every cow goes through the crush every 3-6 months may be preferred. Inevitably this will mean some cows will be inspected and released without any more than a slight dishing out of the sole. None-the-less, this can be very beneficial for the cow, especially if sole and heel depth can be safeguarded. Alternatively, a system based

on good observation of claws and cow mobility will suit many modern units.

However, it should be noted that over-trimming can contribute to bruising, lameness and increased risk of future claw overgrowth particularly on farms with sharp, eroded concrete. Claw trimming can cause some animals distress. This means regimes always need to be tailored to the farm and individual cows, with some trial and error combined with a degree of caution and good observation.

Due to the unforgiving nature of concrete, claw trimming technique is extremely important for the health and welfare of the dairy cow. Whilst it is possible to learn the principles by studying written texts, there is no substitute for learning the practical skills with your vet or a qualified claw trimming instructor. **Claw trimming should not be undertaken by untrained personell.** Small differences in trimming method can have a major impact on claw health and so keeping up-to-date with the latest views on best practice is recommended and probably highly cost-effective. If in doubt about the best way to trim an individual animal, always seek further advice from your veterinary surgeon. Routine foot trimming should be part of your veterinary herd health plan

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