

LAMENESS

Recently a review on lameness in dairy cows was commissioned in Gippsland. One of the authors was Jakob Malmo, a dairy vet in Maffra who is regarded as an authority on any dairy health matters. The review identified the common types of lameness and the risk factors contributing to these. The causation of lameness is often multi factorial ie there maybe more than one single reason for cases of lameness. These include laneway factors, yard, manner of cow movement, cow handling, nutrition, conformation, genetics and rainfall.

Most lamenesses occur in hind feet, despite the front legs carrying the majority of the cow's weight, and usually occur in the outer claw. This is largely because the hind legs are involved in propulsion and therefore suffer much more friction and shearing forces particularly along the white line on the outer aspect of the outer claw. Also the hind feet have a smaller ground contact area.

Some commonly seen conditions are:

- Excess hoof wear - most common amongst heifers soon after entering the herd. Heifers are often last to be milked and are therefore on concrete for longer. This excess wear can be associated with bruised and or under run soles.
- Bruised sole - sole often worn flat, horn thin and pliable and can usually visualise the bruising.
- Under run sole - can be from rocks/stones penetrating the horn and allowing dirt and bacteria in. Infection can also occur through very small defects or cracks in the hoof. This occurs more commonly in feet that have been worn very thin.
- White line disease - the white line separates the hoof wall from the sole. Separation often occurs here and stones and debris can be forced in to the defect. Subsequent infection and abscess formation can then occur. The infection then usually tracks up under the wall and unless drained, breaks out at the skin hoof junction (the coronary band). Usually the outside white line just in front of the heel on the outside claw of the hind foot is affected. Sometimes if both hind feet are affected together, lameness may not be obvious until one becomes much worse.
- Cracks - may or may not be associated with lameness. Quite often they show up as a problem after heavy rain as fine mud then works into the crack causing pressure on the underlying soft tissue. Infection can then also occur or even polyps of proud flesh may grow.

- Infected joints in the heel - sometimes a progression of infections that have not broken out in the foot. These can be extremely difficult to treat.
- Abnormalities in hoof growth - often a conformation or genetic based problem.

Despite the significant costs of lameness, very little research attention is directed to this area and much of the research has been done in the Northern hemisphere under different production systems. Financial losses arise from loss of milk production, reduced reproductive performance, culling, farmer and vet treatments, time and labour in treating and managing lame cows. Animal welfare issues are becoming more important. Acutely lame cows lose weight, move about less, eat less and are often in obvious pain. Attention to ways of alleviating this discomfort is important.

Risk factors associated with lameness

On the laneway, shed and cow factors have been identified. The majority of lameness cases are related to the movement of stock to the dairy, laneway design, construction and maintenance, and farmer patience. The danger area is usually the 300 metres closest to the dairy where most of the wear and tear and compaction of the herd takes place.

Cow movement - Cows should be allowed to drift at their own pace. A cow needs to walk with her head down and be able to look at the lane and thereby very accurately place each front foot to avoid damage. The hind foot is usually safe because it is placed in virtually the same spot as the front foot. Thus a cow allowed to drift along at its own pace and accurately place its feet, even on a very poor lane, will seldom misplace a foot and unless the lane is terrible, should find enough safe spots to tread.

Once the herd has settled into its walking pace each herd will have its own 'flow rate'. This flow rate or safe walking speed will vary with each surface. If allowed to flow a cow will find her correct place and there is little physical contact between cows. Poor lanes will have danger spots that cows will try to avoid. Congestion then occurs and the flow rate will slow and adjustments will occur. No problems should arise if the cows are allowed to slow down, analyse the danger spot, adjust and move on perhaps at a slower pace. Such spots might include wet poorly drained areas, narrowings or severe turns, shaded areas (slow to dry), steep or broken sections, narrow entrances or too narrow tracks.

When congestion occurs there are three scenarios commonly recognised 1) cows stop completely and think about the obstacle, 2) they form rows to get past, 3) they change their stride length and walk along more slowly. Forcing cows from the back doesn't always work because the cows up front or in the middle are dominant cows and refuse to be pushed by the less dominant rearguard. The rear cows are compacted even more and are

forced and unable to place their feet accurately or safely. They push in amongst surrounding cows and if the lane is slippery their back feet skid and wear. If unable to place their feet safely they can bruise, crack, split etc. If a cow is on the edge of the lane she will lean on the cows that are pushing her rather than on the fence. She will push with her back leg closest to the cow she is leaning against and most of the force is taken on the outer wall of the outer claw of that foot. This is where damage is often seen. Also a cow no longer able to drift shortens her strides and her hind feet are not placed on the same spot as her front feet. As the cows congest they put their heads over the backs of the cows in front and now can't see to place their feet either. Placing on unsafe spots then occurs.

Indications that the herd is being "pushed" include cows at the back weaving or swapping sides to escape the farmer, dog or bike; cows seen pushing each other (in a drifting herd cows seldom ever touch other cows: cows at the back will lift their heads over those in front (drifting cows always look and have their heads down choosing a safe path).

If these responses are recognised and the farmer adjusts their pushing there should be a significant decrease in the incidence of lameness even if the lane is in poor condition. Because foot placement is critical, if pushed correct placement can't occur and on most lanes problems will occur. Foot placement is also important in the yard where space available, surface and backing gates can all interfere with placing.

Cow behaviour is also important. Leadership and dominance behaviour controls spacing and herd movement. Cows lower in the pecking order move about more to avoid dominant cows and this leads to imprecise foot placement or excessive movement and maybe more hoof injury and wear. The farmer, dog, motorbike etc modifies this behaviour.

Wet weather and lameness - the wet is thought to increase horn moisture and cause softening which then predisposes to greater wearing and increased susceptibility to sole puncture. Also in wet conditions finer mud particles occur and are more easily forced into small defects in the hoof.

Herd size: In general the incidence of lameness increases with herd size. Important factors here are adequate maintenance of lanes, gateways and areas around troughs. More concrete contact time and longer distances to walk are also involved.

Shed factors: adequate yard space is required so once again cows can safely place their feet. There should be no fighting or pushing. If this occurs there is slipping and increased abrasion and wear. More bruising also takes place if stones and gravel have been carried into the yard.

Problem areas include too narrow an entrance, sharp turns into the yard, non direct flow into the bail, and excessive use of the backing gate. Concrete roughness and smoothness where slipping is involved all

contribute to lameness. Rough surfaces act like sandpaper and when examined the hind feet are worn flat and are usually bruised.

Cow factors: foot and leg angle or conformation as well as claw abnormalities can lead to lameness. Age is also important with wear and bruising being more common in young cattle. Often these are the cows at the rear and lower in the pecking order. Older cows tend to have more white line problems as well as cracks.

Stage of lactation is also a factor with most lamenesses occurring in early lactation soon after walking and standing begins for another season. There is some thought that metabolic stress in early lactation may soften the horn and predispose to problems.