Understanding Lameness and Cow Flow

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Understanding Lameness

Together with mastitis and infertility, lameness is one of the BIG 3 problems on many farms.

In pasture-based systems only four lameness conditions account for almost 90% of the lameness:

- White-line separation (WL)
- Sole injury (SI)
- Foot-rot (FR)
- Axial wall crack (between the toes) (AWC)

Each condition has a different set of risk factors, so it is important to know what lameness conditions your cows have if you want to identify the risk factors on your farm.

To know what is happening, you will need at least the following records for each lame cow:

- date treated,
- cow ID,
- lesion causing the pain – WL SI, FR or AWC.

Most farmers only record the cows receiving antibiotic because of milk withholding – do start to record!

Risk factors – not causes

In the past we used the word "CAUSE" of lameness. So we might say things like "Lameness is caused by wet weather". Every time it rains for extended periods it is true that lameness prevalence in a district will increase – but not every cow gets lame! So it is more accurate to say that wet weather increases the risk of lameness. Each lameness condition has a different set of risk factors.

Risk factors for white-line injury – separation of sole and wall of the hoof

- long walking distances,
- thin soles,
- damaging walking surfaces,
- yard size too small for the herd,
- backing gate/top gate moves too fast,
- people/dogs causing pressure herding on track and/or yard,
- feet slipping, twisting on concrete.

Risk factors for sole injury – bruising, penetrations

- long walking distances,
- thin soles,
- poor walking surface on tracks,
- sharp gravel,
- gravel on concrete surface,
- people/dogs causing pressure herding on track.

Risk factors for foot-rot – injury of interdigital skin and then getting infected

- specific bacteria *Fusobacterium necrophorum* in faeces of cows,
- excessive crowning of tracks resulting in cows walking in side drains,
- track surface breakdown,
- repair of paddock entrances or around water troughs with fine river gravel.

Risk factors for axial cracks – stone injury of coronet between claws or genetic

- same risk factors as for foot-rot where stones about 1cm diameter lodge between the claws.

When you look at the list of risk factors you can immediately see why long periods of rainfall may increase the chance of each of them. Rain can damage track surfaces exposing base materials which then can be carried onto concrete on muddy feet. Cows are likely to walk slower on rain soaked surfaces of tracks. People are more likely to get impatient when there is slow cow flow. Early studies identified the two important success factors that would reduce lameness : maintenance of the track and patient handling of the herd.

Treatment rules

In this presentation we haven't enough time or space to cover treatment in any detail, however, I can't resist mentioning a few basic rules about treatment:

- Remove all underrun wall or sole.
- Lift the foot off the ground with a block on the healthy claw.
- Do not give antibiotic injections unless there is swelling up above the hooves.

Cow Flow

I'd like to cover each of the risk factors to do with the tracks in more detail, but there isn't enough space. Instead I will focus on the second important risk factor – the management of the hard.

On many farms the tracks are really well designed and maintained, but the farmer has too many lame cows with white-line injuries. On the track and/or milking yard you can see the cows are under pressure from the way they are managed.

Very often the pressure put on the cows is not done because the farmer is angry, but because his/her impression is that the herd is not flowing very well and need just a bit of a push. So they use the gate behind the herd to encourage the rear cows to walk forward. The problem is that from the pit it is difficult to recognise the signs of pressure. Many farmers come out of the pit to encourage the cows to move into the milking bails. This can be done really well, but if a milker doesn't recognise the signs of pressure or understand cow behaviour it is easy to overdo the "encouragement".

Understanding the 12 behaviours of cows and reducing the pressure will often result in better cow flow and shorter milking times within two weeks. So here are the 12 behaviours of cows:

Twelve cow behaviours

1. Rear foot placement is almost in the same position as the front foot

If a cow can drift at a voluntary pace the front foot will be safely placed and the rear foot will also be placed in the same safe place. Under pressure and on slippery or painful surfaces the rear foot steps short.

Response: Reduce herding pressure if cows are short stepping and repair walking surfaces.

2. Cows walk and stand with their heads down

With space for their heads to move up and down freely they can find safe foot placement, avoid cows of higher dominance and respond to pain if they stand on a rock.

If cows' heads are up either on the track or in the shed it is because they are too tightly packed.

Response: Cows need space. Don't force cows to bunch up tightly on the track or in the milking shed. Walk no closer than 5 metres behind on track and use only short forward movements (3 to 5 seconds) with the backing gate.

3. Cows have a pecking order

Cows have a walking order that is slightly different to their milking order. After entering the milking yard cows need time to rearrange themselves before they enter the milking bails.

Response: Cows need space and time to re-arrange their position in the herd before entering the milking parlour. Don't move the backing gate for at least 20 minutes after milking starts.

4. The majority of the dominant cows are at the front of the herd, but a significant number are present throughout the herd including the rear group

It is important that cows have space at all times to keep their distance and avoid forced interactions with cows around them of similar or higher dominance.

Response: Don't put pressure on the rear cows in the herd.

5. Dominant cows set the walking speed of the herd

Pressure on the rear cows on the track or by the backing gate causes the rear group to compact because they won't overtake the dominant cows in front of them. The front cows are almost unaffected and so don't walk any faster - they continue at their own speed.

Response: Don't put pressure on the rear cows in a herd.

6. Cows follow the leaders – their movement is forward

Under pressure lower dominance cows and heifers reverse out of tight spots. So a cow reversing indicates too much pressure. Both on the track and in the milking yard cows should have enough space to follow in lines.

Response: On the track increase the distance between the herdsman and the herd. In the milking shed the pressure will be from the backing gate.

7. Cows avoid bumping other cows side to side

Dominant cows will push in among other cows when under pressure causing sideways bumping and shoving and unplanned foot placement.

Response: Identify and reduce the cause of pressure. Cows need a minimum area for congregating in a milking yard (1.3 m^2 for Jerseys, 1.8 m^2 for large Holstein Friesians).

8. Cows respond to voices

Cows are afraid of low, harsh voices. Calling out to cows from behind the herd along the track keeps them moving without causing fear. In the shed the only sound should be gentle calling – "come on girls". No sticks, loud whistling or shouting.

Response: Use a higher, friendly tone from behind the herd along the track and to call cows into the milking bails (never a sharp, gruff, low voice).

9. Cows have flight/fight distances

Every herd is different. If a herd has never been hurt or has learned to trust you, then the distance may be very short (2 to 3 metres). If you keep behind the herd and outside the flight/ fight distance, compaction of the rear group will be minimal.

Response: Find the flight distance for your herd and always keep outside it.

10. Cows have a shoulder balance point

Walking past their shoulder can be used to direct them backwards or forwards. For example, coming out of the pit to gather cows puts you in front of the shoulders and the cow turns away.

Response: Use the balance points correctly, try and avoid coming out of the pit to gather cows.

11. High and low dominance cows use different feet to push with when responding to pressure

A dominant cow in a tight situation pushes sideways using the back leg closest to the cow she is leaning against for propulsion. The white-line of the rear outer claw takes most of the pressure. A lower dominance animal will reverse out of a tight situation using a front foot for propulsion. The front inner white-line takes most of the pressure.

Response: Reduce herding pressure or else white-line injuries will occur.

12. Cows are creatures of habit

Cows respond positively and flow better if they have a consistent routine. The top gate and backing gate must be moved in the same way by all milkers or cow flow is negatively affected.

Response: Milking must be "an exercise in contentment." All routines must be the same every day. Voices, herding technique, milking technique, moving the top gate and backing gate must all be done in the same way by all milkers.