



Healthy hooves

Lameness field guide

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Why is lameness important?

- Lamé cows represent a financial cost to your farm business and, therefore, impact on profitability.
- Lamé cows produce less milk, lose weight, and take longer to cycle.
- Lamé cows take time, energy and skill to treat properly.
- Lamé cows suffer pain and, consequently, lameness is an animal welfare issue on Australian dairy farms.

Lameness is not an easy problem to fix. It is caused by many factors that differ between individual cows and farms. Reducing the number of lame cows in your herd requires a long-term, planned approach that is supported by the whole farm team.



Understand cow behaviour

Lameness is commonly the result of a negative alteration in the way cows walk or interact with the herd. In order to prevent lameness, it is critical to first discuss normal cow behaviour.

- Cows need to see where their feet are placed.
- Subordinate cows will not pass dominant cows.
- Dominant cows walk throughout the herd, not always at the front.
- Milking order is different to walking order.
- Cows need space in the yard.
- Under pressure, dominant cows push forward using back feet and lower dominance cows reverse, using front feet to brace and push.
- Cows are creatures of habit.

Good stockmanship to prevent lame cows

Don't pressure cows on the laneway with people, vehicles or dogs.

- 1 Ensure enough cow space in the yard.
- 2 Use backing gate correctly:
 - Movement no longer than 5 seconds duration.
 - Delay first movement until at least 2 rows/platforms are milked.
- 3 No heads up!
- 4 Use a consistent routine for handling cows.



Scan QR code
to watch Cow
behaviour
and stock
handling
video.

Treatment tool kit

Essential

- Hoof knives – 1 x right handed, 1 x left handed
- Hoof knife pouch (old teat-cup liner)
- Hoof tester
- Hoof trimmer
- Straps or pulley for lifting leg
- Soft rope for securing foot
- Back bar or rope or support belt for cow
- Antiseptic spray
- Cowslips or blocks
- Sharpening stone
- Diamond hoof knife sharpener
- Fine round chainsaw file
- Glove or wrist protector
- Disinfectant

Optional

- Paring hoof knife, rasp or angle grinder with sanding disc
- Antibiotic
- Methylated spirits



Minimising lameness

Cows spread out, heads down

Cows need space in the yard. Space allows a cow room to manoeuvre gently forward and feel and look for a safe place to stand.



Cows standing upright

When cows are relaxed in the yard feet are at normal angle to the yard surface and have low risk of being damaged.



Cows bunched, heads up

Heads up suggests that the whole herd is too tightly packed. This will result in foot damage from twisting and turning and standing on gravel.



Cows pushing at an angle with their feet

Cows pushing at an angle with their feet are avoiding pressure from the backing gate or top-gate. Pushing at an angle like this will damage the white-line of the foot (see page 10 & 11 for description of white line).



Rocks and gravel on concrete

Rocks and gravel on concrete damage and penetrate the sole. They are painful to walk on. This results in poor cow flow into the shed.



Clean concrete

Clean concrete is less damaging to a cow's foot. Use a nib wall or curb at the junction between gravel and the concrete, to prevent gravel being brought onto the yard surface.



Cows bunched up on laneway

This is caused by herding pressure from behind. Bunching often happens at congestion points on the laneway. The result is poor foot placement and damage to the sole from laneway material.



Cows spread out on laneway

If cows are spread out and able to drift at their own pace, foot placement is good and wearing of the sole is minimal.



Knife sharpening



Step 1 Correct angle

Only when a knife is first purchased use a rough stone, a file, or an angle grinder to change the inner angle (straight and curved cutting edge) of the blade to 20 degrees (see illustration). The knife edge should be gradually tapered.



Step 2 File the edge

Use a fine chain-saw file, a fine grain stone or diamond hoof knife sharpener (illustrated). File the sharpened edge again. Ensure consistent angle.

**Always sharpen
the inside edge
of the knife.**



Too steep



Correct angle

3



Step 3 Protect blade

Protect the blade while not in use inside an old teat cup liner, piece of polythene tubing or leather cover.

4



Step 4 Sharpen regularly

Touch the blade up regularly with a diamond sharpener.

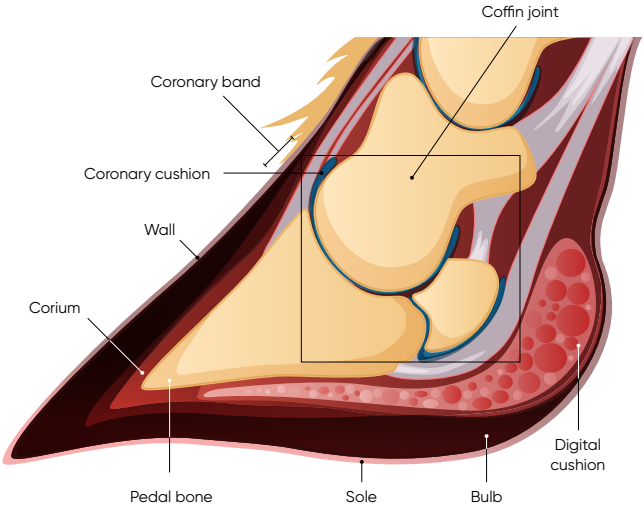
When sharpening a knife, have it securely held to ensure a consistent and sharp edge.



Scan QR code to watch a video on how to sharpen hoof knives.



What does a normal foot look like?



Coronary band

Joins the hoof and the skin. A pale hairless band.

Wall

Grows from the coronary band downward at a rate of approximately 5mm per month. Made of tough horn.

Pedal bone, or distal phalanx

Connects with other bones in the hoof to give the hoof flexibility. Tendons allow the bone to move forwards and backwards in normal movement. Protected by the digital cushion and corium.

Sole

Grows down directly from beneath the pedal bone. This horn is softer than the wall horn. The sole is joined to the wall by the white line.

Bulb

Merges with the inside and outside wall and the sole continuous with the coronary band. A soft rubbery part of the hoof.

Digital cushion

Acts as a shock absorber, bearing the weight of the cow as she steps onto her foot.

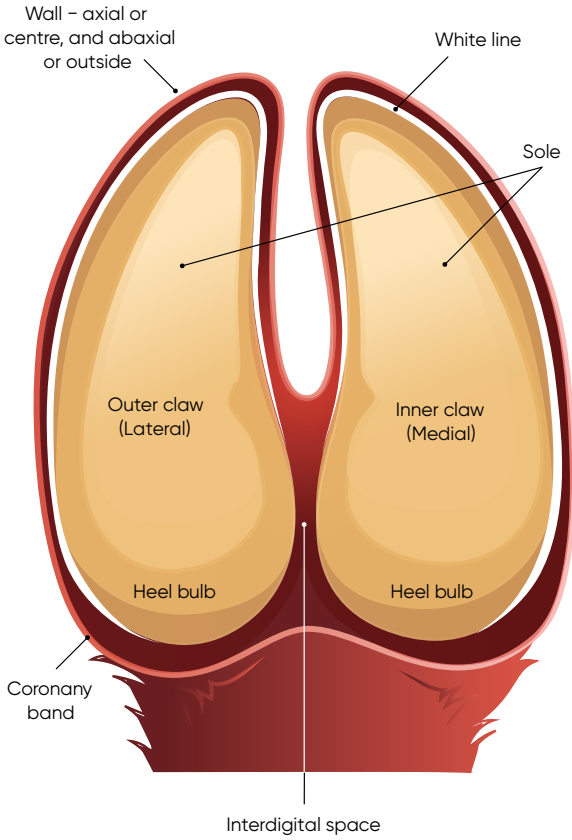
Coffin, or distal interphalangeal joint

Allows the hoof to flex. Prone to injury involving the attachment of the deep flexor tendon to the pedal bone. The tendon can separate and the toe of the claw will turn up.

Corium

Supports the pedal bone within the hoof wall.

What does a normal foot look like?



Heel bulb

Merges with the inside and outside wall and the sole. A soft rubbery part of the hoof continuous with the coronary band.

Inner claw (medial)

Controls direction and carries more weight than the outer claw in front hooves. In the front hooves the inner claw is slightly larger.

Outer claw (lateral)

Controls direction and carries more weight than the inner claw in rear hooves. In the hind hooves the outer claw is slightly larger.

Interdigital space

The space between the inner and outer claws. This space can become impacted with debris.

Coronary band or coronet

A pale hairless band at junction of hoof and skin. Area at the top of the hoof from where the hoof wall is produced.

Wall – axial or centre, and abaxial or outside

Grows downward from the coronary band approximately 5mm per month. Made of tough horn.

White line

Junction where sole meets hoof wall. Runs from the bulb of the heel to the toe and then back along the first third of the inside wall. Softer than the wall and sole. It, it is a point of weakness and often the site for wedged stones and entry of infection.

Sole

Sole horn is softer than the wall horn.

Lameness scoring

Score	Walking speed	Stride	Weight bearing
0 Walks evenly <i>No action required</i> This cow is normal	Confident. Similar walking speed to a person. Maintains position in the herd.	Long, even and regular. Rear foot placement matches front foot placement.	Evenly placed and weight bearing when standing and walking.
1 Walks unevenly <i>Minor action required</i> Record and keep an eye on her – some cows normally walk unevenly	Not normally affected, should easily maintain position in the herd.	May have uneven stride and/or rhythm. Rear foot placement may miss front foot placement.	May stand or walk unevenly but difficult to identify which leg/s are affected.
2 Lame <i>Action required</i> This cow is lame and needs to be recorded, drafted and examined within 24 hours	May be slower than normal; may stop, especially when turning a corner.	Shortened strides rear foot placement falls short of front foot placement.	Uneven – lame leg can be identified.
3 Very lame <i>Urgent action required</i> This cow is very lame and needs urgent attention. Draft and examine as soon as possible	Very slow, stops often and will lie down in paddock. Cannot keep up with the healthy herd.	Shortened and very uneven. Non lame leg will swing through quickly.	Lame leg easy to identify – 'limping'; may barely stand on lame leg/s.

Backline

Straight (level) at all times.



Straight when standing, may be mildly arched when walking.



Often arched when standing and walking.



Arched when standing and walking.



Head

Held in line or slightly below the backline and steady when walking.



May have slight bob and/or may be held lower than normal.



Bobs up and down when walking.



Large head movements up and down when walking.



Scan QR code to watch a video on lameness scoring.



Which foot is lame?

To identify which foot is lame use the following rules.

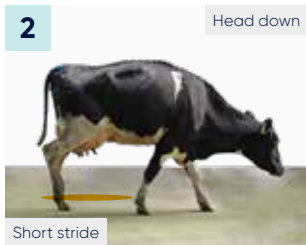
Rule 1 Front foot

Walk the cow around the yard. If her front foot is lame she will raise her head as the foot is placed on the ground.



Rule 2 Back foot

If her back foot is lame she will lower her head when the foot is placed on the ground. She will also have a smaller stride for a lame back leg.



Treatment facilities

Farms should have appropriate facilities for treating lame cows.

Good facilities make it easy to provide prompt treatment and ultimately improve your lame cow management.

The health and safety for both cow and operator are important aspects of any treatment facility.



Scan QR code
to watch a
video on how to
restrain a cow.

How to examine a lame cow

8-point dairy cow hoof examination

- 1

Observe the cow walking. Which leg is the cow lame in?

↓ ↓

Head down? Hind limb. Head up? Fore limb.
- 2

Is the leg swollen and obviously painful above the hoof?

↓ No Yes ↓

No swelling present. Think of infections like footrot.
Note: Always check for wire or similar wrapped around leg/claw.
- 3

Observe the external surface of both hooves on the lame leg and compare with the external surface of hooves on the other feet.
Are cracks present in external surface of the hoof wall of the lame leg?

↓ No Yes ↓

No abnormality detected in either claw on the lame foot. Vertical or horizontal cracks present – possible sand crack(s)
- 4

Restrain cow in suitable facility and secure the affected leg with a rope or strap. *Tip: Use a second person to apply a 'tail jack' while attaching the rope.* Thoroughly clean the external surface with a brush and water.
Is there soft tissue swelling with foul smelling discharge and dead and damaged skin in the interdigital space?

↓ No Yes ↓

No abnormality detected in the interdigital space. Footrot or a hard fleshing swelling or growth – possible Fibroma or a foreign body (gravel or stone), or foreign body penetration (wire) and injury of the axial wall, or an axial wall crack.



Scan QR code to watch a video on how to examine a lame cow.

5 Carefully pare or sand away the superficial outer surface of the sole and trim any overgrown wall horn (double sole). Sole horn may be very thin so be careful not to reduce the weight bearing surface around the edge of the hoof more than necessary. **Is there abnormal discolouration in the sole horn? Do not confuse with normal pigment (usually black).**

↓ No

Yes ↓

No visible discolouration.

- Red or bleeding lesion on sole at the sole-heel junction – sole ulcer?
- Red/purple smudges in the sole itself – bruised sole?
- Red paint splash spots/lines in the sole horn – Laminitis?
- Black/dark lines or cracks in the sole – sole penetration and/or under-run sole. Pare away until no black horn, dirt or pus remains detected. Check for presence of foreign body – stones/nail.

6 White line – expanded and filled with mud and gravel, especially towards heel area?

↓ No

Yes ↓

No apparent abnormality detected.

White Line Disease – separation of wall from sole – check for abscess breaking out at the coronet? Trim or grind hoof wall back to normal tissue to allow drainage.

7 Use hoof testers over the sole to gently squeeze the sole against the wall searching for sensitive areas which cause withdrawal reflex (flinching). **Are there any sensitive areas which cause withdrawal reflex?**

↓ No

Yes ↓

No apparent abnormality detected in either claw or hoof.

Withdrawal response detected

- Bruising – rest.
- Toe/foot abscess or under-run sole – trim, pare or grind until loose sole horn removed back to normal horn.
- Pus detected – establish drainage.

↓

8 Seek veterinary advice as lameness may be associated with upper leg abnormality.

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How to restrain a cow

Step 1

Get an assistant to 'tail jack' the cow by gripping the tail near its base and lifting it up and forward over the cow's spine.

When applied correctly this will prevent the cow kicking.



Step 2

Pick up the lame leg.



Step 3

Using a quick release knot secure the leg to the rail. If possible, have an assistant holding this rope, rather than tying it.



Scan QR code to watch a video on how to restrain a cow.

Be aware!



If a cow drops to her knees, with her head in the bail, this may put pressure on her windpipe, suffocating her.

Putting a strap/belt under her chest can prevent this.

How to put a block or 'cowslip' on

A block or 'cowslip' goes on the good claw, not the injured claw.

Step 1

Clean the foot thoroughly, then using a paring knife scrape the sole and wall clean. An angle grinder with sanding disc may be used.



Step 2

Dry the foot with methylated spirits or a hair dryer.

Step 3

Check the block or 'cowslip' for size. If necessary you can cut the block or 'cowslip' then refer to glue mixing instructions.



Step 4

Apply the block or 'cowslip' onto the healthy claw and allow the glue to dry.



Scan QR
code
to watch
a video
on how
to block
or cowslip.

Remember to record your
lame cow treatments
datagene.com.au



Types of lameness

There are six major types of lameness in Australian herds.

White line disease

White line disease is separation of the wall of the hoof from the sole.



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Sole bruising

Sole bruising is a visible area of bruising under the surface of the sole.



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Footrot

Footrot is a bacterial infection with a putrid odour found between the claws.



Sole injury

Sole injury is a term used to describe three possible conditions associated with damage to the sole – sole penetration, sole abscess and underrun sole.



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Axial wall crack

An axial wall crack is a crack of the inside of the toe at the join of the hoof wall and sole.



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Digital dermatitis

Digital dermatitis is the infection of the digital and/or interdigital skin with erosion and initially painful ulcers, which become chronic and less painful (but can still be infectious).



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code to
watch
a video
on types
of lameness.



White Line Disease

What you will see

- 'Break out' or abscess at the coronet (top of the claw) may occur.
- Wall is split away from the sole and the space between them may be filled with sand and gravel.
- If both front feet are affected a cow may stand and walk cross-legged.
- When side wall is trimmed a dark line can be found running vertically up the hoof from the sole sometimes to the coronet.



Scan QR code to watch a video on how to treat white line disease.



How you treat it

Step 1

Open up the white line at the bottom and the top to allow drainage.



Step 2

In most cases you will need to remove the whole side wall.



Step 3

Take the weight off the injury by paring or apply a block (or 'Cowslip') to the uninjured claw.



Sole injury

What you will see

- Dark hole or crack on sole leading to pocket of pus.
- Not always obvious.
- Hoof testers usually produce a response over the penetration – cow will flinch or try to pull away.
- In heifers, presentation is often at the toe.



Scan QR code to watch a video on how to treat sole injuries.



How you treat it

Step 1

Open up hole or crack in hoof and release any build up of pus.



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Step 2

Pare away all under-run horn (separated sole) to ensure drainage and prevent build-up of pus.



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Step 3

Apply a cow slip or block to the good claw to relieve pain by removing weight bearing role of the affected claw.



Sole bruising

What you will see

- The sole has reddish / dark brown areas. Don't confuse with normal pigmentation.
- Patches can be localised or they can cover large portions of the sole.
- Often the cow is lame in more than one foot.
- Cow often stiff when getting up and walking.



Scan QR code to watch a video on how to treat sole bruising.



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How you treat it

If one claw is bruised

If only one claw is injured apply a 'cowslip' or block, to the uninjured claw.

This will keep the bruised claw off the ground and immediately relieve pain.



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If both claws are injured

If more than one claw is affected, but there is only pain in one claw, a 'cowslip' or block may be applied to the non-painful claw. If both claws are painful, keep the animal close to the shed.



Simple bruising should heal fairly quickly.



Footrot

What you will see

- Skin between claws is broken.
- Swelling and heat below the dew claws.
- It often smells.
- Often occurs in wet conditions.
- Common to find a stone or stick between the claws.



Scan QR code
to watch a
video on how
to treat footrot.



How you treat it

Step 1

Explore the split between the claws with a finger to check for foreign objects such as buried stones, or sticks.

Step 2

Clean the cleft removing any foreign object or dead tissue.

Note: This can be very painful and the use of pain relief may be required. Consult your vet.

Step 3

Spray the cleaned cleft with an antiseptic/iodine.

Step 4

Check claws for other lesions, for example sole abscess or white line disease requiring treatment.

Step 5

If necessary, begin a three day course of intramuscular antibiotics, prescribed by your veterinarian.



Axial Wall Crack

What you will see

- A vertical crack on the inside wall of the claw.
- Crack starts at the coronet (interdigital skin/axial wall junction) and grows down towards the sole.
- A pain response may occur if the hoof testers are used to squeeze the inner (axial) wall against the outer (abaxial) wall.
- A small area of proud flesh might be visible under the dark gravel filled cavity.
- The wall is under-run upwards toward the interdigital skin and down to the sole.



Scan QR code to watch a video on treating axial wall cracks.



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How you treat it

Step 1

The skin between the claws is often extremely sensitive. Check for any stones.



Step 2

Carefully remove all the under-run horn on both sides of the crack.

If the crack extends down the axial wall to the sole then pare away the wall and sole, next to the crack, to transfer weight bearing to the outer healthy wall of this claw.



Step 3

Check the block or cowslip for size. Will it fit? If necessary trim the claw or the edge of the block or 'cowslip' so it is not rubbing against the skin.



Digital dermatitis

What you will see

- In its early stage it looks like a raw grey/brown ulcer at the back of the foot. Cleaning with water reveals the red surface of the ulcer.
- These ulcers then develop into warts. Some of these may extend between the claws.
- The infection may get deeper into the hoof, causing erosion and under-running of heel horn, (especially if left untreated).
- Eventually the ulcer or wart may appear to heal naturally or shrink to a very small scar, (but may still be a source of infection to other cows).
- Painful to begin with, causing 'shifting' lameness. Less or no pain as it becomes chronic.



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How you treat it

Seek veterinarian advice. It is important to accurately diagnose the disease.

Step 1

Tie up the foot.

Step 2

Clean the ulcer or wart with water.

Step 3

Dry, and then spray with an antibiotic spray from your veterinarian.

Step 4

Let the spray dry for 10–15 seconds and then apply again.

Step 5

Lower the foot and then let the cow stand for 10–15 minutes on clean concrete.

Step 6

Repeat the treatment for two more days.

- *Severe outbreaks can be prevented with hygiene to keep the feet clean and foot-bathing of every animal.*
- *Ongoing control is by use of footbaths with antiseptic solutions on a regular basis.*



Digital dermatitis (continued)

How you prevent it

- Digital dermatitis is usually introduced by bringing infected animals (cows, bull or heifers) onto a farm.
- All introduced animals should be checked and foot-bathed before mixing with a clean herd.
- Once digital dermatitis becomes established in a herd it seems impossible to get rid of it.
- Avoid cows standing in slurry whenever possible.
- Install a foot-bath for monthly sanitizing of feet as a precaution.



Scan QR code
to watch a
video on digital
dermatitis.



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