

Rubber mats and lameness – soft surface and shock absorption

Rubber mats are installed in farms to minimise the impact of concrete flooring and its constant abrasion of the hooves. In a natural environment, hooves come into contact with different types of surfaces; some can be hard and stony and others soft like pastureland. Such ground exposure leads to a balance where hooves remain healthy with no human intervention.

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When cows are standing or walking, they have to support their whole weight over a very small surface, their hooves.

To ensure that each of these weight-bearing small surfaces is effective, a good cushioning system is needed. In a cow's anatomy, this task is performed by the foot's digital cushion, the fat cushion between the digital bone and the hoof itself and by the digital ligaments appended to the bone in an elastic manner.

In the natural environment, the cow's natural cushioning system does its job with help from the ground's shock absorption capacity.

The consequence of cow confinement is

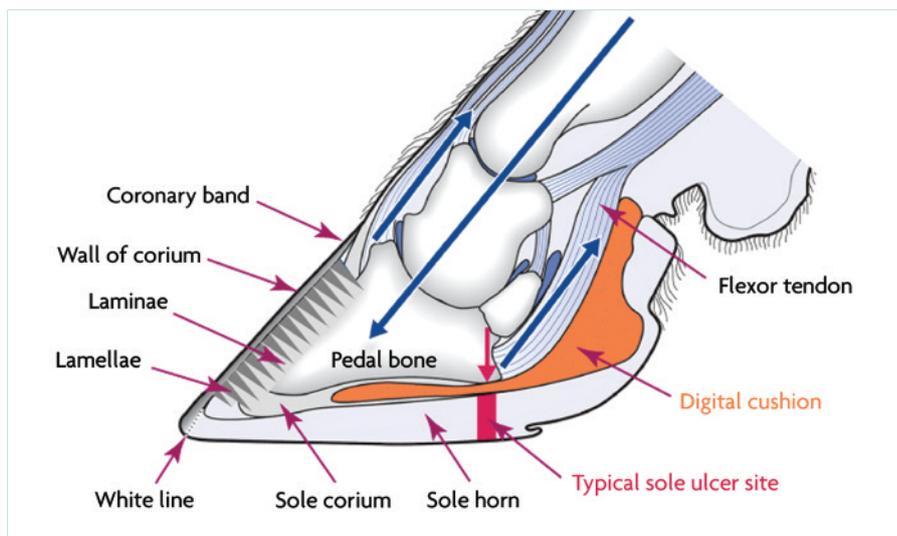


Fig. 1. Cow hoof.

that, for all their productive lives, animals have to walk and stand on concrete floors that have no shock absorption capacity at all.

All shock absorption efforts must come from the cow's shock absorption system, its digital cushions and ligaments. In the long term, this is a risk factor for fatigue in those cushioning elements. The aim of placing rubber mats on concrete floors is precisely

to reproduce natural conditions, by providing a softer floor to take some of the pressure off the cow's anatomical cushioning structures.

Growth and wear balance

The shape of a hoof is the consequence of growth and wear. If there is more wear than growth, the result is a thin sole. Risk factors are abrasive concrete, the abrasive effect of sand bedding, long-distance walking (parlour), aggressiveness (pushing and shoving), high humidity causing soft hooves, and poor horn quality.

On the other hand, if there is more growth than wear, the consequence is excessive growth. This is a minor problem that can be addressed by frequent hoof trimming. Under ideal conditions, the hoof's growth and wear balance out.

Hoof wear and physical impact stimulate peripheral blood flow at the hoof's white line, and thus increased horn growth to ensure the protection of live claw tissue.

Again, when a hoof bears weight on a soft surface, there is less wear, less physical impact, and thus less extra keratin is produced.

Walking on soft surfaces may lead to horn

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Table 1. Locomotion scores and description (adapted from Sprecher et al., 1997).

Score	Description	Signs
1	Normal	Stands and walks normally, all feet placed with purpose.
2	Mild	Stands with a flat back, but the back arches when the cow walks; gait is slightly abnormal.
3	Moderate	Stands and walks with an arched back; short strides with one or more legs.
4	Lame	Arched back standing and walking; one or more limbs favoured but at least partially weight bearing.
5	Severe	Arched back; refuses to bear weight on one limb; may refuse to move or has great difficulty moving from lying position.

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overgrowth. In reality, when cows have limited movement and they are walking on rubber mats, there is a slightly greater horn overgrowth compared to cows on concrete; nothing that can not be solved by a regular hoof-trimming program.

Locomotion is beneficial for animals; the more cows walk, the better their hoof shape, but the integrity of their hooves must always be checked.

Hoof infectious diseases

To minimise dermatitis digitalis, it is important to:

- Address it while the calf is young.
- Keep the alley clean.
- Promptly detect and individually treat new cases.
- Implement a functional hoof-trimming program.
- Adopt an efficient footbath program.
- Ensure good barn ventilation.
- Provide comfortable bedding to ensure maximum lying time.

If rubber mats are installed, one must adopt an effective alley-cleaning system by flushing or scraping, and making sure that the remaining waste is minimal to prevent puddle formation.

Behaviour and early detection

Lameness is a sign of pain and a cow will walk in a different way to avoid this pain; she will limp. When a cow stands or walks on a soft surface, the pressure on a lesion is less, and so is the pain. With the same type and size of lesion, cows show more obvious signs of lameness on concrete than they do on a soft floor.

A lame cow with a locomotion score of four on concrete will probably have a locomotion score of three on rubber. Over the short term, the advantage of rubber is obvious; with the same lesion, a cow will experience less suffering. However, over the long run, this can turn into a disadvantage since it takes longer for the farmer to realise that the cow is in pain, so detection may be delayed, and the advantages of rubber lost. A good farmer must develop skills to detect this sign of pain; this is known as having a clinical eye.

Another key issue to fight lameness, as important as prevention, is early detection and treatment to restore the cow's health and minimise losses. To benefit from all the advantages of rubber mats, farmers must improve their skills in lameness detection.

From our experience in lameness and cow welfare consultation around the world, once farm workers understand the importance of early detection and pay attention to it, they can detect foot lesions

on rubber mats at an early stage and benefit from the full cow-comfort advantages of a soft floor.

A world class manufacturer

Animat is a recognised world leader in the manufacture of heavy-duty, long-lasting comfortable rubber mats. With its distribution network of specialised dealers, the company is present in 44 countries worldwide.

After more than 30 years of research and development, it continues to seek ways to improve cow comfort and productivity by producing the highest quality rubber flooring available. Over the years, it has invested millions of dollars in developing and manufacturing cow mats that meet the specific requirements of today's dairy farmers and incorporate the latest technological advances in the industry.

Rubber mats for dairy cows will provide optimal comfort for your herd and Animat offers the best quality/price ratio on the market thanks to its unique design, product research, development, manufacturing techniques and quality control process on inputs and outputs.

Cow mats provide unparalleled comfort for your dairy herd and are the only products that come close to replicating the natural conditions of pastures. ■