kersia®
INVENTING A **FOOD SAFE WORLD**

KERSIA GLOBAL APPROACH
ON HOOF MANAGEMENT

HOOF ISSUES ARE MULTIFACTORIAL

OVERALL MANAGMENT SHOULD COVER MANY ASPECT IMPACTING...

90%
of lameness involves the hooves

Control the environment

Walking areas must be cleaned and dried!

→ **A moist environment softens the hoof horn and reduces the resistance to bacterial infection**

1 Reduce the environmental infection sources:

- Limit the humidity in the cubicles and on the concrete floors to limit bacteria expansion (particular attention on frequented places: corridor, drinking trough…)
- Keep clean and dry hoof

2 Avoid the risk of leg and hoof trauma by external environment:

- Clear the ground of irregularities, stones and protrusions
- Avoid rough ground and long pathways

Limit the bacteria multiplication

Prolonged contact between hooves and contaminated organic material is a source of infectious problems

1 Detergency to remove organic matter

- Reduce the amount of organic matter that remains on foot to
  - → limit the level of humidity
  - → limit soiled material storage into interdigital space
  - → limit feet wounds
  - → improve the disinfectant contact in the next step

2 Hoof disinfection

- Final step to decrease the microbial load on hoof
- Do not exceed the recommended number of passes and regularly clean the bath

Strengthening the hooves

Feed is the basis for everything

- A well-balanced diet supplemented with the right vitamins and trace elements can help to decrease the risk of lameness.
- Biotin and copper for example, are known for supporting the keratin synthesis with a positive impact on the horn formation and hoof strength.

LAMENESS - 3rd PROBLEM ON DAIRY FARMS

Lameness is the **3rd** biggest challenge in dairy farms after mastitis and reproduction problems!
Locomotive disorders have many direct and indirect effects and associated costs.

CONSEQUENCES

1 Impact on animal welfare

- Painful for the animal
- Reduced locomotion
- Lower ingestion and water consumption
- Immune system under pressure, more sensitive, which can lead to the appearance of simultaneous diseases

2 Negative impact on body condition and feed intake

- Ingestion is reduced at different levels depending on severity of the lameness :
  - → not very severe (< 15 days): - 3% of feed intake
  - → severe (1 month): - 7% of feed intake
  - → very severe (> 1 month): - 16% of feed intake (Daviere, 2013)

3 Impact on milk production

- Decrease in milk production, average loss per case in a lactation is estimated between **350 to 420 kg** in case of severe lameness.

4 Impact on reproduction

- Longer inter-calving periods (Roussel et al., 2009) leading to more unproductive days

5 Increased culling rate

DIRECT COSTS

Loss in milk production (by the cow itself or due to treatment), **vet costs, ...**

250 - 268 EUR

(Kelton et al., 1997; Holzhauer, 2003; FANUEL et Bureau technique de la production laitière, 2013)

INDIRECT COSTS

Loss in productive days (longer inter-calving periods)

393 - 515 EUR

(Holzhauer, 2003; Blowey, 2005; Swissgenetics, 2006)

HOOF MANAGEMENT
TURN THE RISKS INTO GOOD PRACTICES

Safe environment

Be careful not to overcrowd the stable and not to have long waiting and standing times.

- Enough cubicles (soft & dry bedding)
- Good construction of cubicles
- Clean & dry walking paths

Nutrition

Keep in mind that acidosis can lead to an increased risk of lameness 6 to 8 weeks afterwards.

- No sudden feed changes
- Provide good quality feed (no moulds, fresh and enough structured feed)

Genetics

Check the genetic parameters for hoof and leg health, foot and leg conformation, and locomotion before insemenation.

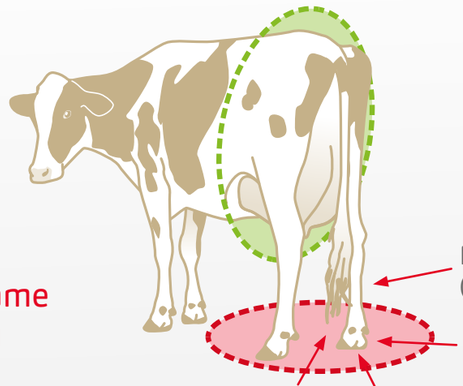
Hoof management good practices

- Regular foot bath with cleaning and disinfection
- Do preventive and regular trimming
- Do regular scoring, register and treat lame cows
- Do not forget the heifers!

WHERE DOES THE LAMENESS COME FROM?

10%
Bones, joint, muscular or nervous origin

90%
hoof origin



Mainly the **hind feet** (92% of the cases)

Mainly the **outer claws** (68% of the cases)

Interior claws (12 % of the cases)

Area, skin **between the claws** (20 % of the cases)

Average rate of lame cows per farm
=
15 - 30%
(but some are not seen)

Why do dairy cows face more problems with the exterior, hind claws?

- Hind legs rotate more compared to the front legs (shoulder joint vs. hip joint)
- Exterior claws bare the most weight on the hind legs
- Exterior claw is therefore more sensitive to bad positioning

(Toussaint Raven and Haalstra, 1985)

ZOOM ON NON-INFECTIOUS DISEASES

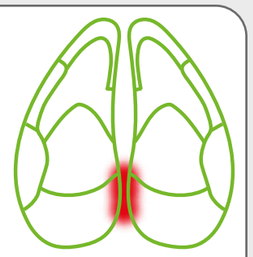
LAMINITIS

- Clinical signs:
  - Blemishes, white line openings and ulcers
  - These signs are often accompanied by softening of the horn and poor quality horn production.
  - They appear around calving, the start of lactation where the changes are most significant (hormonal, housing, diet).
- Risk factors:
  - Ruminal acidosis
  - Bacterial toxins
  - Excessive compression of the pododermis (excessive time spent standing, thinning of the horn of the sole, thinning of the shock-absorbing pad following weight loss)

Naturally, weakness and cuts on the feet are an entry point for bacteria and potential infection.

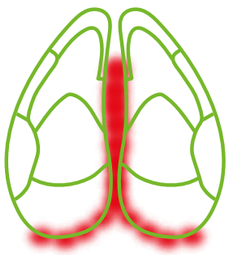
ZOOM ON INFECTIOUS DISEASES

Mortellaro or Digital dermatisis



- Clinical signs:
  - primarily affects the skin of the interdigital space (between the claws), can progress to more severe stages if left untreated
  - common signs: redness, inflammation, erosions, ulcerations and foul-smelling discharge
  - lameness or reluctance to bear weight on the affected limb
  - not always both legs infected, can also be on the front
- Bacterial cause:
  - *Spirochaetes: Treponema spp, Guggenhaemella bovis, Borrelia spp.*
- Risk factors:
  - It thrives in moist and unhygienic environments, such as muddy or dirty conditions, and can easily spread among cattle.
- Transmission:
  - through direct contact between infected and healthy animals
  - or indirectly through contaminated surfaces or equipment

Footrot or Interdigital dermatisis



- Clinical signs:
  - typically affects the skin between the digits (toes) of the claw
  - common signs: inflammation, swelling and lameness
  - early signs: mild redness and swelling, which can progress to the development of a foul-smelling discharge
  - in severe cases: extension into the deeper structures of the claw, necrotic (dead) tissue - i.e. erosion of the heal horn or skin and severe lameness, always both legs
- Bacterial cause:
  - *Fusobacterium necroforum*
- Risk factors:
  - wet and muddy environments, poor claw hygiene, overcrowding and prolonged contact with contaminated surfaces. The disease is more prevalent in areas with high humidity and frequent rainfall.
- Transmission:
  - through direct contact between infected and healthy animals
  - or indirectly through contaminated environments, such as shared pasture, water sources, or handling equipment.
  - carrier animals that show minimal or no clinical signs can also spread the bacteria to susceptible individuals.

HYGIENE PROTOCOL - Control the environment

To maintain a healthy milk production and for easy rumination, dairy cows need to be able to rest for at least 10 to 15 hours per day. During this resting time the udder and claws are in close contact with the environment. Keeping the resting areas clean on a daily basis is a very important step in the prevention of both hoof and udder hygiene.

Main objectives:

- Reduce the environmental load :
  - → Limit the humidity on the ground to limit bacterial growth (particular attention on frequently used areas such as cubicles, waiting areas, drinking areas,……)
  - → Keep the legs and hooves as clean and dry as possible

SOLUSAFE

SOLUSAFE combines a high power of absorption and drying capacity together with a bacterial and enzymatic complex to create a positive flora and to acidify the area.

- Enzymatic and bacteria complex to colonize the medium through a positive flora permitting a better control of the sleeping area of the animals
- Vegetable fiber
- Aromatic plants extracts
- Effective drying and good litter state
- Composition: based on clay, plant extracts, lithothamne, carbonate and bacterial and enzymatic complex.

DAIRY COWS

Wet & risky areas (troughs, drinkers, feeders):

→ apply with a dose of 50-100 g/m²

Deep beddings, straw areas

→ apply after straw application with a dose of 400-800g/cow/week

Cubicles:

→ apply per week over the back third of the cubicle with a dose of 250-500g/cow/week

ENVIREX +

Envirex + is based on a mineral complex combined with 2% VIREX and offers many advantages:

- Bactericidal efficacy at an application of 300g/m²
- A neutral pH around 7
- Fresh spring aroma: long term smell thanks to aroma powder
- Captures odour: high reduction of ammonia scent
- Easily spread on the ground: does not stick on the hand of the operator, on the udder or the straw
- Strong absorbency:
  - → kaolin is a efficient dryer and allows high humidity control
  - → absorbs more than 120% of its own weight, which nearly 3 times more absorbent than lime

Ingredients	Benefits of each ingredient
Kaolin clay	Dries all types of surfaces Soft component in contact with skin Much more absorbent than calcium carbonate
Plant extracts	Good moisture absorption
Virex	Contains 2% VIREX (a bactericidal powder disinfectant)
Fresh spring aroma	Better diffusion than perfume essences Provides a long-lasting fresh smell
Yucca-extract	Neutralizes ammonia and unpleasant odors

CALVES

Huts and boxes

→ after cleaning, disinfection and drying, apply 300g/m² to the floor, then 1 application per week on the bedding

DAIRY COWS

Deep beddings, straw areas

→ apply after straw application with a dose of 300 g/m² for 2-3 times per week

Cubicles:

→ apply 2 to 3 times per week over the back third of the cubicle with a dose of 300 g/m²

Disinfectants are regulatory biocides. They have guarantees of efficiency and protection of human, animals and the environment. Use biocides safely. Before use read the label and product information. Dangerous. Comply with precautions for use.

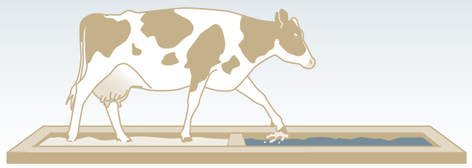
HYGIENE PROTOCOL - Limit the bacteria multiplication

Any farm hygiene management strategy needs to pay particular attention to the animals themselves. Kersia plays a role in the overall hoof management by offering hygiene solutions that help to control the bacterial load, maintain the quality and integrity of hooves and skin.
Different means for applying these solutions are offered in an effort to best respond to your constraints: Hoofbath or spray.

FOOTBATH APPLICATION

Footbath:
- Preferably 2 footbaths: 1 to clean and 1 to disinfect

Two footbaths: detergency & disinfection



STEP 1: **DETERGENCY** STEP 2: **DISINFECTION**

Usage:
- Clean the hooves with PODOCLEAN before contact with disinfectant solution
- Respect PODOCLEAN & PODOFEET MAX recommended dilution rate
- Frequency : 2 consecutive days (4 to 6 milkings) out of 7 days
- Refresh the foot bath every 100 cows
- Make sure that the cows walk in a clean barn when they leave the footbath
- Empty and clean the footbath after each treatment before re-use
- Follow this protocol for 4 consecutive weeks

Why cleaning before disinfecting?

- Reduce the amount of organic matter
- Limit the multiplication of bacteria on the feet
- Improve contact with disinfectant solution

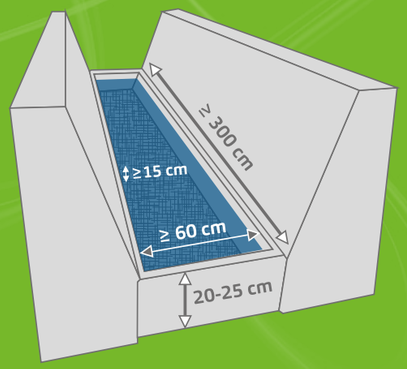
→ **To perform a more effective disinfection on previously cleaned feet**

ALTERNATIVE TO FORMALDEHYDE
The use of formaldehyde, a molecule widely used in hoof managment products, has been banned for foot bath applications since January 2023. Due to its hazardousness (carcinogenic) to humans, requiring the wearing of personal protective equipment, and its negative impact on the environment, this molecule requires safer alternatives.

IDEAL FOOTBATH DIMENSIONS AND LOCATION

Ideal hoofbath dimension:
- **Length:** long enough to allow the cow to soak each foot at least twice (≥ 3m:)
- **Width** : As wide as the standard corridor (≥ 60cm)
- **Bath height** 20-25 cm
- **Liquid height** ≥ 15 cm to cover all foot

Note: Adding rubber mats to the bottom improves comfort and reduces the risk of slipping.



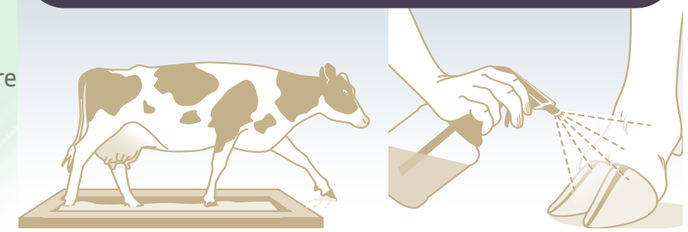
Location of the footbath:
- Location is crucial to ensure proper integration of foot baths into the building and animal traffic.
- The best way is to position them where all the animals have to pass: at the milking parlour exit, for example, or in a specially-designed removable corridor. The location can stress the animals, increase the workload and ultimately discourage the use of foot baths. The best locations are often in the milking exit alley or in the transfer area between the milking parlour and the living area.

Distance from milking parlour to footbath:
- In linear milking system: 1.5m²/cow from the milking parlour to avoid traffic jams at the exit
- Roto milking systems : shorter with 3m²/cow

SPRAY APPLICATION

Usage:
Spray application has the benefits to apply the right dosage at the right place. It allows also a lower use of water and products, seen as more economic and avoid waste.
- Clean the hooves with PODOCLEAN before contact with disinfectant solution
- Respect PODOCLEAN recommended dilution rate and apply it directly on the claw with straying system
- Keep cows in clean area right after application

Detergency Footbath & Spray Application



STEP 1: **DETERGENCY** STEP 2: **DISINFECTION**

PODOCLEAN
- **Detergent product**, prior disinfection
- Remove organic matter from the feet thanks to a high concentration of surfactants and wetting agents
- **Low foaming:** facilitate use in foot bath
- 2% dilution

PA-FEET 5
- **Peracetic acid based product, bactericidal effect**
- **Free of quaternary ammonium, copper sulfate and zinc sulfate**
- 5% dilution

PODOFEET MAX
- Amine based product, **bactericidal effect**
- **Free of quaternary ammonium, copper sulfate and zinc sulfate**
- **High visible** product with blue marking colorant
- 5% dilution

PA-FEET SURF
- Based on peracetic acid, **bactericidal effect**
- **Free of quaternary ammonium, copper sulfate and zinc sulfate**
- **Foaming product**
- 5% dilution

NUTRITION - To ensure good horn quality

Adequate nutrition is important for hoof health for 2 main reasons:

1 Support the sole thickness

Nutrition plays a role in hoof quality, both in terms of the thickness of the foot sole, which must be sufficient to ensure good shock absorption and the quality of the horn. In the event of an energy deficit, the cow loses weight, the footbed rapidly «melts» and lesions can appear.

It is therefore essential to avoid:

→ imbalance in the ration (too rich in energy, poorly balanced in nitrogen or lacking in fiber)

→ weight loss.

This is always a key parameter in order to avoid complications and the risk of subsequent infections.

No body condition score loss >1,5 points

! Drying off is an ideal time for trimming.

In addition, this period of rest is beneficial for claw health and horn regeneration.

2 Support the horn quality

- Bring a regular and minimum level of nutrients needed for the cow during dry period
- Focus on biotin
- Essential for the formation of skin, hair and horn

  → contributes to better horn quality, reduce the incidence of lameness in farms

Focus on BIOTIN

BOLITRACE BIOTIN +

- **Long-term supply (120 days) of grazing animals in trace elements and vitamins (ADE)**
- **Rich in biotin to strengthen the horn**
- **Application at the start of the dry period or 2 months before the expected calving date for heifers ready to calve**

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Contact your local Kersia representatives to discuss hoofcare management

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www.kersia-group.com