DIGITAL DERMATITIS

tech guide

170 years of innovation

Dugdale Nutrition

Introduction

Digital Dermatitis is an infectious foot lesion and often leads to lameness which will have an impact on milk production, fertility and performance. To control Digital Dermatitis the progression of the disease must be understood and early identification of lesions, followed by prompt treatment of topical, targeted treatment is essential.

Contents

Digital Dermatitis

What is Digital Dermatitis

Digital Dermatitis (DD) is a bacterial infection of the foot. Treponema are the causal bacteria and are then followed into the lesions by other bacteria. It is commonly found in dairy and beef herds and can be referred to as hairy heel warts. The infectious disease often leads to lameness which decreases milk production and fertility in dairy herds and in beef herds it leads to poor performing cattle.

Appearance

Raw, bright red or black circular erosion and inflammation of the skin above the heel bulb. The edges form a white margin and overlong hairs that surround sores or are adjacent to thick, hairy, wart-like growths

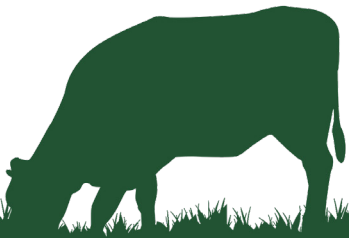
Pathogenesis

Mechanical irritation and maceration by water and chemicals from the manure causes weakening of the skin barrier. A poor environmental hygiene can result in a mixed infection of different bacteria. Infection starts as acute which is infection of the dermis– ulcerative dermatitis. Acute stage may lead to chronic inflammation which is thickening of the skin and proliferation of the epidermis causing the infection to look like hairy warts.

Layered heel horn erosion, increased depth of the caudal aspect of the interdigital space and decreased foot hygiene result from periodic disruption of heel horn formation due to recurrent DD lesions.

Risk Factors

- Biosecurity– introducing new, infected animals to the herd
- Poor hygiene– excessive slurry in pens and inadequate footbath programmes
- Chemical or physical skin trauma
- Early lactation cows and young cattle



Digital Dermatitis

Complications

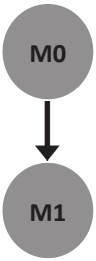
- Wall and toe abscesses
- Pre-mammary dermal sores
- Layered heel horn erosions and abnormally shaped claws
- Poor hygiene in interdigital space

6 Stages of Dermatitis

Identification & Severity

To keep the disease under control, it must be identified early and the severity must be understood. Once the disease is introduced into a herd, it spreads rapidly and the prevalence often exceeds 70%. Below are the 5 stages of the disease.

Stage 1

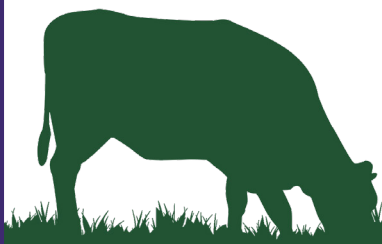


Healthy Claw

- Normal digital skin.
- No signs of dermatitis.

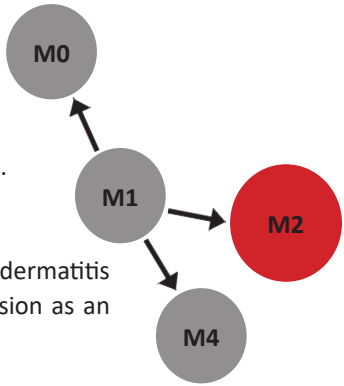
Progresses from M0 to M1

- Under pressure from risk factors, lesions start to develop.
- Poor hygiene, biosecurity and dirty pens are common factors.



6 Stages of Dermatitis

Stage 2



Early/ sub clinical

- Small, circumscribed red to grey epithelial defects.
- Lesions are less than 2cm in diameter.
- Can appear in the interdigital space.
- Can also occur between acute episodes of digital dermatitis lesions or within the margins of a chronic M4 lesion as an intermediate stage.

Progresses from M1 to M0, M2 or M4

- May return to M0 or develop to M2.
- Some animals with M1 lesions never develop to M2 (type 1).
- The transformation from early stages (M1) into chronic stages (M4, hyperkeratotic) does not need to go through an observed M2 stage at all times.

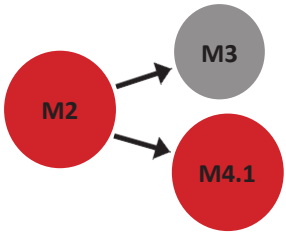
Stage 3

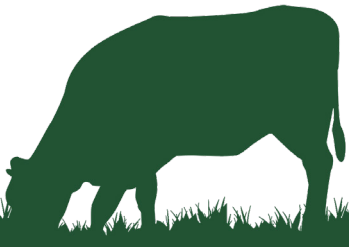
Painful/ acute ulcer

- Bright-red active ulcer or red to gray granulomatous digital skin alteration.
- Lesions are 2 cm or greater in diameter.
- Commonly found along the coronary band at the skin/horn border, in addition to around the dew claws, in wall cracks and occasionally as a sole defect.

Progresses from M2 to M3 or M4.1

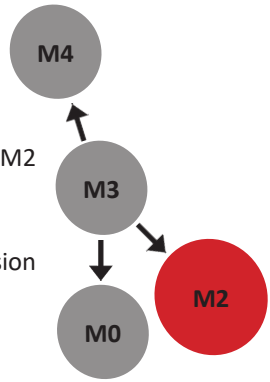
- When treated effectively, healing (M3) begins.
- May cycle between M2, M4 and M4.1.
- Accumulation of high numbers of M2 lesions starts an outbreak.





6 Stages of Dermatitis

Stage 4



Healing

- Occurs within one or two days following treatment of an M2 lesion with topical antibiotics.
- Lesion surface become firm and scab-like.
- In best-case scenario after topical therapy, the lesion appears to be no longer painful.

Progression

- Healing can continue with lesion occacionally becoming M0.
- May regress to M2 or develop into chronic M4 lesion.

Stage 5

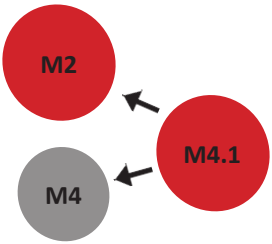
Chronic/ Hairy warts

- Hyperkeratosis (thickened epidermis).
- Filamentous, scaly or mass proliferations, commonly called “hairy warts”.

Progression

- May rarely return to M0.
- May progress to M4.1.
- Reservoir of disease from encysted bacteria deep in the skin.

Stage 6



Chronically recurring

- Hyperkeratosis and lesion within
- Chronic M4 lesion with an early or intermediate M1 lesion within its perimeter

Progression

- May return to M4
- May develop into M2
- Reservoir of disease from bacteria deep into the epidermis and dermis

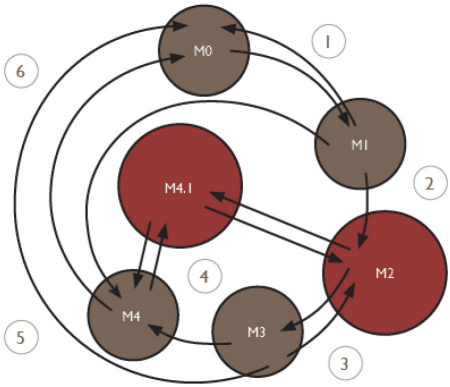
Cycle Of Disease

Cycle

1. “Type 1” animals are never observed to develop M2 lesions and typically represent 10-30% of the animals in an endemically infected herd.

2. “Type 2” animals develop M2 lesions only once and represent about 30-60% of a herd. “Type 3” animals repeatedly develop M2 lesions and represent about 10-30% of a herd.

3. Treat M2 lesions with topical antibiotics.



4. Once treatment begins the lesion may heal, regress to an open ulcer or become chronic.

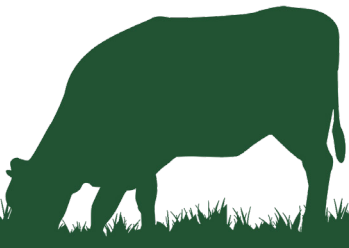
5. The disease can lie dormant deep in the dermis and epidermis of M4 and M4.1 lesions, creating a reservoir of infection that serves as the source of new outbreaks when conditions are favourable.

6. The dynamics of digital dermatitis are driven by chronic lesions (M4 and M4.1) not by acute, active lesions.

Problem Animals

Chronically affected animals are not only difficult to cure, they also can be used as indicators of future outbreaks in the herd. These animals have more than one M2 lesion within a period of time and may show visual clues, such as:

- Proliferation of the epidermis (hairy warts)
- Layered heel horn erosion
- Corns in between the claws
- M4.1 lesions



FIGHTER Strategies

FIGHTER strategies help to manage DD.

Action	Tools	Objectives
Footbath	Dimensions, Chemicals	Disease Chronic/ Subclinical cases going to acute DD
Infectious Status	ELISA - diagnostic blood tests, visual inspection (in crush, parlour) DD pen walk	Early detection, monitor care
Grouping of Animal	Tailored interventions, periods of high-risk heifers	Maximise work efficient and DD control success
Hygiene	Focus on critical control points	Decrease risk of DD transmission
Trimming	Professional trimming	Prevention and cure
Early Tropical Treatment	Topical (wrap) treatment of M2 DD	Maximise clinical care - minimise skin proliferation
Record Keeping	Commercial software	Monitor and adapt management
Skin Quality - Skin Protection	Trace mineral nutritional supplements	Maximise skin integrity - skin protection

Trimming

Routine trimming allows for close examination as well as early identification and treatment of DD infections. Appropriate trimming can help prevent DD infections by

- Removal of loose horn at the heels
- Wide trimming of the axial space of the lateral toe
- Treatment of DD lesions

Record Keeping

There are many software programs available to record on-farm data. This can help to record lameness and hoof lesions to then organise future tasks such as treatments or trimming. These records can help determine the severity and prevalence of DD infections in different groups and intensify the control program.

Prevention & Control

Whole Herd

An Integrated Prevention Control Strategy is needed for all phases of life within a herd, from calves and heifers to lactating and dry cows. This will help manage the risk factors to control digital dermatitis throughout the herd.

Management

Biosecurity

- Measures to prevent infected animals from entering the herd
- Keep new animals in quarantine and treat and footbath before entering the herd, or maintain a closed herd
- Reducing contact from adult cows to replacements.

Inspection

- Regularly inspect hind feet by walking through the pen looking for evidence of DD

Records

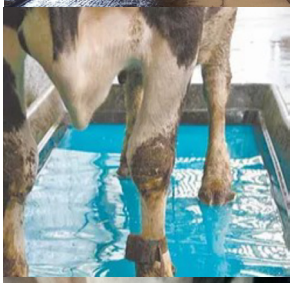
- Keep records of lesions on animals for informed decision making based on their history

Identify M2 lesions early and treat promptly with topical, targeted treatment

Risk Factors

- Abrasive walking surfaces and bad hygiene

Address horn formation damage by utilising functional hoof trimming



Prevention & Control

Hygiene

Too frequent or aggressive foot baths aimed at improving foot hygiene may result in an increased number of chronic lesions that serve as a reservoir of DD causing agents.

Promote a clean, dry environment and use disinfecting footbaths customised for the needs of DD dynamics on the farm.

The bacteria are in the slurry so to control DD the following should be thought about:

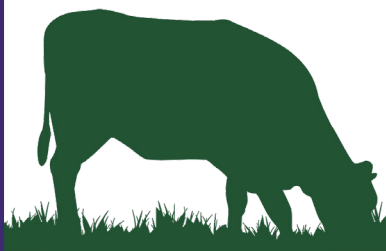
- Reducing contact with slurry
- Risk of automatic scrapers washing feet with slurry
- Narrow passages increasing slurry build up
- Scraping out when cows out of the shed
- Ensuring comfort to maximise lying time

In straw yards having a feed passage segregated from the straw that is regularly scraped out. Straw yards cleaned out every 2 weeks and managed to be dry and clean.

Nutrition

Prevention of DD in pre calving heifers results in a significant reduction in the recurrent DD in lactating cows.

Micronutrient supplementation significantly reduces DD prevalence in precalving heifers when combined with the same risk and hygiene management as implemented in adult cows



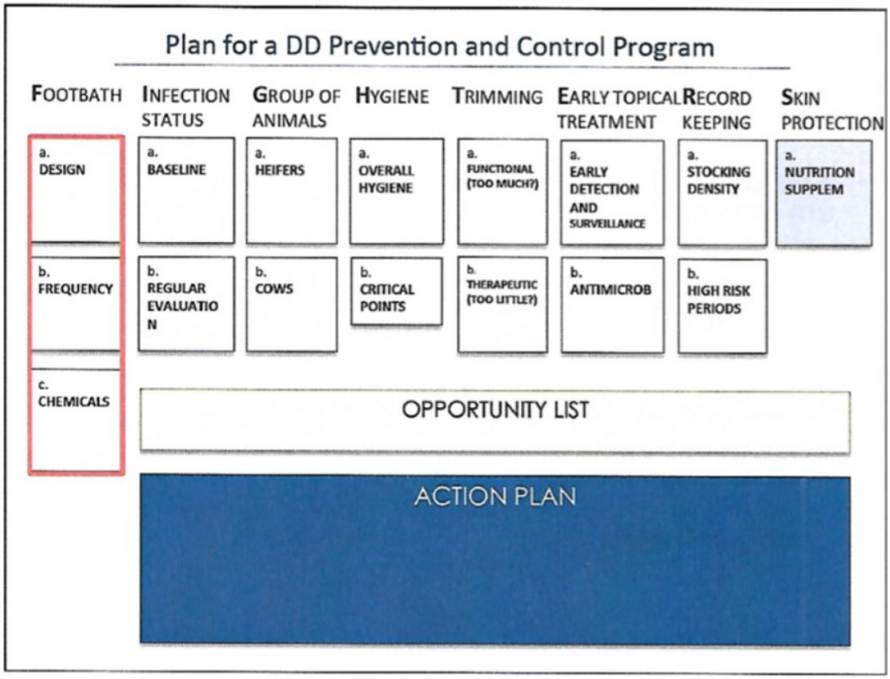
Breaking The Cycle

Within the animal

- Incidence of painful, active lesions is lowered in an animal, slowing new outbreaks. This requires rapid identification of lesions and early treatment with topical treatment such as tetracycline sprays and thorough cleaning of the lesion

For the herd

- Outbreaks are decreased at all stages of production, resulting in reduced prevalence and better control over time
- Foot-bathing will act as a control. Hygiene, biosecurity and early identification and treatment of cases is crucial to reduce the incidence within a herd



Footbath

Footbaths

Footbaths are used to prevent chronic lesions returning to active lesions and are important in the control of infectious feed lesions. Farmers are all different in the requirement for footbaths. The better the hygiene, the cleaner the cows' legs and feet, the lower the frequency footbaths are required.

Footbath design is crucial for success. There must be at least 2 'dunks' of the back feet and this means the footbath must be at least 12 foot long. This can increase the volume and so making the footbath narrower can help. An instep of 10" helps retain the solution and the solution depth should be at least 4" (10cm).

Capacity Of The Footbath

To find the capacity of the footbath we need:

Length (m) X width (m) X depth (m) = number of litres= kg of water

Capacity Of The Footbath

To calculate chemical:

kg of water X % solution desired = kg chemical to add

If the side walls of the footbath are sloped a width of 2 foot (60cm) will work.

Minerals

At Dugdale Nutrition, we now have a range of minerals to suit everyone.

DN Essential Minerals

Minerals using inorganic salts to meet standard requirements for cows including a high level of magnesium for grazing cattle at risk of grass staggers, lactating cows and general purpose minerals.

- **Dry Cow Essential**
- **GP Essential**
- **Dairy Essential**

DN Progressive Minerals

Minerals of a specification shown to improve performance of ruminants on farm, including Availa formulations.

The range includes a Dry Cow Mineral, Lactating Cow Minerals, an Intensive Beef Mineral and a Heifer Mineral with the Digital Dermatitis formula.

Our Progressive Mineral range all include Availa minerals which are proven to be more readily absorbed and utilised by the cow to ensure optimal results.

Over 60 research papers have shown the benefits to include lameness reduction, improved immunity and lower SCC, improved fertility, increased milk production, better feed efficiency and digital dermatitis control.

Our Progressive Heifer mineral contains the Availa Plus formula which, if fed prior to signs of digital dermatitis occurring, will reduce the risk of this disease and provide protection through into lactation.

- **Progressive Dry Cow**
- **Progressive Dairy**
- **Progressive Beef**
- **Progressive Heifer**
- **Progressive Availa Dairy**

Minerals

Bespoke Minerals

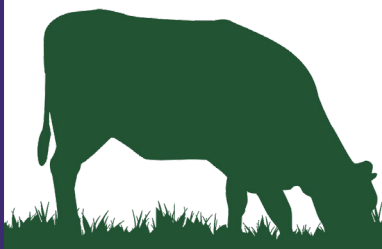
Minerals designed to suit your own farm following a full mineral audit. To develop these, we will analyse forages, water (if required), other feed inputs and all supplements used.

We will highlight any excess or deficiencies and can then specify a mineral that would suit your individual farm. If the minerals are purchased from us there will be no cost to this service.

Benefits of Availa 4

Benefits of Zinpro Availa 4 Include:

- Increased Milk Production
- Better Production
- Improved Hoof Health
- Improved Udder Heath



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