 <b>University of British Columbia</b> <b>Centre for Dairy Education</b> <b>and Research</b>	<b>Document Number</b>	<b>SOP-COW-002</b>
	<b>Revision Number</b>	<b>000</b>
		<b>December 1, 2020</b>
<b>LAMENESS, GAIT SCORING &amp; HOOF HEALTH</b>		

## **1. PURPOSE**

- 1.1. This Standard Operating Procedure (SOP) instructs farm staff and students on the humane methods of assessing hoof health and lameness in cattle at the UBC Dairy Education and Research Centre.

## **2. SCOPE**


- 2.1. This SOP outlines how hoof health and lameness in dairy cows is assessed by both farm staff and students and provides a general overview of considerations regarding hoof care in dairy cattle. It also provides important points impacting the welfare of the animal to remember.

## **3. RESPONSIBILITY**

- 3.1. The Operations Manager is responsible for reviewing and updating this procedure as required.
- 3.2. The Operations Manager is responsible for ensuring all staff involved in gait scoring are trained in this procedure. Both students and farm workers are to be observant of cattle gait when working with the animals.
- 3.3. Students are to bring any suspected hoof health issues to the attention of the farm workers. In some cases Farm Workers II may treat the affected animals.
- 3.4. Observations are to be recorded in the dairy day book located in the vet room of the main barn.

## **4. TRAINING**

- 4.1. Training will include animal handling, and gait scoring. Training on how to safely move animals is provided with the use of two in-house video modules located in Rm 205 of the office/lab building. Personnel new to handling cattle will also shadow an experienced handler to gain practical experience. See SOPs on Student and Staff Training, Moving and Chasing Cattle, and Handling Cattle.

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## 5. SAFETY PRECAUTIONS

- 5.1. All personnel entering the cattle facilities will wear personal protective equipment –coveralls, disposable latex gloves and dedicated facility footwear.
- 5.2. Hands should be thoroughly washed with hot soap and water when leaving the barn facilities.

## 6. DEFINITIONS

Lameness: refers to any painful condition which causes a cow to change the way she walks in order to limit the amount of weight that affected limbs have to bear. It is a serious and costly welfare issue for dairy cattle and for farmers. *Dairyfarmers.ca*

## 7. LAMENESS & GAIT SCORING

- 7.1. Lameness among dairy cows is widely recognized as one of the most serious (and costly) animal welfare issues affecting dairy cattle. Lameness results in decreased mobility, reduced Dry Matter Intake (DMI), decreased production, impaired reproduction, debilitated cows and early culling. Some causes of lameness are related to genetics and infectious disease but the majority of problems are related to nutrition and the environment that the cow lives in. Prompt recognition, diagnosis and early treatment minimize animal welfare concerns and allow the cow to produce to her potential. The majority of cases of lameness in dairy cows involve lesions of the claw. *NFAAC Code of Practise.*
- 7.2. The gait of the dairy cattle on the UBC farm is assessed by farm staff during routine movements of the animals to and from the milking parlour, and between pens. See SOP on Moving and Chasing Cattle.
- 7.3. Additionally, student projects often include an assessment of lameness in the cows, utilizing the 1-5 score outlined in Table 3.
- 7.4. Any cows that are noted to be lame or severely lame (4 & 5's) are hoof trimmed by the Farm Worker IIs and added to the hoof trimmer list for attention at his monthly visit. If scoring is done by students, the Operations Manager will check accuracy of any animal scored 4 or 5, before treatment is given. Further consultation with the hoof trimmer and veterinarian may be needed.
- 7.5. Hoof lesions/treatments are recorded by the hoof trimmer in the binder for that purpose which is located in the vet room.



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### 7.6. Responses to Lameness Score:

- 7.6.1. 1 – sound cow – no treatment necessary
- 7.6.2. 2 - mildly lame - may be starting to exhibit lameness symptoms. No treatment necessary but cow is observed more closely for deviation from normal gait (see Table 1) while she is being moved to and from the milking parlour (2x/day). Observations are recorded in the dairy day book.
- 7.6.3. 3 - cow is moderately lame. Cow is examined for cause of lameness. May need hoof trimmed by Farm Worker II. The cow's gait is observed 2x/day while being moved to the milking parlour and observations recorded in the dairy day book.
- 7.6.4. 4 - cow is lame. Cow is examined for causes of lameness, and her affected hoof is trimmed by a Farm Worker II in a timely manner. If required, a block may be applied to the healthy claw to relieve pressure on the sore one. Analgesics will be used only if the animal's condition warrants it. The cow is placed on the list for treatment by the hoof trimmer at his next visit. Cow's condition is monitored 2x/day, and any observations recorded in the dairy day book. Gait is assessed as per Table 1.
- 7.6.5. 5 - cow is severely lame. Cow is examined, hoof trimmed by Farm Worker II in a timely manner and placed on a list for treatment by the professional hoof trimmer at his next visit. If the cow is severely lame, and the Farm Worker can't diagnose the problem, the hoof trimmer will be called in on short notice. Farm workers II's and the hoof trimmer will work together to assess the problem and provide treatment. The treatment will vary depending upon the cause of lameness – blocking, pain control and/or antibiotics - Cow may also be moved into the hospital pen. If the animal is placed on an antibiotic and does not respond within 5 days (a typical timeframe for improvement), she will be euthanized. All treatments are recorded in the dairy day book.




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**8. TABLE 1. DESCRIPTION OF GAIT BEHAVIOURS.**






<b>Behaviour</b>	<b>Description</b>
Head Bob	This refers to up and down head movement when walking. The head moves evenly as an animal walks, but animals with injuries may have jerky head movements when walking.
Asymmetric steps	This looks at the rhythm of the foot placement. An animal free from injuries would be expected to place her hooves in an even "1, 2, 3, 4" fashion but an animal with injuries may have an uneven rhythm of foot placement "1, 2.....3, 4". Not equal, a cow places her hooves in an uneven rhythm.
Limping	This looks at whether the animal is favouring one or more limbs. You would expect animals free from injury to bear weight evenly over the four limbs. An animal with an injury may not place all her weight on an affected limb.

**9. TABLE 2. DESCRIPTION OF THE PRESENCE AND ABSENCE OF THE THREE GAIT BEHAVIOURS.**

<b>Behaviour</b>	<b>Absence</b>	<b>Presence</b>
Head Bob	Even, gradual up and down head movement when walking.	Even, Jerky or exaggerated up and down head movements when walking. Obvious when foot makes contact with ground.
Asymmetric steps	Hooves placement is in an even "1, 2, 3, 4" fashion	Uneven rhythm of foot placement "1, 2.....3, 4". Foot placement is not equal on both sides, cow places her hooves in an uneven rhythm.
Limping	All legs bear weight equally.	Walk with an uneven, irregular, jerky or awkward step as if favouring one leg.

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**10. TABLE 3. GAIT SCORING SYSTEM FOR DAIRY CATTLE**

<b>SCORE</b>	<b>DESCRIPTION</b>	<b>BEHAVIOURAL CRITERIA</b>		<b>RESPONSE</b>
<b>1</b> SOUND	Smooth and fluid movement	-Flat back when standing and walking -All legs bear weight equally -Joints flex freely -Head carriage remains steady as the animal moves		No response needed
<b>2</b> MILDLY LAME	Ability to move freely not diminished	-Flat or mildly arched back when standing and walking -All legs bear weight equally -Joints slightly stiff -Head carriage remains steady		Note observations, but no intervention needed
<b>3</b> MODERATELY LAME	Capable of locomotion but ability to move freely is compromised	-Flat or mildly arched back when standing, but obviously arched when walking -Slight limp can be discerned in one limb -Joints show signs of stiffness but do not impede freedom of movement -Head carriage remains steady		Cow is examined for cause of lameness. Progression of lameness is monitored. May need intervention – hoof trimmed.
<b>4</b> LAME	Ability to move freely is obviously diminished	-Obvious arched back when standing and walking -Reluctant to bear weight on at least one limb but still uses that limb in locomotion -Strides are hesitant and deliberate and joints are stiff -Head bobs slightly as animal moves in accordance with the sore hoof making contact with the ground		Farm Worker II and/or operations manager examines cow and trims hoof. Each animal is assessed individually and a treatment plan made after consultation with the hoof trimmer, and vet if needed. Animal is placed on the list for attention by the hoof trimmer at his monthly visit. Cow's condition is monitored.
<b>5</b> SEVERELY LAME	Ability to move is severely restricted. Must be vigorously encouraged to stand and/or move.	-Extreme arched back when standing and walking -Inability to bear weight on one or more limbs. -Obvious joint stiffness with very hesitant and deliberate strides -One or more strides obviously shortened -Head obviously bobs		Farm Worker II examines cow, and trims hoof. Placed on list for attention by hoof trimmer. Will need further treatment – antibiotics, pain control and/or vet visit. May need to be moved into a separate pen.



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### 11. GENERAL – HOOF HEALTH

- 11.1. The pen walkways are scrapped cleaned several times a day in order to keep the floor as clean and dry as possible, thereby reducing the amount of manure and bacteria the cows are standing in.
- 11.2. Cows and heifers are housed in free stall barns with deep sand bedded pens available for all animals. Having comfortable pens available for all animals encourages them to lie down more, reducing the time they spend standing on concrete.
- 11.3. The professional hoof trimmer visits the farm monthly. All cows on the UBC Dairy have their hooves professionally trimmed annually - during the month in which they are being dried off.
- 11.4. The 5 most common hoof lesions that can occur include: digital dermatitis, sole ulcer, white line lesion, sole hemorrhage, and toe ulcer (see section 12 for descriptions of these lesions).
- 11.5. Any animals needing attention before the hoof trimmer can come are examined by the farm worker II on duty who will diagnose the problem and give appropriate treatment to any animal needing it. This could include providing pain control, blocking the foot, antibiotics, and possibly moving her to a hospital pen if needed.

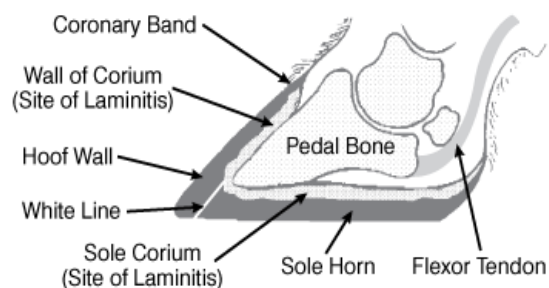
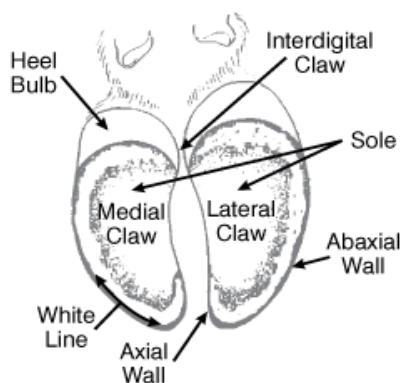


Fig 2 & 3. Anatomy of the cow's hoof.



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### 12. HOOF CARE

#### Definitions:

- 12.1. Digital dermatitis: often referred to as hairy heel warts and is a common infectious foot disease, caused by bacteria, that results in lameness in cattle. It manifests itself as raw red or black lesions above the heel.
- 12.2. Foot rot: a highly contagious bacterial disease that results in the entire foot becoming swollen and painful. The affected foot may produce a foul odour. Animals may have a fever.
- 12.3. Sole ulcer: a painful, noninfectious hoof lesion in the sole/heel area of the outside hind claw.
- 12.4. White line lesion: the white line is the junction between the sole and the outer wall of the hoof. See Fig 2 & 3. It can become separated leaving a cavity that can become filled with organic matter. In severe cases, a painful abscess can form.
- 12.5. Sole hemorrhage: noninfectious lesion of the sole of the hoof, manifesting itself as red bruising on the sole.
- 12.6. Toe ulcers: black mark or rupture at the white line or sole at the toe.
- 12.7. Blocking: a treatment method for lame cattle where a wooden or rubber block is glued to the healthy claw of the hoof, thereby taking pressure off of the sore claw. See Fig 1.

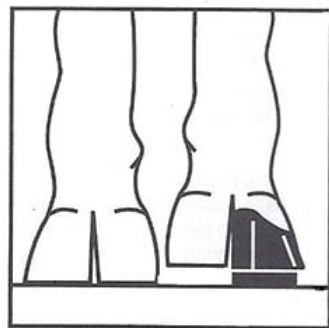



Fig 1. Illustration of a block under a cow's hoof. The block raises the hoof off of the ground, relieving pressure on the sore side of the hoof.

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### 14. REFERENCED SOPS

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- 14.2. SOP-General-007 Staff Training
- 14.3. SOP-Cow-006 Moving & Chasing Cattle
- 14.4. SOP-Cow-023 Handling Cattle





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**15. APPROVAL AND REVISION HISTORY**

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