Common Causes of Lameness

By Francis H. Fox

Books have been written on this important subject (such as Lameness in Cattle by Greenough et al) which attests to its importance and widespread occurrence among cattle. As in any other species in which lameness is common, there are numerous causes, but specific problems involving the feet would probably account for about 95 percent of the cases encountered.

Foot rot is the term used to denote the most common form of lameness in cattle. This can appear initially as an inflammation and swelling of the soft tissue between the toes which may or may not extend to and include one or both bulbs of the heels.

Its cause is considered by most to be an infectious organism which thrives in moist and manure-littered soil. Others believe that although a single organism is almost never isolated from a lesion, something has to first break the protective integrity of the skin for the organism to gain entrance and do its damage.

Frequently incriminated items would include small sharp stones such as shale or cinders, sharp brush, or hedges which remain at the surface of the ground after they have been trimmed, and even overabundant use of anti-slip materials such as calcite.

Additionally, it is frequently observed by many that foot rot outbreaks are exceptionally high in periods of excessive weather, such as either extremely dry years or extremely wet ones.

In wet years, it seems logical to assume that the wetness favors excessive growth.

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of the organism as well as aiding mechanically in allowing mud buildup between the toes. If the mud contains any abrasive materials such as sharp gravel, this logically accounts for the initial cut or injury.

In dry years, many feel that the interdigital skin and skin at the heels literally becomes dried out and cracks, thus allowing entrance of the infectious organism.

**Signs Are Obvious**
The signs are quite obvious to those with any experience. The animal is observed to be lame, usually in one limb, and the severity can range from a slight limp to so-called "three-legged lameness," in which the animal prefers not to touch the affected foot to the ground or floor.

Upon closer examination, one observes varying degrees of redness, swelling, and tenderness between the toes and/or involving one or both heels.

Neglected cases may demonstrate extension of the swelling/infection so that it involves the pastern area below the dewclaws and eventually may extend upward above the dewclaws to a point about midway between the ankle and the knee or hock. This indicates the infection has spread and involves soft tissues of the area including the

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muscles and tendon sheaths and, in the most severe cases, also extends into the fetlock joint causing a severe septic arthritis.

The possibility of foot rot spreading from cow to cow has been a controversial subject for many years, and no final conclusion has been reached as yet.

Up to half of the animals in a herd may be affected in a severe outbreak; some people are inclined to say that such a high incidence proves the disease's infectious nature. However, others do not agree it is truly an infectious disease in the context of spreading from cow to cow but rather that if the environmental agents (injury and organisms) are present, then "one animal gets the disease from where the others did." I tend to favor this latter concept.

Economic Losses
The economic significance is of considerable importance. The affected animal rapidly loses considerable weight and body conditioning and if lactating, milk production may drop as much as 50 percent. The reason for these effects includes the severe pain that obviously accompanies the swollen limb and, perhaps more importantly, the fact that the animal prefers to lie down most of the time. Whether an animal obtains its feed by grazing or by standing at a feed bunk, neither is possible while lying down. The same is true of water intake.

Treatment, especially if initiated early in the disease, is usually successful, though somewhat difficult and costly depending upon the facilities available to properly restrain the animal.

Ideally, the foot should be cleaned (and trimmed if needed) to ensure that a foreign object such as a small sharp stone does not remain between the toes or lodged under the hard sole or heel regions.

Following this, many apply a healing ointment, liquid, or powder, and bandage. The bandage is removed in 3 to 5 days, at which time the healing usually is complete. Others, as during an outbreak in a large feedlot operation, prefer to treat the animal systematically by administering an antibiotic such as penicillin and/or sulfonamide. Still others combine both methods, but in lactating dairy cattle it must be remembered that the milk must be withheld for the prescribed time period after antibiotics or sulfonamides have been administered.
Prevention is important, particularly if large numbers in an outbreak are becoming affected. If the most likely cause is obvious, its removal is relatively easily accomplished and the results are rewarding. Fencing a mudhole, changing or resurfacing an offending laneway, or changing offending anti-slip material on cement surfaces can bring about dramatic results.

Also, in mature animals (both beef and dairy) whose feet have become overgrown with extra long toes, proper trimming can dramatically reduce the number of cases of foot rot. Overgrown hooves invite heel injury (long toes tip the weightbearing surface back to the soft heel tissue, inviting cuts and bruising); unworn and/or untrimmed walls frequently extend over the soles, creating pockets for stones or other foreign material to become imbedded.

Footbaths. Another worthwhile method of reducing incidence in a herd experiencing an outbreak consists in having the herd walk through a wet or dry footbath once or twice daily. This can be accomplished easily by constructing the bath at the entrance or exit of the milking parlor in the freestall dairy herd. In feedlots, arrange-

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ments in the watering or feeding areas are necessary.

For the wet bath, either a 5 percent copper sulfate solution or a 2 to 5 percent formalin solution is recommended. If one prefers a dry bath (especially in cold weather), a mixture of one part powdered copper sulfate and nine parts slaked lime seems equally effective. These methods undoubtedly reduce the number of causative organisms.

Punctures, Quittors
Other direct causes of foot lameness would include nail or wire punctures or the presence of a mass of soft tissue growth between the toes referred to by some as a quittor. In the former, one should search the environment for the cause, such as a board lying on the ground or a floor with nails protruding from it.

In the latter, this growth was thought at one time to be hereditary and initially seemed to be present almost exclusively in the Hereford breed. Today, however, an abundance of the growths can be found in many older animals of all breeds.

The affected animal becomes lame either when the growth becomes so large it extends to the bearing surface
(and then becomes injured) or when a foreign object (such as a stone) becomes wedged between the growth and one of the claws.

In the average case, removing the object and bandaging with an antiseptic ointment results in recovery. In the valuable brood cow or herd sire, complete surgical removal offers the best chance for permanent recovery.

**Laminitis** is an important foot problem in some herds and most frequently involves half grown to young adult animals. When this occurs, the laminae (sensitive vascular tissue between the hoof wall and the inner foot) become inflamed and very tender. Though all four feet may be involved, usually the animal is equally lame only in both front feet.

The animal prefers to lie down. When forced to move, it walks painfully with back arched and rear limbs tucked up under the body to carry most of the weight. In extreme cases, the animal may walk on its knees.

The cause is controversial, as is true in horses as well, but two incriminated contributory factors include an abrupt change in feed, particularly from a high fiber diet to a high protein and/or energy ration, or because the feet have dried out excessively. In the latter case in dairy cattle, this may happen due to changing the bred heifers from a mud lot or a pen with a deep manure pack to a dry bedded cement platform in a stanchion or tie stall barn after calving.

**Treatment** or prevention consists of eliminating the abrupt diet change and softening the feet with a moist pack such as bunk or manger sweepings. Antihistamines are thought by some to help reduce the inflammation.

Miscellaneous local causes of lameness are numerous and frequently unrelated. For example, in some confined dairy herds, several individuals may become lame from knee or hock injuries usually due to combinations of too short and/or too narrow platforms with inadequate or abrasive bedding or protruding objects at the base of the stanchion or edge of the manger. By laceration or bruising, various organisms gain entrance to the joint capsule or joint and ultimately cause a septic arthritis and severe lameness.

**Calving Effects**

Lameness associated with calving sometimes occurs. If the birth was difficult, espe-
cially if due to an excessively large calf, nerves (such as the obturator) within the birth canal may become bruised or otherwise damaged. The result is that the mother loses the ability to keep her rear limbs in under her body. She becomes "spraddle-legged" and some cows will be unable to stand, especially if the footing is slippery as on wet, smooth cement floors.

Good nursing care is essential to prevent further injury (such as hip joint dislocation) and most recover in from 5 to 14 days.

Another lameness associated with calving is when the animal is unable to rise for a prolonged period of time after calving (such as in stubborn or repeated cases of milk fever) and begins to knuckle forward on one or both rear fetlocks.

The cause is bruising of the deep peroneal nerve at the region of the stifle from the weight of the cow being on that area for prolonged periods of time, especially if this area of the body is on the edge of the curb of a cement platform or a rocky area in the pasture or barnlot. Again, with good nursing care, the condition usually resolves within a one- to two-week period.

Trauma and slipping occasionally result in lameness from sprains, broken bones, or joint dislocation. Prevention includes providing good footing for the animals at all times and handling them in as quiet a manner as possible. Slippery cement floors are the most common offenders in an inside environment, while ice on a bare frozen ground surface may cause problems on the outside.

Lameness may be caused also by a disease or condition affecting the entire body. In such cases, lameness would be but one of many signs (results) of the specific illness.

Examples include the stilted gait or sawhorse position of tetanus, the painful gait and ultimate foot and limb deformities of fluorine poisoning, the occasional lameness involved with the mucosal form of bovine virus diarrhea, the extreme lameness with the affected limb(s) in blackleg, the lameness associated with ergot poisoning, and some cases affected with vesicular stomatitis.

As the name implies, it is logical to expect lameness to occur in the dreaded exotic viral disease, foot-and-mouth disease.