



Vet Call

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Photosensitization

Although cattle (particularly light-colored cattle) can experience simple sunburn that results in red, peeling skin much like human sunburn; severe skin damage caused by the sun in cattle almost always requires consumption of certain plants or molds growing on plants.

Causes

Photosensitization is the term given to the situation when chemicals are consumed that either directly go to the skin and interact with sunlight to cause serious damage to the skin; or the liver is damaged (often due to toxic plants), which leads to the buildup of chemicals in the bloodstream. When delivered to the skin, these chemicals will interact with sunlight to cause severe damage. Parts of the body that receive direct sunlight, such as the face, back and shoulders, and white or light-colored skin are most commonly affected. In Angus and other dark cattle, in all but the most severe cases, damage is confined to the light-colored areas of the vulva and the eyes and eyelids.

Liver damage

Some plants can contain high levels of chemicals that can be absorbed by the digestive tract and taken to the skin, which, when exposed to sunlight, can cause damage or destroy skin cells. This is called primary photosensitivity. If cattle eat enough of certain plants, such as Saint-John's-wort, buckwheat, some clovers, alfalfa, and several other weeds and forages, and are then exposed to bright sunlight, skin damage can follow in a few days to a few weeks. In addition to chemicals present in plants, some sulfur and tetracycline antimicrobial drugs have been reported to cause photosensitivity.

Secondary photosensitivity is much more common than primary photosensitivity and occurs when the liver is damaged, often by toxic plants or molds. The liver plays an important role in removing potentially toxic chemicals from the body; if the liver is damaged, these chemicals remain in the body where they can cause harm.

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can use, once chlorophyll is consumed by grazing cattle, it is broken down in the digestive tract into a phototoxic (light toxic) compound. Normally, this chemical is cleared from the body by the liver. If the liver is damaged, the chemical that comes from plant chlorophyll reaches high levels in the blood and moves to the skin, where, in unpigmented areas, it will be activated by sunlight to damage the skin.

Many toxic plants, as well as moldy hay or straw, can damage the liver. Most of these types of toxic plants do not taste good and cattle rarely eat them. However, in situations of overgrazing, such as during a drought or overstocking, cattle will eat plants that they would normally avoid.

In these types of situations, only a few cattle are likely to consume enough of the plants to be affected. If many cattle in a herd show signs of photosensitivity, the most likely issue is a normally safe plant (such as wheat or rye) producing much more of a primary phototoxic chemical or liver-damaging chemical than usual.

Photosensitivity effects

Although cases of photosensitivity are

often associated with cattle consuming lush green forages, several molds and mycotoxins found in poorly preserved hay or other feedstuffs can cause either direct photosensitivity or secondary photosensitivity due to liver damage. Regardless of the original cause, signs of photosensitivity can vary from mild sunburn to loss of hair with peeling, crusting and bleeding skin.

Affected cattle will often squint and appear to be uncomfortable in sunlight. The muzzle is commonly affected and will appear very red and swollen. In most situations, only light-colored skin is affected, with lesions stopping abruptly at the junction of light and dark skin. Severely affected cattle can become quite uncomfortable and refuse to eat and drink, with dramatic weight loss and death occurring without proper care.

Cattle with photosensitization should be moved away from the suspected feeds or pastures causing the problem and into a well-shaded pasture or inside a structure where they can be protected from sunlight. Cattle with mild skin damage will heal in a few days, but severely affected cattle can require weeks to regrow healthy skin.

If cattle have underlying liver problems, those issues must be addressed. Although there is no direct treatment for photosensitivity, severe skin lesions should be treated with typical wound therapy focused on keeping the area clean and protected from flies. Sometimes antibiotics applied directly on the wound or given as an injection are used to prevent infections of the damaged skin and underlying tissues.

Many beef cattle producers will never see cases of photosensitization in their herds. Other herds and their veterinarians may experience sporadic cases that need to be identified and addressed to protect the health of individual animals. Occasionally, due to certain plant-growing environments, a large percentage of a herd can be affected, and a major health problem can result in significant effort to avoid large-scale losses.

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