



Cattle Producer's Handbook

Animal Health Section

619

Toxic Contaminants in Harvested Forages

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Harvested forages are vitally important and commonly used for beef production. But contamination can occur in these forages, reducing their quality and palatability, or may even result in animal illness and death. Outlined below are some of the common problems that should be considered. References are made to other fact sheets in the "Guide" that give more specific details on that particular contaminant.

Quality

Forage quality is affected primarily by moisture damage, maturity at harvest, and contamination with other plants. The effect is reduced protein, energy, and vitamin content. Under some conditions, toxins or poisons may also be produced.

Mold

(see 632, "Mycotoxins")

Moldy forage is caused by growth of microscopic fungal organisms. Excessive moisture is always involved. The feed quality is reduced because the fungal organism uses the forage nutrients for its own growth requirements. The actual toxins produced, if any, vary depending on moisture, temperature, forage involved, and nutrients present. The presence or absence of visible mold does not indicate the presence or absence of a mycotoxin.

Abortion may be caused by forage molds and is referred to as "mycotic abortion." It is usually sporadic in a herd, causing a 3 to 10 percent abortion rate. Mycotic abortion is due to an infection, not a mycointoxication, and may come from sources other than moldy hay. The color and other characteristics of the mold growth are not of much value in predicting the potential for abortions

from moldy forage. It is a worthwhile reason to work toward producing and storing better quality forages.

"Strawpile Disease" resulted when cattle were wintered on straw captured in a holder behind the grain combine. The straw was dumped in piles throughout the field. The disease only occurred in years having higher levels of fall precipitation and when the cows were forced to eat the moldy portions of the straw. The mycotoxins present in the moldy straw caused liver damage and resulted in severe photosensitization, with sunburn-like skin lesions on the legs, face, and udder. The sore teats presented major problems for newborn calves trying to nurse.

Spoilage vs. Ensilage

The ensiling process is a means of preserving forage through fermentation. However, if the conditions are not well controlled, it may result in "spoilage" rather than silage.

Botulism is a potential problem whenever the pH of the silage rises over 4.6. The toxins produced by the bacteria *Clostridium botulinum* are the most potent toxins known. This bacteria is common in soil, survives indefinitely, and then will grow when conditions are favorable.

In recent years there have been several outbreaks where "balage" was fed. The large round bales are rolled up green and placed into silage bags for fermentation. Most of these cases have involved punctures of the plastic bags, which allowed entrance of air and improper fermentation of portions of the "balage." It has also occurred in other types of silos, under certain conditions, and in baled alfalfa and alfalfa cubes.

The characteristic signs of botulism are cows that are weak, develop a flaccid paralysis (can't get up), and