

# **DROUGHT: LOSSES FROM POISONOUS PLANTS, POOR FEED AND WATER QUALITY**

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The drought will increase the number and diversity of type of poisoning cases in animals. Most losses are due to plant poisonings, poor feed quality, and lack of palatable and safe water supplies. The following discussion describes hazards, examples, and prevention ideas for these drought-related hazards.

The danger from poisonous plants is magnified during a drought. Overgrazing, aggravated by poor pasture growth, forces animals to seek less palatable, potentially toxic plants. Plant populations in pastures also tend to change as drought-resistant weeds begin to dominate the more desirable forage plants. Drought stress may increase the toxicity of some plants such as forages able to accumulate nitrate (eg oats, sorghum) and cyanogenic plants (some sorghums; chokecherries). Exposure to toxic plants may occur directly in the pasture, or in poor quality feeds obtained from fields stressed by drought and/or overgrown with toxic weeds.

Management of plant poisonings often centers on prevention. Grazing management must center on prevention of overgrazing by, for example, proper pasture rotation and reducing stocking rates. Weed control can be attained by proper fencing, prudent application of weed killers, and mowing/plowing. If herbicides are used, beware that some herbicides will increase toxicity/palatability of plants temporarily. All feeds should be carefully inspected for weeds prior to feeding. Sudden movements to lush, higher quality pasture, such as movement onto recently irrigated, rapidly growing hayfields may predispose animals to development of atypical interstitial pneumonia ("grunts" or "fog fever"). This syndrome is caused by sudden intake of excessive tryptophan, which can cause severe, fatal lung damage.

Poor quality feed can lead to diseases beyond plant poisoning when nutritional contents are low and/or alternate feeds are abused. Feeding of large amounts of dense, poor roughage can cause abomasal impaction in cattle. Heifers in late pregnancy are at most risk due to increased nutrient demands of combining growth and gestation. Pregnant heifers developed bloat, recumbency, and death with large amounts of black fluid in the rumens and impactions in the abomasum. Historically, their feed had included a doubling of poor quality forage.

Feeding of unusual feeds or those of unknown quality and composition may be tempting to farmers when quality feed is scarce. Unusual or unbalanced rations also lead to mineral and other dietary deficiencies leading to insidious disease in herds. An example of toxicosis due to an unusual feed involves whey, which when used as a supplement may contain toxic quantities of salt (causing seizures) or fat (rumen atony and bloat). For another example, cattle, horses, and sheep, on 3 different farms, developed sudden liver failure after feeding large quantities of moldy pomegranets. Grazing of turnips has led to polioencephalomalacia (PEM) from sulfure overload.

Sudden switching of feeds or increases in grains may lead to rumen acidosis and atony with diarrhea. Although sudden feed switches are hazardous at all times. Drought-related acidosis is common when short feed inventories necessitate more frequent switches or when some non-traditional feeds such as bakers byproducts or dough are added suddenly to rations (high carbohydrate sources).

Prevention of abomasal impactions, rumen acidosis, and hazards of unusual feeds centers on providing a proper diet. Rations should be carefully balanced to allow for the optimal protein, mineral, energy, and roughage contents. Roughage should be of the proper density to allow for optimal gastrointestinal activity. Unusual feeds, while tempting at times, should be consciously avoided or viewed with skepticism. Sudden feed switches should be avoided (acclimate cattle to new rations slowly).

Maintenance of a plentiful supply of high quality water is important at all times for optimal production in livestock. During drought, water may become scarce leading to the use of poor or marginal quality sources. Hazards include growth of toxic blue-green algae, sulfur excess, salinity, high levels of toxicants, poor palatability, and short supplies.

Toxic blue green algae have been reported in this region. A bloom of potentially toxic blue green algae may form under conditions of stagnation, eutrophication (high N, nutrients), and warm ambient temperatures. A bloom of algae may be especially toxic after wind or flow concentration. Toxic algal blooms may lead to liver toxicosis or neurological dysfunctions (including sudden death).

High levels of salt and/or water deprivation are especially hazardous to livestock. Sodium/salinity may affect cattle when levels reach 1000 ppm. Levels over 5000 ppm will begin to directly reduce production in pregnant or lactating animals. Levels greater than 7000 to 10000 ppm are unfit for livestock use in general and may cause toxicosis. Salt poisoning will lead to seizures and prostration. Cattle will develop diarrhea and seizures. Salt poisoning/water deprivation is especially hazardous during times of high ambient temperatures. High salinity is aggravated by high levels of magnesium (greater than 250 ppm). Thus, complete salt screens should be assayed when assessing a water sample. One recent case occurred when yearlings were moved to a pasture but did not find the water tank. Those that became dehydrated developed constipation and/or diarrhea, weakness, emaciation, and an aggressive attitude. Some died before finding water. A few animals that had advanced to the severe dehydration state found the water, drank excessively, developed convulsions, and died.

Toxicants that appear frequently in livestock water include nitrate, sulfate, molybdenum, heavy metals, and pesticides. Additionally, high levels of sulfur and sulfides may be present. Sulfur will decrease palatability (affecting consumption and production) as well as adding to the overall sulfur load, which may predispose animals to polyoencephalomalacia (brain damage with blindness).

No substitute exists for providing a high quality of water in plentiful amounts. If water is limited, stocking rates should be reduced or alternate sources of water need to be sought. Methods that may improve quality and palatability of water include use of a splashboard for water high in sulfur (will release sulfur). Algae may be controlled using copper sulfate (NOT for sheep). Please note that some plants, such as those desert plants that have soluble oxalates (e.g. Halogeton and greasewood), are more toxic when ingested by animals do not have adequate water supplies. In addition, weight gains will be limited in animals that have limited water supplies or supplies of limited quality.

The incidence of some diseases will increase in drought conditions. High levels of dust will predispose animals to development of pneumonia. The dust will impair the lung's defenses rendering the animal more susceptible to a variety of pathogens. Bovine respiratory syncytial virus (BRSV) is especially hazardous in drought. Secondary bacterial invaders, leading to more severe bronchopneumonia may follow up such infections. Animals that are debilitated by poor feed and/or water are more susceptible to the entire spectrum of possible infectious diseases. It is suggested that vaccination programs for BRSV especially concentrate on the use of MLV products as the killed products may not be as effective in the face of a dust/drought situation.

Temporary solutions to drought-related feed and water problems that involve marginal or unusual substances may prove very costly. Plentiful, high quality water cannot be replaced. Feeds and rations need to be carefully monitored in relation to stocking rates and other management schemes.