drought tips

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Drought-Related Toxicoses in Cattle

The current drought in California has contributed to a number of poisoning cases in cattle diagnosed recently at the California Veterinary Diagnostic Laboratory System (CVDLS).

Animals have been exposed to less than optimum feedstuffs that may also be toxic because of limitations of feed supplies imposed by the drought. Recent cases have included intestitial pneumonia in cattle caused by feeding on moldy sweet potatoes. Intestitial pneumonia can also result from feeding on moldy green beans or from rapid movement of cattle from poor to lush pasture. The disease is characterized clinically in cattle by difficulty in breathing with grunting upon expiration of air from the lungs. Some animals may be found dead suddenly.

In other cases, moldy pomegranates have been blamed for killing cattle, horses, and sheep. The animals eating the material were found either very depressed and wandering, or suddenly dead. The signs were the result of severe liver damage. Although not proven to be the cause, the pomegranates were the only common source of potential exposure among the animals. Water-borne blue-green algae and copper, both liver toxins, were absent in these cases.

The lack of optimum feeds also may contribute to nutritional diseases, such as deficiencies of the essential elements selenium and copper, or to a basic lack of energy and protein. Although specific clinical syndromes may result from nutritional deficiencies, most deficiencies are insidious. For example, shortages of protein, copper, and selenium frequently are manifested by slowed production and by increased susceptibility to disease in cattle. These forms of nutritional deficiency are difficult to diagnose and trace to a cause and are therefore potentially much more costly to the producer than classical forms of nutritional diseases.

The laboratory has recorded an increased incidence of abomasal impactions that were believed to have resulted from cattle ingesting feeds high in fiber and low in digestibility in the drought-related absence of higher quality forages.

The forage available may be drought-stressed or loaded with drought-resistant weeds. The stress of drought can cause some forages, such as sudan grass and oat hay, to accumulate toxic levels of nitrate. In addition, hay contaminated with weeds known to accumulate nitrate such as pigweed (*Amaranthus sp*) or smartweed (*Polygonum sp*) can cause nitrate toxicosis in exposed cattle.

As a general rule, drought conditions increase the incidence of plant toxicoses. For example, hungry cattle with a lack of adequate pasture grasses may begin to feed on potentially toxic plants they would normally avoid. Recently, sheep on one farm in the Central Valley were presented with liver damage and secondary photosensitization. The animals had ingested excessive quantities of puncture vine (*Tribulus terrestris*), thought to contain a fungal toxin that is toxic to the liver. In another case, cattle in the coastal foothill region died after developing stupor and rumen inflammation. The animals had been on dry pasture and had ingested toxic Durango root (*Datisca glomerata*). Durango root toxicosis had been reported from the area only during drought years, leading to speculation that either drought increased its toxicity, or more likely, that sparse pastures led hungry animals to ingest the toxic plant.

Other plant poisonings that may have been drought related have been diagnosed in the last couple of years. Poison hemlock (*Conium maculatum*) in weedy alfalfa hay caused toxicosis in two cattle herds. The signs of diarrhea, salivation, and tremors associated with hemlock poisoning can be confused with poisoning from pesticides such as organophosphates and carbamates. It is therefore essential to seek diagnostic help if poison hemlock toxicosis is suspected.

Several cases of fiddleneck (*Amsinckia intermedia*) toxicosis in cattle and horses

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have also been recorded. The factors related to the hazard of fiddleneck have not yet been fully identified, however. For example, in some years and instances, fiddleneck has been fed to cattle without incident. Until more information is available, it is best to avoid feeding fiddleneck if at all possible.

In addition to exposure to suboptimum. feed because of the drought, animals have also been exposed to limited water supplies and lower quality water. Toxic constituents of water include excessive nitrate, sulfate, or salts, such as sodium and magnesium. Some poor quality water supplies may also contain large amounts of sulfur-containing compounds that may adversely affect palatability and hence, consumption and production.

During periods of drought, producers and veterinarians are encouraged to be especially careful about the quality of feed and water available for their animals. Hay should be carefully scrutinized for weed content. Animals on overgrazed pastures should be provided with supplemental feed.

Weeds should be controlled using the best available means. Good grazing management can minimize plant poisonings by assuring adequate, palatable supplies of safe forage. Grazing management techniques also allow the safe forage to out- compete the toxic plants, which often prefer overgrazed or abused pasture.

Mowing before the seed stage can help control some undesirable annuals. Otherwise, herbicides, fencing, plowing, or burning may be needed to control some toxic plants.

Herbicides should be used with care. To avoid direct herbicide toxicosis, the withdrawal time for grazing after application should be closely observed. For most common herbicides, a withdrawal time of at least several days is recommended. Direct toxicosis is less of a hazard than secondary effects of herbicides, however. Some herbicides may make normally unpalatable toxic weeds much more palatable. Herbicides that kill plants by altering growth characteristics may cause normally nontoxic forges to go into a brief growth spurt, which may cause a temporary increase in toxic constituents such as nitrate. When herbicides are chosen for use, it is suggested that all directions for mixing be closely followed. Application equipment and spills should be promptly cleaned up, since exposure of animals to that equipment and to spills are the primary cause of direct herbicide toxicosis in livestock.

If water is of poor quality, and therefore may reduce production, it can be tested for minerals and salts. Although using poor quality water should be avoided, it is possible to treat some problems. For example, cattle exposed to water high in molybdenum or moderately high in sulfates can be supplemented with copper. Water high in sulfur/sulfides can be run over a splash board (any system of boards or devices to aerate the water) to remove some sulfur and to improve palatability.

If questions arise regarding the potential feedstuff or water hazards, please contact your local veterinarian or refer him or her to the CVDLS—Toxicology Laboratory for consultation.

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