

Veterinary Concerns in Extreme Heat

Animal health

Examples of the danger to animals in extreme heat occurred in August 1977 in California and in July 1995 in Iowa and Nebraska. In California death rates increased 18-fold in dairy cows during 4 days of intense heat and humidity, resulting in the loss of 725 milking cows. Nearly three fourths of the losses occurred among high-producing cows. In Iowa and Nebraska nearly 10,000 cattle died in feedlots. Death rates of up to 10% of cattle on feed were reported in some lots. Most feedlots suffered 2 to 50 cattle deaths. In central Iowa alone it was estimated that livestock producers lost approximately \$28 million that year because of the heat. In Iowa and Nebraska losses to the poultry industry were estimated to be approximately \$25 million. In the same summer up to a million chickens died in East Coast states.

Every summer there are reports of deaths caused by heat. The most common reports of heat stress in pets are in animals that live outdoors. Animals that have suffered heat stress while indoors were most likely to have been in homes where the air conditioning failed. Animals left in motor vehicles overheat rapidly and die if they are exposed to sun. This does not have to be in the summer. In winter months sunshine can generate considerable heat inside a car.

Preventing Death from Heat in Cattle

The primary factor affecting death in cattle during severe heat in 1995 was the availability of shade. In feedlots with little or no shade, mortality averaged 4.8%, whereas in feedlots with shade, mortality averaged only 0.2%. Lots with a higher proportion of heifers were also at risk of higher than average mortality. Cattle in these high-risk groups should be given extra shade and space, and special attention should be paid to ensure that they are not overheating on very hot days. The benefit of shade has been shown in dairy cows. The number of deaths in dairy herds that were not given shade was 3.4 times the number in herds that did have shade in times of severe heat stress. Dark hide and heavy cattle or those that recently arrived seemed to be most at risk. These factors should be taken into consideration when extreme heat occurs. Dark (black) hide cattle should be allowed access to extra space and shade.

Movement and processing of cattle and other livestock should be avoided when local weather reports indicate that extreme heat conditions may occur.

Cattle need 3 or 4 days to acclimate to hot temperatures. During this time they adjust their feed intake and metabolic adaptation to dissipate heat. To encourage cows to maintain feed intake, the feed bunk should be cleaned out completely at least once a day. That way fermenting and rancid feed leftovers, which are distasteful to cows and discourage them from eating, will not accumulate.

Dogs are often willing to please their owners to the point of endangering themselves. Because dogs do not sweat, they must be allowed to pant to dissipate heat. Therefore dogs should not be allowed to carry objects in their mouths in hot weather because this will greatly compromise their ability to dissipate heat. Also, pets should not be dressed with vests, blankets, and other materials that would prevent them from dissipating heat via their skin.

Animals in cages require special attention because the ventilation may not be very good. Caged animals should be provided with extra ventilation and plenty of fresh, cool water to drink. Water should be offered in shady places because some species may not venture into the sun if it is very hot. Salt licks should be provided for animals that require them regularly.

Excessive exercise in horses should be avoided. Also, persons working with animals should

rest regularly. A few minutes of sweat-free rest every hour will help restore physical and mental energy.

Table 9-3 Drought-related poisonings that can occur in cattle and other grazing animals

Condition	Circumstance
Salt (water) poisoning	Irregular availability of water in livestock on high-salt diets
Urea poisoning	Too rapid introduction of urea-treated feeds to cattle as an alternative diet during droughts
Nitrate poisoning	Feeding of sorghum hays that were cut under moisture stress conditions
Cyanide poisoning	Cattle grazing on drought-stunted Johnson grass, sorghum and sorghum hybrids, and Sudan grass
Selenium poisoning	Ingestion of seleniferous plants when other plants are not available and because some plants (e.g., locoweed) accumulate selenium under drought conditions
Miscellaneous poisonings	Random ingestion of toxic plants caused by lack of availability of appropriate forage
Rumen impaction	Cattle fed diets with excess fiber

The greatest problem that arises for fish in ponds is the development of low-oxygen conditions. A way to reduce heat and low oxygen tension–related deaths is to remove the largest fishes because they are most susceptible to low oxygen tension of water. The feed rate should be decreased to less than 1% body weight per day. The oxygen tension of the water can be increased by adding fresh aerated well water or by sprinkling the pond surface. Pond water should always be kept at least 2 feet deep.

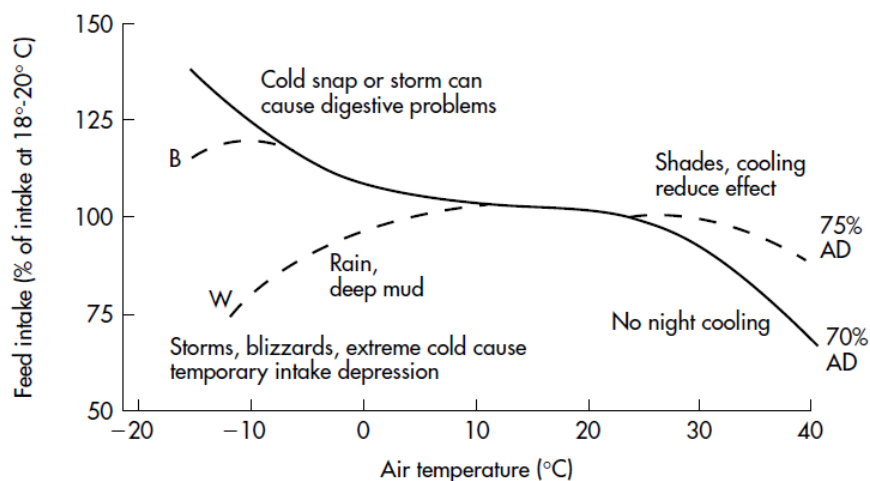


FIG. 9-5 Estimated changes in dry matter intake of ad-lib-fed feedlot cattle on 70% apparent digestibility (AD) ration unless otherwise indicated. B, Behavioral changes; W, transient weather effects. (Modified from National Research Council, Washington, DC, 1981 and 1987.)

Heat stress can be treated in the individual animal by spraying with water. This is most effective if cold water is applied to the areas where blood flow is greatest. In many species

(livestock, horses, dogs) this includes the legs and feet and can be accomplished by standing them in a stream or cool mud. Other interventions include giving cold drinks, water enemas, or intravenous fluids. The principle of these interventions is similar to that for heating hypothermic animals, which is to induce a change in body temperature by affecting the most critical part of the body first: core body circulation. Intensive care treatment of heat-stressed animals should be overseen by a veterinarian because rapid rehydration of severely heat-stressed and dehydrated animals can lead to other complications, such as hemolytic crisis, which in themselves may be life threatening.

Carcass disposal

In Wisconsin renderers reported processing more than 15,000 carcasses per week during a heat wave, compared with the usual 400 per week under moderate ambient temperatures. Dairy farmers reported decreases in milk production of 10% to 50% and an increase in environmental mastitis.

Dead cattle and poultry present huge carcass disposal problems because they rapidly decompose after dying from heat stress and continuing to be exposed to hot environmental conditions after death.

Veterinary practice and animal shelters

During conditions of extreme heat, veterinary practices often report fewer clients than average, which is attributed to their clients feeling too hot to come in for appointments. This may coincide with decreased health care for animals. One report from an animal shelter that had extreme heat conditions reported an increased number of cases of contagious disease, such as parvovirus diarrhea. It was not clear whether this was caused by environmental or management conditions or simply was coincidental with the heat wave.