



A Monthly e Magazine  
ISSN:2583-2212

July, 2023; 3(07), 1759-1762

Popular Article

## Management of Heat stress in livestock

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<https://doi.org/10.5281/zenodo.8196411>

Stress is a reflex reaction of animals in harsh environments and causes unfavourable consequences ranges from discomfort to death. Heat Stress is a general term for any stress associated to high temperatures that alters a cow's thermoregulatory system. Cattle's capacity to regulate their body temperature through sweating and panting is hampered in extremely hot, humid or hot, dry weather, and heat stress results. The body is unable to sustain the core body temperature through sweating and panting (evaporative heat loss mechanism) when the surrounding temperature exceeds upper critical temperature (24°-26°C for Exotic and crossbred cattle, 33°C for Zebu cattle, and 36°C for buffaloes). This when coupled with rising body heat production rate led to hyperthermia in the animal. As a result, body surface temperature, respiration rate (RR), heart rate and rectal temperature (RT) increases which in turn affects feed intake, production and reproductive efficiency of animals. Further, the sensitivity of dairy cattle to HS rises as milk production rises, which could be explained by an increase in metabolic heat output when dairy cows produce more milk. By imposing direct or indirect impacts on the normal physiology, metabolic, hormonal, and immune systems, HS affects dairy animals' health.

### Signs and prevention of heatstroke in summer

Even though all kinds of animals experience the negative impacts of the summer, cows, buffaloes, and poultry are particularly hard-hit because of their black skin, which helps to absorb more heat, and their lack of hair. Moreover, buffaloes have fewer sweat glands than cows due to which they have difficulty in dissipating heat from the body.



- Animal show loss of appetite and milk production
- Epistaxis and diarrhoea, Excessive salivation and frothing.
- Animal shows uneasiness, deep breathing, tachycardia and panting, protrusion of tongue, and feeble breathing at the terminal stage
- Excessive salivation and frothing at the mouth
- Weak and dull reproductive activities- oestrus cycle is prolonged and fiery. As such the chances of pregnancy are declined considerably
- Fat and protein contents decrease in cow and buffalo milk affecting its quality
- Embryonic mortality and Sperm mortality increases in animals
- Neonatal mortality rate increases

**Preventing Heat Stress** Some precautions should be taken to protect animals from heatstroke. Following preventive measures could be helpful for the proper care of lactating animals and newborns to protect them from heat stroke and other diseases as well as to improve milk production.

- Provide a clean, well-ventilated animal home with a concrete floor that is non-slip and has a slope for urine and water drainage. To prevent overheating in the summer, the roof of the animal home should be insulated. Asbestos sheets can be used for this. On very hot days, 4-6 inches thick grass layer of thatch can be put on the roof. These layers act as heat insulators due to which the inside temperature of animal house remains low. White painting or fixing shining aluminium sheet on roof of animal houses are useful in reflecting sunlight. The minimum height of roof of animal house should necessarily be 10 feet for proper circulation of air and the animals are protected from heat of roof. Khas (vetiver) or Jute sacks curtains should be placed at the main entrance of the animal house to protect animals from direct sun. Fans and coolers can reduce the temperature by 10<sup>0</sup>. Size of fans for inside animal house use is 36-48 inches and should be fitted on the wall about 5 feet height from the ground at 30<sup>0</sup> angles.
- Each animal should get sufficient space as per its requirement. An adult cow and buffalo need 40 and 50 square feet area, respectively. In the open house system per animal requirement is 35 and 40 square meter open area and 7 and 8 square meter covered area for cow and buffaloes, respectively. Animals in the stage of advanced pregnancy and close to parturition should be provided 12 square meters covered and open areas each. It is necessary that breeding bulls are



provided 12 square meters covered and 120 square meters open area, where they can have enough exercise to maintain their breeding potential

- If possible, provide cool drinking water to animals after milking. Provide cool water 3-4 times in summer. To avoid inconvenience, arrange drinking water at least in two places in animal houses with a large number of animals. Generally, an animal needs 3-5 liter drinking water per hour. Always keep water and water troughs clean. The temperature of the water should be 70-80 °F, which is liked very much by animals. Earthen pitchers can be used for providing cool water for animals in summer.
- Buffaloes should be bathed at least 3-4 times daily and cows twice a day. If possible, buffaloes can be taken to ponds or pools for bellowing. Experiments show that spraying cold water on animals at noon is useful in improving their production and breeding performances.
- Animals should be provided fodder in the morning or evening only, and as far as possible try to provide much green fodder. This practice has two advantages, first animals relish green fodder and thus consume enough nutritious feed, and second green fodder contains 70-90 percent water providing water from time to time. In case animals are going for grazing, they should be taken to pasture only in the morning and evening. Farmers should sow Mung bean, maize, cowpea, etc in the month of March -April to ensure supply of green fodder during summer. Livestock owners without irrigated land can cut green grass in time and dry and store it. This grass is rich in protein, easy to digest, and nutritious.
- Don't feed carbohydrate-rich food such as flour, bread, rice, etc to animals. Keep grain and fodder ratio 40:60 for a balanced diet. Sorghum grown during summer may contain toxic material, which can be harmful for animals. Therefore, in the absence of rain, irrigate the sorghum crop 2-3 times before feeding it to animals.
- Animal fodder must contain 18-19 percent soluble fiber. Also, animal diet can be supplemented with yeast (which helps in the digestion of fiber), and fungal culture (e.g. *Aspergillus oryzae*) and niacin, which enhance energy.
- Since the consumption of grain is reduced, animals can be fed with fat rich feed such as mustard cake, cotton seed, soybean cake or oil or ghee as well. **Dry matter in the animal feed** contains up to 3%. Besides this, 3-4 percent fat should be fed additionally. The total concentration of fat should not be more than 7-8 percent.



- Shady trees are very much necessary nearby animal houses. This trees not only provides shade for animals but also protects them from hot summer winds
- Animals should be vaccinated for HS, FMD, BQ, etc. in summer to prevent the occurrence of these disease in the rainy season
- Consult veterinarian in case of heatstroke in animals.

