

## Managerial Practice during Summer Heat Stress: An Overview

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### Abstract

*Lactating buffaloes are sensitive to heat stress and are not able to maintain their core temperature within the thermo neutral zone because of their particular species characteristics e.g. black body color and more affiliation to water for their production and reproduction. The high ambient temperature is conducive to reproductive failures and embryonic mortality, especially in buffaloes. Feed intake is reduced and milk yield is alarmingly decreased. The prominent signs of heat stress in buffalo include decreased feed intake, increased reddening of hide, protruded tongue; panting, obvious blood shot eyes, very hot to touch and increased rectal temperature. Increased incidence of certain health problems during the summer months may be manifested as increased occurrences of mastitis, retained placentas, metritis, and ketosis. It can also elevate cortisol levels. The feeding of antioxidants during summer can also improve health and fertility rate. This heat load can be reduced by the provision of wallows or showers, feeding manipulations and improvements in the housing infrastructures, but the long term solution is to improve heat dissipation of the animal itself.*

Key words: Heat stress, Buffaloes, summer sterility

### Introduction

During the month of May and June, the period of midday is too much sunny, hot and painful. Only some relief is observed when day ends but the evening is again comparatively warm. In such weather, the owners of buffalo need to keep some specific attention in their mind to make their herd comfortable (Dobson and Smith, 2000). Cleanliness and management of animals with their shed provides protection against various diseases incidence. These peculiar morphological and anatomical characteristics make buffalo poor thermoregulatory, thereby tending to increase the internal body heat, which in turn, takes its toll on food intake, productivity as well as reproductive performance of the animal. Thus it is no surprise that there is a scarcity of milk in this region during summer months, while most of the calving are concentrated during rainy and winter months of the year.

In spite of these facts, which tend to suggest susceptibility of buffalo to heat stress due to its unique

thermoregulatory mechanisms, the presence of large population of buffaloes in such harsh hot climates, could possibly be due to some of the special anatomical, behavioral and morphological features of the skin in this species. Such features include the characteristic black skin that contains numerous melanin granules, which provide protection against UV rays component of sun light. UV rays are abnormally high in the typical hot climates of the tropics (Dobson and Smith, 2000). Further, buffalo dermis has well-developed sebaceous glands and their oily secretions make skin slippery for water and mud. This possibly acts as a defense against harmful ingredients present in mud and water while wallowing. The oil secretions from skin make it more lustrous during summer to reflect solar radiations more effectively. (Akyuz *et al.*, 2010).

#### **General management of shed:**

The important things to be considered is that the buffaloes should not be allowed to move freely during day hours because they need protection against warm air storms and direct sun exposure and they should be sheltered in cool and shady places. The buffalo shed

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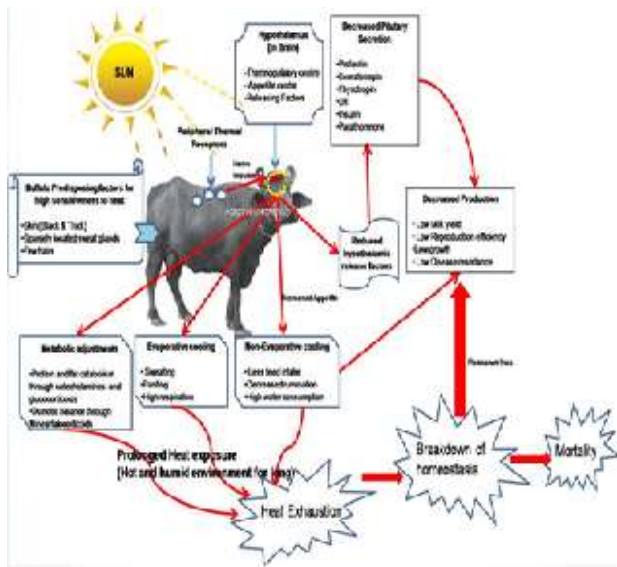


Figure 1: (Anonymous, 2020)

should be ventilated that the polluted air can directly diffused outside and clean and fresh air can enter into it. The roof of the shelter is covered with thatch. The proper plantation should be managed in surroundings so that the environment may be cool and fresh and warm air storm could not enter directly in the shed. Regular use of foggers or sprinklers in summer is recommended to make the environment cool. The buffalo needs at least twice a day bath in the summer. The animals are subjected to detect estrus on time to increase their productivity. Pregnant buffaloes need specific care during summer (Collier *et al.*, 2012).



Fig 2: Wallowing to reduce heat stress

**Heat Tolerance:**

Although buffaloes are found in the tropics and subtropics still have poor heat resistance and suffer real distress if worked during the day hours. Access of free water or shade is essential for the well-being of buffaloes. There should have the facility of wallowing tank nearby shed in the farm. Milking

animals must have clean drinking water to avoid dehydration at any time. It is thus to be noted that sudden changes of temperature and specially to the effect of cold winds and draughts may be extremely harmful to this species (Era, 2003). In manage mental practice it should be keep in mind that heat regulating mechanism of buffaloes in comparison to cattle are less efficient. The difference may be due in part to the heavy black coat of the cow preventing wetting of the skin, but more probably to the fact that the thyroid-adrenal mechanism is less efficient in the buffaloes (Collier *et al.*, 2012)

**Housing Management:**

The floor of the buffalo shed should be clean, non-slippery, non-reactive, non-absorbable, concreted and comfortable to the animals. It should be designed either tail to tail or head to head system so cleaning at any time will be easily with desirable slop and economic for the farmer. The site selection for shed with adequate paddock space, fresh air, sufficient natural light, fresh water, electricity, proper drainage system should be



Fig 3: Buffaloes feeding in a common manger

properly managed. The site should be having easy connecting roads for better transportation facilities but away from the main roads to keep the buffalo farm free from the noise pollution. A buffalo shed should be established at an open area away from the population and industrial surroundings. Usually two types to buffalo houses are commonly used in our country (Behera *et al.*, 2018).

**Conventional housing system:**

In this type of housing system all the animals are tied near to each other. They receive their feed in

manger and a small paddock system. If the number of the animals is below 16 they can be tied in the single row. In case if they more than that, they can be tied in two rows. In this system their tails are in the direction towards to each other. The removal of feces, urine and other waste material routed from same way but the feed from two separate ways. This system requires 2.25 square meter of space per animal. The path between two rows needs to be 1.50 m. in width and the path to mangers 0.90 m. (Kale and Basu, 1993).

#### **Loose housing system:**

In this type housing system the animals are let loose in the shed. They can move freely here and there. The buffaloes are transferred to milk shed and tied only at the time of milking. The shed is covered with a fence as high as 2 m. The mangers are constructed on the boundary so that the adlib feed can be offered from outside the shed (Bianca, 1962). The water trough is situated in the centre of the shed and each every animal has a free access to water as per need and desire.

#### **Space management:**

It is very much important to maintain buffalo shelter management of high grade to earn profits. The buffalo house should have adequate space, so that the



Fig 4: Buffaloes in Conventional housing system

animals can be sheltered contentedly. The sufficient light and fresh air ought to be assessed in the buffalo house. The animal shed must be spotless and uninterrupted free access to fresh water be supposed to always be available to each animal. The specification of total space requirements of buffalo's areas.



Fig 5: Buffaloes in Loose housing system

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