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Original Article



Heat Stress Management in Dairy Animals for Sustainable Milk Production

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ABSTRACT

Heat stress is a major environmental challenge affecting dairy production in tropical and subtropical regions. Elevated temperature and humidity reduce feed intake, milk yield, reproductive efficiency and immunity in dairy cattle and buffaloes. The Temperature Humidity Index is widely used to assess the severity of heat stress under field conditions. Clinical signs include panting, excessive salivation, reduced productivity and poor fertility. Economic losses due to heat stress are significant during summer months. Scientific housing design, proper ventilation, cooling systems, balanced summer feeding, mineral supplementation and adequate water supply are effective mitigation strategies. Adoption of low-cost management practices such as shading, water sprinkling and improved feeding schedules can substantially reduce production losses and improve animal welfare. Efficient heat stress management is essential for sustainable dairy farming under changing climatic conditions.

Keywords: Dairy cattle, Heat stress, Milk production, Temperature humidity index, Water management

INTRODUCTION

Heat stress is one of the most critical climatic constraints limiting dairy productivity in tropical countries. Dairy cattle are comfortable within a temperature range of 5–25°C. When environmental temperature exceeds 30°C, especially under high humidity, animals experience physiological stress. Buffaloes are more susceptible due to limited sweating ability and dark skin which absorbs more solar radiation. The Temperature Humidity Index (THI) is commonly used to evaluate stress levels in dairy animals.

Table 1. Temperature Humidity Index and Stress Classification

THI Value	Stress Category	Impact on Animals
< 72	No stress	Normal production
72-78	Mild stress	Reduced feed intake
79-88	Moderate stress	Decline in milk yield
> 88	Severe stress	Health and fertility risk

Feeding and Water Management

During summer, feeding should be adjusted to reduce metabolic heat production. Water is the most critical nutrient during heat stress and should be provided ad libitum in shaded areas.

Table 2. Summer Feeding Strategies

Practice	Benefit
Feeding during early morning and late evening	Better intake
High quality digestible fodder	Lower heat increment
Mineral mixture and salt supplementation	Prevent dehydration
Bypass fat supplementation	Maintain milk yield
Fresh green fodder	Improved hydration

Table 3. Average Daily Water Requirement

Animal	Water Requirement (L/day)
Lactating cow	60-80
Dry cow	40-50
Buffalo	80-120
Calf	15-25

CONCLUSION

Heat stress significantly affects milk production, fertility and animal health in dairy farms. Scientific housing, effective cooling systems, balanced feeding and adequate water supply are practical and economical approaches to mitigate its impact. Adoption of both modern and low-cost management strategies ensures sustainable dairy production under rising climatic temperatures.

REFERENCES

Collier, R.J. and Gebremedhin, K.G. (2015). Thermal biology of domestic animals. *Annual Review of Animal Biosciences*, 3: 513–532.

ICAR (2018). *Handbook of Animal Husbandry*. Indian Council of Agricultural Research, New Delhi.

Renaudeau, D., Collin, A., Yahav, S., De Basilio, V., Gourdine, J.L. and Collier, R.J. (2012). Adaptation to hot climate and strategies to alleviate heat stress in livestock. *Animal*, 6: 707–728.

West, J.W. (2003). Effects of heat stress on production in dairy cattle. *Journal of Dairy Science*, 86: 2131–2144.