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Conceptual Paper

Management of Milch Animals During Winter Season

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Abstract

The energy requirement of the body increases with onset of winter to produce more heat and to maintain the basal body temperature. Failure to maintain the basal body temperature in cold weather usually lead to cold stress to the animal. With the onset of stress, the health as well as overall productivity of cattle is affected. To maintain the productivity of livestock and decrease the stress, farmers have to adopt certain measures. This issue of cold stress can be catered in multiple ways, some of which include maintaining appropriate body temperature of animal by rendering lukewarm water for drinking, optimal concentration of hay for heat generation and allocation of warm jackets and blankets for livestock. Proper bedding is also needed to the animals so as to deal with the cold floor.

Keywords: Body Temperature; Stress; Productivity; Optimal Concentration; Proper Bedding

Introduction

Production of livestock during winters can be improved by proper management. During wintertime animals go under cold stress which has a direct effect on their health and productivity. More care and vigilance needs to be rendered to animals for improving their health in the pivotal times. This can be ensured by providing nutritional diet and proper shelter. During the fall season the productivity of cows decreases tremendously due to cold stress. One can easily find behavioral and physiological changes going on in these animals. The peculiarity of winter season makes the maintenance of dairy animals of utmost importance. Temperature diving down to zeros and negatives intervenes in the efficiency and fertility of the cows. It is foremost for the cows to maintain temperature of 38°C since they are Homo-thermic. If there is any imbalance occurring in this temperature due to cold weather it leads to more energy usage by cows to maintain their body temperature. This leads to cold related stress. Another factor leading to the cold stress is the substandard quality of fodder availability in the cold weather [3].

Factors affecting an animal's ability to withstand the cold

- **Acclimation**: By growing a longer, thicker coat cattle do adjust or acclimate to colder weather. The cold weather necessitates the coat of the cows to be clean and dry in return for protection from the cold weather but the insulation value reduces dramatically when dirt or moisture is present on the coat.
- **Fat layer:** Thin cattle are unable to withstand cold than the cattle in good condition with a thick fat layer. This ensures more warmth due an extra layer of insulation provided between the animal's core and the environment from the chilly weather.

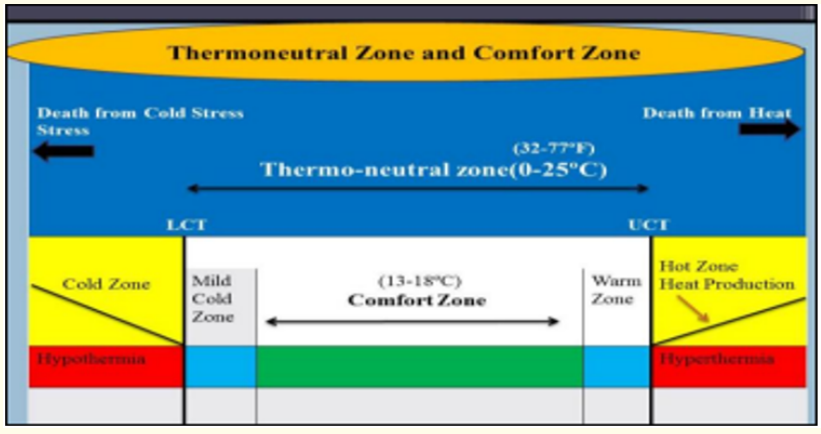

Figure 1

- **Metabolic rate**: Cows elevate their metabolic rate to increase heat production which helps in maintaining their body temperature. This demands for the elevated diet and hence the rise in their appetite.

Some important management should be done during winter season

Shelter

- Curtains can be used to obstruct the flow of chilly breeze.
- Optimal sunlight needs to be ensured to render the warmth to the cattle. It also acts a natural disinfectant to the cow's shelter.
- Animals need to be taken for regular strolls during the day so that they come direct under the sun and make their bodies warm.
- Cleaning of the shelter is of utmost importance during this pivotal period. This can be done by using proper disinfectants
- Dry grass, guinea bags, rice husk can be used to keep the bedding material warm.

Feed and water

Adequate amount of food and water needs to be provided to the animals so as to maintain optimal balance of heat energy in their bodies through the diet. During winter season animals consume more food as compared to their normal diet for increased body heat production.

- A well nutritious and balanced diet including groundnut cake, mustard cake, cotton seed cake and soya bean flakes should be provided to the animals during the bone – chilling cold weather.
- Provision of lukewarm water for drinking purposes should be made for the cattle.
- A concentrated mixture of 2.5/kg should be provided for more heat generation in the body.
- Food such as roughages (eg. hay straw) and forages (eg. berseem) is needed to be provided to the animals so that their production of milk does not hamper and their body generates enough heat to fight the cold stress.
- Adding a mixture of oil cake and jaggery in ration can also be done to produce more heat.
- It is also the right time for deworming animals and vaccination against FMD, Haemorrhagic Septicaemia, Enterotoxemia and Black Quarter.

Consequences of cold stress on dairy animals

- **Milk production:** Chilly season limits the capacity of the dairy animals to produce milk by disturbing the temperature of the mammary glands.
- **Reproduction:** The effect of cold stress can occur directly on the reproduction rate of the animals as it dwindles the sexual desire and leads to collapse of proper follicular development and thus decreased pregnancy rates. Another issue noticed is that it decreases the prolificacy of the bulls due to underfeeding.
- **Body condition score:** A cow having higher body condition is found to sheathe better the cold weather. Cold stress depletes the body reserves leading to loss of weight. If the weight of animal decreases more than 16%, that animal is highly unlikely to conceive in the course of the next breeding season.

Vigilance of calves during chilly weather

Young calves between the age of 0-3 months demands extra care and attention as they are at more risk of getting diseases. To

ensure their health and immunity, one should be mindful of the following propositions [4].

- The shelter of the calf should be protected from the cold breeze. It is advised to cover the shelter with polythene or guinea bag.
- Young calves are not capable to generate enough body heat to keep them warm. So, external methods are required to provide them heat like covering them in jackets, blankets, room heaters and installing high watt bulbs in their shelter.
- Care in terms of food is also required. They should be provided with adequate lukewarm water and feed. Sufficient amount of colostrum and milk should be provided to them.
- The shelter should be cleaned twice a day so as to prevent the calves from the risk of diseases.
- To fight cold stress it is very important that they are provided clean and dry bedding. This can be ensured by using straws and rice husk,
- There should be proper drainage system for urine and other secretions as wet floor can further increase the cold stress and make them more susceptible to diseases like fever and chronic cough that can cause mortality in calves.

Other steps to manage winter problems

Dietary management

- In the cold weather it is suggested to raise the amount of crude protein and energy content provided to the animals.
- To maintain optimal milk production and sustain high fat percentage in milk , rations should contain high fiber
- Providing animals with concentrates, conserved forage, crop residues, cultivated fodders, fodder tree leaves and aquatic vegetation can provide a good source of nutrition to the animals
- Molasses can also be used for feeding the cows as it helps in maintaining body temperature [1]

Water management

Water at temperature 47 Degree Fahrenheit is considered optimal for drinking. Cold water is not good for drinking for the cattle, therefore, tank heaters should be installed as they will prevent water from freezing.

Mud management

It is considered of utmost importance for the dairy cows to lie down for approximately 12 hours/day as it is good for their production and welfare, but due to dirty conditions of the shelter, cows mostly remain standing. Hence it is suggested that tiles and sand can be used as it will help in management of mud and fight foot rot caused by parasites in mud.

Health management

Following propositions for health management for the cattle can make the animals healthier and less prone to diseases [2]

- Keep the feed and water at little farther places so that cattle move. As walking is kind of exercise, it will decrease obesity and disproportionate hooves.
- Regular vaccinations, provision of supplements and deworming activities should be taken.
- Ensure that feed is not contaminated as wet and muddy feed makes the animals at higher risk of catching coccidiosis.
- Grooming of animals is also important to keep them in good shape. One needs to trim the over grown hooves and get the bruises on heels treated.

Conclusion

Animals shows optimum performance in their production and reproductive traits within the thermoneutral zone. The condition above upper critical temperature and below lower critical temperature leads to animal performance getting compromised. Thus to cope up with the cold stress, the focus is inclined towards the proper nutrition, shelter, watering and health of the animals.

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