

HEAT STRESS IN DAIRY ANIMALS

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ABSTRACT

Heat stress occurs when animals are exposed to high temperature and high relative humidity .Affected cattle reduces heat load by reducing exercise ,feed intake and lactation. High feed results intake in raised metabolic heat increment.High metabolic heat increment requires effective thermoregulatory mechanisms to maintain homeostasis.As heat stress that is not life- threatening leads to reduced milk production and impaired reproductive performance .Treatment of several affected animals is by cooling with cold water or fans. Changes to the diet are also beneficial and often implemented. However, there may be some potential risks associated with the nutritional management of heat stress in dairy cattle.

Keywords:-, Cattle, Heat increment, Heat stress.

I.INTRODUCTION

Cattle is a homeothermic animal i .e.an animal that regulates its body temperature at a constant level,usually above that of the environment ,by its metabolic activity,which is essential to preserve the multitude of biochemical reactions and physiological processes that occur with normal metabolism. As metabolism of an animal is always in state of dynamic equilibrium in which influx of nutrients is balanced b the production of energy in catabolic and anabolic processes. Early research to measure heat and moisture production or loss was based on the standard metobolic rate(SMR)(Gordon et al. 1968)or basal metabolic rate(BMR)(Hayssen and Lacy 1985).When the amount of heat produced by the cattle exceeds the amount released to the environment to the body temperature of the cattle raises then cattle responds physiologically by reducing activities that shed heat (sweating ,increased respiration and salivation).Some responses of cattle to heat stress ,such as increased respiratory rate may actually increase heat production in their bodies. Thus will increasing heat loads the cattle experiances more distress ,eventually with life threatening consequences.

II. DISCUSSION

1.1Effect on Production

Reduced feed intake is a primary strategy for lowering body heat production. The effect of reduced appetite and feed intake in heat-stressed cattle will be an immediate fall in the production with reduced weight gain or decreased milk yield. The temperature-humidity index (THI)was used as a predicator of heat stress in dairy cattle.Milk quality parameters are also affected ,with somatic cell count(SCC) and bacterial counts commonly increased during periods of hot ,humid weather.Higher producing animals having highest feed intake are most severly affected.

1.2 Effect on reproduction

The heat of environment has major impact on reproductive performance in cattle. The reduction in conception rates in heat stressed cattle appear to be related to the level of production , larger declines occurring in higher cattles. There is also loss in the fertility of bull, particularly involving spermatogenesis. In addition ,there can be interactions with reduced nutrient intakes that are superimposed on the direct effects of high temperatures on reproduction. As well as the direct effects of environmental heat on reproductive physiology and the conceptus ,reproductive performance may also be indirectly reduced by adverse effects on energy balance ,as reduced appetites reduce DMI under hot conditions .

1.3 Effect on health

Heat stress can cause adverse effects in udder thereby reduce milk yeild. Heat stress during dry period may trigger mammary gland involution accompanied with apoptosis and autophagy ,decreased amount of mammary epithelial cells which can cause decreased milk yeild. Heat stress was found to influence oxidative glucose metabolism fluctuations and thereby control secretory cell number and level of secretory activities and secretory epithelium integrity of the udder. The SCC was established to be a good indicator of udder health. Heat stress affects calf viability by impeding foetal growth in the last trimester of pregnancy and by depressing cholesterol quality and immunoglobulin transfer. Cattles in late gestation during hot weather have reduced feed intake. As a result , calf birth weights are reduced . Once delivered, calves born in stressful conditions are weaker and slower to suck. So, calves born during the hotter summer months have higher rates of failure of passive transfer. Thus, it appears that both physical and physiological mechanisms are responsible for the high rates of failure of passive transfer in these calfs.

1.4 Steps to reduce heat stress

1. To reduce heat stress, provide cool water and shade for all milking and dry cows plus heifers.
2. To alleviate heat stress, in lactating cattles is to provide a more comfortable environment in the holding pen.
3. To reduce heat stress, provide shade and a cooling device around the feed manager.
4. To reduce heat stress, increase the density of the ration.

III. CONCLUSION

Heat stress is considered to be the primary factor reducing milk production in dairy cattles which ultimately culminates in severe economic loss to livestock farmers around the world. Heat stress not only reduces the milk yeild but also the quality of the milk. Heat stress also causes problem during pregnancy, lactation and parturation. The high producing dairy cattles seems to be more affected for the heat stress effects than the low producing one.

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