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RESEARCH PAPER

Stressful factors affects yield and quality of milk in small ruminant

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ABSTRACT

The stress is commonly associated with increased secretion of cartisol from the adrenal glands. Any stress either climatologically factors (*i.e.* heat, extreme temperature, rainfall, humidity, winter etc.) influence the yield and quality of milk in small ruminants. Stress management through spraying water on body, ventilation etc. In hot and humid condition, protecting under roof in rains and aproning the animals in extreme cold help to overcome stress effect. Through this the yield and quality of milk can be sustained / improved. However, strengthening of these approaches needs to be confirmed by further research.

Key words : Stress, Milk, Sheep and goat, Yield of milk, Quality of milk

Heat stress is increasingly recognized as a major factor and predicted changes in climate are expected to increase the heat stress incidence. The heat and humidity of summer can be some of the most stressful of times for the sheep and their shepherd, second only to the stresses of the lambing season. Heat stress, cold stress, extreme temperature (hot and cold), relative humidity vs. ventilation / wind and rainfall are stress factors affecting the productivity and product quality of small ruminants.

The effects of stress on milk production of dairy sheep/goat have been very diminutive studied. Stress is commonly associated with increased secretion of cortisol from the adrenal gland. In which the stress e.g. heat stress, extreme temperature (hot and cold) and humidity etc. were studied in relation to milk production in small ruminants i. e sheep and goat. Extreme temperatures and imbalanced diets are known to result in significant reductions in productivity and product quality in small ruminant production systems.

Stressing factors and their effects:

Heat stress:

Heat is a major constraint on animal productivity in the tropical belt and arid areas (Silanikove, 1992). Sheep and goats have few usual coastal defenses against high temperature. The air conditional techniques improve the growth, milk yield and its compositions in heat stressed small ruminants (Anonymous, 2010). Even though sheep behaviour and productivity may also be affected by heat stress. A stress management suggested as, if the temperature is over 105^0 F, set a fan for direct ventilation, spray the goat with water, and wet the head, legs and stomach with water. Supplementation of complementary rations according to abridged level of production, tumbling dietetic forage to grain ratio, feeding fat and protein, supplementing minerals, and maximizing cold water drinking may be helpful for heat-stressed sheep / goat in all respects.

Temperature (hot and cold):

High ambient temperatures, high direct and indirect solar radiation and humidity are environmental stressing factors that impose strain on animal (Silanikove, 2000). A high ambient temperature is the major constraint on animal productivity (Marai *et al.*, 1995). Increasing temperature depresses milk solids, fat, and N yields more in. In particular, hot weather results in higher proportions of short chain and saturated fatty acids (FA) in milk, primarily due to increased contents of caproic, capric, lauric, myristic and staeric acids and decreased contents of oleic, linoleic and linolenic acids. To overcome the stress due to extreme temperature most advantageous air relative humidity for milk production should in between 65 and 75%, (Brown *et al.*, 1988).

Table 1 : Effect of stress factors on productivity and quality of milk of small ruminant

Stress factors	Effect on milk	
	Productivity	Quality
Heat	(-)	(-)
Temperature	(-)	(-)
Cold	(-)	(-)
Relative humidity	(-) (25 %)	(-)
Ventilation	(+)	(+)
Rainfall	(-) (23%)	(-)
Wind	(+) 10%	