

A CASE STUDY:

Economic, social, health and environmental perspectives of livestock in India

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The climate effects on animal production and health are to be considered not in isolation but in association with economic, social, health and environmental perspectives.

The critical issues of climate impacting animal health and production, both long term and short term, should not only be seen in terms of alterations which the climate change brings about in the physiological functions of the animal systems but also in terms of the animals capacity to adjust to the production process/ability by adjusting its body system functioning to this climate change.

Change on livestock production systems:

Though, India is often accused in recent years, for its animal population particularly bovine (Cattle and buffalo) for global warming but that is more out of ignorance with respect of the production system in India and factual gas (CO₂, CH₄, N₂O) emission data. Extrapolating the western production model calculation to number of animal breeds in India is not only preposterous but, in fact, atrocious.

Cattle in India are just not a converting machine of feed grains to meat and milk but are essential element of man-plant-animal-eco-system, a system stabilizer, a real converter of crop waste and a hub for agricultural sustainability and nutrition security. In this context, the performance of the animal under different climates in terms of health and disease, therefore, needs and elucidation.

Further, the fact that 59 per cent of our rural population belongs to the landless and marginal group and their livelihood is mainly due to their animal holdings, any production and health infirmity directly leads to further economic deprivation and the population further falling into poverty trap. In the rural scenario where 1 to 2 liter milk production from large ruminants is the basic unit production for our massive milk grid, even a small fall in individual animal production is constraining the market access of these small holders with increased

economic vulnerability.

Impact of climate :

Climate effect health and production due to animal's sensitivity to any change in climatic parameters. Air temperature, humidity, solar radiation load, wind velocity are the major variables that effect animal performance under different agro ecologies.

The effects of each of these variable parameters, and more of their interactions, can enhance or reduce the direct effect on animal system. Temperature Humidity Index (THI) and temperature maximum (Tmax) or temperature minimum (Tmin.) data has been analyzed along with production and disease data in different climate zones and among different breeds of cattle including buffaloes.

Under the climatic stress there can be a decrease in the efficiency of nutrient utilization, dry matter intake decrease in animals subjected to heat stress. This depression in dry matter intake can be either short term or long term depending on the length and duration of heat stress.

Decrease of 10 to 20 per cent are common in summer hot days. There is normally a decrease in milk production for cows under heat stress. This decrease can be either transitory or longer term depending on the length and severity of heat stress. This decrease in milk production can range from 10 to 25 per cent. Heat stress has also been reported to decrease reproductive performance in dairy cows.

There are number of changes in reproductive performance that have been reported the effects on reproduction can be prolonged and effect the animal for months after the heat stress exposure. These include the decrease in the length and intensity of the estrus period, decreased conception (fertility) rate, decreased growth, size and development of ovarian follicles, increased risk of early embryonic deaths, decreased

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