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Review Article

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Environment Variable in Sustainable Animal Health and Production

Pramod Kumar[1], R.P. Diwakar[2*], Rajesh Kumar[3] and Rabindar Kumar[4]

[1]Department of Veterinary Physiology & Biochemistry,

[2]Assistant Professor, Department of Vety. Microbiology

[3&4]Assistant Professor, Department of Vety. Gynaecology & Obst.

C.V.Sc. & A.H., ANDUAT, Kumarganj, Ayodhya, UP 224229

*Corresponding Author E-mail: raj.diwakar74@gmail.com

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ABSTRACT

Environmental pollution is a significant problem affecting biodiversity, ecosystems and human health worldwide. Developed and developing countries share this burden together, through awareness and strict have contributed to a more significant extent in protecting their environment. This pollution effect on our whole system and the coming generation.

Keywords: *Environmental pollution, biodiversity, ecosystems, human health.*

INTRODUCTION

There are some 6 billion people in the world today. Despite declining population growth rates, the world population is increasing by about 80 million a year. Around 95% of this increase is taking place in the developing world. The UN predicts that the world population will reach 9 billion by 2050. Also growing is the per capita demand for animal food, which should continue to rise for at least 20 years. This so-called livestock revolution is a demand-driven evolution. The supply of cereals for human consumption should soon be sufficient to satisfy the demand in developing countries, but the supply of animal-derived foods is far from the mark (Ackerman et al., 2008).

23% of people in developed countries presently consume 3-4 times more meat and fish and 5-6 times more milk per capita than those in developing countries. As these poorer people get richer, one of the first things they want to buy is more nutritious and satisfying food, and this generally means more animal protein. Animal product consumption is thus increasing massively in developing countries and will continue to do so over the next 15-20 years. Developing countries are also playing a growing role in animal production.

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The domestication of livestock species some ten thousand years ago was a vital step in the development of human civilization. Over the centuries, domestication evolved into physiology, nutrition and the genetic improvement of livestock (Al-Saadi et al., 2005). Criticize the sustainable development of animal systems at various integration levels and in an ecological, ethical and socio-economic context based on their fundamental and applied knowledge of a chosen specialization.

Apply in-depth knowledge in at least one specialization on the biological functioning of animals in relation to their environment, both at a fundamental level and in the various purposes of animals for human use and well-being.

Weather and climate affect both livestock production and human health. However, there are many obvious and subtle differences in how animals and humans respond directly or indirectly to a particular environment. Application of weather and climate information to maintain or improve livestock performance, such as survival, growth, reproduction, milk and wool production. Management interventions are necessary not only to improve the genetic potential of animals but also to overcome production limitations imposed by local climate, physical environment, and health hazards, which typically include the selection, design, and management of production facilities. At the same time, collective impacts can guide local or national policy, determine responses to potentially far-reaching changes, or influence other decisions. It is clear to understand the effects of local and regional climates that influence these decisions and the need for timely forecasts that trigger management's forecasts and responses to adverse conditions (Carlson et al., 2004).

Weather- and climate-related animal production issues go beyond understanding atmospheric boundary layer processes and variations and the role of local land cover and topography in these variations. The knowledge that potential environmental stressors (ambient temperature, humidity, heat radiation, wind speed) can directly and adversely affect animal performance, health, and welfare if they exceed the animal's coping capacity. The impact on feed quality and availability must be considered. Factors to consider in animal production include:

(a) Historical weather data (both traditional and derived climate data) must be analyzed and interpreted to determine risk and probability.

(b) Assessment of detailed energy balances for individual animals and groups of animals. An imbalance between metabolic heat production and heat loss to the environment can be demonstrated under various realistic combinations of meteorological variables. Relevant weather data should have an appropriate resolution, such as daily or hourly values. In any animal class, especially young and neonatal animals, there is considerable interest in the maximal (peak) rate of metabolic heat production and the length of time it can be maintained. Possible periods of the weather outside the thermoneutral range for animals need to be known, but the accumulation of such periods during the season (if interpreted as implicit weight loss, etc.) provides some measure of economic performance.

Prolonged weather events affecting forage availability or forage intake can significantly impact performance. Also, suppose food restriction is associated with demand for body reserves that compete with heat stress (such as during pregnancy). In that case, the induced metabolic disturbances may have implications beyond the weather episode and may fully affect the young until birth. It may not be recognized by developing a better understanding, preferably quantitative, of how environmental variables affect animal heat budgets. We propose ways to manipulate the environment through natural and man-made protection from wind, sun and precipitation. By site selection to increase or decrease exposure. And by artificial aids that provide additional heating or cooling.

Animal facilities may improve animal and economic performance. Planning to transform the external macroenvironment into an acceptable microenvironment also requires an energy management approach, with the barn and its animals as a unit, with ventilation (natural or fan-assisted) as the primary control variable.

Weather dependence of diseases and parasites, especially the timing and scale of the problem. Whether reinfection leads to illness depends, among other things, on the number of infective organisms ingested and the occurrence of environmental stress (particularly heat stress) at the time of infection. Development of integrated production systems where understanding of the interactions between livestock practices, facilities, disease control and environmental factors is applied in complementary ways.

Impact of climate change on livestock

Climate change can create problems in many aspects of the dairy industry, such as housing, feeding, and health care. At the same time, certain challenges associated with climate change, such as high temperatures, feed of, and the general unpredictability this poses for the future of the dairy sector, underscores the importance of sustaining various environments' future genetic options. The dairy sector is affected by climate change and contributes to some extent to global warming. Climate change affects dairy cows directly and indirectly. Direct impacts are due to temperature, humidity, wind speed and other climatic factors affecting animal performance: growth, milk production and reproduction. Climate change impacts milk production due to differences in forage grain, pasture and forage crop production and quality, health, growth and reproduction, and diseases and their prevalence under abrupt climate change. Climate change can affect animal health in four ways. Heat-related diseases and stress, extreme weather events, an adaptation of dairy production systems to new environments, and the emergence and re-emergence of vector-borne and other infectious diseases. Thus, as expected in various climate change scenarios, an increase in temperature will directly affect milk by altering the heat budget of animals. It has four modes and is controlled by several physical parameters that control heat transfer through various modes. Air temperature affects energy exchange through convection and evaporation. Therefore, the combination of temperature and humidity becomes important because humidity amplifies the effect of temperature. Therefore, it is important to assess the environment in terms of heat stress using the temperature humidity index (THI). Dairy cows show signs of heat stress when their THI exceeds 72. Comfort levels vary by production level, germplasm type, and lifespan under certain conditions.

Animals with higher levels of performance are more sensitive to heat stress. The intensity of stress and the length of the daily recovery period are important in determining an animal's response to climatic stressors. They are unable to dissipate the extra heat load that accumulates on days when hours of THI are far beyond comfort and when there is little opportunity for recovery. Climate change could lead to disease epidemiology changes, outbreaks' severity, and spread to other regions. Climate change can affect the availability of forage resources in land-based production systems. In some cases, loss of biomass production due to drought often threatens the sustainability of dairy cattle. Poor dairy farmers can partially adapt to the local impacts of climate change, but feed supplies from commercial producers are also affected, especially in urban areas (Ackerman et al., 2008).

Control measures

Since climate change could increase heat stress, all methods by which animals can cope with heat stress or alleviate the impacts of heat stress to mitigate the impacts of global change on animal responses and performance need to be assessed. Three basic management schemes for reducing the effect of thermal stress have been suggested:-

1. Physical modification of the environment.

2. Genetic development of less sensitive breeds.
3. Improved nutritional management schemes.

1. Physical modification of the environment:

Various methods of environmental modification include shading, ventilation, and a combination of humidification and ventilation. Providing shade for dairy cows is the easiest way to reduce the effects of direct sunlight. Shades can be either natural or artificial. Tree shadows have proven to be more efficient. In traditional dairy farming, animals graze in midsummer pastures or the shade of forests. If sufficient natural shade is not available, artificial structures can be built. Various aspects, such as colour tone design and placement, are open to the public. Shading is effective in reducing heat stress in dairy cows. Animals had lower rectal temperatures and respiratory rates in the afternoon and produced more milk when properly shaded. Artificial shade structures made of heat-resistant materials should not differ from tree shades in terms of their impact on animal welfare (de Gouw et al., 2009). Increasing air movement is an important factor in mitigating heat stress. This is because it aids in heat loss through air convection and provides evaporative cooling, especially when ambient humidity is high. Whenever possible, open-sided structures should be built to maximize natural ventilation. Forced ventilation with fans is a very effective method if properly designed. Evaporative spray cooling is an effective way to cool cattle and buffalo.

1. **Genetic development of less susceptible varieties:** It is now well documented that landrace varieties are resistant to many tropical diseases. High tolerance to heat and water scarcity makes it ideal for widespread use in milk production in hot, humid climates and resource-poor agroclimatic areas. It also has a rich gene pool for crossing with high-performance varieties in developed countries. It becomes a significant genetic resource. Genetic modification of dairy cows for feed conversion efficiency and reduced methane production also enable emissions reductions without compromising productivity (York et al., 2003). The strategy is to survey all dairy breed populations considering:

a) Documentation of indigenous breeds for heat tolerance, disease resistance, adaptation to poor diet, etc. and their comprehensive evaluation of performance and use of animals in specific production environments.

b) In phenotypic characterization studies on Animal Genetic Resources (AnGR), the surveys should specifically have data entry on all phenotypic traits.

c) Improving knowledge and awareness of, and respect for, local and indigenous knowledge relevant to climate change adaptation and mitigation.

d) They identify potential climate change-related threats to specific AnGR, ensuring that long-term environmental threats are monitored and that urgent action is taken to address immediate threats from climatic disasters to save small populations at severe risk.

e) Improving knowledge of breeds for their current geographical distributions and to facilitate planning of climate-change adaptation measures and AnGR conservation strategies.

f) Improving the availability of the above-described knowledge, including via DAD-IS and other AnGR information systems.

3. Improving nutrition management systems: The impact of climate change on milk production can be influenced by changes in feed resources and feeding schedules. Forage resources significantly impact milk production, soil carrying capacity, ecosystem buffering capacity and sustainability, grain prices, feed trade, changing feeding options, grazing management, and ultimately controlling greenhouse gas emissions. known to give It is now well documented that increased temperature increases lignification of plant tissues and reduces digestibility. This will lead to a reduction in animal nutrient availability, ultimately leading to a reduction in milk production, and will also affect methane emissions from dairy cows. Micro-level adjustment options, including agricultural production adjustments such as diversification and intensification of crop and dairy production (Jorgenson et al., 2008). Changes in land use and irrigation and operations over time can significantly affect the impact of greenhouse gas emissions from these animal wastes. There is a significant opportunity to reduce methane emissions per animal through individual and herd management changes that reduce the proportion of energy expended on maintenance. Maximize fertility and health and maximize daily milk production by optionally providing highly digestible forage or specific supplements to improve the digestibility of forage and forage. To reduce total herd emissions (kg/day) as well as herd intensity (methane/product), mitigation strategies such as reducing animal numbers or including fats and oils in the diet should be implemented.

CONCLUSION

With the help of genetic engineering for improvement, animals can be improved more easily and go to unfavourable environments. They model future distributions and characteristics of production environments to assist in assessing threats and identifying regions appropriate for specific races, thereby enhancing racial knowledge of current geographic distributions.

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