THE SCIENCE WORLD
A Monthly e Magazine
ISSN:2583-2212
July, 2023; 3(07), 1269-1273

Popular Article

Winter Stress Management: A Vital Knowledge in Animal Husbandry

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https://doi.org/10.5281/zenodo.8133759

Abstract

Temperature varies across Indian sub-continental land mass, divided between four major seasons. Farmers face own challenges in each season, whereas winter season is one of the most challenging environments to deal with. Southern Indian winters are not considered as harsh winters and local level management is sufficient to overcome. Northern winters are extreme and planned strategies could be useful to optimize illness and fatal death. Heating facilities, warm water, changes and upgradation in cattle feed, providing high energy feed are some of the key actions that protecting the livestock from chilling winters and maintain comfortable zone for them. Animal housing and its architecture should be in such a way that it provides warmness to animals and taking care of animals at different stages of growth and reproduction that impacts health of animals during winters. Animals should be vaccinated before winter and supply of frequently used medicines to be kept ready.

Introduction

India experiences the following different seasons viz. summer, monsoon, autumn and winter and it is very much necessary for the marginal, landless farmers and even for the large-scale farmers to opt for adequate measures to combat the winter stress in livestock. Ranging from domestic to wild animals, they are widely affected by the extreme weather conditions. The normal ambient or environmental temperature is known as comfortable zone, thermo neutral zone or ideal temperature. A cow's normal rectal temperature is about 101.5ºF, the animal experiences cold stress when it is below the comfortable zone's threshold and they need to raise its metabolic rate in order to produce

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*Published:*11.07.2023

more body heat in order to withstand cold stress. Therefore, the energy requirement increases to prevent any kind of ailments in livestock due to winter stress. Since the energy and dry matter intake plays negative affect i.e., increased energy and reduced dry matter intake results in maintenance of basal body temperature and in turn it will lead to increase in production performance of the animals. Adequate amount of Luke warm water should be provided and appropriate dry bedding along with heating facility and blankets should be provided to the animals during the winter months. During the winter season, there are several disease outbreaks due low immunity possesses by the animal, unsuitable housing, ecto-endo parasitic infestation etc. Therefore, utmost care of the livestock should be taken during the winter period by keeping warm and providing them diet rich in protein and energy to maintain their outstanding health, production, reproduction.

Management to Combat Winter Stress

1. **Feeding Management:** During the winter period the amount of feed required by the animal vary substantially because cows may need up to extra more feed during cold weather in order to maintain health condition. Hence, various modes of feeding are used to maximize the productivity throughout the winter. Grain and hay both contain high energy and due to its reduced cost and higher heat produced after digestion hay is often preferred. During scarcity, grains like barley, wheat, oats, maize etc. may be more affordable and easily available which can be a good replacement for traditional or conventional feeds. The neonates are fed with milk for 2-3 times a day and if milk is not available then milk replacer is supplied to the young ones. During the scarcity, there should be a sufficient quantity of high-quality forages in storage which is required to feed the heifers. Feeding of animals during the winter months should be done in well-ventilated area preferably outside the shed to avoid the accumulation of ammonia or any other undesirable gas. During the winter the animals are highly susceptible to hypothermia and they should be supplied with adequate amount of clean and Luke warm water. Make sure that frozen feeds are not provided to the animals by their owners. Animal should be fed mostly during the afternoon or evening time since feeding at this particular time increases the fermentation activity and provides warmth to the animal. Lactating cows need 40–60% additional energy than dry and pregnant cows do in regions with lower temperatures in order to maintain their health and produce milk for their calf. Nowadays various types of cakes are available like cotton seed cake, groundnut cake, sesame cake, linseed cake etc are provided to animal and also concentrate mixture supplied at 2.5 kg to produce extra warmth. Supply of high fibre diet can increase the fermentation process in animals and results increase in heat production. Appropriate number of

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vitamins and minerals should be supplied in order to increase the metabolic rate of the animal. The feeding and watering trough should be clean and well maintained.

2. **Housing Management:** The animal housing in the regions with low temperatures should be facing towards East-West direction so that they receive most of the sun's rays. The floor should be non-plastered, durable and strong. The roofing material is made up of either slates or galvanized iron sheet and provide safeguard against rainfall. In temperate regions, conventional barns are most suitable to combat the cold stress hence; the walls are enclosed with bricks and stones in order to protect the animals from prevailing wind. Animals should be provided with comfortable bedding made up of sawdust, paddy husks, rice husks etc to prevent them from chilled floors and depth of the bedding should be 4-6 inches and 2 inches for large and small animals respectively. During night animals should be provided with covered sheds. The animals should be covered with gunny bags or blankets which will provide them heat and warmth. Floor should be cleaned on regular time interval to avoid dampness and moisture. Appropriate drainage system should be present since a moist floor can cause numerous health issues. Shelters should be located slightly higher than the surface of the ground to avoid entry of water inside the shed. A heater should be installed in the room to prevent extreme cold stress. The relative humidity between 40 and 80% is desirable and the shed should be free from draughts. Make sure the animal gets at least an hour of daily sunlight exposure. All litter should be collected and disposed of away from animal shed.
3. **Health Management:** Vaccination against important disease like Anthrax, Brucellosis, *Haemorrhagic Septicaemia*, Foot & Mouth Disease, Black Quarter and calf scour. Proper care and management for parasitic disease should be adopted. Routine deworming against hook worm, stomach worm, liver fluke etc. must be carried out and animal shed should be regularly sanitized and spraying of house with appropriate insecticide like malathion, parathion etc every two weeks, if possible, to prevent ectoparasitic infestation. Exterminate rats and mice by using trap to avoid the spread of disease. Avoid the entry of flies by facilitating the positive airflow from the interior of the shelter to the outside. Overgrown hooves must be trimmed to avoid the occurrence of disease like laminitis, foot ulcers, foot rot etc. During the winter, a teat dip powder will lessen the chance of teats getting frostbite. Adequate measures should be taken against the occurrence of various types of respiratory disease like pneumonia, infectious bovine rhinotrachitis, blue tongue, swine influenza etc. During the winter, immune-compromised animals are susceptible to hypothermia hence entry of air inside the shed should be avoided. In case of sheep shearing should be avoided during the cold

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season. All newly purchased animals should be quarantined for at least 40 days. Manure contamination of feed and equipment should be avoided. Therefore, adequate and appropriate health management is required to combat the winter stress.

Idiosyncrasies of Cold Stress Management: Combating winter stress management through managing and operating feed, housing and healthcare, is a major concern every year. Generally, cattle consume more feed in winter to maintain, energy levels. Various aspects of feed, such as proportion, water content, carbohydrate, fatty acids, fermentation activity, nutritional value etc should be researched and meticulously managed to optimize feed quantity, quality and palatability meanwhile maintaining the appropriately digestible amount. Research in housing management, direction of cattle house, flow of excreta, consumable water temperature, material that provides heating and insulator materials, affordable yet sturdy flooring material, moisture and humidity controllers and various other managemental equipment's should be upgraded and researched further in order to enhance initial capital architecture which facilitates maximum sunlight intake, and reduce the excessive sunlight during summers. Although huge investments has been done in vaccination and medical research, more research is required for providing easily available and affordable preventive measures in accordance with local level awareness to encourage adoption of best managemental practices to enhance output by both popularization and familiarization of farmers with essential vaccines, medicines, lab tests, quarantine period for new purchased animals and the means to prevent new borns from contracting contagious diseases.

Conclusion

A country like India with variety in breeds, weather conditions, altitudes require thorough study of stress management in summer, monsoon and winter. Usually, cattle and other livestock expose to harsh northern winters. Some of the genetical abilities prevent these productive animals from falling to bad weather, yet, there are preventive and curative measures need to be taken from owners and management of these farms. General winter combat practices include feed, housing and health caring. These research work and operational practices are based on increasing energy value, insulation in housing, prevention and cure from cold influenced bacterial and viral infections. Implementing these practices at animal farms prevent animal deaths and low production, resulting in improving financial conditions of farmers and owners.

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