



## Effective Strategies for Livestock Care and Management During Winter

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### Abstract

Livestock constitute an important component of the agricultural economy and rural livelihoods. During winter, animals often experience reduced productivity and deteriorated health due to low ambient temperatures, scarcity of green fodder, and increased energy requirements for thermoregulation. Cold stress affects growth, milk yield, reproduction, and disease resistance across all classes of livestock. Scientific management practices are therefore necessary to maintain animal comfort and productivity during the cold months. Proper housing, balanced nutrition, health care, and reproductive management help reduce winter-related losses. Attention to shelter design, provision of adequate bedding, and supplementation with energy-rich and vitamin-enriched feed are essential strategies. Emphasis on disease prevention and regular monitoring ensures animal welfare and economic sustainability. Effective winter care of livestock enhances production efficiency and contributes to the resilience of livestock-based farming systems.

**Key Words:** Livestock, winter management, nutrition, shelter, animal health, cold stress

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### Introduction

Winter is a critical season for livestock farmers, especially in temperate and subtropical regions where ambient temperatures fall below the thermal comfort zone of animals. The drop in temperature coupled with reduced sunlight and fodder scarcity results in significant physiological stress. Animals expend more energy to maintain body temperature and homeostasis. The thermoneutral zone for most livestock species lies between 18°C and 25°C. Temperatures below this range result in cold stress which can impair feed efficiency and productivity.

Livestock such as cattle, buffalo, sheep, goats, pigs and poultry show varied tolerance to cold depending on their body size, coat thickness, species adaptation and physiological status. For example, high-yielding dairy cows and newborn calves are more susceptible to cold stress due to their limited thermoregulatory ability.

Proper care and management practices including housing improvement, nutritional supplementation, water management and disease prevention play a vital role in minimizing production losses during winter.

### Impact of Cold Stress on Livestock Performance

Cold stress negatively influences feed utilization and metabolic efficiency. Animals exposed to cold conditions increase their metabolic rate to generate more body heat, thereby requiring more energy. If feed intake does not meet the increased energy demand, the animal starts mobilizing body reserves leading to weight loss and reduced production.

According to National Dairy Development Board (NDDB, 2020), milk production in dairy cows can decline by 10–20 percent during winter due to decreased feed efficiency and altered hormonal responses. In small ruminants, cold exposure leads to increased maintenance requirements by 15–25 percent. Poultry birds also show reduced feed conversion ratio and egg production when exposed to low temperatures below 15°C.

### Housing Management during Winter

Proper housing is the first line of defense against cold weather. A well-designed shelter provides warmth, protection from wind and rain and helps maintain animal comfort.

### Design of Animal Shelters

Animal sheds should be constructed to minimize heat loss. The walls must be insulated

using locally available materials such as straw, bamboo matting or gunny bags. The floor should be dry and covered with thick bedding material such as straw or paddy husk to conserve heat.

The orientation of the animal house is important. In India, east-west orientation is preferred to allow maximum sunlight entry during the day. Cross ventilation must be ensured to remove moisture and harmful gases without causing draughts.

### **Bedding and Insulation**

Bedding materials such as dry straw, hay or sawdust should be used to provide warmth. Wet bedding must be replaced daily to avoid ammonia accumulation and prevent skin infections. In cold regions, the use of plastic or rubber floor mats beneath bedding can help retain heat.

### **Protection from Draughts and Moisture**

Cold wind increases heat loss by convection. All openings facing the wind should be covered using jute curtains or polyethylene sheets. Proper drainage must be ensured to prevent dampness, as wet floors increase the risk of respiratory infections and foot rot.

### **Lighting and Sun Exposure**

Sunlight is a natural disinfectant and a source of vitamin D. Animals should be allowed to bask in the sun during mid-day hours. Roof openings or transparent roofing sheets can be used to increase solar radiation inside sheds.

### **Nutritional Management during Winter**

Nutritional care is critical to meet the increased energy requirements during cold weather. Animals consume more feed to maintain body temperature.

### **Energy and Protein Requirements**

Energy-dense feeds such as grains, oil cakes and molasses should be included in the ration. Green fodder availability decreases in winter; hence silage and hay must be used. Urea-treated straw is a good alternative in regions facing fodder scarcity.

Protein supplements like mustard cake, groundnut cake and soybean meal improve feed efficiency and growth. A balance between energy and protein ensures proper rumen function and milk synthesis.

### **Mineral and Vitamin Supplementation**

Cold weather reduces sunlight exposure which may lead to vitamin D deficiency. Supplementation with vitamins A, D and E is essential for maintaining immunity and

reproductive health. Salt licks or mineral mixtures should be provided regularly.

### **Water Management**

Animals tend to drink less water in winter, leading to dehydration and reduced feed intake. Lukewarm water encourages adequate drinking. Dairy cows should be provided with water at 25–30°C for optimal intake.

### **Feeding Schedule**

Feeding should be done during warmer parts of the day. Roughages should be fed before concentrates to enhance rumen temperature. Warm molasses water or mash feed can stimulate appetite in small ruminants and poultry.

### **Health Care and Disease Prevention**

Winter predisposes livestock to several diseases due to suppressed immunity and unfavourable environmental conditions.

### **Common Winter Diseases**

- Respiratory diseases such as pneumonia, bronchitis and cold are prevalent in calves and kids.
- Foot rot and dermatitis occur due to damp floors.
- Frostbite in extremities is common in high-altitude regions.
- Ecto-parasite infestations increase as animals are kept in close quarters.

### **Preventive Health Measures**

- Regular vaccination and deworming schedules must be maintained.
- Disinfection of animal sheds with lime or phenyl once a week helps prevent infections.
- Isolation of sick animals reduces disease transmission.
- Clean and dry bedding reduces the risk of bacterial growth.

### **Monitoring and Early Detection**

Farmers should observe animals for early signs of illness such as nasal discharge, coughing, reduced appetite or reluctance to move. Early treatment ensures quicker recovery and prevents spread.

### **Breeding and Reproductive Management**

Cold weather affects reproductive hormones and breeding efficiency. Cows and buffaloes show weak estrus during winter due to reduced ovarian activity. Proper nutrition and thermal comfort are essential for maintaining reproductive performance.

Pregnant animals require special care to prevent abortion and ensure the birth of healthy offspring. Calving pens must be warm, clean and dry. Newborns should be immediately cleaned and dried, then provided with colostrum within one hour of birth. Use of warm water baths or heating lamps for young calves, kids and piglets helps prevent hypothermia.

### **Species-Specific Care**

#### **Dairy Cattle and Buffaloes**

- Provide thick bedding and wind barriers.
- Feed additional concentrates to compensate for energy loss.
- Ensure regular milking intervals to prevent mastitis.

#### **Sheep and Goats**

- House in elevated sheds to avoid dampness.
- Shearing should be avoided before winter to preserve body insulation.
- Feed good quality hay and mineral supplements.

#### **Pigs**

- Piglets are extremely sensitive to cold; use heating lamps or brooders.
- Maintain pen temperature between 22°C and 26°C.
- Avoid overcrowding to prevent respiratory infections.

#### **Poultry**

- Maintain proper brooding temperature for chicks (30–33°C initially).

- Use curtains to block cold air and provide adequate bedding.
- Offer energy-rich feed and supplement vitamin C to reduce stress.

### **Socioeconomic Importance of Winter Management**

Effective winter management ensures sustained productivity and profitability. In rural India, livestock provide income security and employment. Poor winter care can lead to high mortality and production losses especially among smallholders. Adoption of low-cost interventions such as use of locally available insulating materials, improved feeding practices and regular health monitoring can significantly improve livestock performance.

### **Conclusion**

Proper care and management of livestock during winter are vital for maintaining health, productivity and reproductive performance. Cold stress adversely affects feed intake, growth and disease resistance. Farmers must adopt integrated management practices that include appropriate housing, balanced nutrition, clean water supply, preventive healthcare and suitable breeding management. Awareness programs and training through extension agencies such as Krishi Vigyan Kendras can play a significant role in promoting these practices. Ensuring animal welfare during winter ultimately leads to higher productivity and profitability for the livestock sector.

### **References**

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