

Physical Stressors

- **Environmental Extremes:** Extreme temperatures (heat/cold) require energy for thermoregulation, causing metabolic strain.
- **Nutrition and Water:** Poor-quality feed, nutrient imbalances, or lack of water cause severe physical strain.
- **Health and Disease:** Infections, parasites, and lameness lead to chronic pain and discomfort.
- **Management Practices:** Weaning, transport, castration, and dehorning cause acute pain and physical discomfort.

Psychological Stressors

- **Social Disruption:** Mixing unfamiliar animals causes fighting and disrupts established social hierarchies.
- **Handling and Restraint:** Rough handling, loud noises, and confinement induce fear and anxiety.
- **Novel Environments:** Moving animals to new pens or markets can cause fear and confusion.
- **Social Isolation:** Separating young from mothers (weaning) causes emotional distress.

Physiological Effects of Stress

- **Immune System Dysfunction:** Chronic stress leads to immune suppression, increasing susceptibility to infections like bovine respiratory disease.
- **Decreased Performance:** Reduced feed intake and rumination lead to lower weight gain and decreased milk production.
- **Reproductive Issues:** Lower fertility rates.
- **Metabolic Changes:** High levels of cortisol can cause muscle tissue breakdown.

Signs of Stress in Livestock

- **Behavioral:** Panting, heavy breathing, increased heart rate, and sweating.
- **Social:** Increased fearfulness, fighting, and, for example, dairy cows, reduced time spent lying and ruminating.

Mitigation Strategies

- **Low-Stress Handling:** Using calm, consistent handling techniques during loading and treatment.
- **Improved Housing:** Providing adequate space, shade, and ventilation to reduce overcrowding and heat stress.
- **Management Practices:** Ensuring proper nutrition and careful, gradual weaning processes.

