LIVESTOCK TECHNOLOGY

LT

Pulse of Livestock Industry

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From the Editor's Desk

India's Dairy Sector Building a Sustainable, Farmer-Centric Future

The future of the dairy sector, however, cannot be discussed without placing farmers at its centre. The debate between cooperative and private dairy models often overlooks the most important stakeholder—the producer. India's dairy success was built on empowering farmers through collective action and market access. Today, both cooperatives and private companies contribute significantly to farmer development through procurement networks, veterinary services, digital payments, and productivity support.

The next White Revolution should therefore focus not on strengthening one institutional model over another, but on creating a competitive ecosystem where all dairy processors compete to serve farmers better. Farmer Producer Organisations (FPOs), cooperatives, and other farmer institutions should have the freedom to choose buyers based on performance, transparency, and value creation. Government policy should concentrate on strengthening farmers through investments in animal health, genetics, fodder development, infrastructure, and climate resilience rather than favouring any particular market participant.

India's dairy industry, which powered the White Revolution and transformed millions of rural livelihoods, is now confronting a new set of challenges and opportunities. Sustainability, farmer empowerment, technological innovation, and changing global market dynamics are reshaping the future of dairy. Recent developments—from Mother Dairy's biodegradable milk pouch and Andhra Pradesh's animal-centric breeding programme to the growing emphasis on green dairy processing and the surge in global whey protein demand—offer a glimpse into what the next phase of dairy development could look like.

One of the most encouraging developments is the growing recognition that dairy sustainability extends far beyond the cow. For years, discussions around dairy's environmental impact have focused primarily on methane emissions and farm-level practices. While these remain important, the reality is that a significant portion of the sector's carbon footprint is generated after milk leaves the farm. Milk collection, chilling, processing, packaging, transportation, cold-chain management, and retail distribution all consume substantial amounts of energy and resources.

Mother Dairy's launch of India's first naturally degradable milk pouch. Packaging has long been a difficult challenge for the dairy sector, balancing food safety and shelf life with environmental concerns. Innovations that reduce plastic pollution without increasing costs for consumers represent a significant step forward. Yet packaging sustainability cannot rely solely on new materials. Effective waste collection systems, recycling infrastructure, composting facilities, and strong implementation of Extended Producer Responsibility (EPR) regulations are equally essential to create a truly circular economy.

At the same time, improving productivity at the farm level remains critical. Andhra Pradesh's animal-centric breeding programme reflects a shift toward precision livestock management, where breeding decisions are based on the specific characteristics and genetic potential of individual animals. Such data-driven approaches can improve milk yields, animal health, and farmer incomes without requiring significant increases in herd size.

Global market trends further reinforce the importance of innovation and value addition. The sharp rise in whey protein prices illustrates how dairy ingredients are becoming increasingly strategic commodities. Growing consumer demand for protein-rich foods and nutritional products is creating new opportunities for the dairy sector. India must position itself not only as the world's largest milk producer but also as a major player in value-added dairy ingredients, sports nutrition products, and specialised dairy exports.

The future of Indian dairy will not be determined solely by how much milk is produced. It will depend on how efficiently, sustainably, and profitably that milk moves through the value chain—from the farm to the processing plant and ultimately to the consumer. The sector must embrace renewable energy, scientific breeding, sustainable packaging, green logistics, and farmer-centric governance as interconnected pillars of growth.

The first White Revolution liberated farmers from exploitative market structures. White Revolution 2.0 must empower them with choice, technology, sustainability, and ownership. If India can successfully combine environmental responsibility with farmer prosperity and market competitiveness, it will not only secure the future of its dairy industry but also create a global model for sustainable agricultural development.

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Beyond Cooling Systems:

Why Autolyzed Yeast Technologies Are Redefining Heat Stress Management in Dairy Cows

Raquel Marques and Graziela Alves, R&D and DT team at ICC Animal Nutrition

Heat stress remains a major challenge in modern dairy production, particularly in tropical and subtropical regions such as India, where high temperatures and humidity persist for much of the year. In high-producing dairy cows, thermal stress compromises milk yield, reproductive efficiency, immune competence, feed conversion, and animal welfare.

Lactation and ruminal fermentation generate substantial internal heat, and when environmental conditions limit heat dissipation, cows redirect nutrients and energy away from production toward thermoregulation. This shift reduces feed efficiency, increases susceptibility to metabolic disorders, and reinforces the need for effective heat stress mitigation strategies.

On-farm strategies have traditionally focused on environmental management, including shade, ventilation, sprinklers, soaking systems, and unrestricted access to water. These practices remain essential to reduce external heat load. However, environmental cooling alone cannot fully mitigate the metabolic and physiological changes triggered by heat stress, including changes in feeding behavior, rumen function, hydration dynamics, endocrine responses, and immune balance.

Rumen Function: An Early Indicator of Heat Stress Impact

Among the internal adjustments triggered by heat stress, changes in feeding behavior and rumen function are among the first to appear. One of the earliest responses of dairy cows to heat stress is reduced dry matter intake. Cows also change their feeding patterns, consuming more feed during cooler hours of the day, spending more time standing, and increasing respiratory activity to dissipate heat. Although these responses help maintain the body's homeostasis, they also reduce nutrient availability for milk synthesis and reproduction.

The rumen is central to this process. Ruminal fermentation converts fiber into volatile fatty acids and microbial protein, but it also generates metabolic heat. During heat stress, reduced rumination and lower saliva production decrease ruminal buffering capacity, while fluctuations in feeding behavior increase instability in ruminal pH. In high-producing cows consuming highly fermentable diets, these conditions elevate the risk of subacute ruminal acidosis (SARA), compromise fiber digestibility, and reduce milk component synthesis.

This challenge becomes even more critical during the transition period. In late gestation and early lactation, cows are already exposed to negative energy balance, inflammation, and immune suppression. When heat stress overlaps with this physiologically demanding phase, rumen stability and efficient nutrient utilization become essential to support digestibility, thermal resilience, and productive performance.

Why Autolyzed Yeast Technologies Are Becoming Strategic Tools

Yeast-based additives have long been used in dairy nutrition to improve ruminal fermentation and support digestive efficiency. For example, live yeast products have been associated mainly with modulating the rumen microbiota and stimulating fiber-degrading bacteria, contributing to more stable fermentation patterns during periods of nutritional and environmental challenges.

Meanwhile, autolyzed yeast technologies have expanded this concept by combining fermentative support with a broader supply of functional compounds that may become particularly relevant under heat stress conditions. Autolyzed yeast is produced through the controlled autolysis of Saccharomyces cerevisiae, releasing intracellular metabolites such as peptides, amino acids, nucleotides, enzymes, and B-complex vitamins, while preserving structural cell wall fractions including beta-glucans and mannan oligosaccharides (MOS).

This dual composition allows autolyzed yeast to act through complementary physiological pathways. The intracellular metabolite fraction is associated with fermentation efficiency, fiber digestibility, and nutrient utilization, supporting fermentation efficiency, fiber digestibility, and ruminal stability during periods of reduced feed intake and altered feeding behavior. At the same time, structural yeast cell wall fractions such as beta-glucans and MOS contribute to intestinal integrity and immune modulation, which become increasingly important when heat stress elevates inflammatory and physiological pressure.

Based on this physiological rationale, ICC Animal Nutrition has explored the use of RumenYeast®, an autolyzed yeast technology derived from Saccharomyces cerevisiae, as a nutritional strategy to support dairy cows under heat stress.

Rather than acting exclusively as a fermentative aid, the technology was developed to support thermal resilience through complementary effects on digestive efficiency, nutrient utilization, and physiological adaptation.

Niacin Metabolism and the Thermoregulatory Advantage of Autolyzed Yeast

Among the intracellular metabolites released during autolysis, niacin plays a particularly important role under heat stress conditions. Niacin, or vitamin B3, is a precursor of NAD and NADP coenzymes, which are essential for cellular energy metabolism and are directly associated with peripheral vasodilation and body heat dissipation.

In heat-stressed dairy cows, greater niacin availability may help support thermoregulation by enhancing heat loss mechanisms and reducing the physiological strain associated with elevated respiratory activity. This mechanism becomes particularly relevant during periods of severe heat load, when cows must dissipate large amounts of internal heat generated by lactation and ruminal fermentation.

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Rumen-protected niacin is frequently used to increase systemic niacin availability during heat stress. Although effective in elevating circulating niacin concentrations, its primary function remains the delivery of a single nutrient source. Autolyzed yeast, in contrast, provides niacin within a broader matrix of intracellular compounds that also support digestive efficiency and nutrient utilization.

This distinction is important because heat stress affects multiple physiological systems simultaneously. Therefore, the thermoregulatory role of niacin should be interpreted within the broader functional profile of autolyzed yeast, which combines metabolic support with bioactive fractions associated with rumen function, intestinal integrity, and immune modulation.

Practical Results of Autolyzed Yeast Supplementation Under Heat Stress

ICC Animal Nutrition evaluated RumenYeast® in high-producing multiparous Holstein cows during the transition period under heat stress conditions (THI ≥ 68). Cows received 15 g/day from 21 days before calving until 21 days postpartum.

The study evaluated physiological, productive, and ruminal responses associated with thermal adaptation. Cows supplemented with RumenYeast® showed increased plasma niacin concentration, from 59.8 to 67.0 µg/mL, together with a reduction in respiratory rate from 59.3 to 55.6 breaths per minute. Because respiratory rate is an early indicator of thermal discomfort in dairy cattle, this response suggests improved thermoregulatory adaptation during heat stress.

Additionally, productive performance was also positively affected. Milk yield increased from 35.1 to 37.7 L/day, with additional improvements in lactose and milk protein concentration. At the same time, the incidence of subacute ruminal acidosis decreased from 34% to 19%, suggesting greater ruminal stability during a period characterized by reduced rumination activity, altered feeding behavior, and elevated fermentative challenge. Together, these responses suggest that improvements in thermoregulation occurred alongside better rumen stability and productive performance, reinforcing the relationship between digestive efficiency and thermal adaptation.

Complementary observations obtained in beef cattle under hot grazing conditions reinforce this relationship. Supplemented animals showed increased water intake, between 10% and 15%, together with a tendency toward lower rectal temperature, from 39.96 to 39.73°C. These findings highlight the physiological connection between rumen function, hydration dynamics, and heat dissipation across cattle systems.

Heat Stress, Hydration, and Nutrient Efficiency

Water is one of the most important components of heat stress adaptation in dairy cows. It supports respiratory evaporative cooling, plasma volume maintenance, nutrient transport, sweating, and body heat dissipation. However, efficient hydration depends on more than water availability alone. Under thermal pressure, cows must also maintain digestive and metabolic efficiency to utilize both nutrients and water effectively.

In this context, the reduction in SARA observed with RumenYeast® becomes especially relevant because it links rumen stability with hydration efficiency and productive resilience. Maintaining a more stable ruminal environment may help preserve nutrient utilization during periods when heat stress increases physiological demand.

This relationship becomes even more critical during the transition period, when metabolic pressure is already elevated. Heat stress during late gestation and early lactation may impair colostrum quality, calf development, and transfer of passive immunity while exacerbating negative energy balance. Therefore, nutritional strategies that support rumen function and thermoregulatory efficiency may generate benefits beyond immediate milk yield, contributing to broader cow and calf resilience.

Heat Stress, Sustainability, and the Future of Dairy Nutrition

The consequences of heat stress extend far beyond seasonal reductions in milk production. In dairy systems exposed to chronic thermal challenge, lower reproductive efficiency, poorer feed conversion, greater incidence of metabolic disorders, and increased culling rates all contribute to reduced profitability, making heat stress a long-term challenge for both efficiency and sustainability.

Heat stress also compromises sustainability because cows become less efficient at converting feed into milk, increasing the environmental footprint per liter produced. For dairy systems operating in tropical and subtropical regions, where heat stress is often recurrent rather than seasonal, improving biological resilience is becoming an increasingly important component of herd management.

Within this context, nutritional technologies capable of supporting rumen function, thermoregulation, and metabolic adaptation simultaneously are gaining greater relevance. By acting beyond a single metabolic pathway, autolyzed yeast technologies align with the need for more integrated nutritional strategies that support efficiency, resilience, and productive stability under thermal pressure.

A New Biological Perspective on Heat Stress Mitigation

Modern heat stress mitigation should be viewed as an integrated strategy. Environmental cooling systems such as shade, ventilation, sprinklers, soaking systems, and unrestricted water access remain indispensable for reducing external heat load. However, maintaining productive efficiency during thermal challenge also depends on the cow's internal ability to preserve rumen stability, hydration balance, metabolic flexibility, and immune competence.

In this context, autolyzed yeast technologies are gaining importance not simply as fermentation enhancers but as nutritional tools that support multiple physiological functions associated with thermal resilience. Rather than replacing conventional cooling systems, these technologies complement environmental management by helping cows maintain digestive efficiency and physiological adaptation during periods of elevated heat load.

This perspective shifts heat stress management from a cooling-centered approach to a broader resilience strategy, in which environmental control and functional nutrition work together to sustain cow performance under thermal pressure.

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TMR Management During Summer:

Protecting Dry Matter Intake (DMI), Milk Production & Farm Profitability

Why DMI Matters

Dry Matter Intake is the engine that drives milk production.

When a cow consumes less feed:

- Milk production declines.
- Body reserves are mobilized.
- Fertility suffers.
- Immunity weakens.
- Risk of metabolic disorders increases.

A reduction of just 1 kg DMI can easily result in a loss of 1.5–2.0 kg of milk.

For a farm with 100 lactating cows, a reduction of 2 litres of milk per cow per day can result in:

- ₹ 8,000 loss per day (assuming ₹40/litre milk price)
- ₹ 2.4 lakh loss per month
- More than ₹12 lakh loss during a 5-month summer season

Protecting DMI should therefore be considered one of the most profitable summer management practices available.

1 Maintain the Correct TMR Structure

The first step in maximizing DMI is ensuring that the ration is properly balanced.

Common mistakes observed on dairy farms include:

- Excessive straw inclusion
- Poor-quality silage
- Highly variable forage-to-concentrate ratios
- Excessive dependence on low-quality by-products

The goal during summer is to maximize nutrient intake per mouthful.

Key recommendations:

- Maintain a consistent forage-to-concentrate ratio.
- Use highly digestible forages.
- Ensure adequate physically effective fiber (peNDF).
- Avoid sudden dietary changes.
- Maintain proper energy density.

Every kilogram of low-quality forage occupying rumen space reduces the cow's ability to consume productive nutrients.

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2 Feed During Cooler Hours

Heat-stressed cows prefer to consume larger meals during cooler parts of the day.

Recommended feeding schedule:

- Early morning: 5:00–7:00 AM
- Evening: 6:00–10:00 PM

Best practices:

- Deliver fresh feed immediately after milking.
- Offer 60–70% of daily feed allocation during evening hours.
- Ensure feed availability throughout the night.

Many farms observe their highest feed intake within the first two hours after fresh feed delivery during cooler evening temperatures.

3 Increase Feed Push-Up Frequency

Feed that is out of reach is effectively unavailable feed. Frequent feed push-ups increase bunk access and encourage cows to consume more feed.

Recommendations:

- Push feed every 2–3 hours.
- Increase push-up frequency during hot afternoons.
- Ensure feed remains accessible 24 hours per day.

Benefits include:

- Increased feeding frequency
- Improved DMI
- Reduced sorting
- More consistent milk production

4 Optimize TMR Particle Size

Particle size plays a critical role in rumen health and feed intake.

When particles are too long:

- Sorting increases.
- Nutrient intake becomes inconsistent.
- Feed efficiency declines.

When particles are too fine:

- Rumination decreases.
- Saliva production declines.
- Risk of ruminal acidosis increases.

Regular evaluation using a particle separator can help maintain optimal particle distribution and improve ration consistency.

5 Ensure Excellent TMR Uniformity

Even the best ration formulation is ineffective if it is not mixed properly.

Poor TMR uniformity results in:

- Nutrient variation between mouthfuls
- Feed sorting
- Inconsistent rumen fermentation
- Reduced DMI

Recommendations:

- Follow the correct ingredient loading sequence.
- Avoid under-mixing and over-mixing.
- Follow manufacturer-recommended mixing times.
- Periodically evaluate ration uniformity.

A consistent ration leads to consistent rumen function and more stable milk production.

6 TMR Wagon Maintenance: The Most Overlooked DMI Factor

Many dairy farms invest heavily in feed additives, bypass nutrients, minerals, and rumen modifiers, yet overlook the machine responsible for delivering the ration.

A poorly maintained TMR wagon can significantly reduce ration quality, increase sorting, and reduce feed intake.

Mixer Knife and Blade Maintenance

Mixer knives process forage into the desired particle size.

Worn blades result in:

- Long forage particles
- Increased sorting
- Poor mixing efficiency
- Reduced DMI

Recommendations:

- Inspect knives every 15 days during summer.
- Replace blades when wear exceeds 20–25%.
- Check knife mounting bolts regularly.

Weighing Scale Calibration

Accurate formulation requires accurate weighing.

A 5% weighing error on a farm feeding 4 tonnes of TMR daily can result in approximately 200 kg of feed being over- or under-loaded every day.

At ₹18/kg feed cost, this represents:

- ₹ 3,600/day
- ₹ 1.08 lakh/month

Recommendations:

- Calibrate scales monthly.
- Inspect load cells regularly.
- Protect scale electronics from heat and moisture.

Daily Mixer Cleaning

Feed residues inside the mixer become ideal breeding grounds for yeast and mold growth during summer.

Recommendations:

Remove leftover feed daily.

Clean discharge conveyors thoroughly.

Pressure wash the mixer weekly.

Good hygiene reduces microbial growth and improves TMR stability.

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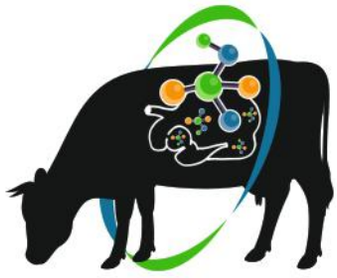

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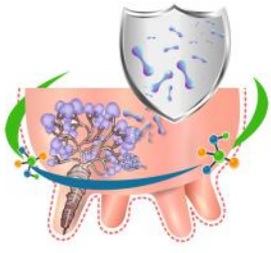

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Conveyor and Discharge System Inspection

Uneven feed discharge creates variation along the feed bunk.

Recommendations:

- Inspect chains and belts weekly.
- Check conveyor alignment.
- Replace damaged slats and worn components.

Uniform discharge improves feed accessibility and reduces competition among cows.

Monitor TMR Temperature

One of the most effective summer management tools is monitoring TMR temperature.

Fresh TMR should ideally remain within 3–5°C of ambient temperature.

Higher temperatures often indicate:

- Aerobic spoilage
- Excessive yeast growth
- Poor silage stability
- Secondary fermentation

Using a simple infrared thermometer can help identify problems before milk production is affected.

7 Prevent TMR Heating and Secondary Fermentation

TMR heating is one of the most underestimated causes of summer DMI losses.

When feed is exposed to oxygen and high temperatures:

- Yeasts multiply rapidly.
- Mold growth increases.
- Nutrients are lost.
- Feed becomes less palatable.

Cows often reduce feed intake before visible spoilage becomes apparent.

Common signs include:

- Warm feed at the bunk
- Sour odor
- Increased sorting
- Higher feed refusals

Maintaining feed hygiene and preventing aerobic deterioration are essential components of summer feeding programs.

8 Organic Acid Blends: A Practical Tool for Summer TMR Stability

Organic acid technology has become an increasingly important tool for maintaining TMR quality during hot weather.

Well-designed blends containing propionic acid, formic acid, sorbic acid, and buffered organic acid systems help improve aerobic stability and maintain feed freshness.

Benefits include:

Control of Yeast and Mold Growth

Organic acids suppress spoilage microorganisms responsible for feed heating.

Reduced Secondary Fermentation

Less microbial activity means improved feed stability.

Better TMR pH Management

Organic acids help maintain conditions that discourage spoilage organisms.

Improved Palatability

Fresh, cool feed encourages cows to visit the bunk more frequently.

Preservation of Nutrients

Reduced heating minimizes dry matter and energy losses.

Improved DMI

The greatest benefit is preserving cow appetite during periods of heat stress.

Organic acid blends should be viewed as part of a complete summer feed management strategy rather than simply preservative.

Summer TMR Management Checklist

Every dairy farm should ask the following questions daily:

- Is fresh feed delivered on time?
- Is feed pushed up every 2–3 hours?
- Is feed available 24 hours per day?
- Is sorting visible?
- Are mixer knives in good condition?
- Is the weighing system calibrated?
- Is TMR temperature being monitored?
- Is the mixer wagon cleaned regularly?
- Is silage face management adequate?
- Is an organic acid stabilizer being used during hot weather?

Conclusion

Summer milk losses are rarely caused by a single factor. They are usually the result of declining feed intake caused by heat stress, poor feed management, feed spoilage, and inconsistent ration delivery.

The farms that consistently maintain milk production during summer are those that focus on the fundamentals:

- Correct TMR formulation
- Strategic feeding times
- Frequent feed push-ups
- Proper particle size
- Excellent ration uniformity
- Well-maintained TMR wagons
- Accurate weighing systems
- Prevention of feed heating
- Use of organic acid-based TMR stabilizers

In modern dairy farming, protecting Dry Matter Intake is one of the most profitable management strategies available. Every additional kilogram of DMI consumed contributes directly to milk production, reproductive performance, animal health, and farm profitability.

Simply put, the most economical litre of milk produced during summer is often not generated by adding more nutrients to the ration—it is generated by ensuring that cows consume the ration that has already been formulated for them.

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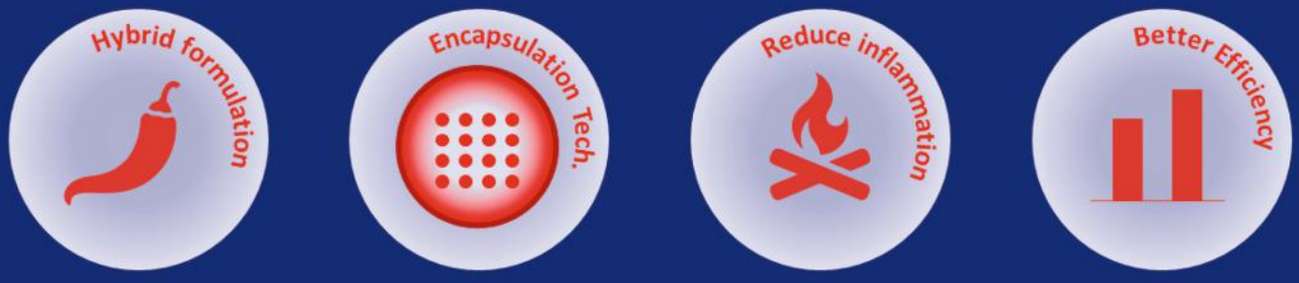

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ARTICLE

Enhancing Livestock Health
through Effective Vaccination Strategies

Narendra Kumar[1], Uma Kant Verma[2], Swarup Debroy[3]
Avantika Srivastav[4] and Mayank Dubey[1]

Introduction

Vaccination is an essential component of livestock health management, playing a crucial role in the prevention and control of infectious diseases that can severely impact animal welfare, productivity, and economic viability in the livestock industry. With growing concerns about food security, sustainable farming practices, and public health, understanding the significance of vaccines in livestock management is more critical than ever. This article aims to explore the importance of vaccination, highlight examples of pivotal diseases and their respective vaccines, and discuss the broader implications of vaccination on livestock health and the global economy.

The Role of Vaccination in Disease Prevention

Vaccination works by stimulating the immune system to recognize and respond to specific pathogens more effectively. By exposing the immune system to antigens from infectious agents—either in the form of killed pathogens, live attenuated strains, or subunit vaccines—livestock can build immunity without experiencing the disease itself. This preventive measure significantly reduces morbidity and mortality rates in animal populations and contributes to overall herd health.

Understanding Vaccination

Vaccination is a process that stimulates an animal's immune system to develop protection against specific infectious diseases. Vaccines contain antigens, which are components of pathogens (bacteria or viruses) that trigger an immune response without causing the disease. By training the immune system to recognize and respond to these pathogens, vaccines prepare animals to fight infections if they are exposed in the future.

Vaccination programs typically cover a range of diseases, including bacterial infections, viral diseases, parasites, and more. Common vaccines administered to livestock include those for bovine viral diarrhea, foot-and-mouth disease, brucellosis, Newcastle disease in poultry, and respiratory viruses in swine.

Enhancing Animal Health and Welfare

One of the primary benefits of vaccination in livestock health management is its capacity to prevent diseases that can severely impact animal health and welfare. Infectious diseases can lead to high morbidity and mortality rates, causing suffering and distress among affected animals. By controlling these diseases through effective vaccination programs, farmers can ensure that their animals remain healthy and thrive in their environments.

Vaccinated animals are also less likely to transmit diseases to one another, which can significantly reduce the spread of infections within herds or flocks. This is particularly important in intensive farming systems where animals are kept in close quarters. By implementing vaccination protocols, farmers can create a healthier living environment, thus contributing to improved animal welfare.

Benefits of Vaccination

1. Disease Prevention: Vaccines effectively prevent the onset of diseases that can decimate livestock populations, reducing the likelihood of outbreaks.

2. Economic Viability: Healthy animals result in better productivity, including improved growth rates, higher milk production, and better reproduction, which translates into higher profits for farmers.

3. Animal Welfare: Vaccination reduces the incidence of painful and debilitating diseases, promoting better living conditions and welfare for livestock.

4. Human Health Protection: Vaccination in livestock can reduce the risk of zoonotic diseases—those that can be transmitted to humans—thereby safeguarding public health.

5. Biosecurity: Vaccination programs are essential components of biosecurity strategies on farms, helping to contain and control infectious disease outbreaks.

Important Diseases and Their Vaccines

1. Bovine Brucellosis

Disease Overview: Brucellosis is a bacterial infection caused by the genus Brucella, primarily affecting cattle. It leads to reproductive failures, including abortions and infertility, and can also affect humans, causing undulant fever.

Vaccine: The Brucella abortus vaccine (RB51) is commonly used to immunize heifers to prevent the disease. The vaccine has been effective in reducing infection rates in vaccinated cattle.

2. Foot-and-Mouth Disease (FMD)

Disease Overview: FMD is a highly contagious viral disease affecting cloven-hoofed animals, leading to significant economic losses in the livestock sector due to reduced productivity and trade restrictions.

Vaccine: Various inactivated virus vaccines are available for FMD. These vaccines are essential in endemic regions to prevent outbreaks and are regularly updated to match circulating virus strains.

3. Porcine Reproductive and Respiratory Syndrome (PRRS)

Disease Overview: PRRS is a viral disease affecting pigs, characterized by reproductive failure in breeding stock and respiratory issues in growing pigs. The disease can lead to significant economic losses in the swine industry.

Vaccine: Modified live vaccines and inactivated vaccines are available to help manage PRRS outbreaks. Vaccination is a primary strategy for controlling this complex disease.

4. Newcastle Disease

Disease Overview: This viral disease affects poultry and can cause high mortality rates. It can also lead to economic losses through decreased egg production and weight gain.

Vaccine: Live attenuated vaccines and inactivated vaccines are used to prevent Newcastle disease in chickens. The use of these vaccines is crucial for maintaining flock health and productivity.

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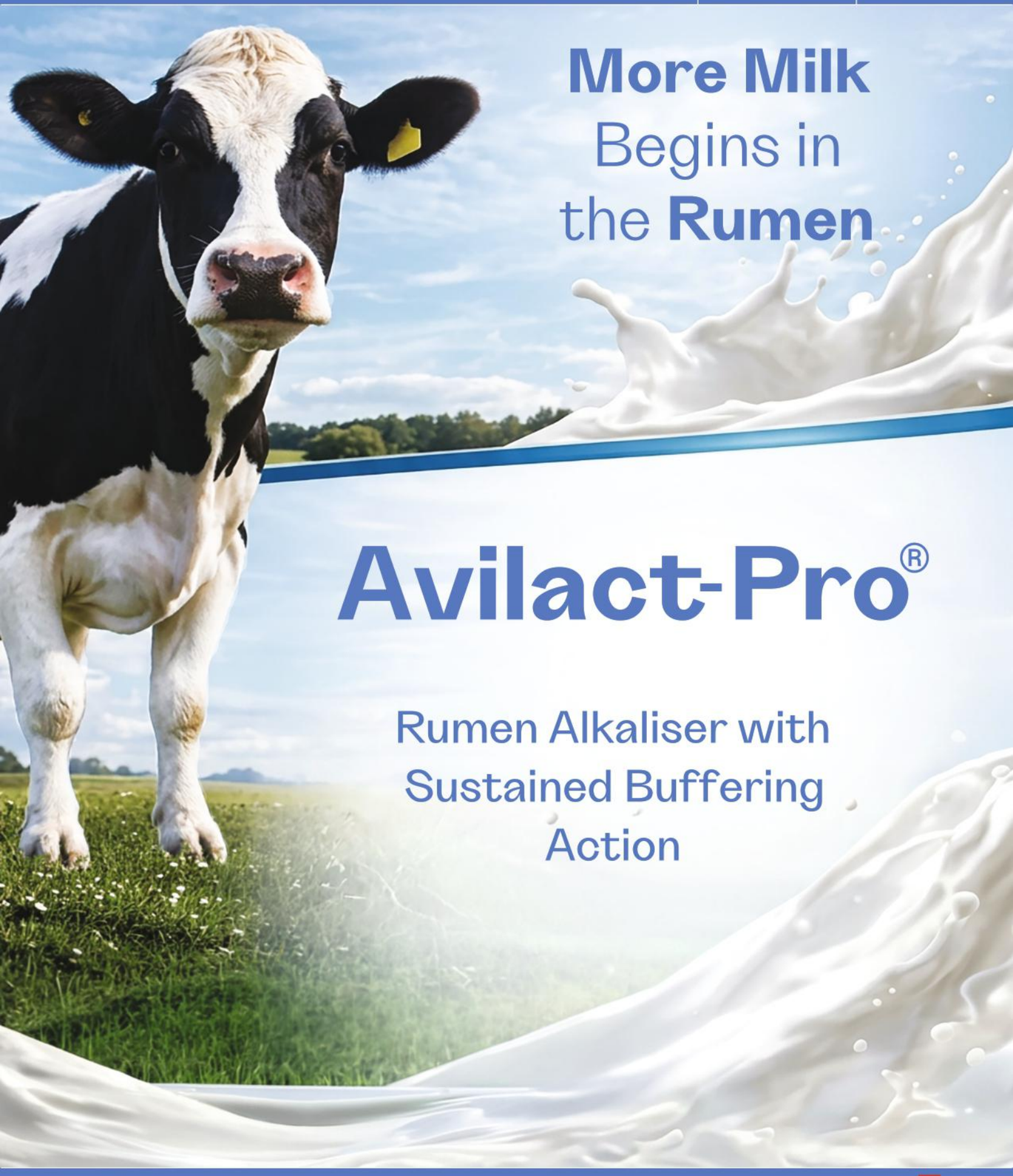

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5. Avian Influenza

Disease Overview: Avian influenza, also known as bird flu, is a viral infection that can cause severe illness in poultry and poses a risk to human health, particularly the H5N1 strain.

Vaccine: Vaccination strategies involve the use of inactivated vaccines to control the spread of avian influenza in poultry populations.

Implementation of Vaccination Programs

To achieve effective vaccination and maximize the benefits of immunization in livestock, several key strategies can be employed:

1. **Vaccination Schedules:** Establishing appropriate vaccination schedules based on animal age, risk factors, and disease prevalence is crucial for effective immunity.
2. **Proper Handling and Administration:** Ensuring that vaccines are stored correctly and administered according to guidelines is vital for maintaining their efficacy.
3. **Farm Management Practices:** Integrating vaccination with other animal husbandry practices, such as biosecurity measures and proper nutrition, enhances overall herd health.
4. **Education and Training:** Educating livestock producers about the importance of vaccination and best practices can lead to better adoption rates and improved animal health outcomes.
5. **Monitoring and Evaluation:** Regularly monitoring the health status of vaccinated herds and evaluating vaccine effectiveness is essential for ongoing health management.

Economic Benefits of Vaccination

The economic implications of vaccination in livestock health management are profound. Healthy animals tend to be more productive, yielding higher rates of milk production, weight gain, and meat quality. Conversely, disease outbreaks can lead to significant economic losses, including increased veterinary costs, decreased productivity, and potential market restrictions due to animal health concerns.

Preventing diseases through vaccination can lead to substantial savings by minimizing veterinary treatment costs and reducing mortality rates. For example, the vaccination of poultry against avian influenza can prevent devastating outbreaks that can decimate flocks and lead to significant economic fallout for farmers. Early investment in vaccination can ensure the longevity and profitability of livestock operations.

Moreover, many consumers are increasingly concerned about food safety and animal welfare, driving a demand for ethically produced animal protein. Farms that maintain healthy livestock through vaccination can market their products more effectively, potentially commanding higher prices and gaining consumer trust.

Challenges and Best Practices in Vaccination

While the benefits of vaccination in livestock health management are clear, there are challenges to implementing effective vaccination programs.

1. **Vaccine Hesitancy and Education:**

Some farmers may be hesitant to adopt vaccination practices due to misinformation or lack of understanding. Educational initiatives are essential to ensure that farmers recognize the importance of vaccination and follow recommended protocols.

2. **Storage and Handling:**

Vaccines must be stored and handled correctly to maintain their efficacy. Improper storage conditions, such as exposure to extreme temperatures or sunlight, can render vaccines ineffective, leading to wasted resources and missed opportunities for disease prevention.

3. **Cost of Vaccination:**

While vaccinations save money in the long run, the initial cost can be a barrier for some farmers, particularly smallholders. Governments and agricultural organizations can play a role in subsidizing vaccination programs or providing assistance to ensure broader access.

4. **Monitoring and Record Keeping:**

Effective vaccination programs require systematic monitoring to assess coverage rates and identify any gaps in immunization. Farmers should maintain comprehensive records of vaccinations administered, including dates, types of vaccines, and animal responses.

5. **Developing New Vaccines:**

As pathogens evolve, there is a constant need for the development of new or improved vaccines. Research institutions, vaccine manufacturers, and governments must collaborate to innovate effective vaccination strategies against emerging diseases.

Conclusion

Vaccination is a cornerstone of livestock health management, offering substantial benefits in preventing disease, promoting animal welfare, and ensuring economic sustainability within the agricultural sector. By implementing effective vaccination programs for critical diseases such as bovine brucellosis, foot-and-mouth disease, PRRS, Newcastle disease, and avian influenza, livestock producers can protect their animals, enhance productivity, and contribute to global food security. As the livestock industry continues to face challenges from emerging diseases and changing economic landscapes, embracing vaccination as a fundamental practice will be vital for sustainable livestock production.

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ਯੁਵਰਾਜ ਸਿੰਘ

ਡੇਅਰੀ ਉਦਯੋਗ ਖੇਤੀਬਾੜੀ ਦਾ ਇੱਕ ਮਜ਼ਬੂਤ ਥੰਮ ਹੈ, ਜੋ ਮਨੁੱਖੀ ਪੋਸ਼ਣ, ਰੋਜ਼ਗਾਰ ਅਤੇ ਦੇਸ਼ਾਂ ਦੀ ਆਰਥਿਕਤਾ ਵਿੱਚ ਮਹੱਤਵਪੂਰਨ ਯੋਗਦਾਨ ਪਾਉਂਦਾ ਹੈ। ਭਾਰਤ ਇਸ ਵੇਲੇ ਦੁਨੀਆ ਦਾ ਸਭ ਤੋਂ ਵੱਡਾ ਦੁੱਧ ਉਤਪਾਦਕ ਦੇਸ਼ ਹੈ। ਪਿਛਲੇ ਕੁਝ ਸਾਲਾਂ ਤੋਂ ਇਹ ਖੇਤਰ ਤੇਜ਼ੀ ਨਾਲ ਬਦਲ ਰਿਹਾ ਹੈ ਅਤੇ ਵਧੇਰੇ ਵਪਾਰਿਕ ਅਤੇ ਆਧੁਨਿਕ ਹੋ ਰਿਹਾ ਹੈ। ਇਸ ਵਿੱਚ ਉੱਚ ਉਤਪਾਦਨ ਵਾਲੀਆਂ ਨਸਲਾਂ ਦੀ ਵਰਤੋਂ ਵੱਧ ਰਹੀ ਹੈ, ਜਿਨ੍ਹਾਂ ਦਾ ਮੁੱਖ ਉਦੇਸ਼ ਦੁੱਧ ਦੀ ਉਤਪਾਦਕਤਾ ਨੂੰ ਵਧਾਉਣਾ ਹੈ। ਇਸ ਤਰ੍ਹਾਂ ਦੀ ਜੈਨੇਟਿਕ ਤਰੱਕੀ ਨਾਲ ਦੁੱਧ ਉਤਪਾਦਨ ਵਿੱਚ ਕਾਫ਼ੀ ਵਾਧਾ ਹੋਇਆ ਹੈ—ਅੱਜ ਦੀਆਂ ਹੋਲਸਟਿਨ ਗਾਂਵਾਂ ਪੁਰਾਣੀਆਂ ਪੀੜ੍ਹੀਆਂ ਨਾਲੋਂ ਕਈ ਗੁਣਾ ਵੱਧ ਦੁੱਧ ਦੇ ਰਹੀਆਂ ਹਨ। ਪਰ ਇਸ ਤਰੱਕੀ ਨਾਲ ਇੱਕ ਨਵੀਂ ਸਮੱਸਿਆ ਵੀ ਸਾਹਮਣੇ ਆਈ ਹੈ। ਉੱਚ ਉਤਪਾਦਨ ਵਾਲੇ ਪਸ਼ੂ ਦੀ ਗਰਮੀ ਸਹਿਣ ਦੀ ਸਮਰੱਥਾ ਘੱਟ ਹੁੰਦੀ ਹੈ। ਇਸ ਕਾਰਨ ਵਧ ਰਹੇ ਗਲੋਬਲ ਤਾਪਮਾਨ ਦੇ ਮਾਹੌਲ ਵਿੱਚ ਗਰਮੀ ਦਾ ਦਬਾਅ/ਹੀਟ ਸਟਰੈੱਸ ਡੇਅਰੀ ਉਦਯੋਗ ਲਈ ਇੱਕ ਵੱਡੀ ਚੁਣੌਤੀ ਬਣ ਕੇ ਸਾਹਮਣੇ ਆਇਆ ਹੈ। ਇਹ ਨਾ ਸਿਰਫ ਪਸ਼ੂਆਂ ਦੀ ਸਿਹਤ ਅਤੇ ਸੁੱਖ-ਸਹੂਲਤ 'ਤੇ ਅਸਰ ਪਾਉਂਦਾ ਹੈ, ਸਗੋਂ ਉਨ੍ਹਾਂ ਦੀ ਉਤਪਾਦਕਤਾ ਅਤੇ ਡੇਅਰੀ ਖੇਤੀ ਦੀ ਆਰਥਿਕਤਾ ਨੂੰ ਵੀ ਖਤਰੇ ਵਿੱਚ ਪਾ ਦਿੰਦਾ ਹੈ ।

ਹੀਟ ਸਟਰੈੱਸ ਕੀ ਹੈ?

ਪਸ਼ੂ ਦੇ ਸਰੀਰ ਵਿੱਚ ਗਰਮੀ ਦੇ 2 ਮੁੱਖ ਸਰੋਤ ਹਨ —ਇੱਕ ਅੰਦਰੂਨੀ ਕਿਰਿਆਵਾਂ (ਖੁਰਾਕ ਪਚਣ ਅਤੇ ਦੁੱਧ ਉਤਪਾਦਨ) ਅਤੇ ਦੂਜਾ ਬਾਹਰੀ ਵਾਤਾਵਰਣ (ਉੱਚ ਤਾਪਮਾਨ, ਨਮੀ ਅਤੇ ਸੂਰਜੀ ਕਿਰਨਾਂ)। ਗਰਮੀ ਦਾ ਦਬਾਅ /ਹੀਟ ਸਟਰੈੱਸ ਉਹ ਸਰੀਰਕ ਸਥਿਤੀ ਹੈ ਜਿਸ ਵਿੱਚ ਕੁੱਲ ਗਰਮੀ ਦਾ ਬੋਝ (ਅੰਦਰੂਨੀ + ਵਾਤਾਵਰਣਕ) ਪਸ਼ੂ ਦੀ ਗਰਮੀ ਬਾਹਰ ਕੱਢਣ ਦੀ ਸਮਰੱਥਾ ਤੋਂ ਵੱਧ ਜਾਂਦਾ ਹੈ, ਜਿਸ ਨਾਲ ਸਰੀਰਕ ਤਾਪਮਾਨ ਵੱਧਦਾ ਹੈ ਅਤੇ ਪਸ਼ੂ ਗਰਮੀ ਦੇ ਦਬਾਅ ਹੇਠ ਆ ਜਾਂਦਾ ਹੈ।

ਥਰਮੋਨਿਊਟ੍ਰਲ ਜ਼ੋਨ ਤੋਂ ਬਾਹਰ ਹੀਟ ਸਟਰੈੱਸ: ਟੈਮਪਰੇਚਰ-ਹਿਊਮਿਡਿਟੀ ਇੰਡੈਕਸ ਦੀ ਭੂਮਿਕਾ

ਡੇਅਰੀ ਗਾਂਵਾਂ ਨਿੱਘੇ ਖੂਨ ਵਾਲੀਆਂ/ ਹੋਮਿਓਥਰਮਿਕ ਪਸ਼ੂ ਹੁੰਦੀਆਂ ਹਨ, ਜਿਸਦਾ ਮਤਲਬ ਹੈ ਕਿ ਉਹ ਆਪਣੇ ਅੰਦਰੂਨੀ ਸਰੀਰਕ ਤਾਪਮਾਨ ਨੂੰ ਵਾਤਾਵਰਣਕ ਤਾਪਮਾਨ ਵੱਧ-ਘੱਟ ਹੋਣ ਦੇ ਬਾਵਜੂਦ ਵੀ ਸਥਿਰ ਰੱਖ ਸਕਦੀਆਂ ਹਨ। ਪਰ ਇਹ ਤਾਪਮਾਨ ਸਥਿਰ ਰੱਖਣ ਦੀ ਸਮਰੱਥਾ ਸਿਰਫ਼ ਇੱਕ ਨਿਰਧਾਰਤ ਵਾਤਾਵਰਣਕ ਤਾਪਮਾਨ ਦੀ ਸੀਮਾ ਦੇ ਅੰਦਰ ਹੀ ਪ੍ਰਭਾਵਸ਼ਾਲੀ ਰਹਿੰਦੀ ਹੈ, ਜਿਸਨੂੰ ਥਰਮੋਨਿਊਟ੍ਰਲ ਜ਼ੋਨ ਕਿਹਾ ਜਾਂਦਾ ਹੈ।ਇਹ ਨਿਰਧਾਰਤ ਵਾਤਾਵਰਣਕ ਤਾਪਮਾਨ ਵਿਦੇਸ਼ੀ ਗਾਂਵਾ ਲਈ 25 ਡਿਗਰੀ ਸੈਂਟੀਗ੍ਰੇਡ ਮੰਨਿਆ ਜਾਂਦਾ ਹੈ। ਇਸ ਜ਼ੋਨ ਦੇ ਅੰਦਰ ਪਸ਼ੂ ਆਰਾਮ ਵਿੱਚ ਰਹਿੰਦੇ ਹਨ ਅਤੇ ਉਨ੍ਹਾਂ ਦਾ ਸਰੀਰਕ ਤਾਪਮਾਨ ਲਗਭਗ 38 ਤੋਂ 39.0 ਡਿਗਰੀ ਸੈਂਟੀਗ੍ਰੇਡ ਦੇ ਵਿਚਕਾਰ ਸਥਿਰ ਰਹਿੰਦਾ ਹੈ।ਪਰ ਜਿਵੇਂ ਹੀ ਵਾਤਾਵਰਣਕ ਤਾਪਮਾਨ ਇਸ ਸੀਮਾ ਤੋਂ ਉੱਪਰ ਚਲਾ ਜਾਂਦਾ ਹੈ, ਪਸ਼ੂਆਂ ਦੀ ਸਰੀਰਕ ਤਾਪਮਾਨ ਨੂੰ ਸਥਿਰ ਰੱਖਣ ਦੀ ਸਮਰੱਥਾ ਕਮਜ਼ੋਰ ਪੈਣ ਲੱਗਦੀ ਹੈ।

ਖੇਤਰੀ ਪੱਧਰ 'ਤੇ ਹੀਟ ਸਟਰੈੱਸ ਨੂੰ ਵਾਤਾਵਰਣਕ ਕਾਰਕਾਂ ਦੇ ਆਧਾਰ 'ਤੇ ਮਾਪਿਆ ਜਾਂਦਾ ਹੈ। ਇਸ ਲਈ ਟੈਮਪਰੇਚਰ-ਹਿਊਮਿਡਿਟੀ ਇੰਡੈਕਸ (ਟੀ.ਐਚ.ਆਈ) ਵਰਤਿਆ ਜਾਂਦਾ ਹੈ, ਜੋ ਵਾਤਾਵਰਣਕ ਤਾਪਮਾਨ ਅਤੇ ਨਮੀ ਨੂੰ ਇਕੱਠਾ ਕਰਕੇ ਇੱਕ ਮੁੱਲ ਦਿੰਦਾ ਹੈ।ਅਸਲ ਵਿੱਚ, ਇੱਕੋ ਤਾਪਮਾਨ ਦੋ ਵੱਖ-ਵੱਖ ਹਾਲਾਤਾਂ ਵਿੱਚ ਵੱਖਰਾ ਅਸਰ ਕਰ ਸਕਦਾ ਹੈ। ਉਦਾਹਰਨ ਲਈ, 32 ਡਿਗਰੀ ਸੈਂਟੀਗ੍ਰੇਡ ਤਾਪਮਾਨ ਜੇ ਨਮੀ ਘੱਟ ਹੋਵੇ ਤਾਂ ਪਸ਼ੂ ਠੀਕ ਰਹਿ ਸਕਦਾ ਹੈ, ਪਰ ਜੇ ਨਮੀ ਵੱਧ ਹੋਵੇ ਤਾਂ ਉਹੀ ਤਾਪਮਾਨ ਪਸ਼ੂ ਲਈ ਬਹੁਤ ਜ਼ਿਆਦਾ ਗਰਮ ਬਣ ਜਾਂਦਾ ਹੈ।ਟੀ.ਐਚ.ਆਈ

ਇਸੇ ਗੱਲ ਨੂੰ ਦਰਸਾਉਂਦਾ ਹੈ।

Relative humidity (%)

Temperature (°F)	20	30	40	50	60	70	80	90
50	54	53	53	52	52	51	51	50
55	56	56	56	56	56	55	55	55
60	59	59	59	59	60	60	60	60
65	62	62	63	63	63	64	64	65
70	65	65	66	67	67	68	69	69
75	68	68	69	70	71	72	73	74
80	70	72	73	74	75	76	78	79
85	73	75	76	78	79	81	82	84
90	76	78	79	81	83	85	86	88
95	79	81	83	85	87	89	91	93
100	82	84	86	88	91	93	95	98
105	84	87	89	92	95	97	100	102
110	87	90	93	96	99	101	104	107

<68	Not Stressed
68-71	Stress Threshold
72-79	Mild Stress
80-89	Moderate Stress
>89	Severe Stress

ਉੱਤਰੀ ਭਾਰਤ ਦੇ ਕਈ ਖੇਤਰਾਂ ਵਿੱਚ ਗਰਮੀ ਦੇ ਮੌਸਮ ਦੌਰਾਨ ਟੈਮਪਰੇਚਰ-ਹਿਊਮਿਡਿਟੀ ਇੰਡੈਕਸ ਅਕਸਰ 78 ਤੋਂ ਵੱਧ ਹੋ ਜਾਂਦਾ ਹੈ, ਜਿਸ ਕਾਰਨ ਪਸ਼ੂ ਲੰਬੇ ਸਮੇਂ ਲਈ ਹੀਟ ਸਟਰੈੱਸ ਦੀ ਸਥਿਤੀ ਵਿੱਚ ਰਹਿੰਦੇ ਹਨ।ਆਮ ਤੌਰ 'ਤੇ ਗਰਮੀ ਦਾ ਦਬਾਅ ਅਪ੍ਰੈਲ ਤੋਂ ਅਕਤੂਬਰ ਤੱਕ ਬਣਿਆ ਰਹਿੰਦਾ ਹੈ।

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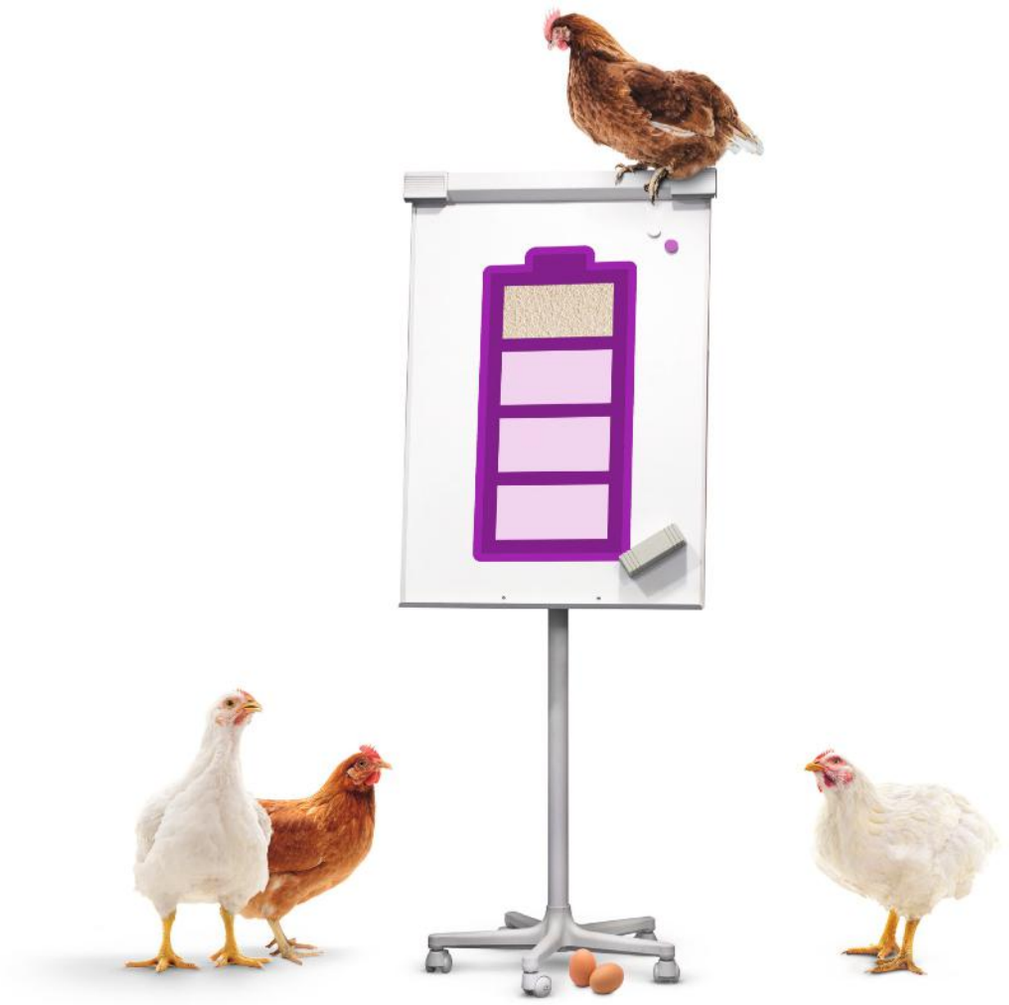

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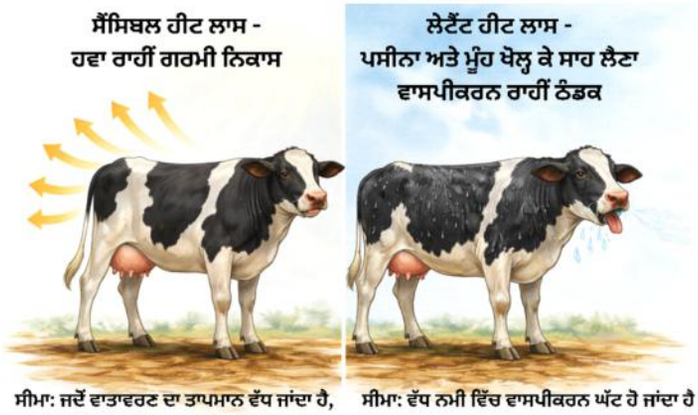
ਪਰ ਇਸਦਾ ਸਭ ਤੋਂ ਗੰਭੀਰ ਰੂਪ ਉਸ ਵੇਲੇ ਵੇਖਣ ਨੂੰ ਮਿਲਦਾ ਹੈ ਜਦੋਂ ਉੱਚ ਤਾਪਮਾਨ ਦੇ ਨਾਲ ਵੱਧ ਨਮੀ ਵੀ ਹੁੰਦੀ ਹੈ—ਖਾਸ ਕਰਕੇ ਜੁਲਾਈ, ਅਗਸਤ ਅਤੇ ਸਤੰਬਰ ਮਹੀਨਿਆਂ ਵਿੱਚ।

ਪਸ਼ੂ ਹੀਟ ਸਟਰੈੱਸ ਨਾਲ ਕੁਦਰਤੀ ਤੌਰ 'ਤੇ ਕਿਵੇਂ ਨਿਪਟਦੇ ਹਨ?

ਜਦੋਂ ਵਾਤਾਵਰਣਕ ਤਾਪਮਾਨ ਵੱਧਦਾ ਹੈ, ਤਾਂ ਪਸ਼ੂ ਆਪਣੀ ਗਰਮੀ ਨੂੰ ਬਾਹਰ ਕੱਢਣ ਲਈ ਮੁੱਖ ਤੌਰ 'ਤੇ ਦੋ ਤਰੀਕਿਆਂ—ਸੈਂਸਿਬਲ ਹੀਟ ਲਾਸ ਅਤੇ ਲੈਟੈਂਟ ਹੀਟ ਲਾਸ 'ਤੇ ਨਿਰਭਰ ਕਰਦੇ ਹਨ। ਸੈਂਸਿਬਲ ਹੀਟ ਲਾਸ ਵਿੱਚ ਗਰਮੀ ਸਰੀਰ ਤੋਂ ਸਿੱਧੀ ਤੌਰ 'ਤੇ ਵਾਤਾਵਰਣ ਵਿੱਚ ਨਿਕਲਦੀ ਹੈ, ਜੋ ਰੇਡੀਏਸ਼ਨ, ਕਨਵੇਕਸ਼ਨ ਅਤੇ ਕੰਡਕਸ਼ਨ ਰਾਹੀਂ ਹੁੰਦੀ ਹੈ, ਅਤੇ ਇਹ ਪ੍ਰਕਿਰਿਆ ਉਸ ਵੇਲੇ ਸਭ ਤੋਂ ਵੱਧ ਪ੍ਰਭਾਵਸ਼ਾਲੀ ਹੁੰਦੀ ਹੈ ਜਦੋਂ ਵਾਤਾਵਰਣ ਦਾ ਤਾਪਮਾਨ ਸਰੀਰ ਨਾਲੋਂ ਘੱਟ ਹੋਵੇ। ਪਰ ਜਦੋਂ ਤਾਪਮਾਨ 30–35 ਡਿਗਰੀ ਸੈਂਟੀਗ੍ਰੇਡ ਤੱਕ ਵੱਧ ਜਾਂਦਾ ਹੈ, ਤਾਂ ਸਰੀਰ ਅਤੇ ਵਾਤਾਵਰਣ ਦੇ ਤਾਪਮਾਨ ਵਿੱਚ ਅੰਤਰ ਘੱਟ ਹੋਣ ਕਰਕੇ ਇਹ ਪ੍ਰਕਿਰਿਆ ਕਮਜ਼ੋਰ ਪੈ ਜਾਂਦੀ ਹੈ। ਅਜਿਹੀ ਸਥਿਤੀ ਵਿੱਚ ਪਸ਼ੂ ਲੈਟੈਂਟ ਹੀਟ ਲਾਸ 'ਤੇ ਨਿਰਭਰ ਕਰਦਾ ਹੈ, ਜਿਸ ਵਿੱਚ ਪਸੀਨੇ ਅਤੇ ਮੂੰਹ ਖੋਲ 'ਕੇ ਸਾਹ ਲੈਣ ਰਾਹੀਂ ਪਾਣੀ ਦੇ ਭਾਫ਼ ਬਣਨ ਨਾਲ ਗਰਮੀ ਸਰੀਰ ਤੋਂ ਬਾਹਰ ਨਿਕਲਦੀ ਹੈ।



ਸੀਮਾ: ਜਦੋਂ ਵਾਤਾਵਰਣ ਦਾ ਤਾਪਮਾਨ ਵੱਧ ਜਾਂਦਾ ਹੈ, ਇਹ ਤਰੀਕਾ ਪ੍ਰਭਾਵਸ਼ਾਲੀ ਨਹੀਂ ਰਹਿੰਦਾ

ਸੀਮਾ: ਵੱਧ ਨਮੀ ਵਿੱਚ ਵਾਸਪੀਕਰਨ ਘੱਟ ਹੋ ਜਾਂਦਾ ਹੈ

ਹਾਲਾਂਕਿ, ਇਹ ਤਰੀਕਾ ਉਸ ਵੇਲੇ ਹੀ ਪ੍ਰਭਾਵਸ਼ਾਲੀ ਹੁੰਦਾ ਹੈ ਜਦੋਂ ਵਾਤਾਵਰਣ ਵਿੱਚ ਨਮੀ ਘੱਟ ਹੋਵੇ; ਜੇ ਨਮੀ ਵੱਧ ਹੋਵੇ, ਤਾਂ ਭਾਫ਼ ਬਣਨ ਦੀ ਪ੍ਰਕਿਰਿਆ ਪ੍ਰਭਾਵਿਤ ਹੋ ਜਾਂਦੀ ਹੈ ਅਤੇ ਗਰਮੀ ਸਰੀਰ ਵਿੱਚ ਹੀ ਇਕੱਠੀ ਹੋਣ ਲੱਗਦੀ ਹੈ। ਇਸ ਕਰਕੇ ਨਮੀ ਅਤੇ ਉੱਚ ਤਾਪਮਾਨ ਦਾ ਮਿਲਾਪ ਗਰਮੀ ਦੇ ਦਬਾਅ ਦਾ ਸਭ ਤੋਂ ਵੱਡਾ ਕਾਰਣ ਬਣਦਾ ਹੈ।

ਪਸ਼ੂ ਵਿੱਚ ਹੀਟ ਸਟਰੈੱਸ ਦੀ ਪਛਾਣ ਕਿਵੇਂ ਕਰੀਏ?

ਹੀਟ ਸਟਰੈੱਸ ਦੀ ਪਛਾਣ ਪਸ਼ੂਆਂ ਦੇ ਵਿਹਾਰ, ਸਰੀਰਕ ਹਾਲਤ ਅਤੇ ਉਤਪਾਦਨ ਵਿੱਚ ਆ ਰਹੇ ਬਦਲਾਅ ਰਾਹੀਂ ਆਸਾਨੀ ਨਾਲ ਕੀਤੀ ਜਾ ਸਕਦੀ ਹੈ:

- ਪਸ਼ੂ ਵੱਧ ਸਮਾਂ ਖੜ੍ਹੇ ਰਹਿੰਦੇ ਹਨ
- ਛਾਂ ਜਾਂ ਠੰਢੀ ਥਾਂ ਦੀ ਖੋਜ ਕਰਦੇ ਹਨ
- ਤੇਜ਼ ਸਾਹ ਲੈਣਾ ਅਤੇ ਮੂੰਹ ਖੋਲ੍ਹ ਕੇ ਸਾਹ ਲੈਣਾ
- ਪਾਣੀ ਦੀ ਖਪਤ ਵਿੱਚ ਵਾਧਾ
- ਖੁਰਾਕ ਦੀ ਖਪਤ ਵਿੱਚ ਗਿਰਾਵਟ (ਡ੍ਰਾਈ ਮੈਟਰ ਇੰਟੇਕ ਘਟਣਾ)
- ਸਾਹ ਦੀ ਦਰ 60 ਸਾਹ/ਮਿੰਟ ਤੋਂ ਵੱਧ ਹੋਣਾ
- ਸਰੀਰ ਦਾ ਤਾਪਮਾਨ ਵੱਧ ਹੋਣਾ
- ਵੱਧ ਲਾਰ ਆਉਣਾ
- ਦਿਲ ਦੀ ਧੜਕਣ ਵਿੱਚ ਵਾਧਾ
- ਦੁੱਧ ਦੀ ਮਾਤਰਾ ਵਿੱਚ ਗਿਰਾਵਟ
- ਦੁੱਧ ਵਿੱਚ ਫੈਟ ਅਤੇ ਪ੍ਰੋਟੀਨ ਵਿੱਚ ਗਿਰਾਵਟ

ਹੀਟ ਸਟਰੈੱਸ: ਸਿਹਤ, ਉਤਪਾਦਨ ਅਤੇ ਪ੍ਰਜਨਨ 'ਤੇ ਵੱਡਾ ਅਸਰ

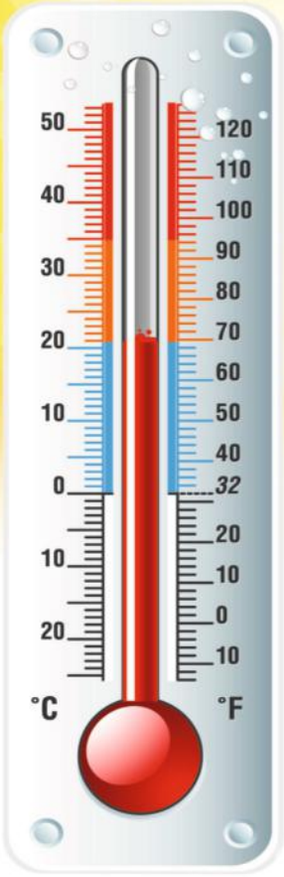
ਹੀਟ ਸਟਰੈੱਸ ਡੇਅਰੀ ਪਸ਼ੂਆਂ ਦੀ ਉਤਪਾਦਕਤਾ, ਸਿਹਤ ਅਤੇ ਪ੍ਰਜਨਨ ਸਮਰੱਥਾ 'ਤੇ ਗਹਿਰਾ ਨਕਾਰਾਤਮਕ ਅਸਰ ਪਾਂਉਦਾ ਹੈ। ਇਹ ਪ੍ਰਭਾਵ ਤੁਰੰਤ ਵੀ ਦਿਖਦੇ ਹਨ ਅਤੇ ਪਸ਼ੂ ਦੀ ਭਵਿੱਖੀ ਕਾਰਗੁਜ਼ਾਰੀ ਅਤੇ ਅਗਲੀ ਪੀੜ੍ਹੀ ਤੱਕ ਵੀ ਪਹੁੰਚਦੇ ਹਨ। ਗਰਭ ਅਵਸਥਾ ਦੌਰਾਨ ਹੀਟ ਸਟਰੈੱਸ ਦਾ ਸ਼ਿਕਾਰ ਹੋਈਆਂ ਗਾਂਵਾਂ ਤੋਂ ਜੰਮੇ ਵੱਛੇ ਅਕਸਰ ਘੱਟ ਭਾਰ ਵਾਲੇ ਹੁੰਦੇ ਹਨ। ਅਜਿਹੇ ਵੱਛਿਆਂ ਦਾ ਵਿਕਾਸ ਹੌਲੀ ਹੁੰਦਾ ਹੈ ਅਤੇ ਉਹਨਾਂ ਦੀ ਰੋਗਾਂ ਦੇ ਵਿਰੁੱਧ ਲੜਨ ਦੀ ਸਮਰੱਥਾ ਵੀ ਘੱਟ ਹੁੰਦੀ ਹੈ। ਪਹਿਲੀ ਹੀਟ ਅਤੇ ਸੂਏ ਦੀ ਉਮਰ ਵਧ ਜਾਂਦੀ ਹੈ। ਇਸਦੇ ਨਾਲ ਹੀ ਵਹਿੜਾਂ ਠਹਿਰਦੀਆਂ ਵੀ ਘੱਟ ਹਨ ਅਤੇ ਦੁੱਧ ਉਤਪਾਦਨ ਦੀ ਸਮਰੱਥਾ ਵੀ ਘੱਟ ਹੋ ਸਕਦੀ ਹੈ। ਲਵੇਰੇ ਦੀ ਦੁੱਧ ਉਤਪਾਦਨ ਵਿੱਚ ਕਾਫੀ ਗਿਰਾਵਟ ਆ ਜਾਂਦਾ ਹੈ। ਇਸਦੇ ਨਾਲ ਹੀ ਦੁੱਧ ਵਿੱਚ ਫੈਟ ਅਤੇ ਪ੍ਰੋਟੀਨ ਦੀ ਮਾਤਰਾ ਘੱਟ ਜਾਂਦੀ ਹੈ ਅਤੇ ਸੋਮੈਟਿਕ ਸੈਲ ਕਾਊਂਟ ਵੀ ਵਧ ਜਾਂਦਾ ਹੈ। ਥਨੈਲਾ ਰੋਗ, ਬੱਚੇਦਾਨੀ ਦੇ ਰੋਗ ਅਤੇ ਹੋਰ ਸੰਕਰਾਮਕ ਬਿਮਾਰੀਆਂ ਦੇ ਕੇਸ ਵਧ ਜਾਂਦੇ ਹਨ। ਰੂਮਨ ਵਿੱਚ ਤੇਜਾਬੀਪਨ ਵੀ ਬਣ ਸਕਦਾ ਹੈ। ਗਰਮੀ ਕਾਰਨ ਪਸ਼ੂ ਵੱਧ ਸਮਾਂ ਖੜ੍ਹੇ ਰਹਿੰਦੇ ਹਨ, ਜਿਸ ਨਾਲ ਖੁਰਾਂ 'ਤੇ ਦਬਾਅ ਵੱਧਦਾ ਹੈ ਅਤੇ ਲੇਮਨੈੱਸ/ਲੰਗੜੇਪਨ ਦਾ ਖਤਰਾ ਵਧ ਜਾਂਦਾ ਹੈ। ਇਸਦੇ ਨਾਲ ਹੀ ਫਲ ਸਿੱਟਣ ਦਾ ਖਤਰਾ ਵੀ ਵੱਧ ਜਾਂਦਾ ਹੈ।

ਹੀਟ ਸਟਰੈੱਸ 'ਤੇ ਕਾਬੂ: ਸਹੀ ਪ੍ਰਬੰਧਨ ਦੀ ਭੂਮਿਕਾ

ਵਾਤਾਵਰਣਕ ਪ੍ਰਬੰਧਨ

- ਸ਼ੈਡ ਨੂੰ ਸਹੀ ਉਚਾਈ, ਲੰਬਾਈ ਅਤੇ ਚੌੜਾਈ ਨਾਲ ਬਣਾਇਆ ਜਾਵੇ

Temperature is rising...



...LEVUCELL®SC maximizes milk production during heat stress

Levucell® SC
Rumen Specific Yeast

€ EU approved for use in bovine destined for milk and meat production, dairy goats, dairy ewes and lambs (E1711/4a1711/4b1711).
Not all products are available in all markets nor associated claims allowed in all regions.

Heat stress adversely impacts dairy cow performance

Did you know that heat stress can cost over 400€/cow/year[1]? The consequences of heat stress include significant losses in milk production, (which can be up to 35%), coupled with rumen dysfunction and reduced reproduction rates.

The level and impact of heat stress on cows is influenced by a combination of ambient temperature and relative humidity. New research has shown that temperatures in excess of 20°C and 50% relative humidity[2] will lead to cow discomfort and reduced milk production.

1 Saint Pierre et al., 2003 - 2 Burgos & Collier, 2011.

Even under conditions of heat stress, LEVUCELL®SC will maximize diet potential and your Income Over Feed Costs

- Milk yield: +1.2 to 2.5 litres/cow/day.
- Increased Feed efficiency : up to 7%*, +120g of milk/kg/Dry Matter Intake.
- Optimizes rumen pH (less risk of acidosis).

LEVUCELL®SC is a rumen specific live yeast *Saccharomyces cerevisiae* I-1077, selected through collaboration with INRA (France).

**Marfola, et al, ADSA 2010.*

For more information, please contact your feed distributor or Lallemand.

LALLEMAND ANIMAL NUTRITION
Tel: +33 (0) 562 745 555 Email: animal@lallemand.com

Available at Progressive Dairy Solutions Ltd. (PDS)
Contact Person at PDS: Munish Sharma : +91-87288-18900

www.lallemandanimalnutrition.com

LALLEMAND

- ਘਰੇਲੂ ਛੱਤ ਵਾਲੇ ਪੱਖੇ ਦੀ ਬਜਾਇ ਡੇਅਰੀ ਫਾਰਮ ਲਈ ਖਾਸ ਪੱਖੇ ਵਰਤੋ
- ਨਮੀ ਦੇ ਅਨੁਸਾਰ ਘੱਟ ਨਮੀ ਵਿੱਚ ਫੋਗਰ ਅਤੇ ਵੱਧ ਨਮੀ ਵਿੱਚ ਸਪ੍ਰਿੰਕਲਰ ਨੂੰ ਪੱਖਿਆਂ ਨਾਲ ਮਿਲਾ ਕੇ ਵਰਤੋ ਤਾਂ ਜੋ ਪ੍ਰਭਾਵਸ਼ਾਲੀ ਠੰਡਕ ਮਿਲ ਸਕੇ
- ਉਪਕਰਣਾਂ ਨੂੰ ਢੁੱਕਵੀਂ ਉਚਾਈ ਅਤੇ ਸਹੀ ਥਾਂ 'ਤੇ ਲਗਾਓ
- ਪਸ਼ੂਆਂ ਨੂੰ ਛਾਂ ਅਤੇ ਵਧੀਆ ਹਵਾਦਾਰੀ ਦਿਓ
- ਵੱਧ ਭੀੜ ਤੋਂ ਬਚੋ ਅਤੇ ਪਸ਼ੂਆਂ ਨੂੰ ਖੁੱਲ੍ਹੀ ਜਗ੍ਹਾ ਦਿਓ
- ਜੇ ਸੰਭਵ ਹੋਵੇ, ਪਸ਼ੂਆਂ ਲਈ ਪਾਣੀ ਦਾ ਤਲਾਬ ਜਾਂ ਠੰਡਾ ਕਰਨ ਵਾਲੀ ਜਗ੍ਹਾ ਬਣਾਓ

ਖਾਦ-ਖੁਰਾਕ

- ਰਾਸ਼ਨ ਵਿੱਚ ਐਨ.ਡੀ.ਐਫ. ਦਾ ਪੱਧਰ ਉਚਿਤ ਰੱਖੋ, ਤਾਂ ਜੋ ਰੂਮਨ ਦੀ ਕਾਰਗੁਜ਼ਾਰੀ ਠੀਕ ਰਹੇ
- ਬਾਈਪਾਸ ਫੈਟ ਅਤੇ ਬਾਈਪਾਸ ਪ੍ਰੋਟੀਨ ਦੀ ਵਰਤੋਂ ਕਰੋ
- ਰਾਸ਼ਨ ਵਿੱਚ ਨਮਕ ਅਤੇ ਬਫਰ ਸ਼ਾਮਲ ਕਰੋ
- ਯੀਸਟ ਕਲਚਰ / ਖਮੀਰ ਨਾਲ ਰੂਮਨ ਸੁਧਾਰੋ
- ਕੋਲੀਨ ਅਤੇ ਬਿਟੇਨ ਵਰਗੇ ਫੀਡ ਐਡਿਟਿਵ ਵਰਤੋ
- ਖੁਰਾਕ ਠੰਢੇ ਸਮੇਂ (ਸਵੇਰੇ ਜਾਂ ਰਾਤ) ਵਿੱਚ ਦਿਓ
- ਖੁਰਾਕ ਨੂੰ ਵਾਰ-ਵਾਰ ਅੱਗੇ ਵਧਾਓ
- ਸਾਫ ਅਤੇ ਠੰਢਾ ਪਾਣੀ 24 ਘੰਟੇ ਉਪਲਬਧ ਰੱਖੋ

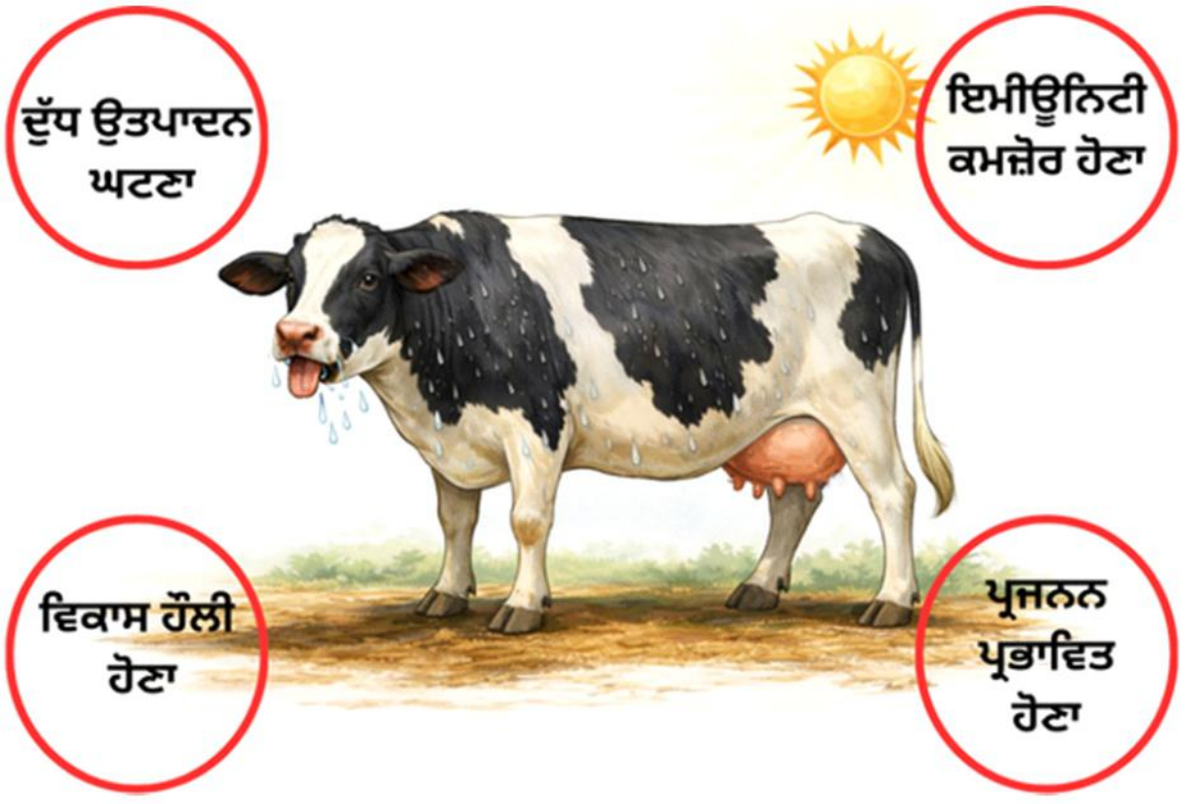
ਪਸ਼ੂ ਪ੍ਰਬੰਧਨ

- ਤਣਾਅ ਵਾਲੇ ਕੰਮ ਜਿਵੇਂ ਟੀਕਾਕਰਨ, ਖੁਰ ਕਟਾਈ ਸਵੇਰੇ ਜਲਦੀ ਕਰੋ
- ਗਰਮੀ ਦੇ ਦਿਨਾਂ ਵਿੱਚ ਪਾਣੀ ਦੀਆਂ ਟੈਂਕੀਆਂ ਨੂੰ ਛਾਂ ਵਿੱਚ ਰੱਖੋ
- ਦੁਪਹਿਰ ਦੇ ਸਮੇਂ ਪਸ਼ੂਆਂ ਨੂੰ ਬਿਨਾਂ ਲੋੜ ਦੇ ਨਾ ਹਿਲਾਓ-ਡੁਲਾਓ
- ਲੰਬੇ ਸਮੇਂ ਲਈ ਉਹਨਾਂ ਨਸਲਾਂ ਦੀ ਚੋਣ ਕਰੋ ਜੋ ਸਥਾਨਕ ਮੌਸਮ ਵਿੱਚ ਵਧੀਆ ਪ੍ਰਦਰਸ਼ਨ ਕਰਦੀਆਂ ਹਨ

ਡੇਅਰੀ ਪਸ਼ੂਆਂ ਵਿੱਚ ਹੀਟ ਸਟਰੈੱਸ ਹੁਣ ਇੱਕ ਵੱਡੀ ਚੁਣੌਤੀ ਬਣ ਚੁੱਕੀ ਹੈ, ਜੋ ਸਿਹਤ, ਦੁੱਧ ਉਤਪਾਦਨ ਅਤੇ ਪ੍ਰਜਨਨ 'ਤੇ ਨਕਾਰਾਤਮਕ ਅਸਰ ਪਾਂਉਦੀ ਹੈ ਅਤੇ ਕਿਸਾਨਾਂ ਦੇ ਮੁਨਾਫੇ ਨੂੰ ਘਟਾਉਂਦੀ ਹੈ।ਪਰ ਸਹੀ ਸਮੇਂ 'ਤੇ ਕੀਤੇ ਵਾਤਾਵਰਣਕ, ਪੋਸ਼ਣਕ ਅਤੇ ਪ੍ਰਬੰਧਕੀ ਉਪਾਅ ਨਾਲ ਇਸਦੇ ਪ੍ਰਭਾਵ ਨੂੰ ਕਾਫ਼ੀ ਹੱਦ ਤੱਕ ਘਟਾਇਆ ਜਾ ਸਕਦਾ ਹੈ। ਸਹੀ ਪ੍ਰਬੰਧਨ ਹੀ ਹੀਟ ਸਟਰੈੱਸ ਤੋਂ ਬਚਾਅ ਦੀ ਕੁੰਜੀ ਹੈ।

ਯੁਵਰਾਜ ਸਿੰਘ

ਪਸ਼ੂ ਆਹਾਰ ਵਿਭਾਗ , ਗੁਰੂ ਅੰਗਦ ਦੇਵ ਵੈਟਰਨਰੀ ਅਤੇ ਐਨੀਮਲ ਸਾਇੰਸਜ਼ ਯੂਨੀਵਰਸਿਟੀ, ਲੁਧਿਆਣਾ



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Aligned Governance, Accelerated Impact: SEC India RAC Charts the Path Forward

The Soy Excellence Center (SEC) India Regional Advisory Council (RAC) convened its 5th meeting on 30 April 2026, bringing together a distinguished group of industry leaders, educators, and sector experts committed to advancing workforce development and industry capacity building across the animal agriculture and soy food value chains.

The meeting reflected the continued strength and maturity of a long-standing advisory body that has played a pivotal role in shaping SEC India's growth and strategic direction. The session opened with encouraging remarks from Kevin Roepke, who set a confident and forward-looking tone for the discussions. Joining virtually, Brent Babb reaffirmed USSEC's continued commitment to SEC India and shared an optimistic outlook for the program's future.

A key highlight of the meeting was the review of progress made against action items identified during previous RAC discussions. Of the 30 action points reviewed, 21 demonstrated significant progress over the past seven months, while 9 were identified as priority areas requiring focused attention and continued guidance from council members. This review underscored the value of an engaged governance structure that not only monitors progress but actively drives outcomes.

As SEC India continues to expand its reach and impact, alignment between regional priorities and global SEC objectives has become increasingly important. The RAC discussions demonstrated how local initiatives are now closely synchronized with broader SEC goals, ensuring that activities undertaken in India contribute meaningfully to a unified global vision for workforce development and industry advancement.

One of the defining strengths of the RAC is the breadth and depth of expertise represented within the group. Members include leaders from major trade associations, educational institutions, and industry organizations spanning poultry, aquaculture, feed milling, soy foods, and animal nutrition. The council includes representation from CLFMA of India, IVPI, PFI, Soy Food Promotion and Welfare Association (SFPWA), and the Animal Nutrition Association, alongside respected organizations such as WorldFish, Venkateshwara Hatcheries, and NSB Bangalore.

This unique blend of perspectives enables robust discussions and practical recommendations that are

grounded in industry realities while remaining focused on future opportunities. Throughout the meeting, members shared valuable insights and innovative ideas aimed at strengthening SEC India's programs, enhancing industry engagement, and expanding the platform's contribution to workforce development.

Beyond reviewing achievements, the RAC meeting served as a strategic forum for identifying new opportunities and refining priorities. The recommendations emerging from the session will further strengthen SEC India's roadmap and reinforce its position as a globally aligned platform delivering meaningful impact across the agriculture and food sectors.

The continued commitment of RAC members remains instrumental to SEC India's success. Their guidance, expertise, and collaborative spirit have helped build a strong foundation for sustainable growth and industry advancement.

As SEC India moves forward, the organization remains grateful for the support and partnership of its advisory council and looks forward to building on this momentum to create even greater impact in the years ahead.

INDO LIVESTOCK, INDO FEED, INDO DAIRY, INDO AGROTECH, INDO VET, AND INDO FISHERIES 2026 EXPO & FORUM: "Successfully Held Technical Meeting, Ready to Present Industry Innovations and Highlight Programs"

In preparation for the upcoming Indo Livestock, Indo Feed, Indo Dairy, Indo Agrotech, Indo Vet, and Indo Fisheries 2026 Expo & Forum, PT Napindo Media Ashatama (Napindo) successfully held a Technical Meeting on Tuesday (12/05/2026) with exhibitors, partners, venue representatives, and related stakeholders. The meeting marked an important part of the preparation series leading up to the exhibition, which will take place on 16-18 June 2026 at Nusantara International Convention Exhibition (NICE), PIK 2, Tangerang, Indonesia.

As the pioneer of international livestock industry exhibitions in Indonesia, Indo Livestock continues to consistently provide a strategic platform that brings together industry players, government institutions, associations, academics, professionals, and investors. Through this event, stakeholders are able to expand business networks, exchange insights, introduce innovations, and strengthen cross-sector collaborations.

The event began with an opening remark by Napindo Project Director, Lisa Rusli, who expressed appreciation for the enthusiasm and participation of attendees at the Indo Livestock 2026 Expo & Forum Technical Meeting.

"Since its inception in 2002, Indo Livestock has remained committed to delivering excellence as part of our contribution to the development of Indonesia's livestock exhibition industry. Today's Technical Meeting marks an important step in ensuring the readiness of the entire Indo Livestock 2026 Expo & Forum. We are confident that this edition will be executed at the highest standard, while creating even greater opportunities for collaboration and innovation across the livestock, poultry and ruminant sectors, animal feed, dairy processing, agriculture, animal health, veterinary equipment, fisheries, and aquaculture industries in Indonesia."

Following the opening remarks, the event continued with a technical briefing session presented by Napindo Operation Director, Adhika Arthapaty. Through this session, Napindo reaffirmed its readiness and commitment to delivering a professional and high-quality exhibition that provides the best experience for all participants and visitors.

The Technical Meeting was also attended by representatives from the Directorate General of Livestock and Animal Health Services (Ditjen PKH) of the Ministry of Agriculture of the Republic of Indonesia.

Government Support, Industry Collaboration, and Highlight Programs

For its 19th edition, Indo Livestock is officially hosted by the Ministry of Agriculture of the Republic of Indonesia through the Directorate General of Livestock and Animal Health Services (Ditjen PKH). This cross-industry exhibition also receives support from 33 ministries, institutions, and associations across various related sectors. This year, Indo Livestock 2026 Expo & Forum is set to welcome more than 600 exhibitors from 40 countries and 20,000 visitors throughout the three-day event. Visitors will not only explore the latest innovations and technologies, but also gain direct insights from industry experts on current issues and trends that support the advancement of businesses and the national industry.

In addition to the exhibition and forum, Indo Livestock 2026 will also feature several flagship programs, including the Indo Livestock Grand Championship and Youth Farmers Day. Furthermore, the SDTI Socialization (Milk, Meat, Eggs, and Fish), presented through Bazaar, Fun Activities, and Talkshow, will serve as another major attraction for visitors.

As one of Indonesia's largest livestock exhibitions and a leading platform in Asia, Napindo hopes that Indo Livestock 2026 Expo & Forum will further strengthen collaboration among stakeholders, support the advancement of Indonesia's livestock industry, and open wider opportunities for business expansion in the global market.

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Evaluate precisely the nutritional values of raw materials to ensure livestock performance

A **feed** mainly consists of a mixture of **raw materials**. It is designed to satisfy an **animal's requirements**, depending on the animal's physiological stage or the market it is aimed at. Precise knowledge of the components making up that feed is essential for quantifying each of its **ingredients**. The ultimate goal is to achieve the **technical** and **economic** targets set by the market. In this context, how can one most appropriately estimate the **nutritional** value of these **raw materials**? What levels of **energy** and **digestibility** should be considered? How can one optimise the raw material values in one's **formulation** software?

Why is it necessary to estimate the nutritional values of the raw materials composing the feed?

Optimising each **feed** "recipe" or its "**formulation**" means that strict **nutritional and economic constraints** are respected. The feed miller offers a feed which must be sold at a reasonable price. This feed must also match the animal's requirements depending on species, age, physiological stage, and the final market it is intended for. It is essential that the **raw materials** used are accurately estimated so that under-performance (under evaluation) and economic waste (over-evaluation) are avoided. An **appropriate estimate i**s a key factor for formulating nutritionally-adequate diets. This whole optimisation process should also allow for saving money on feed costs.

How can we characterise the nutritional values of raw materials in the matrix formulation?

Each **raw material** is estimated by means of chemical and nutritional criteria whose values are called nutrients. This characterisation is based on the analytical evaluation and expertise drawn from the relevant scientific literature and research data.

The standard analyses conducted in the laboratory are meant to provide the chemical values for each **raw material** considered according to parameters such as moisture, protein, fat, fibre, minerals...

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For a more thorough understanding of the composition of these raw materials, in-depth analyses need to be carried out. Aminograms are thus meant to provide the values for each of the amino acids considered.

The level of **energy** and **digestibility** also need to be properly determined (energy, amino acids, ...). These parameters are defined through calculations and **equations** stemming from nutritional expertise. This knowledge results from the compilation and synthesis of many trials that have either been conducted in Research Center or in farms, on all species: poultry, rabbits, pigs, and ruminants. To do so, results from the **digestibility** trials must be compared to the results obtained within actual rearing conditions. This stage is meant to validate the estimated initial values. Some nutrients can also be calculated via **predictive equations**. These have been established through the compilation of institutional research, reference tables, and experiences on livestock as described above.

All this work, derived from **matrix expertise,** will lead to defining nutritional norms for each species. When it comes to a specific species or subspecies, we can currently formulate feed based on the reference points of different **energy systems (digestible energy, metabolizable energy, net)**. The **amino acid** profiles of these species can now also accurately be assessed. This overall accumulated knowledge on raw materials, also referred to as 'precision nutrition", is ultimately designed to match the physiological requirements of animals with the nutrient content of the available ingredients. The raw materials thus characterised will eventually make up the "**table**" or "**raw material matrix**". Depending on raw material origin, the manufacturing process, the supplier, and the production site, the content of this **matrix formulation** is likely to vary substantially.

With over 60 years of experience in animal nutrition, experts from the Techna Group assist feed manufacturers and professionals in the feed industry with their knowledge and selection of raw materials, as follows:

- Studies of technical-economic interest
- Criteria to be considered for laboratory analysis.
- The Level of incorporation depends on the species, production targets...

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BULLETIN

Alltech®

Agri-Food Outlook | 2026

Shares global feed production survey data and insights for South Asia

Data collected through 15 th annual global feed survey estimates world feed production increased in 2025 by 2.9%, to 1.44 billion metric tons

Alltech, a global leader in the agriculture industry, has released its 2026 Agri-Food Outlook, a report that includes the results of the company's annual global feed production survey. Based on that data, global feed production in 2025 reached an estimated total of 1.44 billion metric tons — representing an increase of 2.9% and 40.136 million mt from 2024.

Most regions and sectors experienced growth, and the numbers suggest a strong recovery phase for animal agriculture; however, the data show that growth was uneven, increasingly regionalized and driven less by herd expansion than by structural change, productivity gains and shifts in how production is measured and recorded.

Now in its 15th year, the annual survey that serves as the foundation of the Alltech Agri-Food Outlook report collected data from 142 countries and 38,837 feed mills in late 2025. By analyzing compound feed production and prices — collected by Alltech's global sales team and in partnership with feed associations and official data-collecting organizations — the survey provides a comprehensive snapshot of global feed production. These insights serve as a barometer for the overall livestock industry, highlighting key trends across species, along with regional challenges and opportunities for growth.

Top 10 countries

The top 10 feed-producing countries globally remained unchanged between 2024 and 2025. These 10 countries (listed below) collectively produced 65.2% of the world's feed in 2025 — and 47.7% of all global feed tonnage was produced in the top three countries: China, the U.S. and Brazil.

- China: 330.063 million mt; +4.8%
- U.S.: 267.383 million mt; -0.8%
- Brazil: 89.904 million mt; +2.8%
- India: 57.729 million mt; +4.5%
- Mexico: 41.883 million mt; +1.2%
- Russia: 38.347 million mt; +1.1%
- Spain: 37.507 million mt; -3.4%
- Vietnam: 26.524 million mt; +2.6%
- Türkiye: 25.480 million mt; +3.8%
- Japan: 24.006 million mt; -1.3%

Global feed volume results by species

- Broiler: 400.379 million mt; +3.7%
- Layer: 180.126 million mt; +3.2%
- Pig: 380.907 million mt; +3.0%
- Dairy: 170.294 million mt; +2.6%
- Beef: 134.181 million mt; +0.5%
- Aquaculture: 55.470 million mt; +4.7%
- Pet: 39.276 million mt; +2.4%
- Equine: 10.194 million mt; +0.2%

Notable regional results

- **Asia (559.297 million mt):** Asia remained the global center of feed production in 2025, with growth shaped by industrialization and price-conscious consumers increasing the demand for poultry and aquaculture. Continued shifts from on-farm mixing to commercial feed, especially in China, supported record output. Southeast Asia entered a rebuild-and-export cycle, with the recovery of the sow herd lifting pork output; additionally, while poultry feed tonnage also remained strong, disease outbreaks are now a consistent challenge and threat.
- **North America (288.620 million mt):** In 2025, North American feed tonnage contracted modestly (by 0.7%), primarily due to a historically tight cattle cycle and declining beef herd dynamics.

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- खनिज और विटामिन से युक्त, बेहतर उत्पादकता और रोग प्रतिरोधक क्षमता के लिए।
- बेहतर दूध उत्पादन, वसा (फैट) और एस.एन.एफ के लिए।
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- बेहतर स्वास्थ्य और बीसीएस में सुधार के लिए।
- बेहतर एवं सम्पूर्ण उत्पादक काल (लैक्टेशन पीरियड) हेतु पशुओं के लिए सर्वोत्तम आहार।
- मक्की के साइलेज के साथ खिलाने से अधिकतम लाभ।
- दूधारू पशुओं के शीघ्र गर्भधारण में सहायक।
- 1 किलो फीड प्रति 2.5 लीटर दूध उत्पादन के लिए।

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The region still saw some selective, species-driven momentum, with growth concentrated in broilers and dairy. Stabilization also emerged in pork feed, and the egg and turkey sectors remained in recovery following health-related disruptions. Operational efficiency gains, sustainability pressures, formulation optimization, and consolidation among feed mills continue to reshape the feed industry across the region.

- **Europe (274.061 million mt):** Europe's feed sector in 2025 was differentiated, yet broadly resilient, growing by 1.0%. Lower raw material prices, supported by large global harvests of soybeans, rapeseed, wheat and maize, improved margins and stimulated production in several key markets. Despite ongoing disease pressure and regulatory constraints, the region stabilized overall. Modest gains in dairy and broilers offset pressure in other segments, while evolving trade frameworks and sustainability expectations continue to reshape production strategies across the region.
- **Latin America (204.446 million mt):** In 2025, Latin America solidified its position as the world's premier "protein basket." Compound feed demand expanded 2.8% year over year, rising by 5.536 million mt, supported by strong export markets and lower grain prices. Growth was broad-based, particularly in poultry, pork and aquaculture, although localized disruptions in parts of the Andean and Caribbean sub-regions tempered overall expansion.
- **Africa and the Middle East (102.549 million mt):** This region experienced a year of divergence in 2025. While Africa expanded strongly (+11.5%) on commercialization and rising compound feed penetration, the Middle East entered a structural plateau (+1.1%), balancing disease pressures and regulatory or resource constraints. Across both sub-regions, three forces shaped performance: protein affordability, input vulnerability driven by grain prices and currency volatility, and continued disease disruptions — particularly related to foot-and-mouth disease and avian influenza.
- **Oceania (11.104 million mt):** Oceania showed broad-based gains in 2025, with an overall 3.4% increase supported by population growth, resilient livestock sectors and strong export demand. Absolute increases were at their strongest in the broiler, layer, beef and pork sectors. High feedlot numbers and elevated cattle inventories sustained record beef production, particularly in Australia (+11%), with more moderate growth in New Zealand (+1.6%). Recovery in layer feeds following an avian influenza outbreak, along with steady demand for chicken and pork, contributed to a balanced regional expansion.

Alltech Agri-Food Outlook insights for South Asia

The Indian animal feed sector maintained steady growth in 2025 across major segments. Broiler feed production increased by 2.5%, driven by strong poultry meat demand and expansion by major integrators. Layer feed recorded a 4.47% growth, supported by consistent demand for eggs as an affordable protein source. Breeder feed also grew by 4.08%, reflecting continued industry confidence and ongoing investments in the poultry sector.

Dairy feed registered strong growth of 6.83%, driven by rising focus on productivity, better infrastructure, genetic improvement, and increasing demand for quality dairy products. Aqua feed sector grew by 5.35% with improving market demand and farm efficiency. Pet feed emerged as the fastest-growing segment with 16.24% growth, supported by rising pet ownership and premium nutrition demand. Swine feed also showed healthy growth whereas equine feed demand declined following the glanders disease outbreak and cancellation of races.

Bangladesh recorded a significant feed industry growth of 21.66% in 2025, driven mainly by the poultry and dairy sectors. Nepal achieved an 18.92% growth in total feed production, with poultry emerging as the major growth engine, while Sri Lanka registered a 22.13% growth in total feed production

The compound feed production totals and prices reported in the 2026 Alltech Agri-Food Outlook were collected in the first quarter of 2026 with assistance from feed mills and industry and government entities around the world. These figures are estimates and are intended to serve as an informative resource for industry stakeholders.

To access more data and insights from the 2026 Alltech Agri-Food Outlook, including an interactive global map, visit alltech.com/agri-food-outlook.

For more information, visit Alltech.com/India

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Nutritional Management of Transition Dairy Cows

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In dairy production, few stages are as delicate and important as the transition period. This is the short but critical window beginning about three weeks before calving and continuing until about three weeks after calving. During this time, the cow is preparing for birth, milk production begins, and her body must cope with rapid hormonal, metabolic, and nutritional changes. A well-managed transition period lays the foundation for better milk yield, healthier cows, and improved fertility. A poorly managed one often leads to diseases, lower production, and financial loss.

Transition nutrition is about feeding the right nutrients at the right time so that the cow can move smoothly from pregnancy to high milk production. This becomes even more important in India, where heat stress, variable forage quality, and inconsistent mineral feeding can add to the challenge.

Why the transition period matters

As calving approaches, the cow's appetite naturally declines. At the same time, the demand for nutrients rises sharply because the animal is preparing for milk secretion. This creates a mismatch between intake and requirement, leading to negative energy balance, means the cow uses body reserves to meet her needs. If this condition becomes severe, the cow becomes prone to several other metabolic disorders like ketosis, fatty liver, milk fever, displaced abomasum, uterine infections, poor fertility, etc.

The transition period also affects immunity. Around calving, cows are more vulnerable to mastitis, metritis, and other infections because their immune system is under stress. Nutrition plays a major role in supporting immunity, maintaining calcium balance, and reducing metabolic issues.

Dry period: preparing the cow for calving

The dry period, especially the far-off dry phase, should not be treated as a time when nutrition is ignored. The goal during this phase is to maintain a healthy body condition without allowing the cow to become over-fatty. Over-conditioned cows often eat less after calving and are more likely to suffer metabolic disorders.

During this stage, the ration should be mainly forage-based and moderately energy dense. The cow should receive enough fibre to keep the rumen healthy and functioning well. Excessive energy should be avoided, because too much body fat before calving can create problems later. Mineral balance is also important, especially calcium management. Feeding too much calcium in the dry period can reduce the cow's ability to mobilize calcium effectively at calving, so controlled calcium intake is preferred.

Close-up period: the most critical feeding phase

The last three weeks before calving are the most important from a nutritional point of view. This is the time when the cow needs special attention because feed intake is falling; the diet must be made more nutrient dense while still keeping enough fibre to protect rumen health.

A gradual increase in concentrate feeding helps the rumen adapt to the diet the cow will eat after calving. This is also the time to prepare the cow for the sudden calcium demand of lactation. One useful strategy is dietary cation-anion difference, or DCAD, manipulation. In simple terms, this means adjusting the mineral balance of the ration to help the cow mobilize calcium more efficiently at calving. Anionic salts are often added to the diet for this purpose. When done properly, this can reduce the risk of milk fever and subclinical hypocalcaemia.

Monitoring urine pH is a practical way to check whether the DCAD program is working. Proper close-up feeding helps the cow transition more smoothly into lactation and reduces the risk of calcium-related problems.

The fresh cow period: supporting the first three weeks after calving

The first three weeks after calving are a time of intense demand. Milk production begins rapidly, but feed intake rises more slowly. This is why fresh cows are especially vulnerable to negative energy balance and ketosis. The feeding goal during this period is to encourage dry matter intake and provide highly digestible, energy-rich feed. Fresh cows should always have access to clean water, fresh palatable TMR, and adequate feeding space. Energy density should be increased and effective fibre must be present to prevent sub-acute ruminal acidosis.

Propylene glycol is often used as an energy precursor to support glucose production and reduce ketosis risk. Rumen-protected choline helps the liver process fat more efficiently and lowers the chance of fatty liver. Calcium boluses at calving and shortly after calving are helpful in preventing hypocalcaemia, especially in older cows that are more at risk.

Peak lactation: feeding for production and recovery

During this time, feed intake gradually increases and begins to match her higher milk output. This is the time to support peak production without causing digestive upset. The diet should be energy dense and balanced with good quality protein, effective fibre, and enough rumen support.

Bypass fat can be included to increase energy intake without overloading the rumen. High-quality bypass protein sources are also helpful because the cow needs amino acids for milk synthesis. Yeast cultures are often used to support rumen fermentation, improve fibre digestion, and stabilize rumen pH. In many herds, these feed additives improve intake and milk yield during early lactation.

The aim during peak lactation is not just to maximize milk, but to help the cow recover from the stress of calving and enter a stable productive cycle.

Feed additives in transition cows

Several feed additives can make transition management more effective.

- Rumen-protected choline supports liver function and helps reduce fat accumulation in the liver. Yeast products improve rumen environment and digestion.
- Antioxidants such as vitamin E and selenium strengthen immune function and help lower the risk of retained placenta, mastitis, and uterine infections.
- Anionic salts, when used carefully in the close-up ration, are valuable for calcium balance.

However, they must be mixed properly and fed with attention to palatability, because cows may refuse poorly prepared diets.

Monitoring the cow during transition period

Good feeding must be combined with good observation. Transition management should include regular checks of body condition score, feed intake, milk yield, blood ketone levels, calcium status, and urine pH when relevant. These simple monitoring tools help farmers detect problems early, before they become serious.

Body condition should be neither too low nor too high. Excessive loss after calving is a warning sign of poor energy balance. Blood beta-hydroxybutyrate can be used to detect subclinical ketosis. Milk fat-to-protein ratio may also provide clues about energy status. Early detection allows timely correction through feeding or treatment.

Economic concern

Metabolic diseases during early lactation are expensive because they reduce milk yield, increase treatment costs, and lower fertility. On the other hand, cows that are managed well during the transition period tend to reach higher peak milk yield, maintain better health, and return to pregnancy more successfully. For dairy farmers, even small improvements in transition feeding can lead to significant financial gains over the full lactation. This makes transition nutrition one of the most cost-effective management practices in dairy farming.

Conclusion

The transition period is the bridge between pregnancy and peak milk production. Success during this stage depends on thoughtful feeding, close monitoring, and timely management. For Indian dairy farmers, especially those raising crossbred cattle and buffaloes, careful transition management can reduce disease, improve milk yield, and enhance fertility. In simple terms, a healthy transition period means a healthier cow, more milk, and better profit.

World Milk Day

On the occasion of World Milk Day, Huvepharma's Dairy Division, in association with Krantisinh Nana Patil College of Veterinary Science, Shirwal, celebrated the true backbone of India's dairy sector, women dairy farmers. The event brought together more than 50 women dairy farmers, their families, distinguished members of faculty and guests to recognize and felicitate four inspiring women dairy entrepreneurs (Mrs. Bhosale, Ganraj Dairy, Mrs. Ghorpade, Satwik Dairy, Mrs. Patil, Sant Sawata Maharaj Dairy & Mrs. Sawant, Surajya Dairy). Their stories of resilience, determination, and progress reminded us that behind every litre of milk is a journey of hard work, care, and commitment.

Providing a platform for these remarkable women to share their experiences was both humbling and inspiring. Their success is a testament to the growing role of women in dairy farming, rural development, and sustainable agriculture. This event was elevated by the presence of Dr. Shantaram Gaikwad, Member, Council for Extension & Continuing Education, MAFSU, Nagpur & General Manager at Govind Milk and Milk Products Pvt. Ltd., Dr. V. S. Waskar, Associate Dean, Dr. Bapurao Kadam, Prof. & Head Department of Livestock Product & Dr. Deepali Sakunde, Asst. Professor Department of Livestock Product & Technology KNP College of Veterinary Science, Shirwal, Dist. Satara. On World Milk Day, we celebrate not just milk, but the people who work hard & make it possible every day.










HUVEPHARMA
WORLD
Milk Day





World Milk Day was celebrated across India by Huvepharma's field teams alongside dairy farmers, customers, and industry partners. From farm visits to farmer interactions, the day was an opportunity to recognize the dedication of those who work tirelessly every day to produce safe, nutritious milk and strengthen India's dairy sector.

We thank our farmers and customers for their trust and partnership, and salute their invaluable contribution to food security, rural livelihoods, and the nation's growth. Together, we continue to support healthier animals, better productivity, and a stronger dairy industry.

HUVEPHARMA®

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Fylax® Forte-HC liquid

Preserve your grain investment

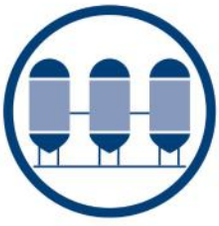
Why Fylax Forte-HC liquid:

Long-term storage under challenging conditions encourages **mould growth**

Mould growth **reduces grain quality** through nutrient consumption

Fylax Forte-HC
Effectively controls mould growth, preserves nutrient value and prolongs shelf life of grain and feed

Grain and feed quality decreases during storage



- Long-term storage and humid conditions in silos and other storage facilities favour the growth of mould
- Over the course of the day-night cycle, moisture fluctuates due to natural temperature change. As a consequence, moisture from grains evaporates and condenses on the walls and ceilings of silos and storage facilities as well as on the top of the material. This creates an optimal environment for mould growth
- Moulds reduce the nutritional value of raw materials and feed by consuming nutrient sources and reducing palatability

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भैंसों में गर्मी/मद/ताव में आने के लक्षण

डॉ. अशवनी सैनी, डॉ. जन्नत सैनी
डॉ. राम सिंह बीबयान

भैंस से हर साल एक बच्चा मिलता रहे, तभी पशुपालन एक लाभकारी व्यवसाय एवं रोजगार का माध्यम बन सकता है। भैंस का न बोलना या शांत मद (गूंगा– आमा), पशुपालकों एवं किसानों के लिए आर्थिक रूप से अत्यंत नुकसानदायक है, जिसके कारण भैंस के ब्याने का अंतराल बढ़ जाता है। पशुपालक को भैंस के मद चक्कर एवं गर्मी के लक्षण तथा उनकी पहचान की जानकारी न होने से वह पशु समय पर गाभिन या नए दूध नहीं करवा पाता हैद्य

भैंस का मद चक्कर, गर्मी में आने की उम्र, अवधि एवं वजनः

भैंसे आमतौर पर 2.5 से 3.5 वर्ष की उम्र में गर्मी के लक्षण दिखाने लगती है। योवनावस्था प्राप्त करने पर कटडीयां गर्मी में आने लगती हैं, लेकिन उन्हें गर्भित करवाने के लिए शरीर का वजन कम से कम 300 से 350 किलोग्राम होना चाहिए। अच्छी चराई करने से यह वजन कटडीयां 3 साल में पूरा कर लेती हैं। ब्याने के बाद भी पशु को प्रसव के 45 से 60 दिन के बीच गर्भित करवाना चाहिए।

अवधि एवं समय :

आमतौर पर भैंस एक निश्चित समय यानी 20 से 22 दिन के अंतर पर लगातार गर्मी या मद में आती रहती है। एक मद से दूसरे मद के समय को मद चक्कर कहते हैं। भैंसों में यह ताव या मद चक्कर आमतौर पर 21 दिन का होता है, किंतु यह कम से कम 18 दिन एवं अधिक से अधिक 27 दिन का भी हो सकता है। 3 से 4 साल तक गर्मी के लक्षण न दिखाना पशुपालक के लिए सरदर्द बन जाता है।

प्रजनन रोगों की अवस्था में ताव चक्कर का समय अधिक या कम भी हो सकता है। इसलिए पशुपालक को अपने पास प्रजनन संबंधी विवरण के लिए एक कापीध् पुस्तिका में गर्मी में आने की तिथि एवं समय लिखना चाहिए, ताकि एक ताव चक्कर से दूसरे ताव चक्कर की तारीख से सही ताव चक्कर की अवधि या समय का पता लगाया जा सके।

गर्भित कराने का उचित समय :

सामान्य रूप से गर्मी या ताव चक्कर 21 दिन का होता है। मद में आने पर भैंस लगभग 18 से 36 घंटे गर्मी में रहती है। भैंस प्रायः देर शाम या रात से अति सुबह तक लगभग 12 से 24 घंटे तक गर्मी में रहती है। अधिक गर्मी के मौसम में भैंस का ताव समय काफी कम हो सकता है। औसतन अवधि 18 घंटे तक रहती है। प्रायः भैंस को गर्मी के लक्षण दिखाने से 10 से 12 घंटे के बाद या गर्मी के मध्य में गर्भाधान करवाना चाहिए। जो भैंस शाम या रात को गर्मी में आए उसे अगले दिन सुबह गर्भित करवाना चाहिए। जो भैंस सुबह गर्मी में आए उसी दिन शाम को गर्भित करवाएं। अच्छे परिणाम के लिए कृत्रिम गर्भाधान 12 घंटे के अंतर पर करवाएं। जिन पशुओं में गर्मी एक दिन से अधिक रहती हैं उनको दूसरे दिन दुबारा गर्भाधान करवाना चाहिए। गर्भित न होने पर भैंस 19 से 23 दिन बाद दोबारा गर्मी में आ जाती है।

भैंसों में गर्मी / ताव / हीट / मद के लक्षणः

1) भैंस का बार–बार रांभनाध् बोलना।
2) पशु चंचल हो जाता है तथा दूसरे पशु को अपने ऊपर चढ़ने देता है, व कभी–कभी दूसरों पर चढ़ता है।

2.1: चंचल

2.2: अपने ऊपर चढ़ने देना

3) पशु का अस्थाई रूप से खाना–पीना एवं दूध उत्पादन कम हो जाता है।
4) बार बार पशु का पेशाब करना।

4.1: बार–बार पेशाब करना

5) योनि या भगोष्ट सहलाने पर भैंस का चुप खड़े रहना, पूँछ उठाना व बार–बार हिलाना या थोड़ी ऊपर उठाकर रखना।

5.1: योनि या भगोष्ट सहलाने पर भैंस का चुप खड़े रहना

5.2: पूँछ उठाना व बार–बार हिलाना

5.3: पूंछ ऊपर उठाकर रखना

6) योनि द्वार से पारदर्शी, चमकीला, लेसदार, गाढा तारध द्रव्य या स्राव का लटकना या भैंस की पूंछ से चिपका होनाद्य

6.1: पारदर्शी

6.2: चमकीला

6.3: लेसदार

6.4: गाढा

6.5: तारद्रव्य या स्राव का लटकना

6.6: भैंस की पूंछ से चिपकना

7) योनि, योनि मार्ग की अंदरूनी परत व योनि द्वार/भगोष्ठ का लाल, गुलाबी हो जाना या हल्का सूजा हुआ होना।

7.1: योनि द्वार या भगोष्ठ का गुलाबी होना या हल्का सूजा हुआ होना

7.2: योनि मार्ग की अंदरूनी परत का गुलाबी या हल्का सूजा हुआ होना

8) गर्मी में आने के तीन चार दिन पहले डोका करना या थनों में दूध का आनाद्य

9) पशु का चिल्लाना, दौड़ना एवं भागने की कोशिश करना।

10) कान खड़े करना, चौकन्ना होना, आंखों में विशेष चमक होना व अन्य पशुओं से अलग होना।

10.1: कान खड़े करना, चौकन्ना होना व आंखों में विशेष चमक होना

गर्मी के लक्षणों की विषमताएं एवम विशेषताएँ

1) भैंस में गर्मी के लक्षणों की तीव्रता गाय की अपेक्षा कम होती है। इसलिए सभी लक्षण अधिकांश भैंसों में प्रकट नहीं होते। ज्यादातर लक्षण रात और सुबह–शाम के समय दिखाई देते हैं तथा कभी–कभी साफतौर पर दिखाई नहीं पड़ते। जिस कारण किसान लक्षण पहचान न कर पाने के कारण भैंस को गाभिन नहीं करवा पाते।

2) बार–बार रांभना, योनि मार्ग से रस्सी की भांति तार का लटकना या गिरना या डोका करने पर डॉक्टरी जांच करा कर वीर्य का टीका लगवा देना चाहिए। भैंस के रांभने या अन्य लक्षणों के इंतजार में देर होने पर गर्मी तथा गर्भाधान का समय निकल जाता है।

3) गर्मी के लक्षणों को ठीक से सुनिश्चित नहीं कर पाने पर लक्षण दिखाई देने की तारीख नोट कर लें तथा फिरसे लक्षण 19 से 24 दिन बाद नजर आए तो भैंस को गर्भित जरूर करवाएं।

4) एक ब्यांत अथवा मद चक्कर में विशेष लक्षण दिखाने वाली भैंस का अगली बार भी मद के वही लक्षण दिखाना जरूरी नहीं हैद्य तार या योनि स्राव, भरपेट चारा खा कर बैठने वाली भैंस में देखना चाहिए, क्योंकि पेट के दबाव के कारण यह योनि तार बाहर निकलकर पुंछ या पुट्ठे पर चिपका हो सकता है।

5) डॉक्टरी जांच का फायदा :

मद मे होने की सही स्थिति का पता लगाया जा सकता है।

संक्रमण में अन्य रोग का निदान एवं समुचित इलाज हो सकता है।

झोंटों द्वारा सूंघ कर छोड़ देने की स्थिति में भैंसों में गर्मी का पता न लग पाने की स्थिति में पशु चिकित्सक द्वारा भैंस की जांच उपयोगी साबित हो सकती है।

जननांग की जांच से भैंस के मद में ना होने पर मद की संभावित स्थिति का पता लगाया जा सकता है।

गर्मी की पहचान सही समय पर होने से गर्भधारण की दर 30 से 35% तक बढ़ सकती है।

6) गर्मी के लक्षणों की पहचान ना होने के नुकसानः

सही समय पर पशुओं का गर्भधारण नहीं हो पाना।

ब्यांत के अंतराल का बढ़ जाना।

पशुओं अथवा भैंसों के खानपान एवं प्रबंधन का खर्च बढ़ जाना।

बयाने की स्थिति में न आने से दूध तथा कटड़े एवं कटडियो का न मिल पाना।

7) गर्मी के लक्षण ढूंढने या पता लगाने का समय :

भैंस देर शाम, रात, अति सुबह अथवा प्रातः काल में गर्मी में आती है। रात–दिन व्यक्तिगत ध्यान देने पर या कम से कम दिन में दो बार सूर्योदय एवं सूर्यास्त के समय, ऋतु–मती भैंसों में गर्मी के लक्षणों का पता अवश्य लगाया जा सकता है। इसके लिए नसबंदी किए हुए (टीजर) झोंटे की मदद ली जा सकती है।

8) मद या गर्मी के लक्षणों के आधार पर भैंसों का वर्गीकरण :

गर्मी के लक्षणों में पशु का व्यवहार तथा प्रजनन अंगों में आए परिवर्तन के आधार पर भैंसों या पशुओं को तीन श्रेणियों या वर्गों में बांटा जा सकता हैः

1. कड़ी या अच्छी गर्मी वाली भैंसे (स्टैंडिंग–हीट)
2. बीच की गर्मी वाली भैंसे
3. चुप्पी या गूंगा–आमा वाली भैंसे (साइलेंट–हीट)

1. कड़ी या अच्छी गर्मी वाली भैंसेः

इन भैंसों में गर्मी के लक्षण बहुत स्पष्ट होते हैं। जब गर्म पशु दूसरे पशु को अपने ऊपर चढ़ने से रोकता या हटाता नहीं, बल्कि दूसरे पशु को अपने ऊपर चढ़ने देता है, इस अवस्था को स्थिर–रितुमती (स्टैंडिंग–हीट) कहते हैंद्य पशु की बाहरी योनि में एक विशेष चिकनाहट, फुलाव या लचीलापन आ जाता है, तथा योनि से शीशे जैसा पारदर्शक, रस्सी जैसा गाढा योनि–द्रव निकलता हैद्य पशु के बैठने पर यह द्रवसाफ दिखाई पड़ता हैद्य

2. बीच की गर्मी वाली भैंसे :

इन भैंसों में गर्मी के लक्षण साधारण किस्म के होते हैं।

3. चुप्पी या गूंगा–आमा वाली भैंसे :

इन भैंसों में गर्मी के लक्षण स्पष्ट नहीं होते हैं। भैंसों में साल भर रितु–मति रहने के बावजूद, मौसम का प्रभाव गर्मी में अधिक दिखाई पड़ता है। भारतीय जलवायु में अधिकतर भैंस चुप्पी किस्म की होती है।

भैंसों में गर्मी अथवा रितुकाल के लक्षण

क्रम–संख्या	लक्षण	प्रारंभिक	मध्यकाल	अंतिम
1.	खाने में इच्छाः	सामान्य	कम	सामान्य
2.	रांभनाधचिल्लानाः	कभी–कभी	रह–रहकर	सामान्य
3.	उद्विग्रता / बेचैनीः	बेचैनी, आवास से बाहर दौड़ना	बेचैनी, आवास से बाहर दौड़ना	आवास में लौटना
4.	योनि द्वारः /भगोष्ठ	हल्की सूजन	सूजन	सामान्य
5.	योनि मार्ग की : श्लेष्मा झिल्ली / परत	हल्की गुलाबी	लाल गुलाबी	हल्की गुलाबी
6.	मूत्रत्यागः	कभी–कभी	रह–रहकर (5 मिनट में 3–5 बार)	सामान्य
7.	नर सांड काः मादा पर मुंह या थूथन रखना	रखता है	अधिकतर	40% मामलों में
8.	कृत्रिम गर्भाधान का उचित समय :	0–8 घंटे	12–18 घंटे	24 घंटे
9.	उपयोगिताः	कम उपयोगी	अत्यंत उपयोगी	कम उपयोगी

डॉ. अशवनी सैनी, डॉ. जन्नत सैनी, डॉ. राम सिंह बीबयान
केन्द्रीय भैंस अनुसन्धान संस्थान, उप– परिसर, नाभा–147201 (पंजाब)

AgroFAT Launched in North India

Aggarwal Industries, with over 60 years of excellence, is a trusted leader in Edible Oils and Palm Products, offering a diverse range of fats including Palm Oil, Sunflower Oil, Soybean Oil, Rice Bran, and Vanaspati. Agarwal Industries is renowned for innovation as the pioneer of White Olein and palm-based animal feed. It has grown into a global brand with a strong local network, backed by AGMARK certification and serving millions with trust, while maintaining its position as a key player in the fast-growing oil market.

They conducted a technical seminar in Ludhiana at Hotel Hyatt on 20th May 2026, where Dr Pankaj Bhardwaj and Dr Deepak Singh were the key speakers for the event. The seminar was well attended by all the leading cattle feed manufacturers, farmers and consultants. Aggarwal Industries officially launched AGROFAT in India. Mr. Vivek Thakur of A1 Fat & Oils is the distributor for AGROFAT in North India. AGROFAT is 99.5 percent bypass fat. Aggarwal Industries, which is in India, has its own manufacturing facility in Kakinada, Andhra Pradesh. This is the only company in India that has a whole integrated process from refinery to end product production.








Nurture Organics Private Limited

GLUCO MAXX R

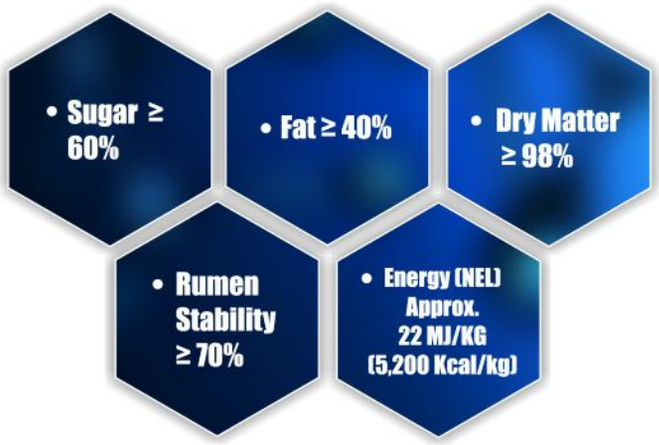
Rumen-Protected Glucose Proven Result

GLUCO MAXX R is an advanced livestock feed additive that delivers glucose (dextrose) directly to the small intestine, bypassing fermentation in the rumen. It is manufactured by encapsulating glucose cores in a protective lipid coating — that resists rumen microorganism degradation but dissolves under the acidic and enzymatic conditions of the abomasum and small intestine.

In a normal ruminant digestive process, nearly all dietary sugars and starches fed to cattle, fermented in the rumen and converted into volatile fatty acids (VFAs). As a result, very little glucose reaches the bloodstream directly from the diet. GLUCO MAXX R overcomes this limitation by using physical protection to deliver glucose intact to the post-rumen digestive tract, where it is released and absorbed efficiently into circulation.

Gluco maxx R mechanism in dairy cows: GLUCO MAXX R bypasses the rumen and is absorbed in the small intestine, raising blood glucose concentration. This elevated glucose directly feeds the mammary gland for lactose and milk fat synthesis, reduces the stimulus for hepatic fat mobilization, spares body protein from gluconeogenesis, and supports immune function during the inflammatory stress of calving and uterine involution.

COMPOSITION



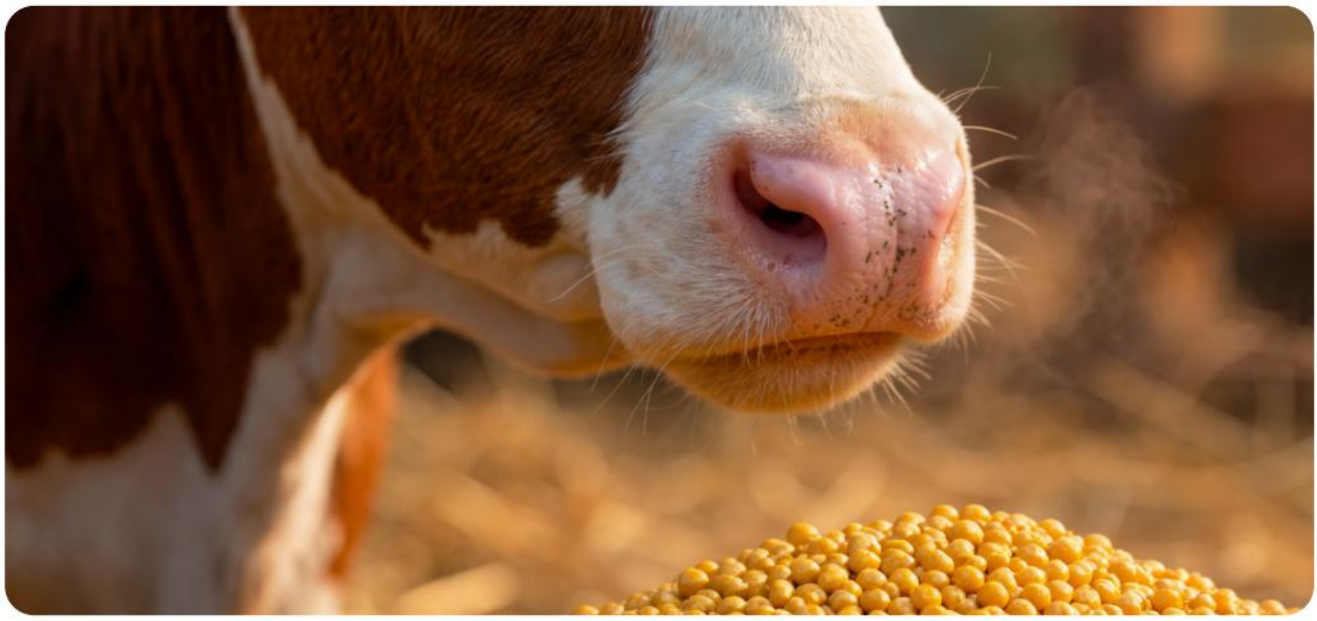
High-quality GLUCO MAXX R products specify a rumen bypass rate of approximately 90% and an intestinal release rate of approximately 90%, meaning the vast majority of the glucose is both protected during passage through the rumen and successfully absorbed in the small intestine.

Role of Gluco maxx R in Livestock?

The Glucose Shortage Problem in Ruminants

Unlike monogastric animals, ruminants cannot rely on direct dietary glucose absorption. The rumen microbiome ferments nearly all soluble carbohydrates into VFAs (acetate, propionate, butyrate), which serve as the primary energy source for maintenance. However, glucose — not VFAs — is the dominant fuel for:

- Lactose synthesis in the mammary gland (lactose requires glucose as a direct precursor)
- Fetal development and placental function during late pregnancy
- Hepatic gluconeogenesis to maintain blood glucose during periods of high demand
- Immune cell function and inflammatory response management



The liver performs gluconeogenesis (manufacturing glucose from propionate, amino acids, and glycerol) to partially compensate, but this is a slow, metabolically expensive process that cannot keep pace with the explosive glucose demand seen in early lactation or late pregnancy in high-producing or multi-fetal animals.

Negative Energy Balance (NEB) — The Core Problem

Negative Energy Balance (NEB) is the condition where an animal's energy output exceeds its dietary energy intake. It is the root cause of most metabolic diseases in transition dairy cows and late-pregnant small ruminants. The timeline in a dairy cow looks like this:

- **3 weeks before calving:** Dry matter intake begins to decline due to hormonal changes and physical compression of the rumen by the growing calf.
- **At calving:** Energy demand surges as milk production initiates.
- **1–3 weeks post-calving:** The animal is at peak NEB — energy deficit may be 10–15 Mcal/day in high producers.
- The body responds by mobilizing fat from adipose tissue, releasing large amounts of non-esterified fatty acids (NEFAs) into circulation.
- The liver attempts to oxidize NEFAs, but if the rate exceeds hepatic oxidative capacity, triglycerides accumulate → fatty liver disease.
- Incomplete fat oxidation produces ketone bodies (beta-hydroxybutyrate, BHBA; acetoacetate) → ketosis.

Regular oral glucose supplementation is ineffective because rumen bacteria would immediately ferment it. **Gluco Maxx R** solves this by delivering a direct, rapid source of absorbable glucose that raises blood glucose levels, reduces the need for fat mobilization, and lowers the risk of ketosis and fatty liver.

BENEFITS OF GLUCO MAXX R SUPPLEMENTATION

Production Benefits

Benefits	Details
Higher Milk Yield	Linear increase in milk production with rising GLUCO MAXX R dose. At 450 g/day, significant improvement over controls ($p < 0.05$). Glucose directly fuels mammary lactose synthesis.
Improved Milk Quality	Significant increases in lactose content, solids-not-fat, and total solids. Glucose is the direct precursor for lactose — more glucose means richer, higher-quality milk.
Better Feed Efficiency	Milk-to-feed ratio improves significantly. Animals produce more milk from the same dry matter intake, improving the economics of production
Body Weight Maintenance	Final body weight increases linearly with GLUCO MAXX R dose. Animals lose less condition post-calving, supporting subsequent reproductive performance.
Faster Growth in Young Animals	In calves and young ruminants, GLUCO MAXX R provides a directly absorbable energy source that supports skeletal muscle development and immune system maturation.

Reproductive Benefits

NEB and ketosis are strongly associated with impaired reproductive performance. By reducing NEB severity, **GLUCO MAXX R** has downstream benefits on fertility:

- Earlier resumption of cyclicity post-calving (shorter interval to first oestrus)
- Higher first-service conception rates due to better uterine environment
- Reduced incidence of ovarian cysts, which are associated with glucose deficiency and IGF-1 dysregulation
- GLUCO MAXX R has been shown to stimulate the insulin-like growth factor (IGF) system and mTOR/AKT signalling pathway in the endometrium, improving uterine receptivity during the early post-calving period

Health Benefits

Health Benefits	Details
Ketosis Prevention	GLUCO MAXX R significantly reduces BHBA (beta-hydroxybutyrate) levels — the primary clinical marker of ketosis. By supplying glucose directly, GLUCO MAXX R reduces the need for fat mobilisation and the resulting ketone body production.
Reduced Fatty Liver Risk	Lower NEFA concentrations ($p < 0.05$) indicate reduced fat mobilisation from adipose tissue. This reduces the flood of fatty acids to the liver, lowering the risk of hepatic triglyceride accumulation (fatty liver).
Improved Gut Health	GLUCO MAXX R supplementation shifts intestinal microbiota towards beneficial butyrate-producing bacteria and cellulolytic species, improving gut epithelial integrity and reducing inflammatory load.
Rumen Microbiome Enhancement	Partial rumen degradation of GLUCO MAXX R (the portion that is not bypassed) contributes to rumen VFA production. At moderate doses (350 g/day), rumen microbial diversity and richness improved, with increased acetate, propionate, and butyrate concentrations.
Postpartum Immune Support	Glucose is a key fuel for immune cells (neutrophils, lymphocytes). GLUCO MAXX R -supplemented cows showed reduced inflammatory cytokine profiles (lower IL-8) and better immune function during the periparturient inflammatory response.
Reduced Retained Placenta & Metritis	By improving the energy and immune status of transition cows, GLUCO MAXX R indirectly reduces the incidence of retained fetal membranes and uterine infections, which are both linked to NEB and immune suppression at calving.
Faster Disease Recovery	In animals recovering from illness, transport stress, or surgical procedures, GLUCO MAXX R can restore blood glucose levels rapidly, supporting tissue repair and immune response without the metabolic costs of gluconeogenesis.

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MINERAL SCIENCE DESIGNED TO SUPPORT NUTRIENT UTILIZATION FROM DIGESTION TO MILK QUALITY

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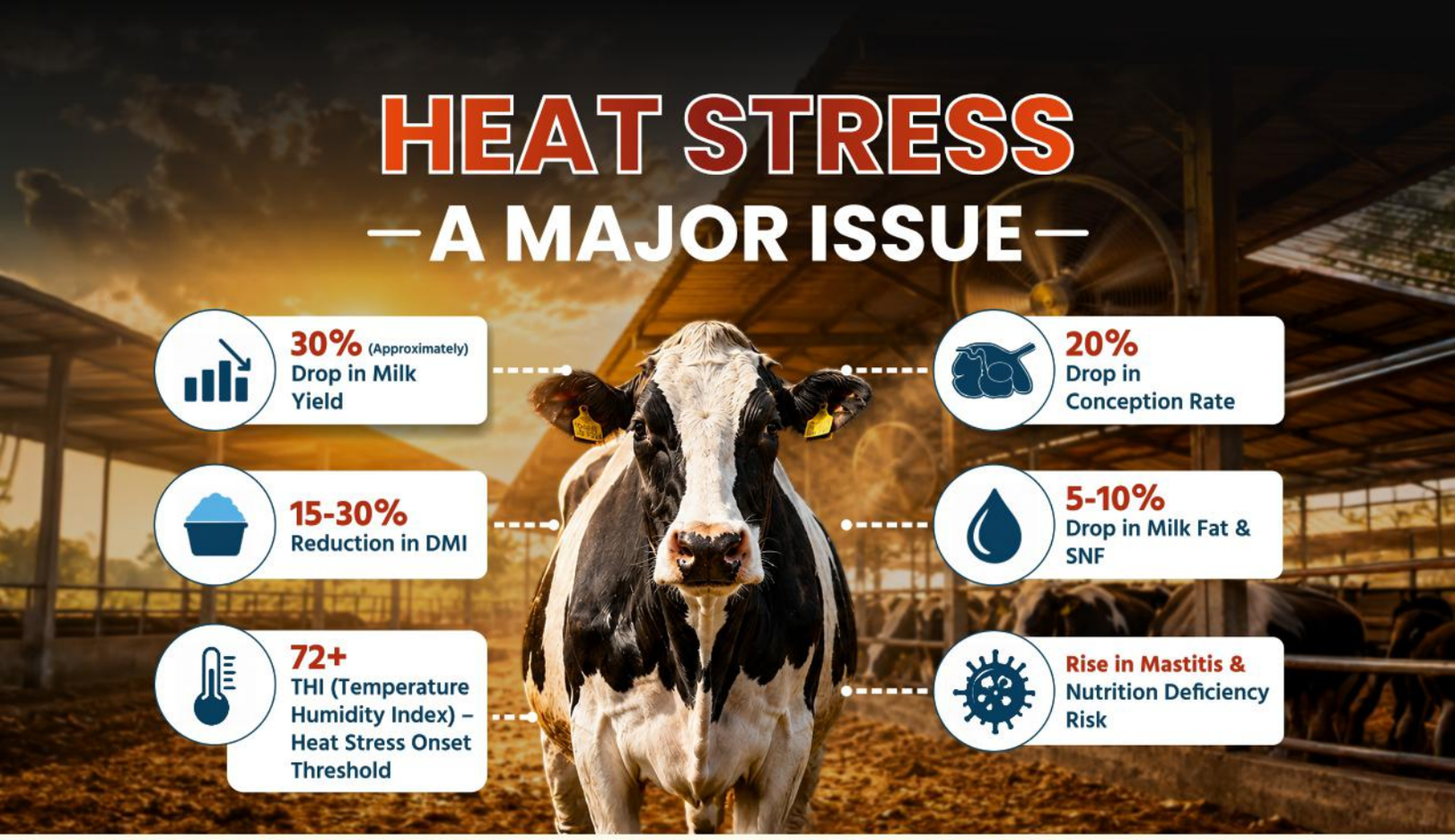
HEAT STRESS
— A MAJOR ISSUE —



What is THI and why does it matter?

The Temperature Humidity Index (THI) is a single value, often called a "discomfort index," that combines ambient temperature and relative humidity to assess the total heat stress risk for livestock, particularly dairy cattle.

Below 68	72-79	79-88	88+
Normal	Mild	Moderate	Severe

Comfortable **Severe stress**

During Indian summers, THI regularly exceeds 88 in northern and central states, including Gujarat, Rajasthan, Andhra Pradesh, Uttar Pradesh, Punjab, Haryana, Maharashtra, and Kerala.

Estimated Financial Loss Due to Heat Stress

- Average Milk Production: 15 Litres/Day
- 30% (Approximately) Milk Production Loss During Heat Stress
- Additional Health & Fertility Costs Included

**Note: Numbers are indicative and may vary depending on management, breed, and environment. For educational and awareness purposes only.

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Heat is Near...

Is She Ready?

Advanced rumen-protected glucose support during heat stress

- Supports cows during heat stress
- Helps meet high energy demand
- Supports early lactation
- No withdrawal for milk

COMPOSITION

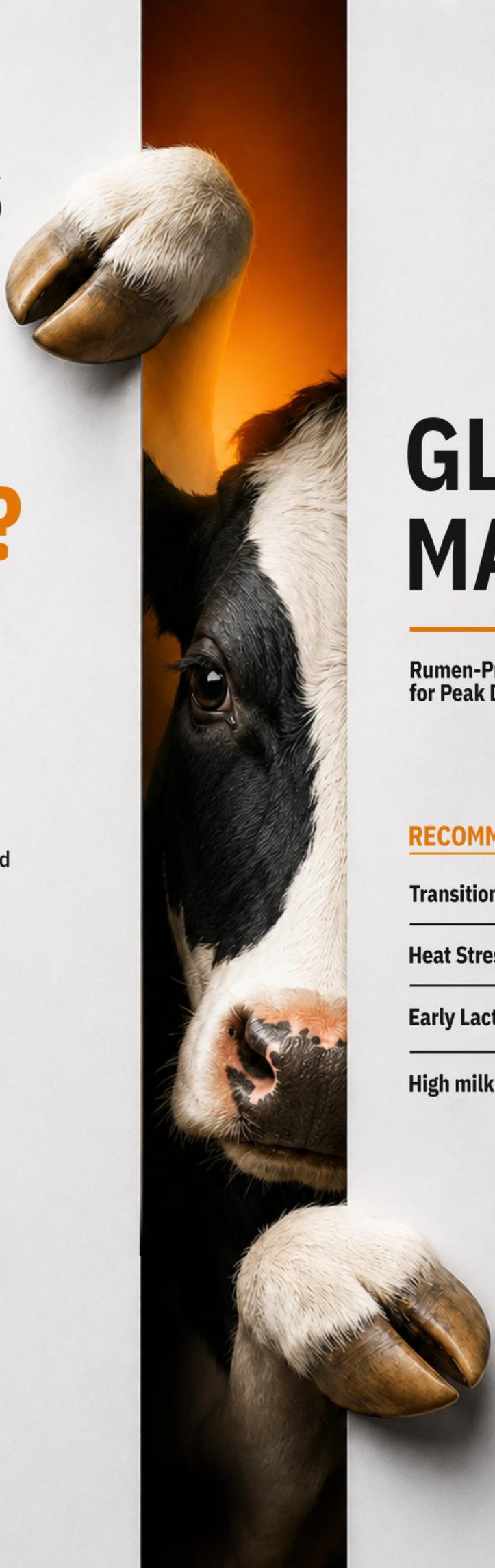
Sugar: ≥ 60%

Fat: ≥ 40%

Dry Matter: ≥ 98%

Rumen Stability: ≥ 70%

Energy (NEL):
approx. 22 MJ/Kg
(5,200 kcal/kg)



GLUCO MAXX R

Rumen-Procted Glucose for Peak Dairy Performance

RECOMMENDED DURING

Transition

Heat Stress

Early Lactation

High milk yield periods