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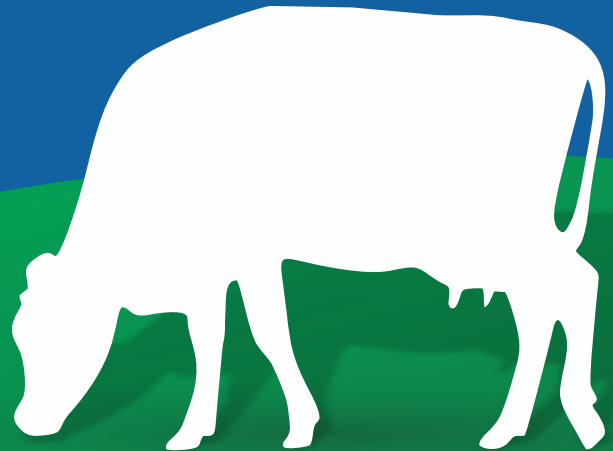


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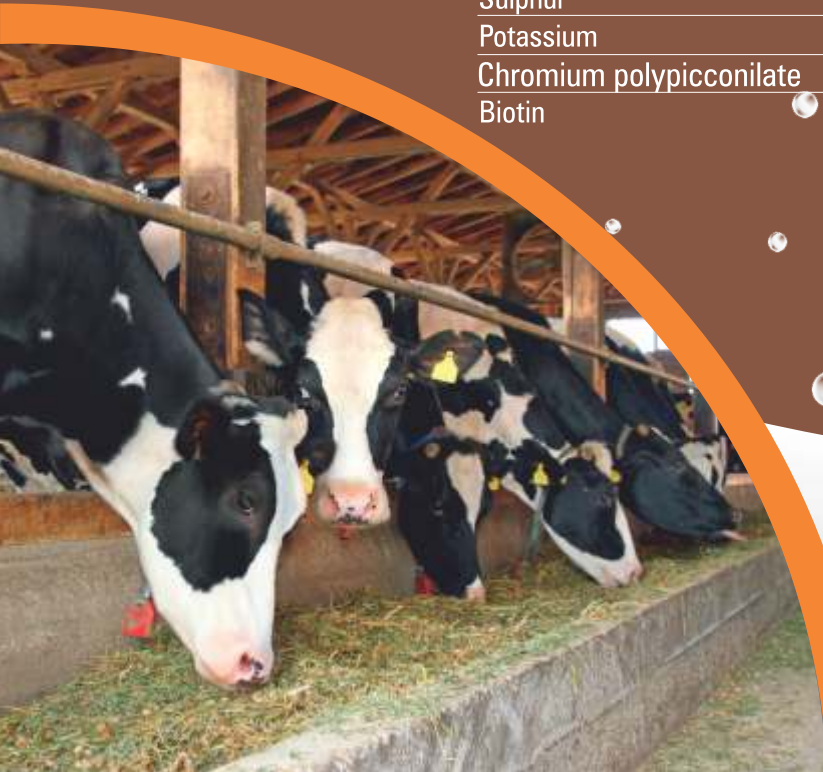
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# From the Pen of Chief Editor



## Nourishing Our Livestock: The Critical Role of Nutrition in Cattle During Summer Months

As the sun climbs higher in the sky and temperatures soar, the agricultural landscape undergoes a transformation, presenting both challenges and opportunities for livestock farmers. Among the myriad concerns facing cattle ranchers during the summer months, perhaps none is as consequential as ensuring adequate nutrition for their herds. The importance of maintaining optimal nutrition cannot be overstated, as it directly impacts animal health, productivity, and overall welfare.

Summer poses a unique set of nutritional challenges for cattle. High temperatures, coupled with humidity, increase the risk of heat stress, which can have profound physiological effects on livestock. During periods of heat stress, cattle experience reduced feed intake, decreased rumen function, and altered metabolic processes, all of which can lead to decreased productivity and increased susceptibility to disease.

One of the primary nutritional concerns during summer is maintaining hydration and electrolyte balance. As cattle perspire to dissipate heat, they lose essential electrolytes such as sodium, potassium, and chloride. Inadequate replenishment of these electrolytes can result in dehydration, heat exhaustion, and even death. Therefore, providing access to clean, fresh water and supplementing with electrolyte-rich feeds or additives is paramount for mitigating heat stress and ensuring optimal hydration.

Furthermore, summer forage quality tends to decline due to factors such as heat, drought, and plant maturity. As pasture grasses become fibrous and less nutritious, cattle may struggle to meet their dietary requirements for energy, protein, vitamins, and minerals. To address this shortfall, farmers must implement strategic feeding practices, such as supplementation with high-quality forages, grains, protein supplements, and mineral mixes, tailored to meet the specific nutritional needs of their herds.

In addition to addressing immediate nutritional needs, proactive management strategies can help cattle adapt to the challenges of summer more effectively. For example, rotational grazing allows pastures to recover and regrow, ensuring a continuous supply of fresh, nutritious forage for grazing cattle. Providing adequate shade and shelter can also help mitigate heat stress, allowing cattle to seek refuge from the scorching sun and reduce heat load.

Moreover, technological innovations such as precision nutrition and data-driven management systems offer unprecedented opportunities for optimizing cattle nutrition and health outcomes. By leveraging tools such as ration formulation software, remote monitoring sensors, and predictive analytics, farmers can fine-tune feeding strategies, monitor animal performance, and intervene proactively to prevent nutritional deficiencies and health issues.

Beyond the immediate benefits to animal health and productivity, prioritizing nutrition in cattle during the summer months carries broader implications for sustainability and resilience in the livestock industry. Well-nourished cattle are better equipped to withstand environmental stressors, resist disease, and maintain reproductive efficiency, thereby safeguarding the long-term viability of farming operations.

In conclusion, the importance of nutrition in cattle during the summer months cannot be overstated. By ensuring adequate hydration, balancing electrolytes, optimizing feed quality, and implementing proactive management practices, farmers can safeguard the health, welfare, and productivity of their herds, even in the face of challenging environmental conditions. As guardians of agricultural sustainability, let us commit to nourishing our cattle with the care and attention they deserve, ensuring a prosperous and resilient future for the livestock industry.

*Vishal*

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**Vishal Rai Gupta**  
Editor-In-Chief  
vishal@pixie.co.in

**Siddhi Gupta**  
Co-Editor  
siddhi@pixie.co.in  
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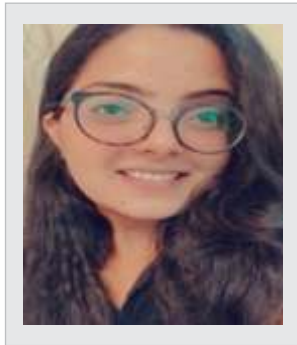
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# Feeding Strategies to Improve Milk Production in Dairy Herd



**Bhavya Arora**

4<sup>TH</sup> Professional year BVSc and AH IIVER, ROHTAK (LUVAS)

**Dr. Deepandita Barman**

(Assitant Professor), LCVSC, ASSAM Agricultural University

## Introduction

Nowadays, small scale farmers in developing countries face laboriousness which includes high production costs, low margins of profit. They are unable to choose price for their agricultural products.

Expense of purchasing animal stock, their shelters. Maintainance, disease control and feeding management practices are the main causes of cost of milk production. There are some other factors like

seasonal variation and variation in cost of input like green feed, dry feed and concentrate throughout the year are also important factor that affect the cost of milk production.

Alterations or adaptations in feeding management and nutrition have the most possible potential production I in shortest amount of time out of all realizable ways in a dairy farming system to produce maximum profits to the farmers.

## Strategies



## **Unconventional feed resources**

Replacing the conventional feed with an unconventional feed is the most reasonable option to fulfil the scarcity and also decreases the production costs. Appropriate method of processing and detoxification must be used.

Remnants from agricultural crops are a novel source of feed that might be applied to feed livestock.

## **Total mixed ration**

This is the method of weighing and mixing all different feed stuff into forming a complete ration which provides sufficient nutrition to meet the dietary needs of cow that produces milk for one day.

This feature consists of increase in 4-5% feed intake, improve ruminal microflora and environment, better formulation and feeding accuracy and improving the taste or flavour of non traditional feeds like urea , limestone, fatty acids.

It is very important to avoid overmixing and undermixing the ingredients while blending all the feeds in a total mixed ration.

Therefore it is an effective method that can reduce feed loss and promote feed

efficiency in cows that produce milk.

## **Techniques for adding minerals in feed**

Different breeds require minerals for optimal well being, growth and milk production. Generally green fodder contains less amount of minerals and need continuous or frequent supply for high milk producing animal.

Its deficiency is difficult to diagnose as symptoms appears after an extended period of under feeding.

Mineral deficiency interfere with growth and production without showing particular signs.

Therefore for high producing animals , correct amount of mineral supplementation is essential which involve supplemental blocks, lick or mineral blocks, mixing of powder with concentrate feed.

There are some minerals which should not be fed in excess because they are unsuitable with one another and decreases their absorption. For example calcium to phosphorus proportion should be zero to one.

For better performance, minimum mixture need to contain both main and trace

minerals in appropriate amount.

## **Dry period**

Animal should be given proper dry period which is necessary for their recovery. This period affects the next lactation period.

In this period provide low quality forage like grass hay, straw.

Vitamin A, D, E must be included in diet to increase survival of calf , decrease the risk of retained placenta and improve the complications of milk fever.

## **Technology applied for precision feeding**

This method ensures most efficient and most secure production of animal products , best products quantity and at same time lowest level of environmental pollution by decreasing elimination of unutilized nutrient.

It meets the nutrient needs of an animal with highest degree of adequacy.

## **Conclusion**

A balanced diet enhances nutrient utilization by stabilizing ruminal fermentation. The entire expense of technologies for both consumers and farmers must be taken into account.



# Precision Feeding

## Concept For

## Ruminants

**Neelam Kumari**

Assistant Professor at Mahatma Gandhi  
Veterinary College Bharatpur Rajasthan

Precision animal nutrition is defined as providing the animal with feed that precisely meets its nutritional requirements for optimum productivity efficiency to produce better quality animal products (milk, meat and eggs) and to contribute cleaner environment and thereby ensure profitability. A cleaner environment means reducing the enteric methane emission, excretion of nitrogen (ammonia), phosphorus and other compounds into the environment. It is aimed at supplying nutrients to the animals matching their requirement to improve not only the animal physiology and health but also the enrichment of their products for the well-being of the consumer (Reddy and Krishna, 2009). This approach aims to improve efficiency, reduce waste, enhance animal performance and minimize environmental impact. Precision feeding often involves the use of

advanced technologies, data analytics and management practices.

**Key aspects of precision feeding in animals****Nutrient Requirements**

Determine the specific nutrient requirements of different groups of animals based on factors such as age, weight, growth stage, production purpose (e.g., milk production, meat production), and reproductive status.

**Feed Formulation**

Develop customized feed formulations that precisely match the nutrient requirements of the animals being fed.

Utilize software and modeling tools to optimize feed formulations.

**Precision Feeding Technologies**

Employ technologies such as automated feeding systems, precision feeding equipment, and sensors to measure and control feed intake.



Use electronic identification systems to monitor individual animals and adjust feeding programs accordingly.

### **Real-Time Monitoring**

Implement real-time monitoring systems to track animal performance, health status and feed intake.

Use data analytics to make informed decisions about feed adjustments.

### **Precision Feeding for Special Groups**

Tailor feeding programs for specific groups, such as high-producing dairy cows, growing animals, or animals with special dietary needs.

Consider the nutritional requirements of pregnant and lactating animals separately.

### **Precision Feeding for Environmental Impact**

Develop feeding strategies that minimize the environmental impact of animal production, such as reducing nutrient excretion and greenhouse gas emissions.

Optimize nutrient utilization to minimize waste and improve efficiency.

### **Feed Efficiency**

Focus on improving feed efficiency by matching nutrient supply to the animal's physiological

requirements.

Monitor and manage feed conversion ratios to ensure optimal utilization of feed resources.

### **Health Management**

Consider the impact of nutrition on animal health and disease resistance.

Implement precision feeding as part of an overall health management program.

### **Economic Considerations**

Evaluate the economic aspects of precision feeding, considering the cost-effectiveness of feed formulations and the potential for improved production efficiency.

### **Training and Record-Keeping**

Train personnel on precision feeding practices and technologies.

Maintain accurate records of individual animal performance, feed consumption and health parameters.

Precision feeding is an evolving field that integrates technology and scientific knowledge to optimize animal nutrition and production. By implementing precision feeding practices, farmers and producers can enhance the overall efficiency, sustainability and profitability of their livestock operations.

### **References**

Reddy, D. V., and Krishna, N. (2009). *Precision animal nutrition: A tool for economic and eco-friendly animal production in ruminants. Livestock research for rural development, 21(3), 36.*



# Enhancing Fertility: Holistic Strategies for Dairy Reproductive Management



Ekta Verma, Bilawal Singh, Reetinder Singh, Prateek Kamboj

The success of a dairy farm depends on its ability to achieve efficient milk production. This, in turn, is significantly reliant on a well-managed reproductive program for the herd. Effective reproductive management ensures timely pregnancies, minimizes calving intervals, and ultimately maximizes milk yield and profitability. This article dwells into the essential aspects of reproductive management in dairy animals, encompassing the key components, strategies, and technologies employed to optimize fertility and enhance productivity. In essence, reproductive management plays a pivotal role in the profitability and sustainability of dairy farming operations. It directly impacts milk production, calf quality, and overall herd health.

## 1. Estrous Cycle: The Cornerstone of Reproductive Management

Effective reproductive management in dairy animals begins with a deep understanding of their reproductive physiology. This intricate system is influenced by a combination of factors, including genetics, nutrition, environment and farm management practices. At the core lies the estrous cycle, a cyclical hormonal interplay involving estrogen and progesterone that governs estrus behavior (heat), ovulation (egg release), and

overall fertility. Cows experience this cycle roughly every 21 days, with a heat period lasting 12-24 hours. During heat, behavioral changes like restlessness and mounting activity become evident, signalling the optimal window for breeding.

## 2. Pinpointing the Right Moment: Strategies for Effective Heat Detection

Accurate identification of estrus, the period of receptivity to breeding, is crucial for maximizing conception rates in dairy animals. Traditional methods rely on visual observation of behavioural shifts like standing heat and mounting activity. While valuable, these methods can be labour-intensive and susceptible to human error. Fortunately, technological advancements offer more precise and efficient tools to supplement traditional approaches.

- **Advanced Monitoring Systems:** Activity monitors, pedometers, and automated estrus detection systems provide continuous data on a cow's activity levels, body temperature, and potentially even mounting activity. Analyzing this data helps pinpoint subtle changes indicative of estrus, leading to more accurate and timely heat detection.

- **Technological Enhancements:** Tools like heat-sensitive tail paint offer a simpler method to detect mounting activity, while electronic heat detectors worn on collars or as pedometers offer continuous monitoring of activity and temperature changes. Veterinary tools like vaginal scopes allow for direct examination of the cervix to identify changes in mucus consistency and texture, further confirming impending ovulation.

By combining traditional methods with these advanced technologies, farmers can significantly improve the accuracy and efficiency of estrus detection, leading to more targeted breeding interventions and ultimately, higher pregnancy rates.

### 3. A Multifaceted Approach to Reproductive Health Management

Effective reproductive management goes beyond simply detecting heat. Maintaining optimal reproductive health in the herd is essential for ensuring successful breeding outcomes and maximizing milk production. This requires a multifaceted approach that combines preventative measures with proactive monitoring and intervention.

- **Preventative Healthcare:** A focus on preventative healthcare plays a crucial role. This includes ensuring cows receive a balanced diet with adequate energy, minerals, and vitamins to support optimal reproductive function. Implementing a strategic vaccination schedule protects cows from diseases that can negatively impact fertility. Regularly monitoring body

condition score helps identify nutritional imbalances that could lead to reproductive issues.

- **Early Detection and Intervention:** Regular monitoring for potential reproductive disorders like endometritis (uterine inflammation), cystic ovaries, and uterine infections is crucial. Veterinarian-conducted reproductive examinations armed with advanced tools like transrectal palpation (internal manual examination), ultrasound imaging, and cytology (microscopic examination of cells) facilitate early detection and treatment of these abnormalities. By promptly addressing these issues, the impact on fertility is minimized, leading to a higher chance of successful pregnancies.

### Choosing the Right Breeding Strategy

Once estrus is confirmed, the choice of breeding strategy comes into play. Each method offers unique advantages and considerations:

- **Natural Breeding:** This traditional method, while cost-effective, presents challenges. Potential injuries to cows or handlers are a concern, and there's limited genetic control over offspring. Additionally, the risk of spreading diseases becomes a factor.
- **Artificial Insemination (AI):** AI offers a more controlled approach. Semen from pre-selected, high-performing bulls is collected and deposited directly into the cow's uterus by a trained technician. This method provides unparalleled control over genetics and herd

health. Farmers can leverage the genetic potential of superior bulls, even those located geographically far away, leading to faster genetic improvement of the herd. However, AI requires specialized equipment, training, and careful semen handling procedures.

By implementing a comprehensive reproductive health management program that combines preventative measures with early detection and intervention, farmers can create an environment conducive to optimal fertility. This, coupled with the strategic selection of a breeding strategy based on specific needs, empowers them to maximize pregnancy rates and ultimately, achieve their dairy farming goals.

### 4. Essential Elements of Reproductive Health Management

Effective reproductive management goes beyond just breeding strategies. It's about creating an environment conducive to optimal fertility within the herd. This multifaceted approach encompasses several key pillars:

- **Nutritional Tailoring:** As highlighted earlier, proper nutrition is the cornerstone of reproductive success. Ensuring cows receive a balanced diet rich in energy, essential minerals, and vitamins tailored to their specific needs during different reproductive stages is crucial. This helps maintain a healthy energy balance, reflected in optimal body condition score (BCS). Regularly monitoring BCS allows for adjustments to feeding strategies, preventing both over- and under-conditioning,



which can hinder fertility.

- **Proactive Protection:** Implementing a strategic vaccination program safeguards the herd from diseases like Brucellosis or Bovine Viral Diarrhea (BVD) that can negatively impact reproductive efficiency. By preventing these illnesses, farmers minimize potential disruptions to the breeding cycle.
- **Early Intervention:** Regular monitoring for potential reproductive issues is essential. Consulting a veterinarian for routine health checkups allows for early detection and treatment of problems like endometritis, cystic ovaries, or uterine infections. This proactive approach minimizes the impact of such issues on fertility and maximizes the chances of successful pregnancies.
- **Veterinary Expertise:** Veterinarians play a critical role in reproductive health management. Their expertise extends beyond routine checkups. They can perform advanced examinations using tools like transrectal palpation, ultrasound imaging, and cytology to diagnose complex reproductive issues and guide appropriate treatment plans.

By focusing on these core elements, farmers can establish a robust reproductive health management program within their dairy herd. This proactive approach, combined with strategic breeding practices, lays the groundwork for maximizing pregnancy rates and overall herd productivity.

## 5. Advanced Techniques for Enhanced Reproductive Efficiency

Modern technology has ushered in a new era of

reproductive management for dairy farms, offering tools that empower farmers to achieve greater control and efficiency:

- **Synchronized Breeding with Technological Precision:** Estrus synchronization protocols utilize strategically administered hormones to manipulate the estrous cycle in a group of cows. This allows for synchronized breeding, significantly reducing the labor-intensive task of individual heat detection. Additionally, it minimizes the calving interval, leading to more calves per year and increased milk production.
- **Sex Selection:** Shaping the Future of the Herd: Sexed semen technology takes genetic control to the next level. By employing sperm sorting techniques, this method separates X and Y chromosome-bearing sperm within semen samples. Selecting X chromosome sperm for insemination significantly increases the likelihood of calving heifers, crucial for herd replacement and long-term sustainability.
- **Unlocking Genetic Potential:** The Power of Embryo Transfer: For high-performing cows, embryo transfer offers a unique opportunity to maximize their genetic potential. This technique involves superovulation, stimulating the production of multiple eggs. These eggs are then fertilized and the resulting embryos are carefully transferred to the uterus of less productive cows for gestation. This allows elite animals to contribute a greater number of offspring with superior genetics to the herd.

## 6. Reproductive

## Biotechnologies: A Glimpse into the Future

Beyond these established techniques, the field of reproductive biotechnologies continues to evolve rapidly. Advancements in areas like in vitro fertilization (IVF) and genomic selection hold immense promise for the future:

- **In Vitro Fertilization (IVF):** Similar to embryo transfer, IVF allows for the fertilization of eggs from high-performing cows outside the animal's body. This opens doors for even greater genetic control and potential manipulation of desirable traits in offspring.
- **Genomic Selection:** This cutting-edge technology analyzes an animal's DNA to predict its genetic potential for milk production, disease resistance, and other important traits. Integrating genomic data into breeding programs allows for the selection of breeding stock with exceptional genetic merit, accelerating the rate of genetic improvement in the herd.

While integrating these advanced reproductive biotechnologies into breeding programs requires careful planning, investment, and collaboration with specialized professionals, the potential benefits are undeniable. These techniques offer unparalleled opportunities to enhance genetic progress, improve reproductive efficiency, and ultimately, secure the long-term success and sustainability of dairy farming operations.

## 7. Data Management for Enhanced Reproductive Efficiency

In the realm of dairy farm management, data is king,

especially when it comes to reproductive health.

Maintaining meticulous reproductive records is an indispensable practice for several reasons:

- **Unveiling Fertility Trends:** Accurate record-keeping allows farmers to meticulously track key information like breeding dates, insemination outcomes, pregnancy diagnoses, and calving intervals. This data becomes a treasure trove of insights, enabling the calculation of crucial reproductive performance metrics like conception rates, days open (the number of days a cow is not pregnant after calving), and calving intervals. By analyzing these metrics over time, farmers can identify trends, pinpoint potential problems, and evaluate the effectiveness of implemented breeding strategies.
- **Data-Driven Decision Making:** Armed with these insights, farmers can transform from reactive to proactive managers. Reproductive data analysis allows for informed decision-making on various aspects of the breeding program. For instance, identifying cows with consistently low conception rates may necessitate veterinary intervention or adjustments to breeding protocols.
- **Streamlining the Process:** Software systems designed specifically for dairy farm management offer a powerful solution for data management. These systems streamline record-keeping processes, ensuring accuracy and eliminating the tediousness of manual recordkeeping. Additionally, they facilitate data analysis by providing user-

friendly tools for generating reports and visualizing trends.

By prioritizing accurate reproductive recordkeeping and leveraging the power of data analysis, farmers gain a deeper understanding of their herd's reproductive performance. This empowers them to make data-driven decisions, optimize breeding strategies, and ultimately, achieve greater reproductive efficiency and overall herd productivity.

## 8. Minimizing Stress for Optimal Reproductive Performance

The success of a reproductive management program extends beyond the cow's biology. Environmental factors and stressors significantly influence reproductive performance, highlighting the importance of creating a nurturing environment for the herd.

- **The Detrimental Impact of Stress:** Heat stress, overcrowding, inadequate ventilation, and social stressors like competition for feed and space can disrupt crucial physiological processes. These stressors can suppress estrus expression, hindering heat detection, negatively impacting ovulation, and potentially leading to reduced embryo development and pregnancy rates.
- **Proactive Management Strategies:** Fortunately, farmers can implement various management practices to mitigate these environmental stressors. Providing adequate shade during hot weather helps regulate body temperature and minimize heat stress. Optimizing housing conditions by ensuring sufficient space, proper ventilation, and comfortable bedding fosters well-being and minimizes social competition.

Additionally, implementing heat abatement strategies like sprinklers and fans can further reduce thermal stress, particularly during peak summer months.

By prioritizing environmental management and creating a stress-free environment, farmers can create an environment conducive to optimal reproductive health and performance. This holistic approach, combined with sound breeding practices and data-driven decision-making, paves the way for maximizing pregnancy rates, milk production, and ultimately, the long-term sustainability of dairy farming operations.

## Building a Dairy Powerhouse: Mastering Reproductive Management

The key to unlocking a dairy farm's full potential lies in mastering reproductive management. It's not just about breeding; it's a comprehensive strategy. Understanding a cow's reproductive cycle allows us to leverage advanced tools like heat synchronization and sexed semen for efficient breeding. But it all starts with the right fuel. A balanced diet packed with essential nutrients keeps cows healthy and lays the groundwork for a robust reproductive system.

Prevention is key. Vaccinations shield the herd from fertility-disrupting diseases, while regular vet checkups ensure early detection and treatment of potential problems. By minimizing losses and maximizing efficiency, we achieve sustainable herd improvement. This translates to not only higher profits but also ensures our farms remain viable in the ever-changing agricultural world. Effective reproductive management empowers us to build thriving dairy industries for generations to come.



# Contribution of Goats in India's dairy industry



**Karishma Choudhary and Vinod Kumar Palsaniya**  
M.V.Sc. (LPM), CVAS, Navania, Vallabh Nagar, Udaipur.

### Introduction:

India, a land of diverse cultures and traditions, has a long-standing history of dairy farming. While cows are often the focal point of dairy discussions, goats play a significant, albeit less acknowledged, role in the country's dairy industry. In recent years, the contribution of goats to India's dairy sector has gained recognition, showcasing their potential to transform rural livelihoods and enhance nutritional security.

### Diversity in Goat Breeds

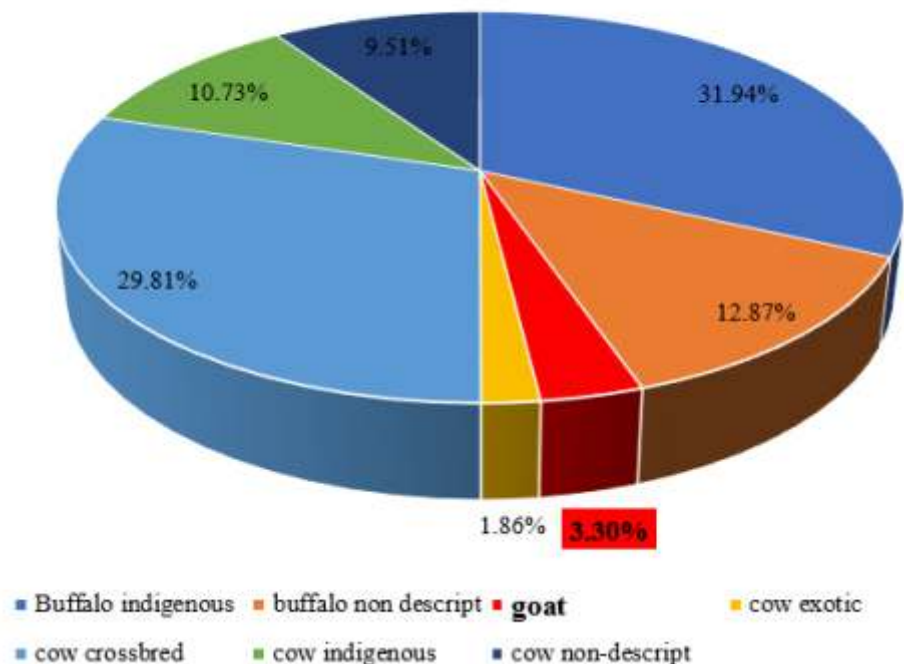
India boasts a rich diversity of goat breeds, each adapted to varying climatic conditions and

geographic landscapes. From the sturdy Jamunapari of Uttar Pradesh to the prolific Beetal of Punjab and the resilient Barbari of Rajasthan, these indigenous breeds form the backbone of India's goat farming sector. Their adaptability to harsh environments and ability to thrive on diverse diets make them invaluable assets to farmers across the nation.

### Milk Production and Quality

While goats typically produce less milk compared to cows, their milk is rich in essential nutrients and is easier to digest, making it an ideal choice for infants, elderly individuals, and those with lactose intolerance.

**Species-wise milk contribution in 2022-23**





Goat milk is also renowned for its therapeutic properties, aiding in the management of various health conditions such as hypertension and gastrointestinal disorders. The growing demand for goat milk and its by-products like cheese and yogurt presents a lucrative opportunity for dairy farmers to diversify their income streams.

India is the world's top producer of milk, with 230.58 MT (2022-23), up 3.83% from 2021-22. A total of 3.30% of the milk produced in the nation comes from goats. At 8908.9 thousand tonnes, Rajasthan is the leading producer of goat milk in all of India.

### Quality of Goat milk



### Economic Empowerment:

In rural India, where agriculture remains the primary source of

livelihood for millions, goat rearing serves as a sustainable income-generating activity. Goats require minimal investment and space, making them accessible to smallholder farmers with limited resources. The sale of goats, both for meat and milk, provides a steady source of income, particularly during festivals and religious ceremonies when demand surges. Moreover, women in rural communities often play a significant role in goat rearing, empowering them economically and socially.

### Ecological Sustainability

Goats are efficient converters of low-quality forage into high-quality protein, requiring less feed compared to larger livestock species. This inherent efficiency makes them environmentally sustainable, reducing the ecological footprint associated with intensive livestock farming. Furthermore, goats play a vital role in land management by

clearing invasive vegetation, preventing wildfires, and improving soil fertility through

their grazing patterns.

### Challenges and Opportunities

Despite their numerous benefits, goat farming in India faces several challenges, including limited access to veterinary services, inadequate infrastructure, and lack of organized marketing channels. Addressing these challenges requires concerted efforts from policymakers, researchers, and industry stakeholders to promote sustainable goat farming practices, enhance productivity, and ensure fair market prices for farmers.

### Conclusion

In conclusion, the contribution of goats to India's dairy industry cannot be overstated. From providing nutritious milk to empowering rural communities and promoting ecological sustainability, goats play a multifaceted role in the country's agricultural landscape. As India strives towards achieving food security and rural prosperity, recognizing and harnessing the potential of goats in the dairy sector will be instrumental in building a resilient and inclusive agricultural system. With the right support and investment, goats can continue to be the unsung heroes driving positive change in India's dairy industry for generations to come.

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# Flooring System in Livestock



Deepandita Barman

## Introduction

FOR increased production, it is necessary to give animal proper comfort, their environment must be considered. There should be a proper place for rest of cows where minimum harm is inflicted to them. Providing them with a properly designed stalls with comfortable bedding is one of the aspect which must be considered.

Providing them with inadequate hard bedding in resting place resulted in lameness, decreased performance risk of injuries.

## Different types of flooring

### 1. Cement concrete

- Common material used
- Cheap and durable if properly constructed
- Provides the required cool conditions for the animal
- Groove and rough surface must be provided to make non slippery and to prevent them from accident.

### 2. Bricks

- Provides non-conducting warmth floor which is necessary in houses.

- Hard impervious bricks with grooves on the surface.
- Joints are coated with cement mortar.
- Ideal flooring for animals because of durability and damp proof condition.

### 3. Stone slab forming

- Stones are made into blocks.
- Durable and strong
- Granite stones are used where they are easily available

### 4. Gravel

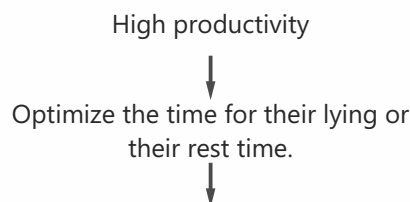
- It absorbs water and worn out quickly.
- Continuous repair and maintainance is required.
- During disease outbreak disinfection is not possible with this type of flooring.

### 5. Rubber floor

- Rubber is used as block set on cement block or as a thin mat with grooves and ridges on the surface.
- It is costly and fixing is difficult.
- In western countries this rubber flooring is used in dairy and calving boxes to provide clean, soft and comfortable surface.

## Effect of flooring in dairy livestock and production

COWS prefer softer bedding materials for lying and spend longer time on it rather than hard bedding.



Disturbed rest will affect the production.



Decreased secretion of growth hormone and decreased lying time is related to hoof health and lameness.

Cows needs 1-4 hours of rest a day which enables better flow of blood to their teats and increased salivation in mouth. This will reduce the chances of ruminal acidosis.

3L of blood per min flows through teats of standing cow, whereas 5L of blood per min flows through teats of resting cow.

So proper rest will also helps in maintaining good udder health and functions which will increase milk production. That all depends on stall design specially flooring material and time of day.

In bedding materials, presence of large number of different types of bacteria results in mastitis and increase in somatic cell count. Mastitis directly affects quantity and quality of milk.

Physical and nutritional conditions of bedding materials also affects the growth of microorganism.

## Conclusion

Various flooring system has been developed to support animal comfort, health and production and providing animal management indoor.

Clean, dry, comfortable and non slippery bedding area should be there for ease of their rising.





may exhibit less efficacy owing to its inefficient conversion process. Thus, prioritizing glycerol as a glucose precursor can aid in restoring energy balance efficiently.

### **Rumen Health: pH and Fermentation**

The impact on rumen health cannot be understated in the context of managing ketosis. Propylene glycol has been noted to decrease rumen pH and dry matter intake, potentially leading to rumen acidosis if not carefully managed. In contrast, bypass glycerol bypasses digestion by rumen microbes, preserving a healthier rumen environment and optimal fermentation. Maintaining balanced rumen pH is pivotal for nutrient digestion, absorption, and overall cow health, underscoring the significance of selecting appropriate glucose precursors.

### **Milk Production and Somatic Cell Count**

Enhanced milk production and reduced somatic cell counts are pivotal markers of cow health and productivity. Bypass glycerol demonstrates a positive association with augmented milk production and decreased somatic cell counts, indicative of improved udder health. This

can be attributed to the efficient energy utilization facilitated by bypass glycerol, fostering overall health and immune function. Moreover, the lower somatic cell count suggests a reduced incidence of mastitis, translating to higher-quality milk and enhanced profitability for dairy farms.

### **Conclusion**

In conclusion, the utilization of bypass glycerol emerges as a more advantageous option for managing dairy cow ketosis compared to propylene glycol. Its ability to support gluconeogenesis, maintain rumen health, and enhance milk production and udder health underscores its significance in optimizing cow productivity and welfare. By incorporating bypass glycerol effectively into nutritional strategies, dairy farmers and nutritionists can mitigate the challenges posed by negative energy balance, ultimately fostering healthier and more productive dairy herds.

In navigating the complexities of dairy cow management, prioritizing effective nutritional interventions like bypass glycerol is essential for ensuring the well-being and performance of dairy herds across India.



# 2024 Alltech Agri-Food Outlook Shares Global Feed Production Survey Data and Influential Trends in Agriculture



Data collected from 13 th annual global feed survey estimates world feed production remains steady, with a slight decrease of 0.2% to 1.29 billion metric tons

Lower demand attributed in part to more efficient use of feed; poultry feed shows most significant growth

## Alltech® Agri-Food Outlook | 2024

### The 2024 Alltech Agri-Food Outlook revealed global feed production survey data and trends.

[LEXINGTON, Ky.] – Global animal feed production remained steady in 2023 at 1.29 billion metric tons (BMT), a slight decrease of 2.6 million metric tons (MMT) — or 0.2% — from 2022's estimates, according to the 2024 Agri-Food Outlook, released today by Alltech. The

annual survey, now in its 13th year, includes data from 142 countries and more than 27,000 feed mills.

The overall lower demand for feed was due, in part, to the more efficient use of feed made possible by intensive production systems that focus on using animal nutrition, farm management and other technologies to lower feed intake while producing the same

amount of protein, or more. A slowdown in the overall production of animal protein, in response to tight margins experienced by many feed and animal protein companies, also contributed to lower feed demand. Changing consumption patterns caused by inflation and dietary trends, higher production costs and geopolitical tensions also influenced feed production in 2023.

## Top 10 countries:

The top 10 feed-producing countries are China (262.71 MMT, +0.76%), the U.S. (238.09 MMT, 1.13%), Brazil (83.32 MMT, +1.84%), India (52.83 MMT, +13.43%), Mexico (40.42 MMT, +0.02%), Russia (35.46 MMT, +3.83%), Spain (27.53 MMT, -11.88%), Vietnam (24.15 MMT, -9.63%), Japan (23.94 MMT, -1.15%) and Türkiye (23.37 MMT, -11.48%). Together, the top 10 countries produced 63.1% of the world's feed production (same as in 2022), and almost half of the world's global feed production is concentrated in four countries: China, the U.S., Brazil and India.

## Notable species results and outlook

- Poultry experienced an increase in broiler feed production (385.04 MMT, +13.10 MMT, +3.5%) and remained steady with a slight increase for layers (170.88 MMT, +0.01 MMT, 0%).
- **Broiler** feed now accounts for 29.9% of the total feed tonnage in the world thanks to a 3.5% increase in overall tonnage in 2023. While this growth was not uniform across all regions, the poultry sector is poised to keep holding strong in 2024 thanks to a combination of regional successes and global market dynamics. Some of the biggest factors that will contribute to the resilience of the broiler sector include reduced costs for inputs, such as feed and energy, and increases in

margins and profitability.

- For **layers**, there are industry-wide efforts to optimize feed efficiency and to keep pace with changing dietary trends and new purchasing power. Some markets around the globe were significantly impacted by macroeconomic challenges and disease outbreaks, which can disrupt production cycles. Still, the general outlook for the layer industry remains positive thanks to its resilience in the face of difficult circumstances, when other protein sectors often struggle to adapt.
- The poultry sector is poised for continued strength, driven by a blend of regional successes and global market dynamics. The broiler forecast remains optimistic thanks to lower input costs, increased industrial margins and shifting consumer behaviors. For layers, challenges persist, but there are pockets of resilience and growth.
- The global **pig** feed production sector faced many challenges in 2023, which led to an overall decrease in pig feed production of 1.23% (320.80 MMT, -4.01 MMT).
- Latin America stood out as the only region that achieved an increase in pig feed production in 2023, while Europe, Asia-Pacific and North America — which have traditionally been the top pig feed-producing

regions in the world — all faced challenges. African swine fever (ASF) continues to wreak havoc on pig production in China and Southeast Asia, where repopulation efforts are slowly proceeding.

- The trends highlight the complex relationship between economic factors, supply dynamics and disease management in the global pig feed industry. Addressing these challenges will be crucial for sustaining animal agriculture and ensuring food security.
- **Dairy** feed tonnage decreased by 2.3% (126.23 MMT, -2.28%), primarily due to the high cost of feed combined with low milk prices, which led farmers to make strategic adjustments that included reducing their cow numbers and/or relying more on non-commercial feed sources.
- In Europe, dairy producers will continue to grapple with stricter environmental policies in the years ahead, and they will need to find new ways to continue growing.
- Asia-Pacific managed to buck the downward trend and emerged as the only region that increased its dairy feed tonnage in 2023. This growth was fueled by a continued increase in the consumption of milk products there, as well as an expansion of feed production in co-operatives.



- This shift reflects the delicate balance between economic factors and the need to sustain dairy production. Lower feed costs and higher milk prices would help right the ship.
- **Beef** feed production decreased by 4.36% (117.49 MMT, -5.35 MMT) globally — the most pronounced downward change among all species sectors last year. Changes in cattle cycles in the United States and stricter sustainability policies in Europe had major impacts, with the Asia-Pacific beef sector notably surpassing Europe's in 2023.
- The substantial decline in North America was the result of lingering droughts and high production costs, among other issues.
- While the European and North American beef industries are expected to continue declining in 2024, growth is expected in China, Brazil and Australia — highlighting the complex dynamics and landscape of beef feed production around the world.
- The **aquaculture** sector experienced a decline of 4.4% (52.09 MMT, -2.42 MMT).
- This decline was driven in part by a significant drop in China's supply of aqua feed due to lower fish prices, which had a far-reaching impact.
- Latin America grew by 0.27 MMT (3.87%). Despite adverse weather conditions in that region, the demand for aqua products is still strong in Latin America, which helped aqua producers there remain resilient.
- The global **pet** feed industry continues to grow, albeit at a slower pace of 0.74% (34.96 MMT, +0.26 MMT) in 2023. Demand for high-quality pet products and services remains high from pet owners who want only the best for their animal companions.
- The Latin American and North American markets were the primary drivers of this growth, with the pet food sector in North America surpassing Europe's this year.
- Europe was the only market experiencing a decline in pet food production in 2023. Supply-chain disruptions and inflationary pressures were the key factors contributing to this decrease.
- The equine feed industry experienced a decrease of 3.9% (7.98 MMT, -0.32 MMT) in 2023.
- The top challenges in the equine sector include high labor and material prices.
- The top technologies impacting the sector are biosecurity, microchipping, genetics and nutritional solutions.
- Survey respondents said the biggest opportunities for nutritional solutions are gut health management and feed efficiency.
- Equine feed is expected to decrease both in price and in volume during the coming year.

### Notable regional results

- **North America** saw a decrease of 2.8 MMT (259.26 MMT, -1.1%), with beef feed tonnage down significantly. The pig and dairy sectors also slipped slightly, but the broiler, layer and pet sectors more than made up the difference. Feed tonnage in the broiler sector was up nearly 2.9%.
- **Latin America** experienced growth in 2023 by 2.46 MMT (200.67 MMT, +1.24%). Despite high production costs, geopolitical tensions and changing consumer behavior due to economic reasons, the region continues to lead global growth, mainly because of its export-driven aquaculture, poultry and pork markets.
- **Europe** continued its downward trend in feed production, with a decrease of 10.07 MMT (253.19 MMT, -3.82%) due to issues that included the invasion in Ukraine and the spread of animal diseases such as African swine fever (ASF) and avian influenza (AI).
- **Asia-Pacific** led feed production growth in 2023, with an increase of 6.54 MMT (475.33 MMT, +1.4%). Feed production growth in the region's ruminant sectors

offset a setback in the aqua sector. The region is home to several of the top 10 feed-producing countries, including China, India, Vietnam and Japan.

- **Africa** experienced continued but slower growth with an increase of 1.95%, nearly 1 MMT to total 51.42 MMT.
- The **Middle East** saw a slight decrease of 0.12 MMT (35.93 MMT, -0.32%).

- **Oceania** had the third-highest growth, 3.71% or 0.39 MMT to total 10.78 MMT.

Alltech works together with feed mills and industry and government entities around the world to compile data and insights to provide an assessment of feed production each year. Compound feed production and prices were collected by Alltech's global sales team and in partnership

with local feed associations in the first quarter of 2024. These figures are estimates and are intended to serve as an information resource for industry stakeholders.

To access more data and insights from the 2024 Alltech Agri-Food Outlook, including an interactive global map, visit [alltech.com/agri-food-outlook](https://alltech.com/agri-food-outlook).

**Contact:** [press@alltech.com](mailto:press@alltech.com)

Dr. Manish Chaurasia

Marketing Manager, South Asia

[mchaurasia@alltech.com](mailto:mchaurasia@alltech.com); +91 8130890989

## About Alltech

Founded in 1980 by Irish entrepreneur and scientist Dr. Pearse Lyons, Alltech delivers smarter, more sustainable solutions for agriculture. Our diverse portfolio of products and services improves the health and performance of plants and animals, resulting in better nutrition for all and a decreased environmental impact.

We are a global leader in the agriculture industry. Our team produces specialty ingredients, premix supplements, feed and biologicals, backed by science and an unparalleled platform of services.

Strengthened by more than 40 years of scientific research, we carry forward a legacy of innovation and a unique culture that views challenges through an entrepreneurial lens. As a private, family-owned company, we adapt quickly to our customers' needs and focus on advanced innovation.

We believe agriculture has the greatest potential to shape the future of our planet. Our more than 5,000 talented team members worldwide share our purpose of **Working Together for a Planet of Plenty™**. Together, we can provide nutrition for all, revitalize local economies and replenish the planet's natural resources.

Headquartered just outside of Lexington, Kentucky, USA, Alltech serves customers in more than 120 countries, has five bioscience centers, and operates more than 80 manufacturing facilities across the globe.

For more information, visit [alltech.com](https://alltech.com), or join the conversation on Facebook, X and LinkedIn.





## NOVUS announces

**Rajeev Murthy** as senior director & managing director of Asia beginning this month. Murthy will shape and steer the intelligent nutrition company's strategy in this vital market.

"Rajeev comes to NOVUS with more than 25 years of industry experience," says Sr. Vice President and Chief Commercial Officer Ed Galo. "Along with his positive track record for driving commercial success, employee engagement and talent development, we are confident in his ability to elevate our presence and enhance our strategic initiatives across Asia."

Originally from Bangalore, India, Murthy says luck brought him to the animal agriculture industry, but he's made it his life's career "for the difference one can make in improving access to healthy and safe protein."

When it comes to supporting poultry, swine, and dairy

producers in Asia, Murthy says customer profitability is key.

"For poultry, driving profitable growth while being mindful of changing customer needs where sustainability and antibiotic use are concerned is important," he says. "For swine, we need to investigate ways to return to a profitable operation in a world that is still impacted by challenges resulting from African Swine Fever. With dairy, we can show how to drive efficiency in the operation."

As part of NOVUS' goals to deliver solutions closer to the customer, Murthy will be based out of the company's office in Bangkok, Thailand.

Before joining NOVUS, Murthy held regional leadership roles at dsm-firmenich in its Animal Nutrition & Health business unit, and Eli Lilly & Company in the Elanco Animal Health division. He also served as CEO of the feed business for Godrej Agrovet Ltd., an Indian livestock and agribusiness company.

NOVUS is the intelligent nutrition company providing solutions for the global animal agriculture industry. The company's portfolio includes bis-chelated organic trace minerals, enzymes, eubiotics, and methionine solutions along with a network of experts worldwide providing guidance on management best practices.

For information on how NOVUS supports producers, nutritionists, and feed mills in Asia, visit [novusint.com](http://novusint.com).



## Dr. Eckel Enlarges Management Board

Dr Viktor Eckel is the new Managing Director for products and innovation

Contact

**Andrea Dietrich**

PR & Communication Manager

press@dr-eckel.de

+49 2636 – 974948



Dr. Eckel Animal Nutrition is adding to its management board. Dr Viktor Eckel has joined founder Dr Antje Eckel on the management board as Managing Director with main responsibility for products and innovation. This strategic decision marks a significant step towards securing the company's future.

For 30 years, the family company has been all about innovative feed additives for sustainable animal nutrition. With a second generation at the management table, the company is now in a great position to meet the current challenges of a growing international market, according to CEO Antje Eckel.

Viktor Eckel is setting out his priorities clearly: sustainability, resilience and resource efficiency. "When it was founded 30 years ago, Dr. Eckel was among the first companies backing plant-based alternatives. We recognised at an early stage how important they are for promoting animal health and well-being and pursued a more sustainable approach from the outset. This commitment remains at the core of our philosophy today." Viktor Eckel believes that this is the key for feed manufacturers and producers in Germany and worldwide to achieve high-resistance, resource-efficient and profitable production. "Offering our customers the best solutions and services for this now and in the future is an amazing, exciting role that I and the rest of the team are very much looking forward to."

Viktor Eckel has already been playing a decisive role in the development of the brand and the positioning of the family business for the future since 2020. As a biochemist with a doctorate in microbiology, he has broad expertise in feed fermentation and physiology, putting him in an excellent position to continue developing the Dr. Eckel Animal Nutrition portfolio and progress the market for feed additives.

### About Dr. Eckel

Dr. Eckel Animal Nutrition is all about innovative feed additives made in Germany. The value-orientated family business was founded by Dr Antje Eckel in Niederrissen / Germany in 1994, where it is still firmly established. The company has meanwhile gained international success. Indeed, Dr. Eckel is one of the world's foremost companies in the sector

with a specific focus on animal welfare, developing products that make animal nutrition more resource-efficient, climate-friendly and healthy. This is how Dr. Eckel contributes to sustainable global nutrition.

Dr. Eckel Animal Nutrition represents excellence, innovation and responsibility towards people, animals and the environment. The products combine innovation and quality, which is what sets Dr. Eckel apart. Customers value the solutions for profitable animal nutrition. These promote animal welfare and enable customers to achieve sustainable, long-term success. To this end, the multinational team of experts conducts research and works with specialists from around 20 different countries. This is but one of the reasons why Dr. Eckel was identified as a hidden champion by the Forschungszentrum Mittelstand (FZM), a research institute for the German Mittelstand at the University of Trier.

Every year, Dr. Eckel invests more than 10 per cent of its revenue in innovation projects for customers, partners and employees. These consist of new products, consolidating digital infrastructure and sustainability projects such as replacing the current company fleet with electric vehicles, among others. This commitment is paying off, as evidenced by various awards, including Leading Employer, TOP 100 innovator, 'Top Arbeitgeber im Mittelstand' (Top 'Mittelstand' Employer) by FOCUS magazine and the 'Innovative through Research' seal of approval.

### Projections

This press release may include projections based on current assumptions and forecasts made by the management of Dr. Eckel Animal Nutrition GmbH & Co. KG. Various risks—both known and unknown—uncertainties and other factors may cause the actual results, financial situation, development or performance of Dr. Eckel Animal Nutrition GmbH & Co. KG to differ significantly from the estimates provided here. Such factors include those described by Dr. Eckel Animal Nutrition GmbH & Co. KG in published reports. Dr. Eckel Animal Nutrition GmbH & Co. KG shall accept no liability whatsoever for updating such projections and adjusting them to future events or developments.



# NABARD Issues Statement to Dispel Misinformation Regarding 'Dairy Loan Yojana'

The National Bank for Agriculture and Rural Development (NABARD) issues a statement to address the recent misinformation circulating about the NABARD Dairy Loan Yojana. A series of false claims suggesting that NABARD is directly providing loans to farmers for dairy farming ventures under their Dairy Entrepreneurship Development Scheme. NABARD, categorically and unequivocally states that these assertions are fake.

NABARD, as an apex development finance institution,

functions by extending financial assistance and support to various financial institutions and cooperatives involved in rural development. It does not extend loans directly to individual farmers. All stakeholders are strongly urged, particularly farmers and rural entrepreneurs, to exercise utmost caution and refrain from believing or propagating such misinformation. Unverified information can lead to financial risks and misunderstandings. Accurate information can be obtained from NABARD's official

website, [www.nabard.org](http://www.nabard.org).

NABARD remains steadfast in its commitment to promoting rural development and agriculture through various initiatives and schemes aimed at fostering sustainable livelihoods. Hence, cooperation of all stakeholders is solicited in ensuring the dissemination of accurate information and discouraging the spread of misinformation.

For further clarification or inquiries, contact NABARD directly or visit our nearest office.



**Nabard Dairy Loan Yojana is a fake publicity**



## Amul Dairy Marks Milestone Achievement Record Turnover of Rs 12,880 Crore in FY 2023-24



Kaira District Co-operative Milk Producers' Union Ltd. (Amul Dairy), situated in Gujarat, had the largest commercial turnover of Rs 12,880 crore in the fiscal year 2023-24, representing a staggering 9 percent rise over the previous year.

Amul Dairy Chairman Vipulbhai Patel announced the statistics, stating, "The remarkable growth reflects Amul Dairy's strong performance and market position."

During the year, Amul Dairy purchased 173 crore kilogrammes of milk from milk farmers, representing a 15% increase over the previous year. Notably, the dairy has maintained its commitment to helping milk farmers by paying Rs 1000 per kilogramme of fat, an increase of 11% over the previous fiscal year.

The Chairman also emphasised Amul Dairy's efforts to increase milk animal output by using modern technology such as sex-sorted

semen and embryo transfer.

Furthermore, the building of a Total Mixed Ration (TMR) facility at Sarsa farm seeks to offer balanced nutrition to milch cows, hence increasing production and health.

He highlighted a 25,000 drop in hospital visits over the previous year, showing better health and

welfare measures for dairy cows.

Amul Dairy is aggressively pursuing production expansion efforts, including projects at the Khatraj cheese facility, the ice cream plant in Pune, and the Chittoor plant, in accordance with its strategic growth goals.

While extending its scope throughout India, Amul Dairy is also dedicated to sustainability by installing biogas across its operating locations and aiming to have all of its DCS solar energy equipped by 2024-25.

The Chairman further praised the Board members' remarkable support, the devotion of MD Amul Dairy Dr. Amit Vyas, Amul personnel, and the faith shown by millions of milk farmers for making this accomplishment possible.

Amul Dairy's continuous dedication to quality and innovation in the dairy business is shown in record-breaking turnover, greater milk

procurement, expanded assistance for milk farmers, and attempts to improve productivity and expand.

## eFeed Launches Research Platform to Revolutionize Sustainable Dairy Practices



eFeed, a precision animal management and nutrition company, has launched a research platform to fuel innovation in sustainable dairy practices in India.

The platform aims to address critical challenges in the dairy industry, such as increasing methane emissions from cattle, the detrimental use of urea in cattle feed affecting soil health, and the consequent depletion of groundwater levels. India has the highest cattle population of over 300 million, and many private sector organizations are also involved in research to mitigate problems related to climate change.

The platform is inviting participation from a diverse group of stakeholders, including researchers, academicians, scholars, dairy experts, veterinarians, and dairy companies. This inclusivity will ensure a comprehensive approach to tackling the challenges faced by the industry. eFeed aims to reduce methane emissions in developed countries while boosting milk and meat production in emerging economies.

eFeed, has received a grant of Rs. 25 lakhs from the Indian Council of Agricultural Research (ICAR). The startup is now moving ahead to expand its network to take the Indian livestock and dairy industry to the higher levels. With a presence of big investors like Omnivore, the company is now working with the ICAR to connect with more farmers for good livestock health and increased income.

eFeed is primarily working for the development of the livestock industry by improving the cattle health and providing farmers with the best solution for increased productivity of their livestock. The company runs a mobile application named eFeed by which farmers can use their services. The company offers several training programs by which it educates Indian farmers about the cattle nutrition and its effect on milk production. It tells about the preparation of cattle feed from homemade organic and natural resources.

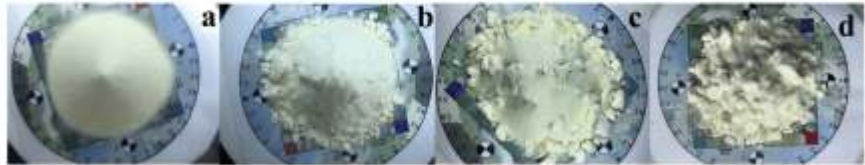
Founder Kumar Ranjan said that the grant signifies the successful impact of the startup for the cattle industry and is excited for the new opportunities this grant brought with it. The company will use this grant in expanding their operation and showcasing the increased milk production to the farmers, inspiring more farmers to connect with them and trust them, ensuring increased contribution from the cattle industry to the country's economy.

To date, eFeed has made a network of more than 1.2 lakh farmers working for the good health of cattles and has raised \$1.5 million funding from big investors like Omnivore, Better Capital, Faad, and others.

## Milk Powder Through the Ages: Comparing Centuries-old Samples to Modern Standards

was crowded with well-wishers. Within 100 nautical miles of the Pole, Shackleton and his crew would reach a point farther south than any previous expedition and abandon their base camp. One container of Defiance brand whole milk powder, which had been frozen at Shackleton's base camp for the previous 100 years, was

**Instant Trim Milk Powder**



**Instant Whole Milk Powder**



A recent comparative study has revealed more similarities than differences between milk powders from both historical and modern times, highlighting the enduring importance of milk in our diets. The analysis was made possible after milk powder produced in New Zealand in 1907 and shipped to Antarctica with explorers searching for the South Pole was revealed in a surprising find. The research details by the team at Fonterra Research and Development Centre in New Zealand were published in the *Journal of Dairy Science*.

In an attempt to become the first person to step foot on the South Pole, explorer Ernest Shackleton's British Antarctic Expedition, traveling aboard the ship *Nimrod*, sailed from Lyttelton, New Zealand, on New Year's Day in 1908. The ship was loaded with dairy products, including two cases of cheese, 1,000 pounds of dried whole milk powder, and 192 pounds of butter, while the port

found during the Antarctic Heritage Trust restoration effort a century later.

Before we had vacuum-assisted evaporation, milk powders in the early twentieth century were manufactured by a roller-drying process involving boiling-hot milk being poured between two steam-heated revolving cylinders so that the water evaporated, leaving a thin sheet of dried milk that would have been milled and sieved. The unexpected findings ran counter to theories that milk has changed throughout time. Despite more than a century between the samples, the composition of bulk components and detailed protein, fat, and minor components have not changed drastically in the intervening years.

Overall, there were striking similarities in the phospholipid, protein, and fatty acid compositions, including the genetic polymorphisms in whey and casein proteins. The Shackleton samples



also included volatile fragrance molecules associated with oxidation, which was another noteworthy variation. Researchers suggest that one of the reasons for it could be less-than-ideal collection and storage of the raw milk before drying, but it's much more likely that—even in frozen conditions—being stored in an open tin for a century is going to result in continued oxidation. While acknowledging the remarkable similarities, the research team emphasizes that modern spray-dried whole milk powders exhibit significant superiority in terms of powder quality. This superiority is particularly evident in aspects such as appearance and their ability to dissolve easily in water.

## Spread of H5N1 Bird Flu in Dairy Cattle Linked to Milk Handling Practices



The bird flu virus, specifically the H5N1 subtype known as clade 2.3.4.4b, is spreading through dairy cattle in the United States. The virus is not believed to be spreading directly from cow to cow through breathing, but rather through milk droplets on dairy workers' clothing or gloves, or through the suction

cups used for milking. The virus has been found in the milk of infected cows but not in nasal swabs or blood samples. So far, only one worker at a dairy farm has been found to have the virus, with no other human cases confirmed.

Initially, researchers believed migratory birds were responsible for spreading the virus to affected dairy farms, but USDA scientists now think the movement of cattle, particularly from southern parts of the country to the Midwest and north in the spring, may have played a role. It is also possible that all affected cows can be traced back to a single farm, although specific herds or locations were not named.

Since the initial infection was reported on March 25, the virus has spread to cattle in six states. USDA has used genetic analysis to track the movement of the virus, finding that cows from infected farms in Texas likely spread the virus to farms in Idaho, Michigan, and Ohio. While the virus could potentially spread to poultry, USDA has not called for drastic measures such as culling entire cow herds, as it does with poultry farms.

USDA and the Food and Drug Administration have emphasized that pasteurization kills the virus, ensuring the safety of commercial

milk. However, they recommend against consuming raw milk or products made from it. Further studies are needed to determine how the virus ended up in cows, as they have not previously been shown to carry a flu virus that causes high mortality in birds. One possibility is that birds infected cows by shedding droppings in their feed or water, but the virus could also have spread through the wind or directly from poultry to cattle.

While some researchers believe USDA should halt the transport of dairy cows, the agency has not taken such action. There is currently no evidence of beef cattle becoming infected. The situation is being closely monitored, and further studies will provide more information on the transmission and spread of the virus in dairy cattle.

## M&S Invests in Green Solutions: Launches Feed Additive to Cut Dairy Farm Emissions

Marks & Spencer is claiming an industry first with the launch of a





new feed additive for pasture-grazed dairy cows that claims to reduce the carbon footprint of its fresh milk.

Working with 40 dairy farmers in its milk pool, M&S is spending £1 million on a diet adjustment for cows to minimise the amount of methane created in their stomachs and emitted into the atmosphere.

It said that the effort is expected to reduce 11,000 tonnes of greenhouse gas emissions from the environment each year, reducing M&S' RSPCA-assured core fresh milk carbon footprint by 8.4%.

Livestock production is a significant producer of methane, a strong greenhouse gas. In the absence of laws targeted at lowering total meat consumption, controlling methane emissions by altering a ruminant's diet has been a top priority for governments and corporations seeking to reduce agricultural emissions. The UK government has investigated the possibilities of animal feed additives such as seaweed and probiotics to decrease methane emissions from ruminant cattle.

The M&S feed additive is derived from maize fermentation byproducts and mineral salts, which inhibit digestive enzymes from producing methane and are naturally degraded in cow stomachs.

Along with feed innovation, M&S has announced the creation of a £1 million Plan A Accelerator finance, via which it intends to collaborate with long-term and new suppliers to finance innovation initiatives in energy, water, recycling, and technology that will help it reach its net-zero by 2040 aim.

One of the efforts will include M&S using Polytag technology on food goods to better identify how much, when, and where their branded

single-use plastic is recovered at UK recycling facilities.

## Study Suggests Whole-Fat Dairy Consumption May Reverse Pre-Diabetes



A 9-year study by researchers from the Shahid Beheshti University of Medical Sciences in Tehran, Iran, has found evidence that consuming whole-fat dairy may be linked to reversing hyperglycaemia and preventing its progression to type 2 diabetes in pre-diabetic patients. The study, which was part of the ongoing Tehran Lipid and Glucose Study, found that full-fat yogurt consumption could be linked to a lower chance of developing diabetes and an increased likelihood of returning to normal glycaemia for patients who already had pre-diabetes.

The study was conducted on 334 pre-diabetic patients, who were part of the ongoing Tehran Lipid

and Glucose Study. The average age of the cohort was  $49.4 \pm 12.8$  years, and 51.5% were men. The rate of pre-diabetes progression and regression was similar (39.8%), though those who returned to normal glycaemia were younger and had lower blood sugar levels, body mass index, and cholesterol ratio.

During the follow-up, the

researchers found that participants who consumed high amounts of full-fat dairy products had a borderline significant lower fasting and 2h serum glucose (2h-SG) concentrations over time. The opposite was true for higher cheese intake (more than a single serving per day), which was associated with higher 2h SG concentrations; while high milk consumption was related to lower 2h-SG over time.

The chance of returning to normal glycemia was significantly increased when 200g of high-fat dairy was being consumed per day. In particular, higher intake of yogurt appeared more likely to be linked to returning to normal glycemia, while high intake of cheese was more likely to increase the risk of

developing type 2 diabetes in pre-diabetic patients.

However, there is no scientific consensus on why yogurt appears to be good for glycaemic health. The inconsistent findings could be down to cheese and yogurt's unique composition, the variety of dairy products available globally, and how these foods are consumed in different cultures.

The current findings do suggest that eating dairy regularly could lessen the risk of developing type 2 diabetes or improve the chances of reversing pre-diabetes. The paper also offers some evidence against claims that full-fat dairy could be a risk factor and supports existing evidence of whole-fat dairy's protective effects against type 2 diabetes.

## Denmark Farmers Get Government Backing to Reduce Cow Methane Emissions by 2030

Denmark has decided to assist farmers in financing a feed additive that is estimated to lower methane emissions from cattle by up to 30%, as part of efforts to fulfil ambitious climate objectives, the government said. Denmark, a major dairy exporter, may become the first nation in the world to charge agricultural pollutants, including methane emissions from burping cows, in a move that has widespread political support.

Methane, a more powerful greenhouse gas than carbon dioxide, is a naturally occurring byproduct of cow and other ruminant digestion that is emitted into the atmosphere. Denmark has vowed to cut emissions by 70% by



2030, compared to 1990 levels. More than half of Denmark's land is cultivated, with agriculture responsible for almost one-third of the country's carbon emissions, according to Danish climate research tank Concito.

Farming has not yet been subject to climate restrictions, but the sector is concerned that a carbon price would compel them to curtail output and shut farms. Instead, farmers and the dairy industry have campaigned for the use of chemicals that inhibit fermentation in the cows' stomachs, reducing methane generation.

The government allocated 518 million Danish crowns (\$74 million) to fund the feed additive, which is anticipated to lower methane emissions from the country's approximately 550,000 dairy cows by 30% by 2030. Such additions have been regarded with mistrust by Danish lawmakers and animal welfare organisations, since it is uncertain if they will fit Danish requirements. The Netherlands-based nutrition business Royal DSM got a feed additive authorised by the EU in 2022.

## Indoor vs. Outdoor: The Complexities

## of Defining 'Free-Range' Dairy Cows

Cows are essential for a fulfilling life, but the definition of 'free-range' cow is ambiguous. Farmers must balance time outdoors and indoors for optimal welfare. Dairy cows typically spend some time outside, but the amount of time spent indoors varies depending on the farm and cow. Some reasons for keeping cows indoors include protecting them from bad weather, allowing farmers greater control over their diet, and increasing yields.

Diet is also crucial, as grass quality varies at different times of the year. Modern high-yielding dairy cows have high energy requirements, requiring additional, concentrated feed to control diet and production. However, access to both grazing and Total Milk Relative (TMR) can help fine-tune the cow's diet.

Dairies often keep cows inside to increase margins, as simplification of the system can help them achieve these goals. Consumer interest in dairy is declining due to growing concerns around animal welfare and environmental concerns. Regulation on how much time a cow should spend outdoors





is lacking, but small-scale certifications like the RSPCA Assured scheme ensure cows have enough access to pasture. These standards include plenty of space, bedding, competition prevention, grazing in summer, environmental enrichment, and health reviews at least four times a year.

Cow welfare is always the priority, and adverse weather conditions can be justification for not meeting the expected number of grazing days. The climate and time of year determine the total number of days available for cows to go out. There is no clear-cut official definition of 'free-range' cows, as most cows are let outside for certain periods of time and all cows are kept indoors during winter months.

The lack of a clear, universally agreed definition of 'free-range' makes it difficult to differentiate between 'free-range' and normal industry practice, where cows are provided with access to pasture during the traditional grazing season. It is vital to cows' health to be kept indoors at some points, as most cows with access to pasture are housed for a significant number of months during the year, which can significantly impact their welfare if facilities are inadequate.

## Cargill and CAU Collaborate to Slash Methane Emissions in Dairy Farming

Cargill Animal Nutrition and Health (ANH) is focused on reducing greenhouse gas emissions in the agriculture industry through innovation. They believe that digital technologies, feed additives, feeding strategies, and farm management must work together to achieve sustainability goals, including reducing methane emissions.

Cargill's Technology Application Center (TAC) in Bazhou, China, plays

a crucial role in their methane emission reduction strategy. The TAC evaluates various technologies, additives, and nutritional strategies to measure their impact on methane reduction. They also collaborate with China Agricultural University (CAU) to develop and investigate emission reduction solutions.

Together, Cargill and CAU have developed the Carbon Reduction Project to support China's carbon reduction goals. They aim to design the future of sustainable farming and reduce carbon emissions by leveraging Cargill's global capabilities and CAU's resources. The project involves evaluating the impact of different ingredients and additives on methane emissions in the lab, as well as validating their effectiveness on-farm.

Cargill ANH has already used C-Lock's GreenFeed machines to validate that their methane emission reduction solution, SilvAir™, can reduce dairy cow methane emissions by up to 10% when incorporated into feed. The next step is to conduct an on-farm study with dairy cattle to test multiple solutions simultaneously and achieve a 20% reduction in methane emissions.

The partnership between Cargill and CAU aims to transform methane emission standards in



China. They will develop carbon emission standards for each ingredient in cattle diets and create life cycle assessment (LCA) tools for dairy farms to assess environmental impacts, including methane emissions.

On March 8, 2024, CAU released a whitepaper titled "Whitepaper on China Dairy in Low Carbon," which includes insights and solutions from the partnership with Cargill's TAC. This whitepaper covers solution efficacy, the landscape of dairy methane emission reduction solutions, and more.

Cargill emphasizes the importance of partnership and cooperation in driving innovation and reducing methane emissions. They believe that a one-size-fits-all solution is not sufficient and that collaboration with key stakeholders is necessary to address the industry's sustainability goals.

## Understanding the Unseen Efforts of Veterinarians: Focus of World Veterinary Day 2024

World Veterinary Day 2024 aims to highlight the importance of veterinarians as essential health workers, as they play a crucial role in ensuring food safety, preventing animal suffering, and reducing the risk of infectious diseases. A survey by Boehringer Ingelheim revealed that only 49% of veterinarians feel that the veterinary profession is appreciated by animal owners. This highlights the need for understanding the reasons why veterinarians feel their profession is underappreciated, raising awareness of complex aspects of veterinary work, and showing veterinary

# WORLD VETERINARY DAY 2024



## Veterinarians are essential health workers

27th April 2024

professionals that they are recognized for their essential work.

The survey found that only 48% of pet-focused (cats and dogs), 55% of livestock, and 42% of equine veterinary professionals reported that their profession was appreciated, despite 75% of respondents feeling personally appreciated by their client base. Dr. Ellen Van Nierop, President at the World Small Animal Veterinary Association, emphasized the need to shine light on the care and effort veterinarians put into forging a healthy and happy society.

Veterinarian professionals believe their personal clients appreciate their level of expertise, ability to

deal with ethical dilemmas, and the variety of care they provide.

However, the survey also revealed that clients don't always have full awareness of the resilience required from the job, with 49% feeling they were underappreciated by clients when it came to understanding the emotional exhaustion required from the job.

The most common responses from pet-focused participants were "our compassion and dedication to animal welfare i.e. not money" and "our commitment to being a veterinarian and the difficulties of the role." The most common response from both livestock and equine veterinary professionals was





the "importance, competence, and value of the profession."

Boehringer Ingelheim, along with the World Small Animal Vet Association and the World Association for Buiatrics, and other leading organizations are united to help veterinarians by showcasing their compassion and dedication to animal welfare while shedding light on the often-unseen complex and difficult aspects of care.

## Phibro Animal Health to Acquire Zoetis' Medicated Feed Additives for \$350 Million

Zoetis Inc. and Phibro Animal



Health Corporation have announced a definitive agreement for Phibro Animal Health to acquire Zoetis' medicated feed additive (MFA) product portfolio, certain water soluble products, and related assets for \$350 million. The transaction is expected to be completed in the second half of 2024.

The acquired product portfolio consists of over 37 product lines sold in approximately 80 countries, generating approximately \$400 million in revenue in 2023. The agreement also includes six manufacturing sites in the US, Italy, and China. More than 300 Zoetis employees are expected to transition to Phibro Animal Health as part of the acquisition.

Zoetis' decision to divest its MFA and water soluble products aligns

with its capital allocation strategy to focus on solutions for animal health, productivity, and sustainability. The company will now be able to concentrate its livestock investments in other areas, such as vaccine, biologic, and genetic programs.

Phibro Animal Health, a leading global diversified animal health and nutrition company, will benefit from the acquisition by expanding its product portfolio and customer reach. The addition of Zoetis' MFA and water soluble products will complement Phibro Animal Health's existing species and product portfolios, allowing customers to meet high standards of animal care, disease prevention, and nutrition.

The acquisition is expected to

boost Phibro Animal Health's profitability. The company plans to fund the acquisition primarily with debt and has received financing commitments from key relationship banks. Phibro Animal Health aims to have a net leverage of below 3.0x by its fiscal year end in June 2027. Zoetis and Phibro Animal Health will work closely with their

colleagues and customers to ensure a smooth transition and continued supply of the acquired products.

Zoetis is a global animal health company focused on advancing care for animals. With a leading portfolio and pipeline of medicines, vaccines, diagnostics, and technologies, the company operates in over 100 countries and generated \$8.5 billion in revenue in 2023. Phibro Animal Health is a trusted partner for livestock producers, farmers, veterinarians, and consumers in the animal health and nutrition industry. The company aims to enhance the health of animals through its solutions and has a global presence.

The acquisition of Zoetis' MFA product portfolio and related assets will enhance Phibro Animal Health's global portfolio and allow for continued investment in its higher growth businesses. The company is confident in its capabilities to integrate and strengthen the acquired business and looks forward to collaborating with the Zoetis team and welcoming new colleagues. Overall, this transaction demonstrates Zoetis' strategic focus on its core areas of expertise and allows Phibro Animal Health to expand its product offerings and global presence in the animal health industry.



# Editorial Calendar 2024

Publishing Month: <b>January</b> Article Deadline : <b>28<sup>th</sup>, Dec. 2023</b> Advertising Deadline : <b>30<sup>th</sup>, Dec. 2023</b> Focus : <b>Opportunities and Challenges</b>	Publishing Month: <b>February</b> Article Deadline : <b>28<sup>th</sup>, Jan. 2024</b> Advertising Deadline : <b>30<sup>th</sup>, Jan. 2024</b> Focus : <b>Budget</b>	Publishing Month: <b>March</b> Article Deadline : <b>26<sup>th</sup>, Feb. 2024</b> Advertising Deadline : <b>28<sup>th</sup>, Feb. 2024</b> Focus : <b>Summer Stress Management</b>	Publishing Month: <b>April</b> Article Deadline : <b>28<sup>th</sup>, March 2024</b> Advertising Deadline : <b>30<sup>th</sup>, March 2024</b> Focus : <b>Cold Chain</b>
Publishing Month: <b>May</b> Article Deadline : <b>28<sup>th</sup>, April 2024</b> Advertising Deadline : <b>30<sup>th</sup>, April 2024</b> Focus : <b>Nutrition</b>	Publishing Month: <b>June</b> Article Deadline : <b>28<sup>th</sup>, May 2024</b> Advertising Deadline : <b>30<sup>th</sup>, May 2024</b> Focus : <b>Milk - Production &amp; Preservation</b>	Publishing Month: <b>July</b> Article Deadline : <b>28<sup>th</sup>, June 2024</b> Advertising Deadline : <b>30<sup>th</sup>, June 2024</b> Focus : <b>Monsoon Management</b>	Publishing Month: <b>August</b> Article Deadline : <b>28<sup>th</sup>, July 2024</b> Advertising Deadline : <b>30<sup>th</sup>, July 2024</b> Focus : <b>Sustainability</b>
Publishing Month: <b>September</b> Article Deadline : <b>28<sup>th</sup>, August 2024</b> Advertising Deadline : <b>30<sup>th</sup>, August 2024</b> Focus : <b>Processing &amp; Packaging</b>	Publishing Month: <b>October</b> Article Deadline : <b>28<sup>th</sup>, September 2024</b> Advertising Deadline : <b>30<sup>th</sup>, September 2024</b> Focus : <b>Disease Prevention</b>	Publishing Month: <b>November</b> Article Deadline : <b>28<sup>th</sup>, October 2024</b> Advertising Deadline : <b>30<sup>th</sup>, October 2024</b> Focus : <b>Biosecurity</b>	Publishing Month: <b>December</b> Article Deadline : <b>28<sup>th</sup>, November 2024</b> Advertising Deadline : <b>30<sup>th</sup>, November 2024</b> Focus : <b>Winter Stress</b>

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