

# DAIRY PLANNER

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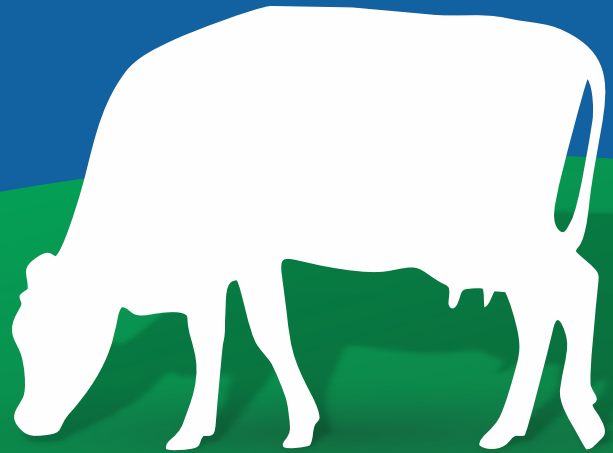


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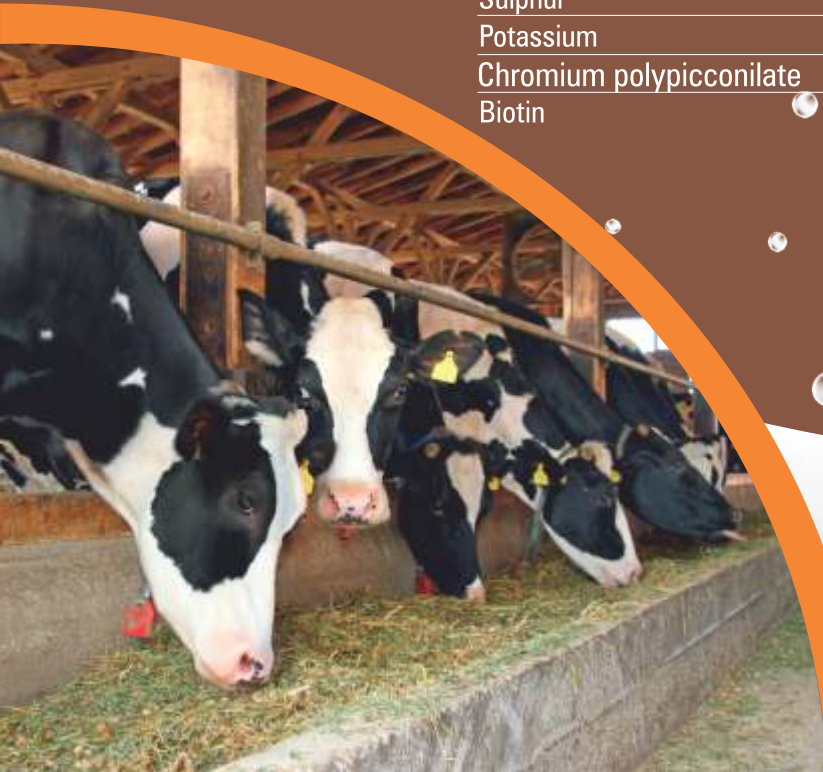
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# From the Pen of Chief Editor



## Empowering Dairy Farmers: Interim Budget 2024's Provisions for the Dairy Sector

The recently unveiled interim budget for 2024 has brought a ray of hope for millions of dairy farmers across the nation with its targeted provisions aimed at revitalizing the dairy sector. This budget signifies a significant step towards addressing the longstanding challenges faced by dairy farmers and fostering sustainable growth in the industry.

One of the most notable aspects of the interim budget is its emphasis on infrastructure development within the dairy sector. The allocation of substantial funds for the establishment of modern dairy processing plants, cold storage facilities, and transportation networks is poised to revolutionize the dairy value chain. Improved infrastructure not only enhances the efficiency of dairy operations but also reduces post-harvest losses, ensuring higher returns for farmers.

Moreover, the budget's focus on technology adoption is commendable. By promoting modern dairy farming practices and digital solutions for herd management and milk collection, the government is empowering dairy farmers to increase productivity and quality. Access to information and training programs on best practices will enable farmers to make informed decisions, leading to better outcomes for both farmers and consumers.

The interim budget also places a strong emphasis on quality assurance within the dairy sector. Strengthening quality control measures and enforcing hygiene and safety standards at dairy processing units will enhance consumer confidence and facilitate market access. This is particularly crucial in light of increasing consumer demand for safe and nutritious dairy products.

Furthermore, the budget's provisions for market access and export promotion hold promising prospects for dairy farmers. By providing export incentives and streamlining export procedures, the government aims to tap into international markets and increase farmers' remuneration. Expanding market opportunities not only reduces surplus stocks but also stabilizes prices, benefiting farmers in the long run.

Overall, the interim budget's provisions for the dairy sector are poised to have a transformative impact, ushering in a new era of growth and prosperity for dairy farmers. By addressing infrastructure gaps, promoting technology adoption, ensuring quality assurance, and expanding market access, the government is laying the foundation for a more resilient and sustainable dairy industry. It is imperative for all stakeholders to collaborate and leverage these provisions to maximize their benefits and drive inclusive growth in the dairy sector.

*Vishal*

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# Interim Budget 2024: A Comprehensive Analysis of its Impact on the Dairy Sector

**Siddhi Gupta and Parth Rai Gupta**  
Co-Editor

The dairy sector in India has long been a crucial component of the country's agricultural landscape, contributing significantly to both rural livelihoods and the overall economy. With the interim budget for the fiscal year 2024 recently unveiled, there has been much anticipation regarding its implications for the dairy industry.

India is the world's largest milk producer, with dairy farming deeply ingrained in its rural economy. The sector comprises millions of small-scale dairy farmers, cooperatives, and private players, collectively driving growth and employment generation.

However, despite its significant contributions, the dairy sector faces various challenges. These include low productivity due to inadequate infrastructure, limited access to quality feed and veterinary services, fragmented supply chains, and price volatility. Additionally, the sector is vulnerable to external factors such as climate change and fluctuations in input costs.

## **Key Provisions of the Interim Budget 2024 for the Dairy Sector**

**Investment in Infrastructure:** The interim budget allocates substantial funds for the development of dairy infrastructure. This includes the establishment of modern dairy

processing plants, cold storage facilities, and transportation networks. Investments in infrastructure are crucial for enhancing the efficiency of the dairy value chain, reducing post-harvest losses, and ensuring quality standards.

### **Technology Adoption:**

Recognizing the importance of technology in improving productivity and quality, the interim budget emphasizes the promotion of modern dairy farming practices. This involves initiatives such as the dissemination of information on best practices, training programs for dairy farmers, and the adoption of digital solutions for herd management and milk collection.

**Quality Assurance:** Quality assurance is paramount in the dairy industry to meet domestic and international standards. The interim budget includes provisions for strengthening quality control measures, including the enforcement of hygiene and safety standards at dairy processing units. This focus on quality assurance is essential for enhancing consumer confidence and facilitating market access.

### **Market Access and Export Promotion:**

In line with the government's efforts to boost exports and enhance farmers' income, the interim budget





outlines measures to promote dairy exports. This includes the provision of export incentives, streamlining export procedures, and market development initiatives targeting key export destinations. Expanding market access for dairy products is crucial for reducing surplus stocks, stabilizing prices, and increasing farmers' remuneration.

**Support for Small-Scale Farmers:**

Small-scale dairy farmers constitute a significant portion of the dairy sector and often face challenges such as limited access to credit and technical know-how. The interim budget includes provisions for targeted support programs aimed at empowering small-scale dairy farmers. This may involve subsidies for inputs such as feed and fodder, access to credit facilities, and capacity-building initiatives.

**Research and Development:**

Innovation plays a vital role in addressing the challenges faced by

the dairy sector and unlocking its growth potential. The interim budget allocates funds for research and development in areas such as animal genetics, nutrition, and disease management. Investing in R&D can lead to the development of high-yielding breeds, innovative feed formulations, and disease-resistant livestock, thereby enhancing productivity and sustainability.

**Environmental Sustainability:** As concerns about environmental sustainability continue to grow, the interim budget emphasizes the promotion of sustainable practices in the dairy sector. This includes incentives for adopting eco-friendly technologies, promoting resource-efficient farming practices, and reducing greenhouse gas emissions from dairy operations. By prioritizing environmental sustainability, the government aims to ensure the long-term viability of the dairy sector while mitigating its impact on the environment.

In conclusion, the interim budget for the fiscal year 2024 presents a comprehensive set of measures aimed at addressing the challenges and opportunities facing the dairy sector in India. By focusing on infrastructure development, technology adoption, quality assurance, market access, support for small-scale farmers, research and development, and environmental sustainability, the government seeks to promote growth, enhance farmers' income, and ensure the sector's long-term sustainability. However, the successful implementation of these measures will require concerted efforts from all stakeholders, including the government, dairy industry players, farmers, and research institutions. With the right policies and interventions in place, the dairy sector can continue to thrive and fulfill its role as a vital engine of rural development and economic growth in India.



# Ketosis Mitigation: A Revolutionary Approach with Rumen Bypass Glycerol



## Introduction

Dairy farming in India is a complex web of challenges, where the well-being of cows and buffaloes holds paramount importance. One such challenge is ketosis that can significantly impact the overall health and productivity of the herds. Ketosis, a metabolic disorder arising from energy imbalance, has been a persistent concern among dairy farmers. However, a groundbreaking solution has been developed to address this challenge – a rumen bypass glycerol feeding application. This article will discuss the challenges of ketosis in Indian dairy cows and buffaloes, exploring the impact of this metabolic disorder and how intervention with rumen bypass glycerol can play a pivotal role in mitigating ketosis, ensuring the sustained health of the dairy animals.

## Understanding Ketosis in Indian Dairy Cows and Buffaloes

Ketosis, a metabolic disorder characterized by an elevated concentration of ketone bodies in the bloodstream, poses a substantial threat to dairy cows and buffaloes, typically manifesting during critical physiological periods such as the transition period and especially in

the initial weeks post-calving, where often the energy demands for milk production exceed the animal's energy intake.

Around calving, the maternal focus on calf care coupled with reduced feed intake can lead to a negative energy balance. This triggers the breakdown of body fat for energy, resulting in the accumulation of ketone bodies in the liver. The prolonged existence of this energy deficiency creates a domino effect, with fatty liver, diminished appetite, and a vicious cycle of ketosis setting in. The consequences are severe, jeopardizing animal health and adversely impacting milk production, resulting in significant economic losses for dairy farmers.

Recognizing the diverse challenges faced by Indian dairy farmers, there is an urgent need for effective interventions to address ketosis and fortify the resilience of dairy herds.

## The Silent Threat: Subclinical Ketosis

One of the more subtle aspects of ketosis is subclinical ketosis, which lacks overt clinical symptoms, making it challenging to identify through casual observation alone. This latent form of ketosis is a silent menace, laying the groundwork for more severe



health complications. It often goes unnoticed until it progresses to clinical ketosis or contributes to other diseases, impacting milk yield, fertility, and overall herd health. To put the scale of the issue into perspective, studies have shown that ketosis can lead to a significant increase in somatic cell count (SCC), indicating potential mastitis issues. Elevated SCC levels not only compromise milk quality but also pose a direct threat to animal health. Rumen bypass glycerol can address this aspect by not only mitigating ketosis but also contributing to a reduction in SCC levels, further safeguarding the health and productivity of dairy cattle.

In the Indian context, where labour-intensive farming practices are prevalent, the early detection of subclinical ketosis is critical.

### **Clinical Manifestations and Economic Implications**

Clinical ketosis, when symptoms become evident, poses a considerable threat to the health and well-being of dairy animals. Loss of appetite, reduced milk performance, altered motor skills, weight loss, and respiratory issues are just a few of the visible signs. Left untreated, clinical ketosis can lead to severe complications such as fatty liver disease, impacting the liver's detoxification function, and even resulting in hepatic coma. The economic ramifications are substantial, ranging from high veterinary costs to the potential loss of a valuable dairy cow. Dairy farmers, often operating within

constrained financial frameworks, cannot afford to overlook the economic implications of ketosis. Rumen bypass glycerol represents a highly cost effective in-feed application to not only alleviate the symptoms but also prevent the progression of ketosis.

### **Ecolex's Rumen Bypass Glycerol: A Game-Changing Intervention**

In response to the pressing need for an effective and sustainable solution for ketosis mitigation, Ecolex Animal Nutrition has developed a revolutionary application of rumen bypass glycerol. Glycerol serves as an alternative energy source for dairy animals and this innovative feeding application addresses the root cause of ketosis by providing a readily available energy source that bypasses the rumen, ensuring optimal utilization by the animal's metabolism. By doing so, Ecolex's rumen bypass glycerol breaks the cycle of energy deficiency, effectively alleviating ketosis and preventing its progression.

### **Scientific Basis and Mechanism of Action**

The scientific underpinnings of Ecolex's rumen bypass glycerol lie in its unique formulation that allows for efficient absorption. Glycerol, when introduced through this application, provides a direct and immediate source of energy for the animal, mitigating the need for excessive fat mobilization and ketone production. This targeted approach not only addresses the symptoms but also tackles the

metabolic imbalances at their source.

Moreover, the application of rumen bypass glycerol can be easily integrated into existing feeding practices, ensuring ease of adoption for Indian dairy farmers. The formulation is designed to complement traditional diets, enhancing the overall nutritional profile and resilience of the herd.

### **Conclusion:**

In the dynamic and evolving landscape of dairy farming, staying ahead of challenges is imperative for sustained success. Ecolex Animal Nutrition's rumen bypass glycerol, Lipo EN+, represents a breakthrough innovation for addressing the critical issue of ketosis in dairy cows and buffaloes. This groundbreaking solution not only empowers farmers to overcome the hurdles posed by ketosis but also ensures healthier animals, increased milk yield, and a brighter future for the Indian dairy industry. As the Indian dairy sector continues to evolve and face unique challenges, collaborations between innovative solutions providers like Ecolex Animal Nutrition and forward-thinking dairy farmers become paramount. Together, they can not only mitigate the impact of ketosis but also contribute to the sustainable growth of the dairy industry, ensuring a brighter and healthier future for Indian dairy farming.

For more information about Lipo EN+

Contact

**Ecolex Animal Nutrition** via <http://www.ecolexanimalnutrition.com> or follow the QR code below:





# Brucellosis: A Hazard to Human

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All around the world, brucellosis is a disease that needs to be reported. A number of Brucella species, which primarily affect cattle, swine, goats, sheep, and dogs, are responsible for the bacterial disease brucellosis. Humans typically acquire the disease through direct contact with infected animals, consuming contaminated animal products, inhaling airborne agents, or all three of these methods. Consuming unpasteurized milk or cheese from infected goats or sheep is the primary cause of the majority of cases.

Brucellosis is one of the most common zoonoses spread by animals, which in endemic regions poses a serious threat to the general public's health.

The bacterium is confined to the udder tissues in female animals and is then eliminated through milk. Farmers, veterinarians, abattoir employees, lab staff, and other individuals who work with animals and use their products run the risk of acquiring infections.

Human brucellosis prevalence is influenced by a number of variables, including dietary practices, how milk and milk products are processed, animal husbandry methods, and environmental hygiene.

## Symptoms of brucellosis

Signs and symptoms are similar to those of the flu and include:

- Fever
- Chills
- Loss of appetite
- Sweats
- Weakness
- Fatigue
- Joint, muscle and back pain
- Headache

The symptoms of brucellosis might go away for a few weeks or months before coming back. Even after receiving treatment, some people with brucellosis have persistent symptoms that last for years. Long-term symptoms and signs may include:

- Fatigue
- Recurrent fevers
- Inflammation of the inner lining of the heart chambers (endocarditis)
- Joint inflammation (arthritis)
- Arthritis of the spinal bones (spondylitis)
- Arthritis of joints where the spine and pelvis connect (sacroiliitis)

## Prevention

To reduce the risk of getting brucellosis, take these precautions:

Avoid unpasteurized dairy foods.

Cook meat thoroughly

Wear gloves.

Take safety precautions in high-risk workplaces.

Vaccinate domestic animals.



# Mastitis Management in Dairy Cattle

Mastitis is the inflammation of mammary gland that is commonly in dairy cattle. It is responsible for significant part of India's economic losses among dairy producers. Dairy farming are important contributor in state's economy. Infectious organism including bacteria, fungus and algae are causative agents of mastitis.

## Incidence of Mastitis

According to a research study done at the University of Wisconsin School of Veterinary Medicine, conducted by Nigel Cook and Rebecca Mentink, the average incidence rate of mastitis on a conventional dairy operation is 32%; this means 32 out of 100 cows on average have a case of clinical mastitis in this lactation. Mastitis alone causes economic losses to Indian dairy industry to the extent of Rs 1 940 crores annually (Manickam 1998).

## Susceptible Host

All breeds of dairy cattle, buffaloes, goat, sheep, pig, horse are susceptible. High yielding cattle are more commonly affected than other animals. Infection rate is more in successive lactation than the first lactation. Exotic and cross bred cattle are more prone to mastitis than the Indian zebu cattle.

## Mode of Transmission

### Environment and udder

E. coli and Ps. Pyocyanus in environment and Str. Agalactiae and Staph. Aureus in udder continue to persist.

During damaging effect and unhygienic condition these all organism invade and multiples.

**Karishma Choudhary and Vinod Kumar Palsaniya**  
LPM, CVAS, Navania, Vallabh Nagar, Udaipur

## Causative Agents of Mastitis

S. N.	Agents	Example
1	Bacteria	Pasteurella multocida, Staphylococcus aureus; Str. Zooepidemicus; Str. agalactiae; Str. pyogenes; Str. faecalis; Mycobacterium bovis, Klebsiella spp; Brucella abortus; Pseudomonas pyocyanus; E. coli; Leptospira Pomona, etc.
2	Fungus	Aspergillus fumigatus; A. nidulans; Candida spp; Trichosporon spp, etc.
3	Physical injury	Poor hygiene and/or trauma

Pre-disposing Factor		
S. N.	Factor	Description
1	Age	Mastitis is more prevalent in high age group. More the number of lactations more the possibility of the disease.
2	Breed	Exotic and crossbred cattle are more prone to zebu cattle.
3	Stage of lactation	Infection rate is more in initial and end stage of lactation.
4	Complete milking	Incomplete milking is a conducive factor.
5	Size of herd	More frequency in large herd.
6	Feeding	Heavy protein feeding may act as predisposing factor.
7	Genetic factor	Some breeds are more susceptible due to low slung udder and long teats.
8	Hygiene	Poor hygienic and sanitation help in microbial growth.

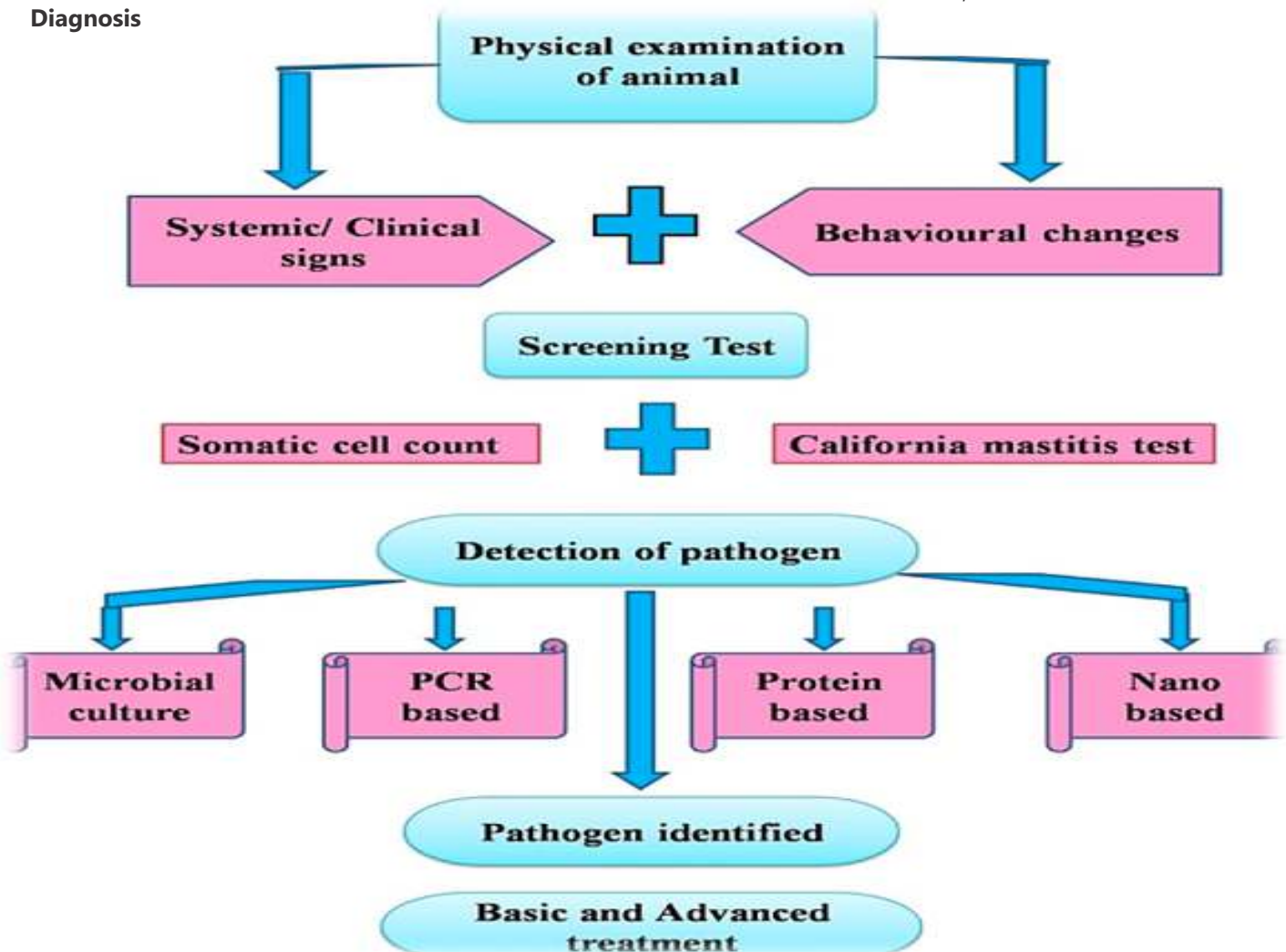


Clinical Symptoms:		
Type	General signs	Udder signs
1. Per-acute	Anorexia, depression, high fever, sunken eyes, tachycardia.	Swelling, pain, abnormal milk, yellow clots.
2. Acute	Less fever, depression, abnormal milk.	Swelling, pain.
3. Sub-acute	Absent	Less changes, watery milk
4. Chronic	Absent	No changes detecting by test.

### Treatment

- 1) Antibiotics to be used at least for 5-7 days.
- 2) Anti-inflammatory drugs like NSAID used.
- 3) Supportive therapy like fluid (DNS) drip.
- 4) Hormone therapy like oxytocin.
- 5) Nutrition therapy involves like Vit E, Se and Zn.

### Diagnosis





# Genomic Selection



Utilizing genetic markers which cover the entire genome to ensure that every quantitative trait locus (QTL) is in linkage disequilibrium with at least one marker is known as genomic selection, a type of marker-assisted selection. Through genome sequencing, several Single Nucleotide Polymorphisms (SNPs) have been found. According to experimental data, breeding values can be predicted with high accuracy using genetic markers alone. However, additional validation is needed, particularly in samples of the population that differ from the population used to evaluate the influence of the markers. GS is a type of marker-assisted selection that uses a large number of genetic markers across the entire genome. It predicts the genetic value of selection candidates based on the genomic estimated breeding value (GEBV).

GS can be used to develop new breeding programs and genetic evaluation models. It can also help to:

- Increase genetic gain of complex traits
- Accurately predict complex polygenic traits, such as disease resistance
- Increase rates of genetic gain
- Minimize inbreeding
- Increase dairy cattle productivity

In contrast to MAS and its focus on a few significant markers, GS examines together all markers in a population. Since the initial proposal of GS for application in breeding populations, it has been emerging as a solution to the deficiencies of MAS.

The MAS has presented two main limitations in breeding applications. First, the bi-parental mapping populations are used for most QTL analyses, limiting their accuracy. This represents a problem because a single bi-parental population cannot represent allelic diversity and genetic background effects in a breeding

population.

Furthermore, polygenic traits (or complex traits) controlled by several small-effects markers have been an incredible hassle for MAS. The statistical methods applied for identifying target markers and implementing MAS for improvement of polygenic traits have been unsuccessful.

## General principle of genomic selection

First a lot of information needs to be collected on a select group of animals: the reference population. All animals in this reference population are genotyped for a very large number of SNP (nearly 60000) that are nicely spread across the entire genome. Genotyping for more SNP is more expensive, but will also result in more accurately estimated associations between the SNP and the phenotypes (i.e. the SNP effects). A larger population allows for more accurate estimates of the SNP effects but is expensive to maintain.

For every genetic marker, the associations between genotype and phenotype will be computed based on the genotypes and phenotypes of the reference population. The estimated impacts are then integrated to create what are known as prediction equations. The prediction equations are set up in a way that estimates the impact of every genotype found in the reference population for each SNP. This is one of the reasons you need a big reference population: each genotype needs to be represented by a sufficiently large number of animals in order to appropriately evaluate all these SNP effects. By using these equations to the SNP genotypes of animals outside the reference population, the breeding value of those animals may now be determined. These breeding values based on genomic information only are called genomic breeding values, or gEBV.

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# Livestock Improvement by Embryo Transfer Technology

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Embryo transfer technology (ETT) is a technique by which embryos are collected from a donor female and transferred to recipient females that act as surrogate mothers for the rest of the pregnancy.

Also called as Multiple Ovulation and Embryo Transfer (MOET) Technology, is used to increase the reproduction rate of superior female dairy animals.

Normally, one can get one calf from superior female dairy animals in a year. But by using MOET technology, one can get 10-20 calves in a year from a cow/buffalo. An elite cow/buffalo is administered hormones with FSH-like activity to induce super-ovulation.

The first embryo transfer technology (ETT) project in the country was initiated by NDDDB in 1987 by establishment of a central ET laboratory at Sabarmati Ashram Gaushala (SAG), Bidaj.

Under this project, NDDDB established one Main ET Lab at SAG Bidaj and four Regional ET Labs at CFSP&TI,

Hessarghatta (Karnataka), ABC, Salon (UP), Shri Nashik Panchavati Panjrapole, Nashik (Maharashtra) and Buffalo Breeding Centre, Nekarikallu (AP). NDDDB also assisted in establishment of 14 State ET centers across the country.

SAG has done pioneering work in this field and has so far produced 14388 viable embryos and 755 calves, which is highest by any organization in the country. Of these, 1026 embryos are of indigenous cattle breeds, from which 122 calves have been born. Besides these, around 3000 embryos of buffalo breeds have also been produced. Under the project, the first buffalo calf of India from frozen thawed embryo was born in the year 1991.

Early embryos of superior genotype are collected prior to their implantation in uterus, and they are implanted in the uterus of other females of inferior genotype where they complete its actual development which is referred to as embryo transfer.

### **Applications of Embryo Transfer:**

- 1) Faster genetic improvement
- 2) Genetic screening
- 3) Disease control
- 4) Import and export
- 5) Circumvention of infertility
- 6) Twinning in cattle
- 7) Conservation of endangered species
- 8) Research/production of clones/and genetic engineering

### **Advantages of Embryo transfer technology (ETT)**

- Increase the number of offspring sired from superior females.
- Results in faster genetic progress.
- Obtain offspring from old or injured animals incapable of breeding or calving naturally.
- Increase farm income from sale of embryos.
- Export/import of embryos is easier than with live animals

### **Disadvantages of Embryo transfer technology (ETT) Programme**

- Costly and success rate are less than AI
- Cost and maintenance of recipient females
- Requires a technician with the skills to flush embryos from the reproductive tract
- Possible spread of diseases through recipients







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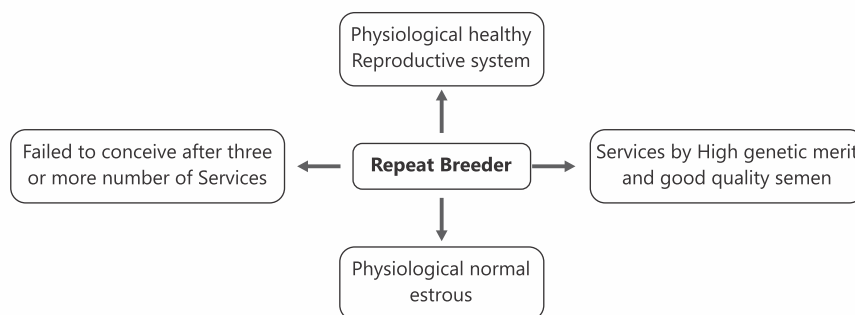
# Repeat Breeding in Dairy Cattle and its Solution

A cow is called as repeat breeder when it has failed to conceive even after three or more number of services, has normal estrus cycle length, no abnormality in the vaginal discharge, no palpable abnormality in the reproductive tract, has calved at least once before and less than ten year of age.

safeguard the herd and the enterprise.

Repeat breeder cows are the bane of any dairy enterprise and one of the major causes of economic loss. What is a repeat breeder cow?

- A cow that has regular estrous cycle
- The cow does not possess or



An animal's ability to reproduce is one of the key essentials in a dairy herd. In sustainable dairy farming one calf crop per year is necessary to increase profit of farmer.

Productive life cycle of cows begins with parturition. Subsequently, cows need consistent cycles of conception and calving to start consequent lactation which is the vital component of its productive life. It is, therefore, vitally important that a herd possesses a robust reproductive pattern. Hence, it can be reasoned that any herd reproduction problems can have a devastating impact on the dairy farm. These issues must be detected and remedied at the earliest to

exhibit any palpable clinical abnormalities

- The dairy animal does not have any uncharacteristic vaginal discharge
- Is usually less than 10 years age
- The cow has calved once and has failed to conceive despite (at least three or more) consecutive inseminations. These animals will regularly come to heat but will not conceive despite mating/ AI.

**Here are some causes of Repeat Breeding Syndrome (RBS):**

- 1. Genetics:**  
One reason could genetic abnormalities passed on from



a parent. Primarily, defects or flaws that occur during the differentiation process could be responsible for RB Syndrome.

## 2. **Age:**

Age has a definitive role to play in fertility. There is a higher incidence of repeat breeding in older cows (> 10 years).

## 3. **Uterine infection and repeated estrous cycles:**

A healthy uterine environment facilitates normal life-cycle of conception and calving. It, therefore, stands to reason that any abnormality or disease infecting the uterus will negatively impact the animal's health and its calving cycle. Disorders such as uterine infections, endometritis, pyometra, metritis etc. cause a high embryo mortality.

## 4. **Congenital anatomical defects of the genital tract:**

The reproductive canal of cow offers a congenial atmosphere for oocyte growth, sperm transport, fertilization, and implantation. Anatomical or functional defects of these organs will cause gestational failure and repeat breeding.

## 5. **Improper ovarian function:**

Dairy cows often develop ovarian cysts which are a reason for reproduction failure. It is also one of the main causes of repeat breeding in herds.

## 6. **Causes related to nutrition:**

Appropriate nourishment and an optimal body weight ensure a healthy reproductive cycle. Malnourished and underweight cows show poor rates of conception. Cows must weigh between 240-275 kg (for indigenous

and jersey cross heifer) and ~350 kg (for HF cross heifer).

Since this study indicated that cows and heifers with good body condition kept in appropriate housing conditions were less impacted by RB, dairy cattle producers should be recommended to enhance the management practices of dairy cattle, give adequate feed and health care, and properly manage housing(b)The severity of RB issues may be reduced by adequate heat detection, timely insemination, and appropriate bull selection for breeding while taking into account the size of the cows(c)To reduce RB and other predisposing reproductive problems, dairy producers should be trained in routine inspection, management, and handling of cows during postpartum periods.

## 7. **Artificial insemination:**

Any incorrect action/s across the several stages that artificial insemination involves could result in failure to conceive by the dairy cow. Dairy cow that has come into heat in morning, should be inseminated in the same day evening and if came to heat on evening she should be inseminated on next day morning (A.M P.M Rule).

## **Possible solutions to reduce repeat breeders:**

1. Bolstering the oestrus (heat) detection: Early and accurate oestrus detection is the key to keep cows from becoming repeat breeders. Less than 50% of dairy farms have and accurate oestrus detection system. This is critical if conception rates are to increase since timing is everything. Cows should be observed for at least 30 mins thrice a day for signs of heat.

2. Administration of GnRH at insemination

GnRH are synthetic hormones that imitate the body's natural hormone gonadotropin-releasing hormone (GnRH). These are injected at estrus detection and prior to insemination. Studies show that this is helpful in reducing the incidence of RBS Hubner et al., 2022.

## 3. **Nutrition**

Taking specific care of nutrition during dry, transition and fresh phases to maintain optimum body condition score (BCS).

## 4. **Management and alertness of farmer**

The severity of repeat breeding may be reduced by adequate heat detection, timely insemination, and appropriate bull selection for breeding while taking into account the size of the cows Eshete et al., 2023.

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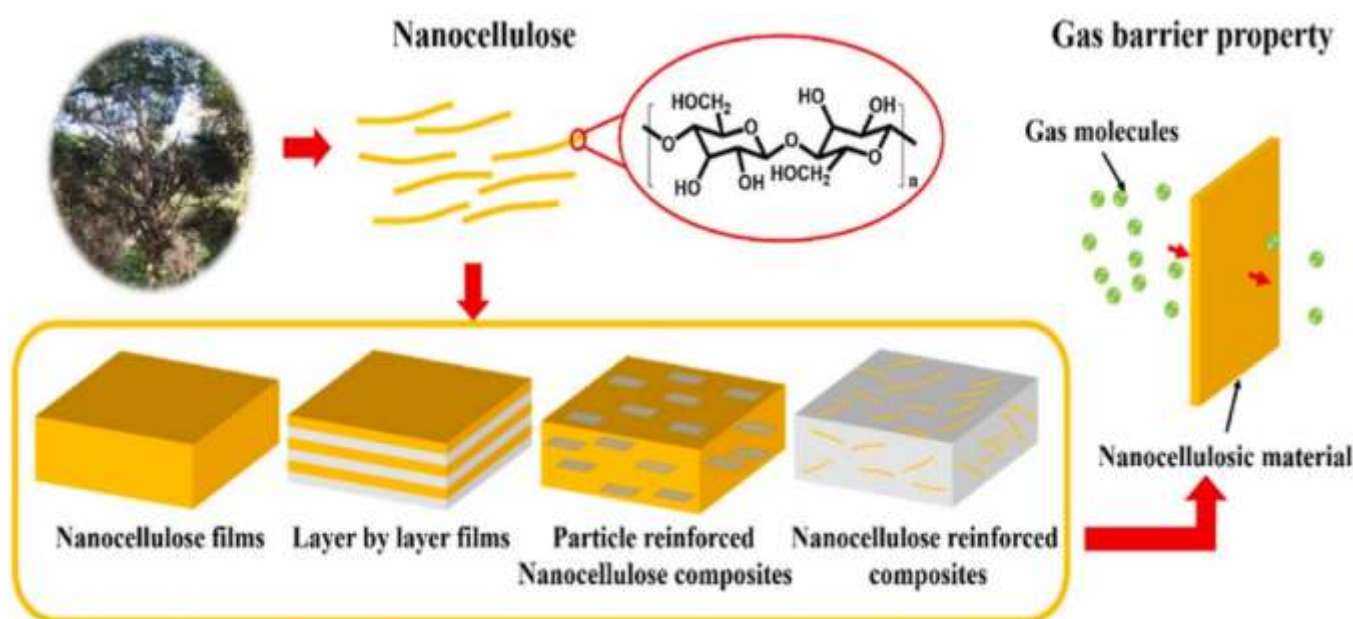
# Renewable Cellulosic Nanocomposite: A Miracle in the Food Packaging

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Packaging is used to protect food quality and give customer hygienic safety. It assists in the managing, conveyance, and storing of food goods by shielding them from biological, chemical, and physical harm. Additionally, it provides information about the products, such as their ingredients, features, and nutritional worth. Petroleum-based plastics have been used in the food business for many years because of their appealing qualities, which include affordability, flexibility, safety, and variety. Despite these benefits, non-biodegradability, disposal, and recycling of these materials are major drawbacks. Biopolymers, which can be obtained from marine and agricultural sources, are becoming a

growing trend due to their renewable and economical nature as compared to conventional petroleum materials. The cellulose based nanocomposites are the materials which are developed from cellulose plant material and which involves isolation of nanocellulose from cellulose and reinforcement of nanocellulose in polymers. Because of cellulose's high specific surface area and nanoscale structure, cellulosic nanocomposite has remarkable mechanical, optical, biodegradation, and barrier capabilities. Further adding cellulose nanoparticle to composite materials improves their mechanical properties; however, adding too many causes agglomeration, which results in poor mechanical performance.



## Applications of cellulosic nanocomposite: -

### Renewable cellulosic nanocomposite in gas/moisture barrier

Because of their use in the packaging industry, gas barrier materials are becoming more and more popular. To stop food, drink, and medication from deteriorating, these packaging materials must be impermeable to gases like oxygen, water vapor, CO<sub>2</sub>, and N<sub>2</sub>. Cellulosic nanocomposites can enhance the gas barrier properties of packing materials by limiting the entry of gases and oxygen that can degrade food quality and shelf life. Enhancements to the moisture barrier inhibit the growth of microorganisms and the absorption of moisture, which helps in maintaining the freshness of food.

### Biodegradability

The discovery of substitute materials for traditional packaging polymers is crucial, as plastic pollution is a global concern. Packaging materials made of green bio-based polymers, such as nanocellulose, can be combined with other green polymers or inorganic particles, or utilized alone. Green polymers that degrade naturally, such as polylactic acid (PLA), chitosan, starch, protein, and agar, are being utilized as substitutes for conventional packaging materials.

### Mechanical strength

Cellulosic nanocomposites can improve the mechanical strength and stiffness of packaging materials, by

providing better protection for food products during handling, transportation, and storage. The absolute qualities of a composite are mostly determined by the mechanical characteristics of the fillers. It is also well-known to be beneficial when choosing

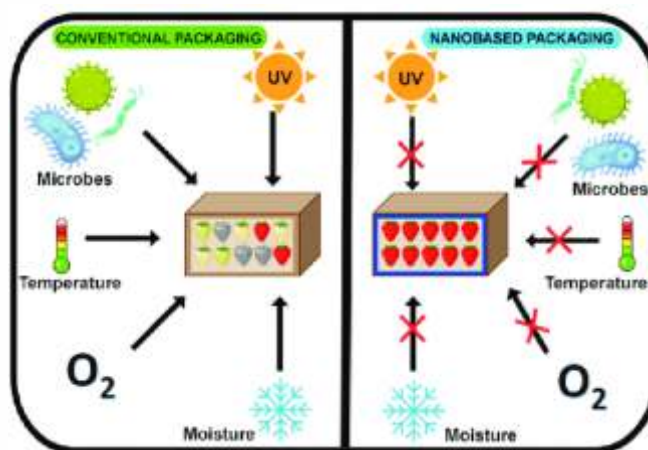
reinforcement materials. The polymer matrix of cellulose nanoparticles receives strong and high rigidity from the crystalline region.

### Antimicrobial properties

Antimicrobial compounds, such as essential oils, antimicrobial peptides, or metal nanoparticles, can be injected or coated on the cellulosic nanocomposites. These substances can stop the growth of fungi, bacteria, and other microbes. The growth of fungus and bacteria on the packing material's surface is prevented by the antibacterial compounds. This is essential for keeping food products from becoming contaminated or spoiling.

### Protecting food from UV rays

UVA and UVB radiation cause more biological harm and organic compound destruction when exposed to excessive amount of sunshine. Sunburned skin, weathering, yellowing of plastics and



papers, discoloration of dyes and pigments, and other issues related to UV light are all caused by UV radiation. The most prevalent natural polymer found in nature, cellulose is biocompatible, renewable, and biodegradable. The coefficient of thermal expansion (CTE) of cellulose film is substantially lower than that of plastic substrates. Compared to many plastics, cellulose materials can withstand a significantly higher processing temperature. Cellulosic film has the high transparency and flexibility to replace plastic substrates in a variety of applications. Cellulosic nanocomposite may prevent light-induced destruction of delicate food constituents, such as flavors and vitamins, by offering UV protection.

### Used in smart packaging

The creation of intelligent packaging may result from the integration of nanocomposites with sensing properties. In packaging, nanosensors are also used for the identification of food deterioration or freshness.

### Conclusion

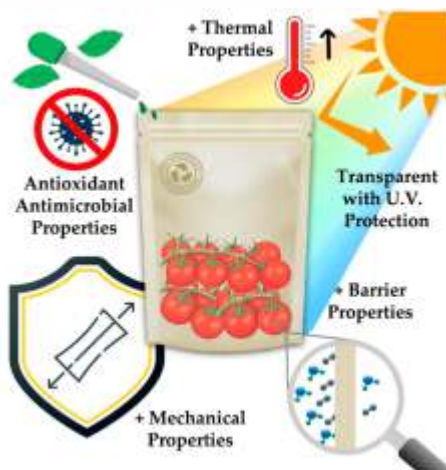
The use of renewable cellulosic nanocomposite in food packaging has created new opportunities for the production of sustainable products that could take the place of traditional synthetic materials that harm the environment. Nanocomposite materials, particularly those reinforced with cellulose, the planet's most common biopolymer, have been emphasized as a major substitute for synthetic goods.



Traditional Plastic Packaging



Bionanocomposite Packaging





# Intracare Expands Global Footprints with Launch of Indian Operations

**New Delhi, 01 February 2024:** Intracare, The Netherlands based globally renowned Animal Health Solutions Provider, is excited to announce the introduction of Intracare SEA Private Limited, marking a significant milestone in the organization's expansion strategy.

With a rich legacy of delivering innovative and highest-quality products for animal health and welfare, Intracare has chosen India as its next strategic location to serve the dynamic and growing Southeast Asian Market. The launch of Intracare SEA Private Limited underscores the company's commitment to fostering a healthier and more sustainable future for livestock in the region.

Intracare's entrance into Indian

market represents a blend of cutting-edge research, advanced technology and a decade long deep understanding of the unique biosecurity challenges faced by the diverse livestock sector in the country. Intracare brings a comprehensive portfolio of products, including hygiene solutions, nutritional supplements, and hoof care products designed to meet the evolving needs of the Indian farmers, veterinarians, and customers.

Mr. Symon de Jong, Director, Intracare Netherlands, expressed his enthusiasm about the expansion, saying, "The launch of Intracare SEA Private Limited is a strategic move to bring our world-class solutions to the vibrant Indian market. We

are excited to contribute to the well-being of the animals and success of the farmers in livestock industry in India. Our team is dedicated to maintaining the highest standards of quality and innovation, aligning with values that Intracare is globally renowned for."

Intracare SEA Private Limited will operate with a commitment to sustainable practices, promoting responsible animal husbandry, reducing the usage of antibiotics, and contributing to the overall welfare of the animals. The company aims to build strong partnership with local stakeholders, including farmers, veterinarians, authorities, and distributors, to create a positive impact on Indian livestock landscape.

## About Intracare:

Intracare, based out of The Netherlands, develops, produces, and supplies proven and effective veterinary medicines, biosecurity, hygiene products, nutrients and innovations for sustainable and modern livestock farming, horticulture, and aquaculture worldwide. The effect of cooperation is more than enough of sum of its parts. Our state-of-the-art R&D department develops solutions for the challenges of tomorrow. Collaborating with our people in the field, we create products that achieve sustainable growth and reduce the use of antibiotics and pesticides. And that makes us pioneers in future-proof-solutions.

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# EuroTier 2024 Presents Guiding Theme

## “We Innovate Animal Farming”

“We innovate animal farming” represents the theme of this year's EuroTier, the world's leading trade fair for professional animal husbandry and livestock management, 12-15 November, 2024, in Hanover, Germany. Organized by the DLG (German Agricultural Society), EuroTier is the central venue for international farmers, contractors, distributors and other experts from both science and practice. Core exhibition areas include animal welfare, animal health, sustainability, emission reduction, breeding, livestock management, feeding, digitalization, farm management, processing and marketing. Exhibitors will present to visitors a comprehensive overview of innovations, solutions and established standards for cattle, pig and poultry farming.

Information on sheep and goats, boarding horses, aquaculture, alternative proteins and direct farm sales round off the exhibition and technical program. The international poultry industry will be joining the World Poultry Show, once again held at EuroTier. EnergyDecentral, the international trade fair for decentralized power generation and agricultural energy, and the Inhouse Farming Feed & Food Show, DLG's new platform for self-contained agricultural and food systems of the future, will be held parallel to the world's leading trade fair.

Current social and political demands, greater concern both for the environment and for the

welfare of animals pose challenges for the future of livestock farming throughout the world. EuroTier will show that these challenges can best be met by the livestock industry which provides new technological solutions and modern equipment designed to further the sustainable development of this high-growth sector of the economy.

“Under the guiding theme ‘We innovate animal farming’, exhibitors at EuroTier 2024 will present a variety of ways in which new and innovative approaches and strategies can be used to improve the efficiency, sustainability and ethical standards of animal husbandry,” says Ines Rathke, Project Manager of EuroTier, describing the central importance of EuroTier for international livestock farming.

### **Innovation platform for the global livestock industry**

As the innovation platform for the global livestock sector, the EuroTier trade fair offers a complete overview of innovations and established standards, including technical solutions for cattle, pig and poultry farming. The EuroTier trade fair portfolio covers products and services for the entire value chain for the production of animal-based foodstuffs, including complete husbandry systems, genetics, feed, climate and environmental technology, milking and cooling technology, manure removal, transportation, operating resources, accessories, processing,

distribution and marketing for agricultural production.

### **International technical program addresses topics of the industry**

Under the guiding theme “We innovate animal farming”, the DLG, together with international partners, will present a high-quality technical program with several hundred events, including conferences, on the current focus topics of the livestock sector:

- EuroTier events like the “TopTierTreff” (English: “Top animal venue”) where international dairy and beef breeding organisations present live animals,
- Autonomous and automatic systems play an increasing role in the sector. The “Barn-Robot Event” presenting feed pusher robots for cattle housing
- Interactive events will take place on the dedicated “Expert Stages” featuring talks on topics and strategies across poultry, cattle, pig, horse, decentral energy as well as agriculture and food systems.
- In the new “AI in the poultry house spotlight”, exhibitors will present innovative solutions for improving animal welfare, animal health, performance and energy efficiency in poultry production.
- A new spotlight in the pig sector focuses on the “curly tail” and presents industry solutions as well as best practice examples from a

range of countries.

- The cross-species spotlight "On-farm slaughter" presents novel mobile slaughter units that enable slaughter to take place on the farm.
- The conference program, the International Cattle & Pig Event, the International Poultry Conference, the associated Poultry Event and the Animal Health Event offer a mix of international keynote speeches, round tables, award ceremonies and subsequent get-togethers.
- The "agrifood start-ups" area presents innovative industry solutions from startup companies and is also networking area attracting investors.
- In the DLG.Prototype.Club, teams of software engineers solve technical challenges set by exhibitors and present their prototypes.

### **World Poultry Show returns to EuroTier 2024**

Conferences and events within the World Poultry Show offer international poultry professionals a wide range of opportunities for networking and professional exchange and information. The main topics will be animal welfare and the CO2 footprint in poultry. The theme spotlight Artificial Intelligence "AI in the poultry house" will present solutions for poultry housing. The Expert Stage "Poultry" will provide information on current developments and innovations in the areas of poultry farming, animal health, feeding, management and marketing. The International Poultry Conference and the International Poultry Event round off the information and networking program.

### **Expanded exhibition offering for systems and components**

For the first time at EuroTier, suppliers of livestock equipment will benefit from a dedicated exhibition area at EuroTier and will present their products to manufacturers of animal husbandry machinery. Named "Supplier Industry - powered by Systems & Components", the area is aimed at engineers, buyers and system integration specialists offering feeding technology, milking systems, transport wagons, presses and mixing and dosing systems. EuroTier exhibitors can find suitable development partners in this new area. The area is a central venue for innovative solutions in the production of animal husbandry technology and is a further building block at the trade fair to represent the entire value chain in the animal husbandry industry.

### **Optimal complement: EnergyDecentral and Inhouse Farming**

The EnergyDecentral trade fair and Inhouse Farming - Feed & Food Show, a premiere, takes place in Hanover in parallel to EuroTier. Already recognized as the leading platform for decentralized energy supply, EnergyDecentral covers the entire value chain of sustainable energy production: Resources, energy generation and smart energy. The Inhouse Farming - Feed & Food Show will be the global B2B venue for self-contained agricultural and food systems of the future. Closely networked with agricultural practice, Inhouse Farming offers practical solutions, specialist information, perspectives, innovations and business - from feed to food.

### **Booking a stand**

Companies planning a stand should visit [www.eurotier.com](http://www.eurotier.com). Personal contact with the DLG, the organizer, is also possible: Tel +49(0)69/ 24 788-433. Email: [eurotier@dlg.org](mailto:eurotier@dlg.org).

### **About DLG**

With over 30,000 members, DLG (German Agricultural Society) is a politically independent and non-profit society. Drawing on an international network of experts in food and agriculture as well as subsidiary companies in nine countries, the DLG organizes over 30 regional arable and livestock exhibitions worldwide, in addition to its leading international trade fairs, EuroTier for livestock equipment, and Agritechnica for agricultural crop machinery, each taking place biennially in Hanover, Germany. Headquartered in Frankfurt, Germany, DLG informs its members of the latest advancements in practical agriculture. DLG's International Crop Production Center, a 600-hectare site located in Bernburg-Strenzfeld, Germany, conducts plot trials on crop rotations, cultivation and irrigation and practical machinery tests. DLG houses Europe's largest test center for agricultural machinery "DLG Test Center for Technology and Farm Inputs", which is located at Gross-Umstadt, Germany. DLG bridges the gap between theory and practice, as evidenced by more than 40 working groups consisting of farmers, academics, farm equipment companies and organizations continually comparing advancement in knowledge in specific areas such as irrigation and precision farming.

## Mother Dairy Expands Portfolio with New Creamy Buffalo Milk at Rs 70/litre



Mother Dairy, the leading supplier of milk and milk products, has announced the launch of a buffalo milk variant in the Delhi-NCR market, with plans to make this new segment a Rs 500 crore brand by March next year. Mother Dairy provides 35-36 lakh litres of milk per day in Delhi-NCR and 45-47 lakh litres per day throughout India. In Delhi-NCR, milk is sold in pouches and at milk booths. By March 2025, they hope to have 2 lakh litres per day. They hope to make the buffalo variant a Rs 500 crore brand in one year. This segment is growing and there is a demand for high-fat milk. Mother Dairy plans to launch the buffalo milk variant in Uttar Pradesh, Haryana, and Maharashtra within the next few months. Mother Dairy buffalo milk contains 6.5 percent fat and 9 percent SNF (Solid Not Fat), giving it a creamier texture and richer flavour profile. Furthermore, the new variant will contain A2 protein. Mother Dairy is introducing yet another species-specific buffalo

milk following the huge success of cow milk, in response to changing consumer preferences for rich and creamy milk that can be used for more than just drinking.

The company launched cow milk 7-8 years ago and has since become a market leader, with cow milk accounting for 35-40% of total volumes.

During the previous fiscal year, Mother Dairy generated approximately Rs 14,500 crore in revenue, with the dairy business accounting for Rs 11,500 crore. Mother Dairy was commissioned in 1974. It is now a fully-owned subsidiary of the National Dairy Development Board.

It produces, markets, and sells milk and milk products, such as cultured products, ice creams, paneer, and ghee, under the 'Mother Dairy' brand. The company owns nine milk processing plants.

The company also has a diverse portfolio of products, including edible oils under the 'Dhara' brand and fresh fruits and vegetables, frozen vegetables and snacks, unpolished pulses, pulps and concentrates, and so on under the 'Safal' brand.

## Kerala Launches 'Dairy Next':



## Interactive Programme to Address Dairy Farming Issues

The state government launched an interactive programme to provide dairy farmers with authentic cow-raising knowledge. As part of this, animal husbandry minister J Chinchu Rani launched the multi-purpose programme 'Dairy Next - Application and Benefits'.

'Dairy Next', which will be carried out by the dairy development and animal husbandry departments in collaboration with the public sector Kerala Livestock Development Board and Kerala Feeds Ltd, aims to provide both scientific and practical advice on cow raising. It will also provide farmers with tips on how to increase milk production while lowering cattle feed costs.

The ultimate goal is to make Kerala self-sufficient in milk production.

"Our goal is to show how dairying can be a profitable activity if we take scientific steps when raising cows. The main issue for our farmers is the high cost of feed. We provide balanced food to our cows by sourcing raw materials from other states. We will work to raise awareness among farmers about



the proper use of feeds', said the minister. The inaugural ceremony was followed by seminars. The event saw the presentation of directives to investigate cases of cow deaths caused by the consumption of poisonous green leaves. The officials listed such dangerous leaves and discussed the steps to take if a cow consumes poison in this manner, as well as the phone numbers to which calls for emergency assistance can be made.

## Akshayakalpa Farms & Foods Sets Up Organic Milk Sourcing Ecosystem Near Chengalpattu to Cater to Chennai Market



Akshayakalpa Farms & Foods Pvt Ltd (aka Akshayakalpa Organic), an organic dairy firm and milk product manufacturer, has established a new milk sourcing ecosystem near Chengalpattu in Tamil Nadu with an investment of ₹15 crore. This move is expected to help the company expand its supply to the fast-growing organic food market in Chennai.

The new sourcing ecosystem consists of a network of 100 organic farmers, chilling centres with varying capacities, a new milk processing centre, and large R&D operations (including model farming units and associated facilities) in Pooriyampakkam village near Chengalpattu. This is the company's second processing facility.

"We have been working for the past four years to improve the ecosystem in Tamil Nadu. Throughout the years, we have recruited farmers from the region through a variety of engagement initiatives. We began construction of the processing factory by the end of 2022. It is now operational, with the capacity to process 40,000 litres of milk per day", said Shashi Kumar, CEO and Co-Founder of Akshayakalpa Farms & Foods. The company identified

approximately 100 farmers, engaged them, and worked with them for about 2-3 years to implement an organic production system. The company handles farm design, financing, veterinary care, and other related services. Each farmer will make milk in the morning and evening and store it in a chilling facility. The chilled milk is processed at the new facility, which will supply milk, curd, and paneer to the Chennai market. Currently, the company secures approximately 4,000 litres per day from the 100-odd farmers. "In the next year, we hope to increase production capacity to 15,000-20,000 litres per day." We intend to achieve this by significantly increasing the number of farmers while also expanding existing farms," Kumar stated.

With the new sourcing system and processing unit, the local facility will meet all of Chennai's demands. Previously, the company served the Chennai market from its first location in Tiptur in the Tumkur region of Karnataka. We are currently selling approximately 5000 litres of organic milk in Chennai, making us the city's largest supplier. We are also the largest in India, producing 90,000 litres of organic milk per day from our cluster in Tiptur, he said. The company currently focuses on three markets: South Chennai, Bengaluru, and Hyderabad, with a customer base of over 60,000. It also offers long-shelf products in Pune, Mumbai, and the National Capital Region. The company generated ₹195 crore in FY23 and aims to reach ₹300 crore by the end of this fiscal year.

## Amul Joins in Celebrations: Honoring Ram



## Mandir Pran Prathista with Special Doodle

Dairy brand posts Ram Mandir doodle on Instagram. The Pran Prathista of Ram Lalla took place on January 22, 2024.

Ahead of the Grand Consecration Ceremony of Ram Temple in Ayodhya, dairy brand Amul shared a doodle commemorating the historic event. Indian Prime Minister Narendra Modi led the glorious Pran Prathista of Ram Lalla event.

The Ram Mandir Pran Prathista was held in Ayodhya on January 22, 2024. Social media is flooded with photos and videos of the Ram Mandir's decoration and guests arriving to witness the Pran Prathista ceremony.



Amul also shared a doodle of the Ram Temple with the caption, "Temple of a billion hopes, Amul welcomes it." The doodle depicted Amul Girl offering prayers to the Ram Temple.

Amul shared the post on Instagram. The dairy brand impressed people all over the country and drew attention from social media users.

### Ram Mandir Pran Prathista.

The long-awaited Pran Prathista took place in Ayodhya, in the presence of Prime Minister Modi. During the event, Army helicopters dropped flower petals on the grounds of Ram Temple. PM Modi took the stage alongside RSS Chief Mohan Bhagwat, Uttar Pradesh Chief Minister Yogi Adityanath, Uttar

Pradesh Governor Anandiben Patel, and other dignitaries.

For this special occasion, Prime Minister Narendra Modi observed an 11-day 'anusthan' in which he slept on the floor and drank only coconut water.

Arun Yogiraj, a sculptor from Mysuru, created the 51-inch-tall Ram Lalla idol. The consecration ceremony was attended by over 7000 VVIPs, including actors, politicians, athletes, and business leaders.

## IDA Awards Best Women Dairy Farmers Across South India



The hall was filled with joy and pride as delegates took part in the Indian Dairy Association's Best Women Dairy Farmer Award Ceremony programme.

On Thursday, hundreds of women dairy farmers from across South India cheered loudly as five of their colleagues received the 'Best Women Dairy Farmer Award'.

The five women are: A N Rajeshwari from Karnataka; Leema Roslein S from Kerala and Lakshadweep (UT); Parimala Vijayaramesh from Tamil Nadu and

Puducherry; Aligineni Sree Padma from Andhra Pradesh; and Dabhu Padma from Telangana. They were all given cash prizes of Rs 20,000 each. Approximately 70% of dairy farmers are women. Despite the fact that it is only a part-time job, their unwavering dedication has propelled India to the top of the world's milk producing nations.

Earlier, IDA South Zone Chairman Satish Kulkarni discussed the IDA's initiatives to boost entrepreneurial tendencies in female farmers. He fondly remembered that IDA was founded in Bangalore in 1949. Dr R S Sodhi, President of the IDA, and Dr K C Veeranna, Vice-Chancellor of KVAFSU, Bidar, both spoke at the event.

## Securing the Supply Chain: ITC's AI-Driven Approach to Dairy Quality

ITC Limited, a major fast-moving consumer goods (FMCG) company, is using artificial intelligence (AI) to strengthen its product portfolio by gaining insights into new consumer trends. The company is also leveraging technology throughout the product value chain.

## ITC Uses AI to Offer Consumers Virtual Dairy Farm Tours to Maintain Transparency



Under pilot runs for its dairy business, the company is using AI tools to monitor cow health and technologies to verify product authenticity by providing consumers with product report cards.

"Our consumer data hub uses AI engines to segment consumers at scale and understand their needs. ITC's Sixth Sense, our sensing engine, employs a team that listens to social conversations and collects insights for all of our brands. They're using AI tools to create contextual communication for our brands. We have yet to deploy applications that use simple AI tools to provide farmers with information about their cows' health. The farmer can take a picture of the cow and scan it to find out if it has any diseases or malnutrition. We have yet to roll out the application." Sanjay Singal, Chief Operating Officer for ITC Foods' Dairy & Beverages cluster, stated that, "the company is utilising digital technologies from the start".

The company that sells fresh milk and dairy products under the name Aashirvaad Svasti employs stringent digital scrutiny to ensure the quality of the milk and prevent adulteration.

Their fresh dairy business operates in East India, including Bihar, West Bengal, and Jharkhand. They do not have organised dairy farms and instead work with nearly 13,000 farmers from whom they purchase

milk twice daily. They use technology, such that when a farmer comes to the village procurement centre to sell milk, we use equipment to test the basic properties of the milk. They track the milk's transport in real time by maintaining a temperature of four degrees throughout the supply chain from village to factory. To address the issue of adulteration, they have provided codes and a WhatsApp number on the milk packets that, once entered, allow the consumer to obtain a report card on the quality of the milk.

The Kolkata-based FMCG company, which sells organic ghee under the Aashirvaad brand, is giving customers a virtual tour of the farms to see how their products are manufactured.

The company also offers an organic range of Aashirvaad atta and allows customers to visit the farm where the batch of wheat was procured and then converted into atta.

## Rockwell Automation Teams Up with ISAP India Foundation to Revolutionize Dairy Farming in Rural Maharashtra

Rockwell Automation, the world's largest industrial automation and



digital transformation company, is collaborating with the ISAP India Foundation to modernise farming practices in rural India.

The initiative, titled "Economic and Social Development of Indian Village Through Technology-Enabled Dairy Farming," seeks to modernise dairy farming practices in the water-scarce region of Antargaon (near Nagpur), Wardha District, Maharashtra. This also required collaboration with a technology implementation partner, eVerse.AI, to carry out this corporate social responsibility (CSR) project.

The on-the-ground implementation makes use of cutting-edge digital technologies and scientific veterinary practices to improve livestock development. This project's interventions over the last six to seven months, which began in May 2023, have already produced promising results. The initiative offers a variety of services to dairy farmers, including the provision of IoT (Internet of Things) enabled collar devices for tracking vital health parameters of dairy animals, mobile phone-based alerts and advice from veterinary experts, the use of a muzzle-based biometric identification system to provide digital identity to animals in addition to 12-digit Pashu Aadhar, and the use of eVerse.AI's newly launched CowGPT platform will provide dairy farmers with accurate insights and advice on animal health, ration balancing advisory services, fodder development activities, supply of quality animal feed, village level animal health services, dairy



farming extension programmes (training, demos, expert visits), market integration activities for milk sale, and the creation of additional revenue sources for dairy farmer families through the use of animal waste products.

During a recent field visit to Antargaon, the project's progress was shared with local dairy farmers via an interactive session. Farmers provided positive feedback, citing a 15-20% increase in milk production over the previous six months. Milk quality has also improved, allowing them to charge higher prices and boost household income.

The session was facilitated by Prafull Kalokar, project coordinator - ISAP India Foundation, and Nitesh Budhabaware, village coordinator, in the presence of Sameer Subhash Khobe, deputy village head, Antargaon; Gaurav Vats, director-Agriculture Services, ISAP India Foundation; Dr Dhanvij, veterinary specialist, Wardha district; Ashish Sonkusare, founder, eVerse.AI; Dipanjan Banerjee, head of corporate affairs, Rockwell Automation India; and Ankit Singh, lead-EHS, Rockwell Automation India has the world's largest bovine population and ranks first in milk production. However, it faces challenges such as low milk yield per animal and poor quality milk products. These problems are

exacerbated by India's decentralised dairy farming structure and rural farmers' lack of awareness of scientific veterinary practices. Rockwell Automation's partnership with the ISAP India Foundation aims to improve the livelihoods of dairy farmers in one of the country's most water-scarce areas by leveraging cutting-edge digital technologies for livestock development through scientifically proven veterinary practices. Rockwell Automation's CSR philosophy is founded on community-centric investments that result in long-term improvements in people's well-being. It aims to foster positive, proactive connections in local communities through innovative projects with measurable results.

## Stellapps in Advanced Talks for \$20M Series C Funding to Scale Up Dairy Tech Solutions

Stellapps, a Bengaluru-based dairy tech startup, is in advanced talks to raise approximately \$20 million in its Series C funding round.

Existing investors will provide

nearly 70% of the funding, including Celesta Capital, Omnivore, the Gates Foundation, the IDH Farmfit Fund, Blume Ventures, and Qualcomm Ventures.

Stellapps cofounder and CEO Ranjith Mukundan confirmed the development, stating that a few new investors are also expected to participate in the funding round. However, he did not reveal the names of the new investors or the valuation at which the startup intends to raise funding.

The startup intends to use the new funding to expand further, with a particular emphasis on value-added dairy products.

Stellapps, founded in 2011 by IIT alumni and former Wipro employees Mukundan, Ravi Shiroor, Ramakrishna Adukuri, Praveen Nale, and Venkatesh Seshasayee, offers a full-stack Internet of Things (IoT) platform for digitising and optimising the entire milk supply chain, from production to procurement and storage. The platform also connects farmers to financial and insurance institutions, cattle nutrition providers, and agro-input suppliers.

Around July of last year, the startup began processing milk to provide value-added dairy products to B2B companies.

The startup currently offers curd, ghee, paneer, buttermilk, and double-toned milk to FMCG brands. It currently operates two processing plants, one in Uttar Pradesh and the other in Bengaluru, and plans to expand to two more.

"We are also considering making ice-cream and selling it under a private label to other businesses," she said.

Responding to a question about selecting the B2B route for its dairy



products, Mukundan stated that B2C businesses require a significant amount of capital to build a brand and acquire customers.

According to the CEO, the dairy tech startup plans to launch an IPO within the next 36-48 months. The startup expects to generate INR 400 crore in revenue this fiscal year and INR 2,000 crore over the next three to four years.

Stellapps last raised an undisclosed amount of funding from IDH FarmFit in 2022, a few months after raising \$18 million in its Pre-Series C funding round from Nutreco, a global animal nutrition and aquaculture company.

## Himachal Pradesh Partners with NDDB to Establish State-of-the-Art Milk Processing



PlantHimachal Pradesh signs an agreement with NDDB to establish an automated milk processing plant with an initial capacity of 1.5 lakh litres per day. The plant's goal is to

produce a variety of dairy products while also supporting the rural economy by directly purchasing milk from farmers. The government has also announced an increase in milk procurement rates. Strengthening the rural economy is critical to making Himachal Pradesh self-sufficient.

Himachal Pradesh Chief Minister Sukhvinder Singh Sukhu announced that the state government has signed a Memorandum of Understanding (MoU) with the National Dairy Development Board (NDDB) to provide consultancy services for the establishment of a cutting-edge automated milk processing plant in Dhagwar, Kangra.

He stated that the Dhagwar plant, which has an initial capacity of 1.50 lakh Litres Per Day (LLPD) and can be expanded to 3 LLPD, would be fully automatic. The project will invest ₹225 crore in the first phase and produce a variety of dairy

products such as curd, lassi, butter, ghee, paneer, flavoured milk, khoya, and mozzarella cheese. Sukhu stated that as the project progressed, it would bring

prosperity to dairy farming communities while also contributing significantly to the state's overall growth.

The plant would play an important role in boosting the rural economy by directly purchasing milk from farmers in the districts of Chamba, Hamirpur, Kangra, and Una, said the chief minister. He emphasised the importance of transparency in milk procurement to ensure that farmers receive a fair return for their efforts.

The plant will receive an additional investment of ₹43 crore to strengthen its milk procurement network and purchase 2.74 LLPD to sustain operations.

The initiative, which is consistent with the government's commitment to farmer welfare, also includes plans for the second phase, which would involve the production of milk powder, ice cream, and various types of cheese at the Dhagwar plant.

Sukhu stated that the government is committed to the welfare of the state's dairy farming community. Recently, the milk procurement rate was increased by ₹6 per litre, from ₹32 to ₹38. He stated that the state government was working hard to increase farmers' incomes, and that new schemes would be implemented in the near future. Strengthening the rural economy was critical for making Himachal Pradesh self-sufficient, according to the chief minister, who added that approximately 95% of the state's population lives in rural areas, and that without achieving this goal, the vision of making Himachal the most progressive state remains unattainable.

## Nili-Ravi Breed Standards Clarified: GADVASU and



## PDFA Work Together to Enhance Dairy Industry Integrity



At Guru Angad Dev Veterinary and Animal Sciences University, office bearers of the Progressive Dairy Farmers Association met with varsity officers. The meeting was chaired by Dr. Inderjeet Singh, Vice Chancellor.

The important agenda items included precise breed characteristics of Nili-Ravi buffaloes to avoid farmer confusion, accurate judging of Nili Ravi buffaloes, and the misuse of Growth Hormone, commercially known as Boostin / Lactotrophin - a synthetic growth hormone used to increase milk production in cows and buffaloes. Boostin is illegal in India, but it is frequently used in malpractices to increase milk production of buffaloes for sale.

After extensive deliberation and consideration of previous meetings on the subject between 2016 and 2018, the characteristics of paramount importance for the Nili-Ravi breed were defined as animals with a wedge-shaped body - narrow in the front and wide at the back, medium height with relatively short

legs, and a large, deep, and low-set body frame.

The forehead is broad, and the horns are wider and mostly curled, albeit slightly more open than those of Murrah buffaloes. Sick-

shaped and drooping horns are not uncommon. Nili-Ravi buffaloes are usually black, but can also be brown. It was emphasised that, while variable white markings are common on the forehead, muzzle, tail switch, and legs, they are not stable and vary from generation to generation, so they cannot be considered breed characteristics.

The Nili Ravi tract is home to animals with walled eyes, pink tongues, white foreheads, and tails. Panchkalyani white patches can also be found in other buffalo breeds such as Jaffarabadi, Nagpuri, Pandharpuri, Gojri, and Iraqi, though these breeds are distinguished by their physical characteristics. Buffaloes with undesirable overly white bodies are produced as a result of an unscientific and unsubstantiated emphasis on unstable panchkalyani characteristics. Farmers attending the ongoing PDFA International Dairy & Agri Expo 2024 are encouraged to become familiar with these distinguishing

characteristics in order to accurately identify and represent the Nili-Ravi breed.

Dr. Inderjeet Singh stated that in response to farmer requests, the University developed a test for detecting the use of illegal synthetic growth hormone in animals using blood and milk samples. Sh Daljeet Singh Sadarpura, President of PDFA, requested that the university conduct sampling on animals participating in the PDFA fair to detect hormone misuse. Dr Malik, Dean of the College of Animal Biotechnology, assured that the services for this test would be fair.

## Crisis at Mooofarm: Allegations of Embezzlement and Misreporting Send Shockwaves Through Dairy Tech Industry

Mooofarm, an agritech and dairy tech startup, has faced controversy over its business model and the alleged embezzlement of INR 10 Cr. The Delhi-based startup, which raised over \$15 Mn from investors like Accel and Aavishkaar, filed a police complaint against its former finance head, Vineet Bhati, for allegedly embezzling funds for personal gain. Bhati disputed the company's claims and claimed that the founders, including then CEO Param Singh, were also complicit in the embezzlement.

Former Mooofarm employees have questioned these claims, highlighting a deeper rot at the company, including its cattle marketplace and supply platform. The company's problems are similar



to other startups in this segment, including Nexus Venture Partners and Omnivore-backed Animall. The biggest allegation from employees is about gross misreporting of revenue, where Mooofarm's founders and management are alleged to have employed tactics such as inventory rotation, fake vendors, and fake customers to show higher-than-actual revenue and embezzle funds further.

Mooofarm has vehemently denied these allegations, insisting that Bhati was solely responsible for the alleged embezzlement of more than INR 10 Cr. The company has registered an FIR by the Economic Offences Wing in Gurugram.

The biggest problem at Mooofarm is that its business model looked to organize a segment that has a reputation of being 'unorganizable'. The company primarily earned revenue from connecting buyers and sellers of cattle, but supply cattle across the country means dealing with middlemen, red tape, political hurdles, supply chain restraints, and lack of monitoring. No startup has been able to crack the model of cattle supply, and some businesses cannot be made better by tech or startups.

Accel, the lead shareholder, initiated an internal audit, revealing discrepancies in fake employee salaries. Mooofarm acknowledged

paying employees that never existed but blamed Bhati for the issue.

Employees dispute the founders' version of events, claiming that the fictitious contractors were part of payroll data sent to potential investors during the Series A round in December 2022. Mooofarm's total revenue for FY23 was INR 19.6 Cr, and former employees claim the startup has done worse in FY24, leading to layoffs, forced resignations, unpaid salaries, and vendor dues.

The management is alleged to misreport revenue to show higher top line or gross merchandise value (GMV) and secure funds based on GMV growth. Mooofarm has also been accused of spending on luxury goods and gifts from the company's credit card. The startup owes crores in loan repayments and vendor dues, and employees are caught in the middle. The company faces the challenge of finding enough funds to pay off these dues and avoid falling behind another startup due to a cash crunch.

## Kerala Agricultural University's Susthira Grass Emerges as Savior for Dairy Farmers

While fodder grass has become

scarce in Kerala, Susthira, a hybrid napier grass, is gaining popularity among Kollam dairy farmers.

The grass, developed by Kerala Agricultural University, is climate resilient and requires little maintenance, making it an attractive option for many, particularly as cattle feed prices rise. Following the successful on-farm trials conducted by the Krishi Vigyan Kendra (KVK), approximately 50 farmers in the district have begun cultivating the variety.

"I did not water the crop for a month after planting, and there was no decrease in yield or feed palatability. It's a straightforward process. "You can cut the amount of cattle feed in half," says S. Sujeesh, a dairy farmer from Pattazhy.

The KVK in Kollam conducted the state's first animal husbandry trials, feeding cross-bred jersey cows grass for a month. "Based on the readings, there was an average increase of 1.5 litres of milk per day. While the normal fat percentage in cross-bred jerseys ranges between 3.5 and 4.2, it exceeded 6 in cows given Susthira. Trials were conducted during both the summer and southwest monsoon seasons, and the results are district specific," says S. Parvathy, Assistant Professor (Animal Husbandry) at KVK.

An adult cow requires approximately 30 kg of green fodder per day, which is an impossible task during the summer months. Farmers frequently feed cows extra concentrate to maximise



productivity. "If we have enough quality green fodder, we can bring down the quantity of concentrate, but we have to standardise the per cent," she said.

Farmers typically rely on a few well-known varieties for green fodder, such as CO1 and CO2, but farm trials have shown that Susthira is a far superior choice. Another advantage of the crop is its heat resilience, which means that thermal stress will have little effect on growth. "While other grass varieties will wilt without moisture, Susthira can survive without regular watering or rain," says C.R. Neeraja, assistant professor of agronomy at KVK.

Around 100 grass slips can be planted on 1% of land, and the crop will be ready to harvest in 75 days. Following the first harvest, farmers can cut the grass every 45 days, with a hectare of land capable of producing approximately 300 tonnes per year. Cow dung slurry, which is readily available on dairy farms, is used as manure to promote succulent regrowth following each harvest.

"Apart from grass, farmers can sell Susthira slips. Ms. Neeraja claims that only 2.5 cents of land will produce enough green fodder for two cows.

## Challenges Plague Mukhyamantri Sudharit Kamdhenu Scheme: Dairy Farmers Cite Difficulties in Meeting Criteria

The Mukhyamantari Sudharit Kamdhenu Scheme has lost popularity among dairy farmers in the state, as evidenced by the fact



that only seven milch cows were purchased through the scheme in 2023-24.

The argument is that farmers are finding it difficult to meet the stringent requirements for receiving benefits.

According to information disclosed in the legislative assembly by Minister for Animal Husbandry and Veterinary Services, Nilkanth Halarnkar, the total number of beneficiaries under the Kamdhenu scheme has decreased dramatically from 816 dairy farmers in 2014-15 to 149 in 2022-23.

Some of the requirements for participating in the scheme include dairy farmers having a pucca cattle shed with cement flooring for housing the animals, a stall feeding system and completing mandatory training from the department of animal husbandry.

In response to a question about the state's daily milk requirement and availability, the Minister stated that Goa's total milk requirement is approximately 4 lakh litres per day, with a daily production of around 1.7 lakh litres.

According to the Integrated Sample Survey (ISS), the state's annual milk production increased slightly from 61,927 tonnes in 2019-20 to 64,176 tonnes in 2022-23. To fill the demand-supply gap, the government purchases cow and buffalo milk from four to five outside dairies.

There are eight schemes to boost milk production in the state, which include the Mukhyamantri Sudharit Kamdhenu Scheme, the Revised

Scheme for Incentives to Milk Producers, the Pashupalan scheme, Incentive to Green Fodder Cultivation for Perennial and Seasonal Fodder Development Scheme (revised), Dairy Equipment Scheme, Financial Assistance to Dairy Farmers belonging to the tribal community, the Community Dairy Farm Scheme, and the Gopal Ratna Award scheme.

The total expenditure on all eight schemes during 2023-24 was Rs 32.3 crore, according to Halarnkar.

## US Dairy Farmers Earn \$3 Million in Carbon Payments

Three carbon projects launched in 2021 and 2022 have paid nearly \$3 million in carbon-asset payments to US dairy farmers who used Agolin Ruminant to achieve verified emissions reductions.

A verified emissions reduction is a carbon asset that can be used as an offset or integrated into a value chain. It represents one metric tonne of greenhouse gas emissions equivalent that is either avoided or removed from the atmosphere as a result of an independently verified carbon reduction intervention.

Agolin Ruminant is a proprietary blend of essential oils that increases milk production and feed efficiency in beef and dairy cattle. In 2018, it became the first feed additive certified by The Carbon Trust to reduce methane in ruminants. More than 2 million dairy cows worldwide consume Agolin Ruminant, and





leading carbon methodology owners Verra and Gold Standard list it in their international climate protection project registries.

Concord Agriculture Partners has chosen Agolin Ruminant to develop a new carbon inset project that ensures participating dairy producers receive an industry-leading 85% of the gross value of the carbon asset.

Carbon inset projects aim to prevent emissions, whereas carbon offset projects aim to reduce or remove greenhouse gas emissions from the atmosphere in order to compensate for emissions caused elsewhere. Concord's project boosts market confidence and generates more value for dairy producers by focusing on inset purchases and using global standards.

Concord continues to collaborate with value chain carbon buyers to ensure that they provide the best value to the farmgate by assisting companies throughout the agrifood value chain in meeting their ESG objectives.

In May 2023, Alltech acquired the majority of Agolin SA. Agolin was founded in Switzerland in 2006 and has since developed and produced plant-based nutrition solutions that have been scientifically proven to improve herd performance, profitability, and sustainability.

## **Imagindairy Secures Industrial-Scale Production Lines for Animal-Free Whey Protein**

Imagindairy, an Israeli startup, has acquired industrial-scale precision fermentation production lines at an undisclosed location "in close



proximity to Israel" and expects to launch products containing its animal-free whey protein in the United States this year.

The production lines and associated downstream processing capability at the undisclosed site will provide Imagindairy with access to 100,000 litres of fermentation capacity, with the potential to triple this volume in 1-2 years, according to the startup, which recently received a "no questions" letter from the FDA confirming the GRAS (Generally Recognised as Safe) status of its whey (produced by microbes rather than cows).

"Having just entered the landscape three years ago, this achievement is a big step forward for us," said cofounder Dr. Eyal Afergan. "This will enable our customers to put animal-free dairy products on-shelf at cost parity to traditional dairy, without compromising on quality." "It's a significant breakthrough and critical step that will enable us to support mass-market adoption, transition to an industrial company, and accelerate the development of other milk proteins."

Dr. Arie Abo, Dr. Tamir Tuller, and Dr. Eyal Afergan founded Imagindairy in 2020, and it has raised just over \$30 million from

backers including Danone, which is significantly less than some other players in the nascent animal-free dairy space. It initially intends to introduce the whey protein beta-lactoglobulin to the US market, but it is also working on a variety of other milk proteins.

Imagindairy has a customer pipeline that ranges from small businesses looking to capitalise on the 'animal-free dairy' message to multinational corporations looking to meet ESG goals by replacing some cow whey with microbe-derived whey, which has a significantly lower carbon footprint.

Imagindairy is the third company to receive the FDA's "no questions letter" for animal-free beta-lactoglobulin. Perfect Day, based in California, received its letter in March 2020. Remilk, based in Israel, received its letter in February 2023.

Imagindairy gains several benefits from operating its own production lines. One is adaptability. Having your own production capacity makes a huge difference for efficient R&D, as things do not always work the same way at the lab, pilot, and industrial scales, so having our own large-scale lines allows us to iterate quickly.

According to advocates, producing



dairy products without cows provides the best of both worlds: more sustainable and ethical products with the nutrition and functionality of 'real' dairy.

The market opportunity for animal-free dairy is still in its early stages, with key stakeholders figuring out how to best communicate the concept to consumers and navigate the regulatory pathway in some markets.

Precision fermentation companies have also struggled to scale up in-house because VC funds are hesitant to fund large-scale capex projects and banks are hesitant to finance technology that has not yet been proven in the market. Israeli animal-free dairy startup Meanwhile, Remilk has cancelled plans to build "the world's largest" precision fermentation facility in Denmark in favour of scaling with a European contract manufacturer.

California-based animal-free dairy company Perfect Day recently claimed that it was on the verge of announcing a partnership with a major CPG (consumer packaged goods) company, and that it was finalising plans to build some large-scale production capacity in-house.

## Precision Livestock Technologies Introduces AI-Powered System for Predictive Cattle Feed Intake

Precision Livestock Technologies (PLT), a leading provider of software and hardware solutions for livestock feeding and health, today announced the launch of the first artificial intelligence (AI)-powered system to predict cattle



feed intake and make feeding recommendations. The system makes daily quantitative feeding predictions based on hundreds of data points gathered from PLT's machine vision Bunk Management System and external data sources, taking into account feeding rates, feeding times, feeding cycles, cattle behaviour, ration type, weather, and other variables. The company developed its AI-based algorithms using machine learning techniques and over 150,000 discrete pen days.

The system replicates the abilities of a highly trained and hyper-observant cattle feeder. Using the system, PLT clients can automate feeding decisions while also providing their employees with an expert system to check assumptions and make corrections before costly mistakes occur. Rather than taking a "one-size-fits-all" approach, the technology is designed to allow PLT to efficiently tune the output to specific feeding protocols.

"Developing this capability has always been a high-priority goal for the company, and it is extremely gratifying to see the system adding value for our customers," said Andrew McKenzie, the company's president and CEO. "Despite the fact that the system was only recently released, customers have

already confirmed that it provides valuable guidance. We are confident that our Bunk Management System's unique, objective data can be used to increase profits while also improving animal health."

"Our team worked through many iterations and pilot rollouts to get the technology to this point, and we are very excited about its potential to overcome the factors that limit productivity in the cattle industry - having good data and the ability to use it to make well-informed, optimised decisions".

McKenzie continued, "One powerful aspect of machine learning is that applications can continuously improve as more data is generated." As the company adds clients and expands the system to cover more cattle, the technology will improve and generate higher returns for PLT customers."

About Precision Livestock Technologies

Precision Livestock Technologies, Inc. uses artificial intelligence and machine vision to deliver data to livestock producers to boost production, increase quality, and improve animal health. For more information visit [www.precision-livestock.com](http://www.precision-livestock.com).

# 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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