

# DAIRY PLANNER

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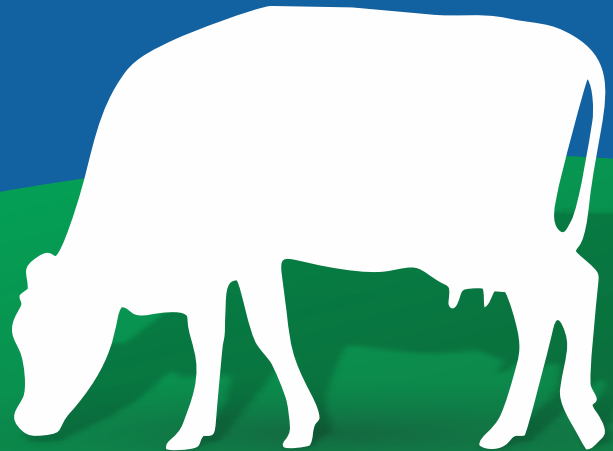


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Email : poultry.pcsl@gmail.com, dairy.pcsl@gmail.com

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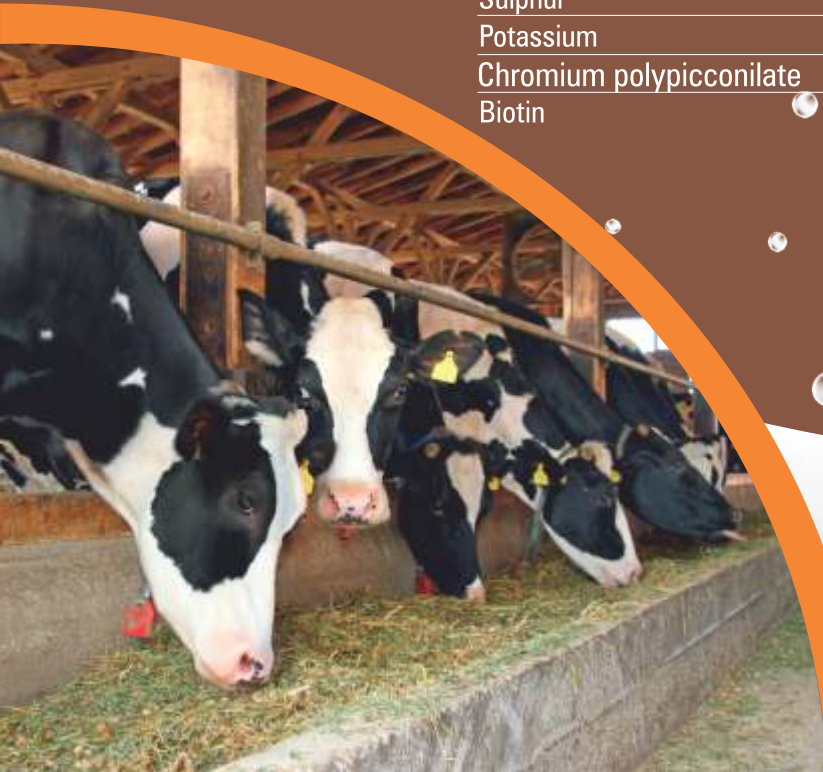
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# From the Pen of Chief Editor



## Emerging Trends in Dairy Processing and Packaging

The dairy processing and packaging sector is undergoing a significant transformation, driven by a confluence of factors including changing consumer preferences, technological advancements, and increasing sustainability concerns.

One of the most prominent trends is the shift towards healthier and more sustainable dairy products. Consumers are increasingly seeking products that align with their health goals and environmental values. This has led to a surge in demand for organic, plant-based, and functional dairy products. Dairy processors are responding by developing innovative products that cater to these preferences, such as fortified milk, probiotic yogurt, and plant-based alternatives.

Technological advancements are also playing a crucial role in shaping the dairy industry. Automation and robotics are being implemented to improve efficiency, reduce labor costs, and enhance food safety. Precision fermentation techniques are enabling the production of dairy proteins and enzymes without the need for traditional dairy animals, opening up new possibilities for sustainable and allergen-free products. Additionally, data analytics is being used to optimize production processes, improve quality control, and reduce waste.

Sustainability is another key trend driving the dairy sector. Consumers are becoming more aware of the environmental impact of food production and are demanding products that are ethically sourced and produced in a sustainable manner. Dairy processors are responding by adopting eco-friendly packaging solutions, reducing their carbon footprint, and implementing sustainable farming practices.

The global market for dairy products is also evolving. Emerging markets, particularly in Asia and Africa, are experiencing rapid growth, creating new opportunities for dairy processors. However, trade tensions and geopolitical factors can pose challenges to the global dairy market.

In conclusion, the dairy processing and packaging sector is undergoing a period of rapid transformation. By embracing emerging trends such as healthier products, technological advancements, and sustainability, dairy processors can meet the evolving needs of consumers, improve efficiency, and contribute to a more sustainable food system.

*Vishal*

### OUR TEAM

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

**Siddhi Gupta**  
Co-Editor  
siddhi@pixie.co.in  
editor.pcs@gmail.com

Website: [www.pixie.co.in](http://www.pixie.co.in)

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Office :

**Pixie Publication**

Anand Vihar, near gogripur railway crossing, hanshi road, karnal-132001 (Haryana)

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# Emerging Trends and Innovations in the Dairy Processing Sector

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

The dairy processing sector has witnessed significant advancements in recent years, driven by factors such as changing consumer preferences, technological breakthroughs, and a growing emphasis on sustainability.

## Key Trends

### 1. Consumer-Driven Innovations:

- **Health and Wellness:** Consumers are increasingly seeking dairy products that promote health and wellness. This has led to the development of fortified dairy products with added nutrients like omega-3 fatty acids, probiotics, and vitamins.
- **Plant-Based Alternatives:** The growing popularity of plant-based diets has prompted dairy processors to develop plant-based alternatives to traditional dairy products, such as almond milk, oat milk, and soy yogurt.
- **Clean Label:** Consumers are demanding products with simple, recognizable ingredients. This has driven dairy processors to focus on clean label formulations, reducing the use of artificial

additives and preservatives.

### 2. Technological Advancements:

- **Automation and Robotics:** Automation and robotics are being used to improve efficiency, reduce labor costs, and enhance food safety in dairy processing plants. Technologies like robotic milking systems and automated packaging lines are becoming increasingly common.
- **Precision Fermentation:** Precision fermentation techniques are being used to produce dairy proteins and enzymes without the need for traditional dairy animals. This opens up new possibilities for creating sustainable and allergen-free dairy alternatives.
- **Data Analytics:** Advanced data analytics tools are helping dairy processors optimize production processes, improve quality control, and reduce waste.

### 3. Sustainability and Environmental Responsibility:

- **Reduced Carbon Footprint:** Dairy processors are exploring ways to reduce their environmental impact, such as implementing

energy-efficient practices, minimizing water usage, and reducing waste.

- **Ethical Sourcing:** Consumers are becoming more aware of the ethical implications of dairy production, leading to a demand for products sourced from farms that prioritize animal welfare and sustainable practices.
- **Circular Economy:** The dairy industry is exploring circular economy models, where waste products are repurposed or recycled to create new value.

#### 4. Global Market Trends:

- **Emerging Markets:** The growth of emerging markets, particularly in Asia and Africa, is driving demand for dairy products. This presents significant opportunities for dairy processors to expand their global reach.
- **Trade Agreements:** Trade agreements are influencing the global dairy market, impacting trade flows and prices.

### Innovations

#### 1. Functional Dairy Products:

- **Probiotic Yogurt:** Yogurt fortified with probiotics is gaining popularity due to its potential health benefits for digestive health.
- **Omega-3 Enriched Milk:** Milk enriched with omega-3 fatty acids is marketed as a heart-healthy option.
- **High Protein Dairy Products:** Dairy products with increased protein content are popular among athletes and fitness enthusiasts.

#### 2. Dairy-Free Alternatives:

- **Plant-Based Milk:** Almond, oat, soy, and coconut milk are among the most popular plant-based milk alternatives.
- **Plant-Based Yogurt:** Plant-based yogurt made from ingredients like almonds, cashews, and soy is gaining traction.

#### 3. Innovative Packaging:

- **Sustainable Packaging:** Dairy processors are exploring sustainable packaging materials like paper, cardboard, and biodegradable plastics to

reduce their environmental impact.

- **Smart Packaging:** Packaging with sensors or QR codes can provide consumers with information about the product's origin, freshness, and nutritional content.

#### 4. Precision Fermentation:

- **Dairy Proteins:** Precision fermentation is being used to produce dairy proteins like casein and whey protein isolate without the need for dairy animals.
- **Enzymes:** Enzymes used in dairy processing, such as rennet for cheesemaking, can be produced through precision fermentation.

The dairy processing sector is undergoing a period of rapid transformation, driven by consumer preferences, technological advancements, and sustainability concerns. By embracing these trends and innovations, dairy processors can meet the evolving needs of consumers, improve efficiency, and contribute to a more sustainable food system.







# Sustainable Packaging Solutions

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

The dairy industry, a significant contributor to global food production, is under increasing pressure to adopt more sustainable practices. Packaging, a substantial component of the dairy value chain, plays a crucial role in product preservation and consumer appeal. However, traditional packaging materials often have a negative environmental impact.

## Challenges of Traditional Dairy Packaging

- **Environmental Impact:** Conventional dairy packaging materials, such as plastic and polystyrene, contribute to pollution, greenhouse gas emissions, and waste management challenges.
- **Resource Depletion:** The production of these materials often requires significant amounts of fossil fuels and non-renewable resources.
- **Consumer Concerns:** Consumers are becoming increasingly aware of the environmental impact of packaging and are demanding more sustainable options.

## Sustainable Packaging Materials

### 1. Paper and Cardboard:

- **Recyclability:** Paper and cardboard are widely recyclable, making them a more sustainable option compared to plastics.

- **Biodegradability:** When properly composted, paper and cardboard can decompose naturally.
- **Versatility:** These materials can be used for various packaging formats, including cartons, trays, and sleeves.

### 2. Biodegradable Plastics:

- **Plant-Based Materials:** Biodegradable plastics made from plant-based materials like cornstarch, sugarcane, and seaweed offer a sustainable alternative to traditional plastics.
- **Compostability:** These materials can decompose naturally in compost environments.
- **Functionality:** Biodegradable plastics can be used for various packaging applications, including pouches, bottles, and films.

### 3. Recycled Materials:

- **Post-Consumer Recycled (PCR) Plastics:** Using recycled plastics reduces the demand for new materials and helps divert waste from landfills.
- **Recyclability:** PCR plastics can be recycled multiple times, further reducing their environmental impact.

### 4. Glass:

- **Recyclability:** Glass is infinitely recyclable, making it a sustainable packaging option.

- **Durability:** Glass is durable and can be reused multiple times, reducing waste.
- **Consumer Appeal:** Glass packaging often has a premium image, appealing to consumers seeking high-quality products.

## Sustainable Packaging Design

### 1. Minimalist Design:

- **Reduced Material Usage:** Minimizing the amount of packaging material used can significantly reduce environmental impact.
- **Efficient Design:** Optimizing packaging design to reduce waste and improve product protection can enhance sustainability.

### 2. Reusable and Refillable Packaging:

- **Consumer-Owned Containers:** Encouraging consumers to bring their own reusable containers can eliminate the need for single-use packaging.
- **Refillable Packaging:** Offering refillable options for products like milk and yogurt can reduce waste and promote sustainability.

### 3. Smart Packaging:

- **QR Codes and RFID Tags:** Incorporating QR codes or RFID tags into packaging can provide consumers with information about the product's origin, sustainability credentials, and recycling instructions.
- **Time-Temperature Indicators:** These indicators can help monitor product freshness and prevent waste.

## Innovative Packaging Solutions

### 1. Edible Packaging:

- **Biodegradable Coatings:** Edible coatings made from natural materials like seaweed or beeswax can protect products while being safe for consumption.
- **Flavor Enhancers:** Some edible packaging materials can even enhance the flavor of the product.

### 2. Bio-Based Inks and Adhesives:

- **Plant-Based Ingredients:** Using inks and adhesives made from plant-based ingredients can reduce the environmental impact of packaging.

### 3. Packaging-as-a-Service (PaaS):

- **Shared Packaging Solutions:** PaaS models allow businesses to share packaging resources, reducing waste and costs.

## Case Studies of Sustainable Dairy Packaging

- **Tetra Pak:** Tetra Pak, a leading packaging company, has

developed a range of sustainable packaging solutions for the dairy industry, including cartons made from renewable materials and recyclable packaging.

- **Danone:** Danone, a global food and beverage company, has committed to using 100% recyclable or compostable packaging by 2025.
- **Arla Foods:** Arla Foods, a dairy cooperative, has invested in sustainable packaging solutions, including reusable bottles and cartons made from renewable materials.

The dairy industry has a significant opportunity to contribute to a more sustainable future by adopting innovative packaging solutions. By embracing sustainable materials, efficient design, and innovative approaches, dairy processors can reduce their environmental footprint, meet consumer expectations, and drive positive change in the packaging industry.





# Micro-fluidization: A Game-changer For Dairy Products



**Indu Panchal, Sharanagouda B, Sumit Mahajan and Shiv**

College of Dairy Science and Technology,  
Lala Lajpat Rai University of Veterinary and  
Animal Sciences

Micro-fluidization is a cutting-edge technology used in various fields, including pharmaceuticals, dairy products, and food. It helps improve the properties of food, like color, texture, and protein solubility. This technology is particularly effective in controlling microbial growth in dairy and food products by applying high pressure. It's often used as an alternative to traditional milk homogenization methods, making it a versatile tool in the dairy and food industries. Micro-fluidization is especially useful for producing high-quality products, making it popular in the pharmaceutical and cosmetic industries.

The process involves creating materials with tiny particles, often at the micro and nano scale levels. It's commonly used to make emulsions, dairy products, and liposomal products in the pharmaceutical and food industries. Micro-fluidizers are devices that use high-pressure pumps to break down fibers by forcing them through narrow channels, creating a high shear rate that tears the fibers apart. The process can be adjusted by changing the pressure, the number of cycles, or the size of the chamber to increase the extent of fibrillation.

One unique application of micro-fluidization is in creating spherical particles that can serve as fat replacements. This is achieved by forcing milk through tiny tubes into

an interaction area where high-pressure jets collide, producing very fine particles. These particles have a narrow size distribution and an average diameter of about 0.35  $\mu$ m, which is smaller than those produced by conventional methods. This technology can also produce fine emulsions and spherically shaped particles that mimic the properties of fat, making them useful as fat alternatives in various products.

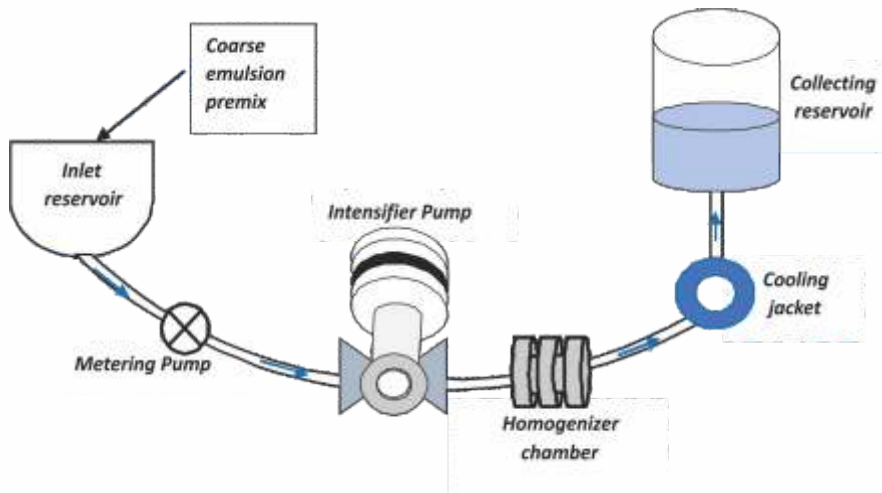
## Principle

Micro-fluidization uses air-powered intensifier pumps to generate the necessary pressure. The product is pushed through specially designed micro-channels in an interaction chamber, where it experiences extremely high shear rates. This causes the product stream to accelerate to high speeds, leading to uniform particle and droplet size reduction, deagglomeration, and efficient cell disruption.

## Working of Microfluidizer

The sample is first poured into the inlet reservoir. The Interaction Chamber is forced to receive the substance by the Microfluidizer processing continuous pressure pumping system. Operating Pressures of up to 30,000 psi. Fluids inside the Interaction Chamber (a very small micro-Channel) can travel at velocities of up to 500 m/s. All material receives consistent, high-shear rates and impact forces. Then the finished product is cooled and collected.





**Figure 1: Schematic diagram of single channel microfluidizers.**

## APPLICATION OF MICROFLUIDIZATION IN DAIRY INDUSTRY

### Encapsulation of Flavours and Additives

Micro-fluidization helps in trapping flavors and additives within tiny capsules, ensuring that aromas are released gradually. This process protects delicate volatile compounds from evaporating or breaking down, extending their shelf life. For example, encapsulating fish oil can mask unpleasant tastes or odors while preserving its stability, making it more palatable.

### Extraction of Bioactive Compounds

Micro-fluidization is an efficient and cost-effective method for extracting bioactive compounds. It disrupts the cellular structure of materials, increasing the yield of these valuable compounds. This technology is useful in areas like pathogen detection, controlled yeast growth, and microbial fuel cells. It also has potential applications in bio-refineries and improving microalgae fuel production.

### Homogenization of Milk

In milk homogenization, micro-

fluidization breaks down large fat globules into smaller ones, resulting in a more uniform distribution. This process can make milk appear whiter and improve the texture and mouth feel of low-fat and non-fat dairy products, such as frozen desserts. It has been effectively used in processing products like infant formulas, cheddar and mozzarella cheeses, and cream liqueurs.

### Production of Nanoemulsions

Micro-fluidization can create fine emulsions with tiny particles that mimic fat, making them useful as fat alternatives. This technique extends the shelf life of products like cream liqueurs and infant formulas by producing stable nanoemulsions.

### Benefits of microfluidization in dairy processing

Microfluidization enhances the texture and sensory qualities of dairy products, leading to improved stability and quality. For example, it can significantly improve the texture and creaminess of low-fat yogurt, making it possible to create premium low-fat versions. It also supports the development of novel cheeses, like low-fat cheeses with desirable textures.

## Extending Shelf Life of Dairy Products

Micro-fluidization improves the stability and shelf life of dairy products, such as cream liqueurs and UHT milk, by producing smaller droplet sizes. It also enables the creation of yogurt-like products from hazelnut slurry without additional ingredients. Micro-fluidized cream cheeses have a higher moisture content and softer texture.

## Less Energy required

Microfluidizers can create nano-emulsions, such as palm oil-based oil in water, with minimal energy and low surfactant concentrations. This process is efficient and sustainable.

## Challenges and limitations

Micro-fluidization has some challenges, such as prolonged emulsification time leading to larger droplet sizes and high-pressure usage raising temperatures. The sensitive micro-channels in the equipment are prone to wear, and over-processing can lead to larger droplet sizes. Additionally, it can disturb the protein matrix, potentially affecting the melt and flow properties of cheese.

## Conclusion

Micro-fluidization is an innovative technology that improves the shelf life and quality of dairy products. It is used for creating micro- and nano-sized emulsions, encapsulating bioactive substances, and enhancing the functional properties of proteins, polysaccharides, and dietary fibers. The results depend on processing parameters like pressure and the type of substances being processed.



# Vegan: Foodstyle Surge

Anupama Rani<sup>1\*</sup>, Anuradha Kumari<sup>2</sup>, Niraj K Singh<sup>3</sup>

<sup>1</sup>\*Dr. Anupama Rani, Assistant Professor, Department of Dairy Chemistry, Sanjay Gandhi Institute of Dairy Technology, Bihar Animal Sciences University, Patna

<sup>2</sup>Dr. Anuradha Kumari, Assistant Professor, Department of Dairy Chemistry, Sanjay Gandhi Institute of Dairy Technology, Bihar Animal Sciences University, Patna

<sup>3</sup>Dr. Niraj K Singh, Associate Professor, Associate Professor & Head Department of Veterinary Physiology and Biochemistry, College of Veterinary and Animal Sciences University, Kishanganj, Bihar Animal Sciences University, Patna

## Abstract

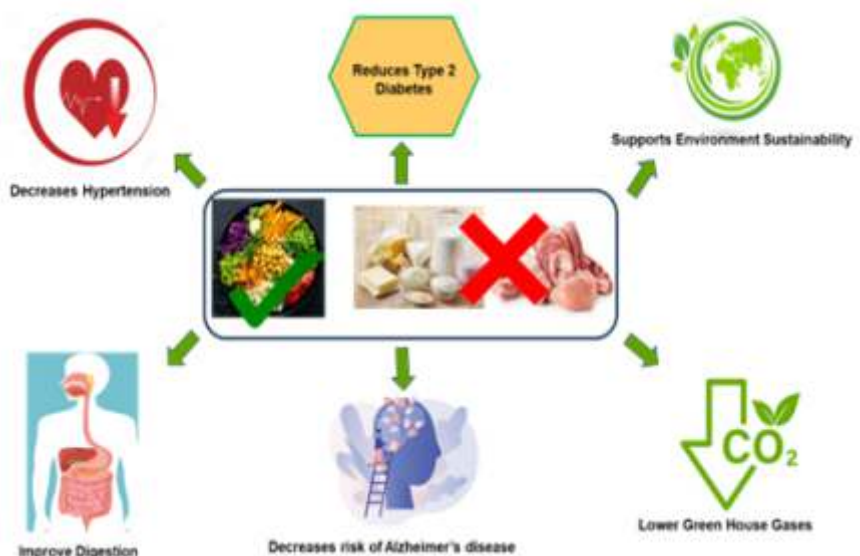
A vegan diet excludes all animal products including dairy, egg, meat, and even honey but the diet includes vegetables, fruits, nuts, legumes, grains, seeds and plant-based dairy and meat alternatives. They believe in the concept that animals should not be exploited for food or other purposes. This effort decreases the animal products demand and thus contributes to the preservation of natural habitats and the protection of biodiversity as it decreases the amount of land required for livestock farming. However, careful planning is essential to ensure that a vegan diet meets all nutritional needs.

## Introduction

A vegan is someone who does not consume or use animal products of any kind. The vegan diet is centred on plants, not including animal products like meat, fish, dairy products, or even honey (Piia et al., 2019). Generally, vegans follow this lifestyle because of ethical, health, and environmental drives (Fuentes, & Fuentes, 2023). Bound to animal rights movements, vegans aim to eradicate all practices of animal cruelty and exploitation. Veganism excludes all animal use, for example in food (meat, eggs, fish, milk and dairy products, honey), in clothing and industry (leather, wool, fur and some cosmetics), entertainment (zoos, exotic pets, circuses), or services (guide dogs, police dogs,

hunting dogs, working animals, or animal testing, including medical experimentation). The annual growth of vegan products was 58% between 2015 and 2019 (Market Insights,). In 2018, the Mintel Global New Products Database mentioned that the United Kingdom launched the most vegan food products in the world (Market Insights, 2018). Also, according to Mintel, in 2018 in Europe, one out of ten new food products was either vegan or had no animal product ingredients. Based on a number published in 2019 by The Economist, it was possible to verify that the total number of vegans in the world would be approximately 79 million in January 2021 (The Economist, 2019)

According to a 2021 survey, 24%



of Indians identified as vegetarian and 9% identified as vegan. Considering how many people live in India that means **“574 million Indians who follow a meat-free diet**, which is more than the total population of the United States and the United Kingdom put together.” So, while the majority of the country considers themselves non-vegetarians or selective meat-eaters, there are still millions of people who follow vegetarian and vegan diets. Here, we are focused on being vegan in India. Even though there may not be nearly as many vegan establishments as there are vegetarian restaurants, you can easily find tonnes of vegan food in many places in India. And, since many traditional recipes are already vegetarian, or indeed vegan, you'll find that it's easy to be vegan in India! Figure 1 depicts the Food Safety and Standards Authority of India (FSSAI) logo for “Vegan”.



Figure 1: FSSAI Logo for “Vegan”

**\* Leaf at the Top:** The green colour leaf depicts that the ingredient/ product is of plant origin

**V at the centre:** To identify it as a Vegan product

**Word VEGAN at the bottom:** Help consumers to identify vegan foods and avoid confusion with the letter “V”.

### Rise of Vegans in India

Veganism as a widespread idea started in 1944, when a small group of people who were vegetarians, broke away from the

Leicester Vegetarian Society in England and formed a Vegan Society. The term 'vegan' was coined by Donald Watson, the co-founder of this society. There is no specific time that can define when the vegan lifestyle entered Indian borders. This is because India is already ranked among the top vegetarian countries. Since vegetarianism has been popular in India for centuries already, it was only natural that people began to easily shift to veganism instead. Veganism is expected to increase in India, perhaps at a slower rate than in other parts of the world due to the nation's love of dairy (Superprof.co.in).

### Veganism

The term “vegan” was chosen from the combination of the first and last letters of “vegetarian.” By 1949, the first definition of veganism had been born. It has changed slightly over the years to become what it is known as today. According to the latest definition from the Vegan Society, veganism is “a philosophy and way of living which seeks to exclude — as far as possible and practicable — all forms of exploitation of, and cruelty to, animals for food, clothing, or any other purposes.” (Healthline.com). According to Joanne Stepaniak, the word vegan was first published independently in 1962 by the Oxford Illustrated Dictionary, defined as “a vegetarian who eats no butter, eggs, cheese, or milk”(Wikipedia).

### Reason for Veganism

**Ethics:** Veganism opposes consuming products which

involve the killing of animals. This includes the slaughter of goats, sheep and calves, or the culling of 1-day-old male chicks in egg production. Ethical vegans believe that animals' milk, eggs, honey, silk, and wool are not for human use.

**Health:** Some people choose a vegan diet for its potential health benefits. Diets high in meat especially red meat have been linked to cancer, heart disease, and type 2 diabetes. Increasing intake of more plant-based foods improves digestion and reduces the risk of Alzheimer's disease. A vegan diet can also help to minimize the side effects linked to the veterinary drugs and hormones used in animal farming.

**Environment:** People choose to avoid animal products to limit their environmental impact. According to recent data, animal farming heavily contributes to greenhouse gas emissions (GHGEs), which cause global warming. Meat eaters are thought to be responsible for 2–2.5 times more GHGEs than people following a vegan diet. This data is based on self-reported dietary patterns in the U.K. Ruminant animals, such as cattle, camel, goat, and sheep, appear to emit the largest amount of greenhouse gases per gram of protein they deliver. Therefore, diets which reduce or eliminate dairy also produce significantly lower GHGEs. One study suggests that a vegetarian diet produces 33% lesser GHGEs than a meat-containing standard American diet offering the same number of calories. A vegan diet



has a smaller environmental impact, producing about 53% fewer GHGs than a calorie-matched meat-containing diet. A large proportion of the plant protein currently being produced is used to feed animals rather than humans. Because of this, the production of an animal-based diet requires the use of more of the earth's resources than the production of a plant-based diet. For example, producing animal protein requires 6–17 times more land and 2–3 times more water than the same amount of soybean protein.

**Vegan Foods:** Vegan foods consist of the following

- **Beans, peas, and lentils:** Red, brown, or green lentils; chickpeas black-eyed peas; black
- **Soy products:** Fortified soy milk soybeans, and products made from them, such as tofu, tempeh, and chunks.
- **Nuts:** Peanuts, almonds, cashews, and their butters
- **Seeds:** Sunflower seeds, sesame seeds, and their butter, as well as flaxseed, hemp seeds, and chia seeds
- **Whole grains:** Quinoa, whole wheat, whole oats, and whole brown or wild rice, as well as products made from these foods, such as whole grain bread, crackers, and pasta
- **Starchy vegetables:** Potatoes, sweet potatoes, corn, squash, beets, and turnips
- **Non-starchy vegetables:** Broccoli, cabbage, asparagus, radishes, and leafy greens vegetables

- **Fruit:** Apples, pears, bananas, berries, mango, pineapple, oranges, and tangerines
- **Other plant-based foods:** Algae, nutritional yeast, fortified plant milk and yoghurts, and maple syrup

### Foods that vegans avoid

Vegans avoid all foods of animal origin. These include:

- **Meat and fish:** All meat and meat-based products
- **Eggs:** Whole eggs and foods that contain them, such as bakery products
- **Dairy:** Milk, cheese, butter, and cream, as well as foods made using these ingredients
- **Other animal-derived ingredients:** Honey, albumin, casein, carmine, gelatin, pepsin, shellac, isinglass, and whey

### Types of Veganism

- **Dietary vegans:** Those who avoid animal products in their diet but continue to use them in other products, such as clothing and cosmetics.
- **Whole-food vegans:** Those who favour a diet rich in whole foods, such as fruits, vegetables, whole grains, legumes, nuts, and seeds.
- **“Junk-food” vegans:** Those individuals who rely heavily on processed vegan foods such as vegan meats, fries, and desserts, including Oreo cookies and non-dairy ice cream.
- **Raw-food vegans.** Those who eat only foods that are raw or cooked at temperatures below 118°F (48°C).

- **Low-fat raw-food vegans.** These people limit high-fat foods such as nuts, avocados, and coconuts and, rely mainly on fruit. They may occasionally eat small amounts of other plants.

### Lacks of Vegan Diet

As a vegan diet is completely, a plant-based diet, it is deficient in vitamins and minerals which are derived from animals. Such as

- vitamin B12
- vitamin D
- calcium
- zinc
- iodine
- selenium

### Dairy Alternatives

A vegan diet is designed to fulfil dairy alternatives, which include:

- **Cheese:** Shreds and slices are made using coconut, almonds, cashews, soy, or pea protein
- **Milk:** Made from oats, hemp, rice, soy, peas, macadamia nuts, sunflower seeds, almonds, or cashews
- **Cream cheese and sour cream:** Made from beans or cashews
- **Butter:** Made using vegetable oil, cashews, or pea protein
- **Ice cream:** Made from soy, oats, cashews, or coconut milk

### The future of veganism in India

Veganism in India has become more mainstream as awareness spreads, and as more restaurants and food companies produce plant-based options. According to a survey conducted by the Indian Council of Medical Research in

2021, there were an estimated millions of vegans in India, steadily increasing year by year (vkind.com). Over the recent years, many people across the globe have shifted to a variety of plant-based food alternatives that offer great taste and health benefits. However, a Vegan diet has become increasingly popular for people wanting to adapt to a healthier lifestyle, save the environment and care for animals. Vegan options, such as almond milk, plant-based paneer, plant-based meat substitutes, soya paneer, plant milk-based curd and chocolates and many more, are flooding the market. Celebrity couple Ritesh Deshmukh and Genelia D'Souza, too, are launching their vegan initiative Imagine Meats, inspired by the multi-billion-dollar success of US giant Beyond Meat. On screen, powerful documentaries such as Cowspiracy, What the Health, Dominion, and most recently, The Game Changers, have been inspiring people across the spectrum to adopt a plant-based lifestyle. In addition to a growing number of vegan-friendly dishes making their way into various restaurant and cafe menus, many plant-based restaurants have cropped up to cater to vegan consumers.

### Conclusion

A vegan diet includes vegetables, fruits, nuts, legumes, grains, seeds, and plant-based alternatives to dairy and meat. A well-balanced vegan diet can lower the risk of many diseases like hypertension, type 2 diabetes, heart disease and certain types of cancer. Veganism supports environmental sustainability by conserving water, reducing carbon footprint and minimising land use. Compared to animal-based diets veganism supports environmental sustainability by reducing the carbon footprint, conserving water, and minimizing land use compared to animal-based diets. Adopting a vegan lifestyle is a stand against animal exploitation which reflects a commitment to social responsibility and ethical living. However, careful planning is required to ensure that a vegan diet meets all the nutritional needs.

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# Unique Animal Genetic Resources of the Himalayan Region: Biodiversity Treasure of Uttarakhand

**Divyanshu Pandey, Saket Kumar Niranjana, Satpal Dixit**

Division of Animal Genetics, ICAR-National Bureau of Animal Genetic Resources, Karnal, Haryana, 132001

## Introduction

The Himalayan region of India is home to a diverse range of livestock species. Despite their large numbers, these animals generally have low productivity. Nevertheless, they are economically significant, supporting the livelihoods of nearly 80% of rural households, either partially or entirely, particularly among tribal and nomadic communities who rely exclusively on livestock.

Livestock production in the Himalayas is primarily undertaken by smallholders, including marginal, small, and landless farmers. These activities occur in millions of small and scattered holdings throughout the region. The predominant farming system is mixed crop-livestock farming, which is irrigated in the plains and rain-fed in the hills. Livestock farming provides year-round employment to a large portion of the population. The region's livestock includes cattle (30-47%), buffaloes (8-12%), goats (16-36%), and sheep (10-22%). In the Western and Central Himalayas, cattle, goats, and sheep are

significant, while in the Eastern Himalayas, pigs and poultry are more common. Alpine zones feature ovine species and yaks. Equines are essential for transportation, especially for resource-poor farmers with limited access to other transportation means.

Individual livestock holdings are typically small, consisting of two or three animals of mixed species, commonly including cattle or buffalo and goats. Cattle are primarily raised for milk production in the plains and as work animals and milk providers in the hills. Sheep are kept in larger flocks of 10-15 animals, occasionally alongside goats, except among tribal and nomadic groups, where flocks can range from 100 to 1,000 animals. These larger flocks are often migratory, grazing in alpine pastures during the summer. Goats are valued for additional income, as a safety net against disasters, and for ceremonial purposes and social obligations. Despite livestock's substantial contribution to the rural economy, many isolated livestock populations remain under-documented in terms of genetic diversity and



production potential within their breeding areas. Animal husbandry holds significant potential in this region due to the large proportion of indigenous animals and birds, which, although often non-descript, are maintained in pure form. Meat-producing animals and birds are integral to the average family diet, as meat is an important food component, and small meaty animals and birds can be sold to meet emergency needs.

Over the past four decades, considerable efforts have been made in livestock research and development in the Himalayan regions of India. Policies have focused on issues related to animal breeding, feed, and health. However, innovations have primarily addressed technical and scientific problems, neglecting many interconnected socioeconomic and biophysical factors, particularly those unique to mountainous areas. Development efforts have aimed to improve animal breeds to boost incomes and living standards for mountain farmers.

### **Animal Genetic Resources in Uttarakhand**

Uttarakhand boasts a rich genetic diversity in livestock, encompassing numerous domesticated species and various breeds, including non-descript populations. The following outlines the primary breeds by species of livestock in Uttarakhand:

#### **Cattle**

Breeds such as Sahiwal, Red Sindhi, and Hariana are maintained by a few institutional herds and private owners, predominantly found in the Haridwar, U.S. Nagar, Dehradun, and Nainital districts. A potential population, Jwalapuri, is mainly seen in Haridwar. Additionally, crossbreeds like Jersey, Holstein Friesian, and Red Dane are widespread across the state, especially in U.S. Nagar, Dehradun, Haridwar, and Nainital. The hill cattle, non-descript and reared for milk, bullock power, and manure, are common in hilly areas and are distinguished by their black, red, or white colors. The red-colored small footed cattle are particularly known as the Badri breed in the Garhwal region, yielding 1.0-3.0 kg of milk per day.

#### **Buffalo**

Murrah and Murrah-grade buffaloes are prominent in the state, especially in the plains of U.S. Nagar, Haridwar, and Dehradun. The Tarai buffalo, native to Uttarakhand, is found in the Tarai and Bhabar areas of Nainital, U.S. Nagar, and Champawat districts. In the hilly regions, non-descript buffaloes are prevalent, with many being Murrah and Tarai graded.

#### **Sheep**

Most sheep in Uttarakhand are non-descript, but breeds like

Gaddi and Rampur Bushair, originating from Himachal Pradesh, are found in high-altitude areas of Nainital, Tehri Garhwal, Chamoli, and Uttarkashi districts.

Muzzafarnagari sheep are present in Haridwar, U.S. Nagar, and the plains of Dehradun. The black sheep of Garhwal are well-regarded, producing medium-quality dense fleece, while their legs, belly, and face remain wool-free.

#### **Goats**

Goats in Uttarakhand villages are mostly non-descript, with limited data on their specific breeds, breeding tracts, and distribution. However, some potential populations are:

- **Chalagarkha:** Found in Almora and neighboring areas, this small breed is reared for meat. They have a lean body and come in black, fawn, and white colors. They typically kid once a year, producing one or two kids, and their meat is coarse and low in fat.
- **Udaipuri:** Located in Pauri and surrounding areas, this tan-colored breed is small and reared for meat, also kidding once a year with one or two kids.
- **Tarai:** These goats are a mix of Black Bengal, Barbari, and Jamunapari types, adapted to the high rainfall and hot, humid climate of the Tarai region. They are small to

medium in size and valued for both meat and milk, producing 1-1.5 kg of milk.

- **Gaddi (White Himalaya):** This medium-sized breed, found in Dehradun, Nainital, Tehri Garhwal, and Chamoli, primarily has a white coat, with some black and brown variations. Both sexes have large, sometimes twisted horns. They kid mostly single, with twinning in 15-20% of births, and produce 300-500 gm of milk and 300 gm of fleece per clip.
- **Chegu (Pashmina):** Found in Uttarkashi, Chamoli, and Pithoragarh, these medium-sized goats usually have a white coat mixed with grayish red. Similar in conformation to Changthangi goats, they kid mostly single, with an annual pashmina production of 120 gm.

Despite the significant contribution of livestock to the rural economy, many livestock populations in isolated locations remain under-documented in terms of genetic diversity and production potential. There are good prospects for animal husbandry in this region, given the high proportion of indigenous animals and birds, which, though non-descript, play a crucial role in meat production and can be sold to meet emergency needs. Over the past four decades, substantial efforts in livestock

research and development have focused on animal breeding, feeding, and health, but these efforts have often overlooked the unique socioeconomic and biophysical characteristics of the mountainous regions.

#### **Horses/Ponies**

The genetic variation in horses and ponies is not well-documented despite noticeable differences in their phenotypic traits. Most of these populations are non-descript and require comprehensive surveys for proper description and evaluation.

#### **Pigs**

Pigs in Uttarakhand exhibit considerable variation in size, color, and performance. Predominantly non-descript populations are found in the U.S. Nagar and Haridwar districts, though some improved breeds are also present. These populations need to be evaluated for their unique traits, with steps taken for their conservation and improvement.

#### **Yak**

The yak, a unique bovine species, holds significant economic and cultural importance for the tribal populations in the Himalayan regions. In Uttarakhand, there are total 2.36 lakh yaks/dog/rabbit populations (20th livestock census, 2019) located in the Pithoragarh

(Kumaon) and Uttarkashi (Garhwal) districts. Yaks are utilized for milk, meat, and draft purposes.

#### **Poultry**

Various poultry species, including chickens, ducks, guinea fowl, and quail, contribute significantly to the human food chain and family income. These species exhibit large genetic variation, which needs to be identified for improvement and conservation. Differences in body size, conformation, and color patterns among these birds should be thoroughly described and evaluated using both phenotypic traits and DNA profiles. Additionally, these populations should be studied for unique traits related to disease resistance and their ability to survive under harsh climatic conditions.

In conclusion, the genetic diversity among livestock and poultry in Uttarakhand holds significant potential for agricultural development and conservation efforts. Comprehensive surveys and evaluations are essential to document and enhance these traits. Improved breeding programs can ensure the preservation and improvement of these valuable genetic resources. Such efforts will not only support local livelihoods but also contribute to the region's overall economic sustainability.



# The Battle Against Oxidative Stress: Exploring Antioxidant Therapy in Veterinary Medicine

## Introduction

The battle against oxidative stress in veterinary medicine involves exploring various strategies, including antioxidant therapy, to mitigate its effects on animals' health. Oxidative stress occurs when there's an imbalance between free radicals (highly reactive molecules) and antioxidants (molecules that neutralize free radicals). In animals, this imbalance can arise from various factors such as environmental stressors, infections, aging, or metabolic disorders.

## Importance of Antioxidant Therapy

- 1. Protecting Cells:** Antioxidants neutralize free radicals, unstable molecules that can damage cells and tissues through oxidative stress. In animals, oxidative stress can result from various factors such as environmental pollutants, infections, aging, and metabolic diseases. By scavenging free radicals, antioxidants help protect cells from oxidative damage, thereby supporting overall cellular function and health.
- 2. Health Benefits:** By neutralizing free radicals, antioxidants can potentially help in preventing or managing certain diseases and conditions that have oxidative stress as a contributing factor. This includes conditions like

arthritis, certain cancers, cardiovascular diseases, and aging-related disorders.

- 3. Diverse Sources:** Antioxidants can be sourced from various dietary components such as vitamins (like vitamin C and E), minerals (selenium, zinc), and phytochemicals (polyphenols, flavonoids) found in fruits, vegetables, and herbs. In veterinary medicine, these can be incorporated into diets or given as supplements.

## Application in Veterinary Practice

Antioxidants play a crucial role in the field of veterinary medicine by helping to combat oxidative stress, which can have significant impacts on animal health.

- 1. Dietary Management:** Antioxidants are commonly included in commercial pet foods or prescribed as supplements to ensure adequate intake. Vitamins such as vitamin C, vitamin E, and beta-carotene, as well as minerals like selenium and zinc, are essential antioxidants commonly supplemented in animal diets. Natural sources of antioxidants, such as fruits, vegetables, and certain herbs, can also be incorporated into diets to support overall health.
- 2. Supplementation:** In cases where dietary intake may be insufficient or when animals are under stress or recovering



**Komal, Sivaraman Ramanarayanan, Kaushlendra Singh, Abhishek Kumar**  
 Assistant Professor, Veterinary Biochemistry, VCC, COVAS, Kishanganj  
 Assistant Professor, Veterinary Pharmacology, COVAS, Kishanganj  
 Assistant Professor, Veterinary Parasitology, COVAS, Kishanganj  
 Assistant Professor, Veterinary Gynaecology and obstetrics, VCC, COVAS, Kishanganj



from illness, antioxidant supplements may be recommended. Veterinarians assess individual needs based on the animal's health status and risk factors.

### 3. Supporting Immune

**Function:** Oxidative stress can impair immune function in animals, making them more susceptible to infections and diseases. Antioxidants can help maintain proper immune function by reducing oxidative damage to immune cells and supporting their ability to respond effectively to pathogens.

### 4. Managing Chronic

**Conditions:** Many chronic diseases in veterinary medicine, such as arthritis, cardiovascular disease, and certain cancers, involve oxidative stress as a contributing factor. Antioxidants may play a role in managing these conditions by reducing inflammation and oxidative damage associated with disease progression. They can complement traditional therapies and improve overall treatment outcomes.

### 5. Promoting Longevity and Quality of Life:

As animals age, oxidative stress accumulates and contributes to age-related decline in health. Antioxidant supplementation or diets rich in antioxidants may help mitigate some of these effects, promoting longevity and maintaining a higher quality of life for aging pets.

**6. Preventive Care:** Antioxidants are not only used therapeutically but also as part of preventive care strategies in veterinary medicine. They can

help maintain cellular health and reduce the risk of oxidative damage before clinical signs of disease appear.

### 7. Research and Development:

Ongoing research explores new antioxidant compounds and formulations tailored to specific animal species and conditions. This includes investigating antioxidant-rich extracts or novel delivery methods for enhanced efficacy.

### Challenges and Considerations

- 1. Species Variability:** Different animal species may have varying antioxidant requirements and responses to therapy. Understanding these differences is crucial for effective treatment.
- 2. Safety and Dosage:** Ensuring the safety and appropriate dosage of antioxidants is essential, as excessive amounts can potentially have adverse effects.
- 3. Integration with Conventional Therapy:** Antioxidant therapy often complements conventional veterinary treatments. Integrating these approaches requires coordination among veterinary professionals.

In conclusion, antioxidant therapy represents a promising avenue in veterinary medicine for combating oxidative stress and supporting animal health by protecting cells from oxidative damage, supporting immune function, managing chronic conditions, promoting longevity, and enhancing overall quality of life for animals. Continued research and clinical application will further refine our understanding and utilization of antioxidants in veterinary practice.

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## Union Minister Shri Rajiv Ranjan Singh Inaugurates the Two-day National Symposium of CLFMA of India in Goa

**Several schemes aims at organizing the unorganized dairy sector and addressing the shortage of feed and fodder: Shri Rajiv Ranjan Singh**

Union Minister for Fisheries, Animal Husbandry and Dairying, **Shri Rajiv Ranjan Singh alias Lalan Singh** inaugurated the two-day National Symposium of CLFMA of India in Goa yesterday. CLFMA of India Chairman, **Shri Suresh Deora**, Animal Husbandry Commissioner at the Ministry of Animal Husbandry, Dairying and Fisheries **Dr. Abhijit Mitra** and former Joint Secretary of the Department of Animal Husbandry and Dairying **Shri O.P. Choudhary** were also present in the event.



In his address, Shri Rajiv Ranjan highlighted the Central Government's significant efforts to promote domestic solutions in animal husbandry and reduce reliance on imports. He also mentioned several schemes aimed at organizing the unorganized dairy sector and addressing the shortage of feed and fodder. Praising CLFMA's initiatives, he expressed hope that such discussions would aid the government in policy-making.







Shri Suresh Deora emphasized the importance of the livestock sector in the Indian economy, noting that it provides employment for farmers and those involved in animal husbandry. The industry has an annual turnover of ₹12 lakh crore, and global demand for high-quality livestock products like eggs, meat, milk and cheese continues to rise.

Dr. Abhijit Mitra stressed the need for better coordination and collaboration between the government, industry and research institutes to benefit India's livestock sector. At the event, CLFMA of India honoured Shri O.P. Choudhary with the Lifetime Achievement Award.



# Secretary Smt. Alka Upadhyaya holds review Meeting with Eastern States Officials of Animal Husbandry and Dairying Departments on Physical and Financial Progress of Several key Schemes

**Actively promote the Realigned Animal Husbandry Infrastructure Development Fund scheme among beneficiaries to maximize its benefits and foster entrepreneurship:  
Smt. Alka Upadhyaya**

Secretary of Animal Husbandry and Dairying (AHD), Government of India, Smt. Alka Upadhyaya chaired a Regional Review Meeting at Bhubaneswar, Odisha. The meeting brought together Additional Chief Secretaries, Principal Secretaries, Secretaries, Directors, and scheme implementation officers from the Animal Husbandry and Dairying Departments of the Eastern states, mainly Chhattisgarh, Jharkhand, Odisha, West Bengal and Meghalaya to discuss the progress of various departmental programs and schemes.

Additional Secretary Ms. Varsha Joshi, Joint Secretary Ms. Sarita Chauhan, Advisor (Statistics) Shri Jagat Hazarika and other senior officials from the Department of Animal Husbandry and Dairying, Government of India also attended the meeting.

Smt. Alka Upadhyaya reviewed the physical and financial progress of several key schemes, including the Rashtriya Gokul Mission (RGM), Entrepreneurship Development



under the National Livestock Mission (NLM), the National Animal Disease Control Programme (NADCP) and the National Programme for Dairy Development (NPDD).

Smt. Alka Upadhyaya urged officials to identify local

strategies to enhance the number of productive bovines and address fodder constraints, taking into account the fodder scarcity and climate variations in the States. She emphasized the need for optimal use of infrastructure created under the NPDD scheme for milk







collection, chilling, processing, and testing. Increasing the coverage of the organized dairy sector, promoting indigenous milk products, enhancing value addition and developing marketing action plans were highlighted as strategic approaches to strengthen the dairy supply chain in the region.

The meeting also recognized the efforts of the states in establishing breeding farms under the Entrepreneurship Development programs of the National Livestock Mission. Smt.

Upadhyaya encouraged states to maximize the utilization of opportunities and financial assistance available under these schemes.

She further urged states to actively promote the Realigned Animal Husbandry Infrastructure Development Fund (AHIDF) scheme among beneficiaries to maximize its benefits and foster entrepreneurship. States presented their new initiatives and best practices during the meeting.

Concluding the meeting, Smt.

Alka Upadhyaya emphasized the collective responsibility of all stakeholders to ensure the success of the 21st Livestock Census. She highlighted the critical role the upcoming 21st Livestock census will play in shaping future policies and programs for the Animal Husbandry sector and called for leveraging the latest technologies to achieve its successful implementation.

The Government of India's flagship NADCP scheme, which focuses on vaccination against major diseases such as Foot-and-Mouth Disease (FMD) and Brucellosis, was reviewed, with discussions on the status of six-monthly vaccinations for cattle, buffaloes, sheep, and goats. Other topics included the components under Assistance to States for Control of Animal Diseases (ASCAD), the operationalization of Mobile Veterinary Units (MVUs) and the formation of "Pashukalyan Samities."



## MoS Prof. S.P. Singh Baghel launches new products developed by the few start-ups and appreciates the technology interventions of the startups in World Food India 2024 at Bharat Mandapam



Union Minister of State for Fisheries, Animal Husbandry and Dairying Prof. S.P. Singh Baghel visited the pavilion of the department in World Food India 2024 at Bharat Mandapam in New Delhi. He appreciated the technology interventions of the startups that participated in the exhibition. He also launched new products developed by the few startups.

A CEO Roundtable was held on the inaugural day of World Food India 2024, wherein the department also participated. It was co-chaired by the Union Minister for Ministry of Commerce and Industry Shri Piyush Goyal and the Union Minister for Ministry of Food

Processing Industries Shri Chirag Paswan. This significant gathering brought together more than 100 CXOs representing the leading Indian and global companies in the



food processing and allied sectors.

Secretary, Department of Animal Husbandry and Dairying Smt. Alka Upadhyaya inaugurated the pavilion of the Department of Animal Husbandry and Dairying on 19th September 2024 at Hall No 2 at Bharat Mandapam. The Department of Animal Husbandry and Dairying has







participated in the World Food India event 2024 organized from 19th to 22nd of September 2024.

In the pavilion, the Department exhibited major schemes, programs, new initiatives and innovative technologies in the livestock and dairy sector. The

pavilion also featured 25 stalls, including the National Dairy Development Board, Start-ups, and Companies working in Animal Husbandry and Dairy sector. The main attractions at the pavilion were the "Selfie Point" and live demonstrations of various innovative products

by start-ups and companies. The exhibition highlighted the department's commitment to promoting technological advancements and facilitating the growth and development of the sector.



The department organized a knowledge session titled "Entrepreneurship and Youth Development in the Livestock Sector" at Conference Room 15 of Bharat Mandapam on 20th September 2024. Ms. Varsha Joshi, Additional Secretary (DAHD) moderated the session. The distinguished speakers include Dr. Rajesh Sharma, Group Head (AN), NDDB (National Dairy Development Board), Shri Nirmal Choudhary, Founder, Milk Station, Dr. Arindam Mukhopadhyay, Manager (Production), Haringhata Meat Plant, West Bengal Livestock Development Corporation Limited, Shri Rahul Ganapathy, Founder, Atsuya Technologies and Dr Lipi Sairiwal, Deputy Commissioner, NLM division, DAHD. The session aimed to explore innovative strategies for integrating youth into the livestock sector, highlight the entrepreneurial opportunities and address challenges in livestock management.



## Union Minister Shri Rajiv Ranjan Singh chairs the Monsoon Meet 2024 - National Conclave of State Animal Husbandry Minister today at Bhubaneswar, Odisha



Union Minister for Fisheries, Animal Husbandry & Dairying and Panchayati Raj, Shri Rajiv Ranjan Singh alias Lalan Singh chaired the "Monsoon Meet 2024- National Conclave of State Animal Husbandry Ministers, today, 13th September 2024 at Convention Centre, Loka Seva Bhawan, Bhubaneswar, Odisha. Chief Minister of Odisha Shri Mohan Charan Majhi graced the occasion as "Chief Guest" of the event. Minister of State for Fisheries, Animal Husbandry, and

Dairying Prof. S. P. Singh Bhagel and Minister of State for Fisheries, Animal Husbandry, and Dairying Shri George Kurian were also attended the Monsoon Meet.

Ministers of Animal Husbandry and Dairying Departments from 17 States participated in the meeting held today. The Monsoon Meet organised to draw out the expectations of States and UTs to create a convergence framework for effective programme

implementation at the ground level.

The agenda focused on farmer concerns, future security, livestock industry growth, sustainable practices, and agricultural community welfare.

The Meet was attended by delegation of key officials including Principal Secretaries, Directors, Chairman of Milk Unions from 32 States and Union Territories.

Union Minister Shri Rajiv Ranjan



Singh has launched various programs included under the Action plan for the first 100 days in the livestock and dairy sector by the new government.

“National Milk Recording Programme (NMRP)” of the department of AH and Dairying was launched by the Union Minister during the event, with an aim for expanding systematic performance recording of large number of animals and for coverage of majority of Indian cattle and buffalo breeds of the country. He has also distributed the certificates to the CMU graded Semen stations.

During the event the Union Minister has launched the A-HELP programme for the State of Odisha and distributed the field kits to the Pashusakhis. The program was initiated to enhance the animal health and welfare by integrating community-based livestock resource persons into rural healthcare and doorstep delivery of services to the farmers.

Nationwide KCC Campaign-2024-25” from 15th September to 31st March 2025 was launched by union minister in order to provide Kisan Credit Card facility to all eligible Animal Husbandry and Fishery Farmers.

Launch of “Web Application for National level Monitors” to ensure the effectiveness and proper field implementation of all the programs and schemes of DAHD in all the States and UTs National Level Monitors Scheme have been developed.

Inauguration of newly relocated unit of Central Poultry

Development Organization (Eastern Region) at Talagarh, Naraj, Cuttack.

Launch of Indigenous cultural media for OPU-IVEP-ET. For the first time in India, bovine IVF technology has been promoted under the Rashtriya Gokul Mission. Department of Animal Husbandry and Dairying, through the National Dairy Development Board (NDDB), has developed indigenous media for embryo production. This will drastically reduce the cost IVF Embryo Production.

Skill Development Framework of DAHD, “Poultry Disease Action Plan and a Coffee Table Book on “Farming Futures- Celebrating 101 Women Success Stories in Livestock Sector” were also released by the Union Minister today.

The Department of animal husbandry, Government of Odisha National Dairy Development Board (NDDB) and the Odisha State Cooperative Milk Producers' Federation (OMFED) signed a Memorandum of Understanding (MoU) to enhance the dairy sector.

The new variant of milk “omfed Gold Plus” was also launched during the event.

The meeting concluded with summarization of the event and closing remarks by the Union Minister Shri Rajiv Ranjan Singh. During his address, Shri Singh expressed his gratitude to the Chief Minister of Odisha for hosting the Department of Animal Husbandry & Dairying, Gol. He encouraged all the ministers from the States to

communicate any issues concerning the Animal Husbandry sector to address the concerns promptly.

Chief Minister of Odisha, delivered the keynote address in the event and highlighted that the first-ever Monsoon meeting in Odisha emphasized the importance of animal husbandry and livestock for food security, ecological balance, soil fertility, social and environmental sustainability, employment, biodiversity, and cultural heritage. The meeting provided a platform for sharing ideas and visions for a sustainable future, aiming to improve livestock health and livelihoods.

In the course of inaugural session, Smt. Alka Upadhyaya, Secretary, Department of Animal Husbandry and Dairying, Gol, gave an overview of the livestock sector while addressing the gathering and given a presentation on "Growth of the Livestock Sector: A Perspective." She highlighted India's significant contribution to the Livestock Sector.

Shri Manoj Ahuja, the Chief Secretary of Odisha, emphasized the state's commitment to the vision of "Vikshit Bharat" while his address to the gathering today.

The Monsoon Meet also addressed the implementation challenges, and promoted the exchange of thoughts where all the Ministers of participating states put forward their challenges, and shared current progress report of Livestock sector in their respective States.

# Superbugs could jeopardise food security for over two billion people and increase annual health care costs by US\$ 159 billion annually by 2050, finds most extensive modelling to date

Drug-resistant pathogens could jeopardise the food supply of over two billion people and increase health care costs by US\$ 159 billion annually by 2050, according to the most extensive modelling of the impact of AMR to date.

The analysis, produced by a global partnership of leading health and development organisations, is the first to comprehensively forecast the economic and health burdens of AMR on both humans and food-producing animals. It also found a return of US\$ 28 for every US\$ 1 invested if urgent action were to be taken now.

According to the UN, AMR is one of the top 10 global health threats facing humanity. It has led to the rise of “superbugs”, including bacteria no longer treatable using antibiotics.

The EcoAMR series (Health and Economic Impacts of AMR in Human and Food-Producing Animals), led by the World Organisation for Animal Health (WOAH), used the latest data from 204 countries and 621 subnational locations to forecast the impact of AMR on mortality, health care costs, food security and the global economy.

Released ahead of a High-Level Meeting on AMR at the UN General Assembly, the modelling found that, if no action is taken now, drug resistance could cause annual global GDP losses up to US\$ 1.7 trillion by 2050, while the spread of resistant pathogens from livestock to humans, could cost up to US\$ 5.2 trillion. It also found that AMR could result in

production losses in the livestock sector equivalent to the consumption needs of 746 million people, or more than two billion people in a more severe scenario by the same year.

The analysis, published in three reports, was produced by experts at WOAH, Animal Industry Data (AID), the Center for Global Development (CGD), Institute for Health Metrics and Evaluation (IHME) and RAND Europe, with contributions from The World Bank.

The EcoAMR series authors have called for urgent investments to support AMR National Action Plans, of which almost 90 per cent have no funding allocated for their implementation. The human health research also showed that greater investment in new antibiotics, health care improvements, universal vaccine coverage and sanitation and hygiene could prevent more than 110 million human deaths from 2025 to 2050.

Investing in access to antibiotics and innovation for new drugs could also reduce human health costs by US\$ 97 billion per year and increase the labour force by 23 million people, the rates of tourism by 1.2 per cent and hospitality by 0.6 per cent, adding US\$ 960 billion to the annual GDP; and generate a further US\$ 679 billion per year in health value, the human economic analysis found.

“AMR carries a significant economic burden, but taking prudent action now will see a significant return on investment through a reduction in health care costs, improvements in

the economy, and a healthier society at large,” commented Anthony McDonnell, Policy Fellow at the Center for Global Development (CGD). “It is in high-income countries’ interests to ensure that those in poorer parts of the world have access to high-quality treatment.”

The animal health analysis showed that achieving a global 30 per cent reduction in livestock antimicrobial use within five year-time-period can lead to a cumulative increase in global GDP by US\$ 120 billion from 2025 to 2050.

“These data highlight the need to accelerate comprehensive solutions to tackle AMR,” said Dr Christopher J.L. Murray, Director of the Institute for Health Metrics and Evaluation (IHME). “A ‘One Health’ approach, which spans the human, plant and animal sectors, is needed, as well as bringing the private and public sectors together to collaborate at the national and global levels. Only global will and investment, guided by evidence, can contain this growing health threat.”

The EcoAMR series estimates that about 39 million people could die due to AMR by 2050, especially among older people and those in low- and middle-income countries. This study is consistent with the results from the Global Research on Antimicrobial Resistance (GRAM) project recently published. Together, these findings provide a complete picture of the critical global threat posed by AMR.



# SPACE 2024: INTERNATIONAL FARMING BEACONS FROM RENNES

Press release – Wednesday 25 September 2024



**SPACE 2024 took place from Tuesday 17 to Thursday 19 September at the Parc-Expo in Rennes, France. This highly successful global scale 38th edition of SPACE was carried out under a radiant sun and in a highly constructive environment.**



The **1 210 exhibitors present, including 370 international from 37 countries welcomed 101 757 visitors (+12% compared to 2023) out of which 12 534 international from 120 countries.** This record attendance on the three days of exhibition reflects the exceptional density of this edition.

This 2024 SPACE generated **high-quality exchanges thanks to a favourable economic conjecture in the Western farming sectors.** According to exhibitors, visitors came to meet them with many projects. All stressed the high quality of exchanges and the development prospects for agriculture that they allow to be envisaged. Many visitors, both French and foreign, came to SPACE looking for suppliers and advice that will enable them to make our agriculture ever more efficient and sustainable in order to meet the global food challenge.

**THANK YOU! SEE YOU ON SEPTEMBER 16.17.18 2025**

**PAGE 1**



## A STRONG NATIONAL AND INTERNATIONAL POLITICAL PRESENCE

For the first time since 1995, due to government context, SPACE did not host an incumbent Minister of Agriculture. However, **French and international political leaders, close to the field and farmers' concerns, came in large numbers to meet SPACE participants.**



**The Minister of Animal and Fisheries Resources of Ivory Coast, Mr. Sidi Tiémoko Touré** honored SPACE with his visit. Mr. Touré was accompanied by **many Ivorian professionals, including ANAVICI, the Ivory Coast National Association of Poultry Farmers** that works every day to succeed in the challenge of feeding their population locally in the future. There were yet again many delegations from Africa, with lots of projects for the development of agricultural sectors in their countries. The Agri'Panel, organized for the first time as part of the Show to discuss the **importance and challenges of raw material flows between our continents**, was also a highlight among the over 100 conferences held in all meeting spaces.

**The Prefect of the Region, Philippe Gustin, the President of the Brittany Region, Loïg Chesnais-Girard,** made the opening visit of this edition. **Nathalie Appéré, Mayor of Rennes and President of Rennes Métropole** also had the opportunity to exchange views with the various stakeholders present at SPACE during her dedicated visit.

**Luis Carazo Jimenez, Acting Director of the DG Agriculture and Rural Development of the European Commission** also honoured us with his presence in a visit co-organised with the European association Maison de l'Europe. His presence gave rise to high-level exchanges on the future challenges of European agriculture with the guidelines for the future CAP which are now being written. FDI, mirror clauses, France's place in the European and world chess board, all these crucial subjects were addressed through these exchanges.



## SPACE 2024: INTERNATIONAL FARMING BEACONS FROM RENNES.

**A cross-party delegation from the Economic Affairs Committee of the National Assembly, organized on the initiative of MP Nicole Le Peih** also walked through the aisles of SPACE. **Chaired by Mr Antoine Armand, new Minister of Economy, Finance and Industry**, this visit was highly appreciated by the professional leaders who were able to **express their impatience with the definition of a clear course for French agriculture.**

Many parliamentarians were also present individually at the Show to take the pulse of the agricultural world. Among them, we can mention first of all **Françoise Gatel, new Minister for Rural Affairs, Crafts and Trade, and Sophie Primas, new Minister for Foreign Trade.**

Among the various visits of national organizations, it is important mentioning that of about twenty representatives of the National Commission for Organic Farming of the Chambers of Agriculture of France who were able to discover with interest the offer that corresponds to them on SPACE.



The Espace for Future was this year under the theme: «Empowering Generations: let's invent the Future». This slogan perfectly reflects the general spirit that prevailed on this edition. Many exchanges, very busy round tables, practical solutions exposed... **A complete offer to discuss the themes of transmission, financing, organization and organisation of working time,...** to answer the crucial questions for the future: how to attract and transmit, how to retain employees, how to understand each other across generations, how to chart your own path...All these subjects have once again made Espace for the Future **a real melting pot for the future of animal farming in the West.**

## INNOVATION AND YOUTH AT THE HEART OF THE EXHIBITION

**Bet won!** SPACE has reached the new generation. The Youth Forum has set the course two years ago with its desire to give young people a **space to express their expectations of living well in their profession**. It was completed by the **Tech'Agri Challenge by Innov'Space**, which promotes the joint work of students in innovation to provide solutions for farmers. This year, the organization has again proposed new features to its young public, with the **Farming Simulator which was very successful in terms of participation**. We also welcomed the **community of influencers who share their lives as young farmers in a positive light on social media**. Their meet & greet session was very popular. It was one of the most exciting moments of this week.



## A RECORD YEAR FOR INNOV'SPACE STARS

The presentation of the Innov'Space trophies and the revealing of the eight special mentions was another particularly remarkable moment at the Exhibition. This year, Innov'Space was under the sign of a record number of stars with its 48 prizewinners. All these innovations, which mark a remarkable level of expertise of the prizewinning companies, are highly sought after by visitors. This year, they were particularly related to improving working conditions for livestock farmers, animal welfare and health.





## A GLOBAL SHOWCASE OF GENETIC EXCELLENCE

The animal presentations and competitions provided a unique genetic showcase for visitors. The strict sanitary framework imposed by SPACE on exhibiting breeders and the derogation of official authorities, allowed these presentations and competitions to take place in a configuration almost identical to that foreseen before this uncertain health context due to the EHD and Ovine Catarrhal Fever epidemics. The competitions were of a very high standard, with beautiful animals, as well as the "Meat Excellence" auction and Genomic Elite auction which are now references at international level. The Supreme Championship, unique in the Exhibitions' world and crowning the judges' favourite of all competitions, this year has awarded a "Pie Rouge" cow, after having rewarded a Jersey, a Normand and a Prim'holstein in previous years. This diversity is the best proof of the excellence offered by SPACE animal presentations regardless of breed. This year's honour breed, the Limousin and the Prim'Holstein as part of the Challenge France offered all genetics enthusiasts exceptional moments of professionalism and quality.



## A BET WON FOR THE FUTURE !

The public at the Show greatly appreciated these new features proposed by SPACE. These participants also noted and welcomed the high level of overall organization of the event. The participants also enjoyed the convivial moments in the new dedicated areas on the Show, such as the first Breton Medallists' Village of the French General Agricultural Competition or the new Terrace area which offered a wide range of restaurants. The return of the exhibitors' breakfast on Thursday was much appreciated. The evenings at SPACE, starting with the Before party and going to the Young Farmers Association closing party, the Exhibitors' party and the farmer's evening, were marked by an extraordinary atmosphere of exchange and conviviality.





**This 2024 SPACE edition was the full expression of the modernity of agriculture by allowing to clearly and openly ask questions related to the farms acquisitions.** Faced with these questions, professionals have found the technical solutions, innovations, advice and guidance to enable them to flourish in their jobs and live well tomorrow. It is the best guarantee for the future of agriculture in the West and in the 120 countries that come to meet SPACE. **Our farming models are attractive and meet the expectations of the industry. This SPACE 2024 was an inspiring and shining proof of it.**



**See you at SPACE 2025 edition which will take place from Tuesday 16 to Thursday 18 September at the Rennes Parc-Expo, in France.**

Find the photo gallery, all videos and all SPACE TV sets. Follow us on social media and share our posts!

**@SPACERennes**



# 38th Edition of SPACE 2024 Exhibition from September 17 to 19, 2024 in Rennes, France, Resounding Success – Ricky Thaper

The SPACE Expo in Rennes, France, a leading platform for innovation and excellence in Poultry, Aqua, Dairy & Livestock farming, with more than 1,400 exhibitors from different countries shared their expertise and innovations focusing on energy conservation & production, the poultry, cattle, the pig sectors and animal nutrition. More than 1,15,000 French and International visitors from over 122 countries visited this important poultry and livestock exhibition over the three days. The business visitors were happy and satisfied as they find new partners and discover innovations, with the aim of contributing to food self-sufficiency in their home countries.

Each edition of SPACE Rennes covers the full spectrum of products and services, from veterinary equipment, feeding stuff and animal breeding. Additional value derives from the educational program. SPACE 2024 developed the political dimension of discussions with livestock sector stakeholders. These visits reinforce SPACE as a platform of expression and discussion to advance the major issues regarding the future of the livestock sectors.

Mr. Marcel DENIEUL, President of SPACE said SPACE is here to give its exhibitors the chance to present their products and solutions to its visitors and visitors will therefore be able to discover new products and existing solutions, compare the various options available, get advice from experts to help them to make the

right choices and plan their investments with all the information they need at their fingertips.



*Mr. Ricky Thaper with Mr. Marcel DENIEUL, President of SPACE*

SPACE served as an observatory for international agricultural policy and provided its participants with solutions and ideas to help them achieve their goals, thanks to its technical expertise, innovations and conferences.



At Biochem booth had good interaction with Dr. Sana Makhlof. Biochem Company headquarter is

located in the northwest German town of Lohne, supplying high quality feed additives for poultry and livestock. As a global company, Biochem feed additives are characterised by efficiency, quality and sustainability. From intestinal health, mycotoxin management, feed safety and nutrient efficiency to immune stimulation Biochem offer solutions to animal nutrition and animal health. Dr. Sana Makhlof told that more than 200 employees dedicate their knowledge and skills in development, production, registration, marketing, logistics, and sales departments. Biochem operate globally with more than 50 retail partners and 16 subsidiaries on four continents.

With more than 360 experienced employees from 30 nations, Biochem team in constant contact with farmers, the feed industry, universities and veterinarians. Dr. Bhaskar Choudhry is heading the Biochem business in India which has good growth in terms of volumes and sales under Dr. Bhaskar leadership.



According to Ms. Ane Marie QUEMENER, General Commissioner of SPACE, in 38 years, SPACE has become an essential event for all. Created by the leaders of the agricultural organizations, it is designed to be a place to meet debate and exchange ideas, for all farming related professionals. Ms. Ane Marie QUEMENER added that the efforts and hard work by SPACE Team has given excellent results.



At SKA Poultry Equipment booth, we had good interaction with Mr. Massimo Ubiali, CEO. Mr. Ubiali is a dynamic leader with a strong commitment to helping customers adopt sustainable solutions for the industry through high-quality equipment. Mr. Ubiali said he has a clear vision to expand SKA's business across the region and

elevate the company to new heights, all while staying true to its core principles and values. Mr. Ubiali firmly believes in empowering individuals to embrace entrepreneurship within themselves. He updated that India is a very potential market for them and their company look forward to fostering partnerships and continuing the exchange of ideas for

the advancement of poultry welfare and Sustainability in the region. Recently Mr. Rajendra Rawat has joined SKA Poultry Equipment, Italy for South Asia Region. Mr. Massimo extended invitation to Indian Delegation to visit their manufacturing facilities in Italy.

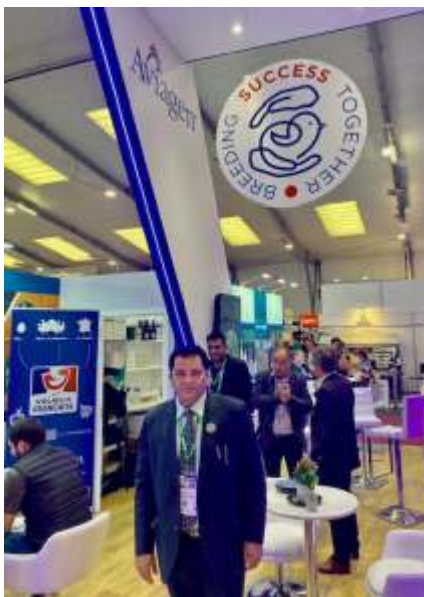
At AB Vista booth with Mr. Fernando Garcilopez Perez, Business Manager. AB Vista is a global animal nutrition technology company offering pioneering products and technical services to the global animal feed industry. Its mission is to advance nutrition through scientific research and 'feed intelligence'. AB Vista has grown to be a top three player in feed enzymes, specialising in innovative feed additives, solutions, and services for all species. In India, Mr. Atmaram Yadaym General Manager, South Asia is heading AB Vista business very perfectly and efficiently.







Ms. Cecile BERTHIER, International Press and Exhibitors Information, SPACE informed that Poultry, Dairy and Aqua farmers working in all types of animal production were able to enjoy the Expo. The top buyers program run by the Business France as a part of the "Export Begins in France" project had welcomed major International Delegates from China, Senegal, Togo, Egypt, Iran, India, Kenya, Angola, Saudi Arabia, Pakistan, Mexico, South America besides European Union.



A series of conferences, debates and seminars that took place during the three days gave this year event a new dimension, as poultry and livestock farmers were able to express the needs and expectations, in line with the ambition of the creators of SPACE.

Innov'Space label has been a great opportunity to publicise and promote novelties in the sector. This year 48 products, equipment or services earned the esteemed Innov'Space awards.



It was nice to meet and interact with Dr. Nemanja Todorovic, Chief Business officer, NU.ANCE Biotechnology and Ms. Solene Gillingham, Marketing and Commercial Officer at their booth. NU.ANCE Biotechnology is a dynamic Swiss-based biotechnology company, founded by the group of entrepreneurs, specialized in development and commercialization of innovative feed additive products, merging expertise in technical and scientific knowledge. At NU. ANCE Biotechnology we are committed to providing high quality feed additive solutions said Dr. Nemanja Todorovic, Chief Business officer. With the recent acquisition of Global Nutrition International, has added a French manufacturer of technological liquid and solid feed additives to our portfolio. This strategic move significantly contributes to increasing range of additives developed at the highest standards of quality and effectiveness to meet our customer needs. Mr. Joginder Singh, Business

Director, is very efficiently heading the NU.ANCE Biotechnology business in India.



During SPACE Expo, it was nice to interact with Mr. Nipun Gupta, CEO, Dr. Paolo Doncecchi, CCo and Mr. Patel Kotula from Innova Biotechnology, Poland, focusing on production and marketing of innovative non-antibiotic products to control bacterial pathogens in environmental, food processing, and medical settings. We shared views on the antimicrobial solutions which are available or being launched based on the phage and anti-microbial peptide technology platforms of Innova Biotechnology and discussed about the future of Antimicrobial Peptides (AMPs) that work by targeting the cell membranes of pathogens, making





it significantly harder for these pathogens to develop resistance. While interacting with exhibitors, they rated SPACE as very high quality trade show. According to Amandine LEROUX, International Development, SPACE, Exhibitors and International Visitors had access to International Club which had all facilities of translators, business meetings and refreshments for the international visitors.

The SPACE was again a springboard for employment and international trade thanks to the job-dating events organized by APECITA, and more than 800 Business to Business meetings organized by Enterprise Europe Network between exhibitors and international investors said Ms. Chloe LETELLIER, Communication Press, SPACE. For foreign visitors, visits to poultry, dairy & sheep farms and agro industrial facilities were arranged. These tours were supported by ADEPTA and Ministry of Agriculture and Fisheries.



An analytical survey so far indicates that 97% of participants think that SPACE Exhibition helps to convey a positive, dynamic image of the animal farming industry. 93% of International Visitors regard SPACE as the standard setting exhibition, offering a comprehensive and unique platform for professionals across all animal production sectors. 91% of poultry, dairy, aqua and livestock farmer's view SPACE Exhibition as an indispensable decision-making tool, enabling them to compare solutions and

make informed choices whereas 88% of Exhibitors express satisfaction with the quality of their business contacts made at SPACE Exhibition.

International delegates visiting SPACE Expo appreciated the arrangements at Expo by the organizers especially at the International Club. The meticulous planning, dedication and tireless efforts of team SPACE Rennes makes SPACE Exhibition one of the biggest Poultry & Livestock Exhibition in this planet.





## Three Pioneering Livestock Farmers Honored at Ludhiana's Vet Varsity

The university assesses the extent and effect of adoption of these technologies in enhancing the productivity and profitability of diverse livestock farming systems in order to organise creative contests that target different categories of livestock producers and perhaps

day with 145 cows. He'd set up an ultra-modern shed and a modern milking parlour.

All of the animals in his care are tagged, and he records every action the animals do using cutting-edge artificial intelligence methods. In order to control dairy waste, he has an automated scraper. Using a Total Mixed Ration machine, he mixes concentrate and silage for feeding, and he has well-maintained silo pits for silage production.

S. Gurdarshan Singh Tiwana, son of S Malkeet Singh, hailing from Chanarthal Khurd village in District Fatehgarh Sahib, was the recipient of the Poultry Farming category award. In 2004, he began broiler farming and in 2017, he erected sheds with tunnel ventilation and environmental management.

He now produces approximately 3,50,000 broilers annually by raising 60,000 broilers every batch (6 batches annually). To increase the feed conversion ratio, he gets his feed to be tailored based on the age of the birds in crumb form.

The farm is equipped with an automated system for watering and feeding. In order to lower the frequency of infections, he maintains the biosecurity system using well-established methods. The hamlet of Wadala Viram, Tehsil Majitha, District Amritsar's Sh. Kuljas Rai Arora, son of Sh. Mohan Lal, won the prize in the Value



The Guru Angad Dev On September 13, 2024, Veterinary and Animal Sciences University, Ludhiana presented three livestock farmers with Chief Minister honours.

The Cabinet Minister for Agriculture, Animal Husbandry, Dairy Development, and Food Processing, S. Gurmeet Singh Khuddian, presented these prizes in a grand ceremony held at the Vet Varsity Mela Ground. The Director of Extension Education, Dr. Parkash Singh Brar, said that Vet Varsity is working tirelessly to improve its extension programs in order to support the growth of the cattle industry in the state.

inspire them.

He made known that The winner of the Cattle Farming category was S. Harpreet Singh, the son of S. Lakhbir Singh, of VPO Sohla, District Tarntaran." This farm produces 12.5 quintals of milk a



Addition of Livestock Produce sector. In 1975, he began operating a layer farm with 1000 chickens. In 1992, he switched to broiler farming and raised the batch size of broiler chicks to 30,000.

In order to produce 500,000 chicks each month, he then entered the hatchery industry in 2010 using his own parent stock. Under his brand "Rai Chicken," he changed course in 2017 and built a state-of-the-art processing facility.

At the moment, he employs 245 people in a state-of-the-art processing facility to sell 618 tonnes of dressed meat and 49 tonnes of ready-to-eat items (sausage, nuggets, seekh kabab, etc.) per month.

Accompanying the monetary value of these prizes are a plaque, shawl, and certificate.

## Zoetis Strengthens India Presence with Hyderabad Expansion, Fostering Life Sciences Innovation



The world leader in animal health, Zoetis Inc., has revealed plans to expand its cutting-edge technology portfolio with the opening of the Zoetis India Capability Centre in Hyderabad.

The Honourable Chief Minister of Telangana, Sri A. Revanth Reddy, and the Minister of Industries and Commerce, Sri D. Sridhar Babu, made this declaration during a meeting while on a current visit of



the United States. Other top government officials were also present.

This development expands Zoetis' presence in India and will generate hundreds of new jobs, demonstrating the company's recognition of the region's strategic significance as a centre of talent and innovation.

The Hon. Chief Minister of Telangana, Sri A. Revanth Reddy, expressed his happiness at the decision made by Zoetis to expand its Zoetis India Capability Centre in Hyderabad. This demonstrates the vibrant business environment that we have created in Telangana, which allows companies to expand and develop. The investment made by Zoetis in cutting-edge technology is consistent with our

goal of establishing Hyderabad as a worldwide centre for life sciences and sophisticated technologies.

"Hyderabad is the ideal location for our Zoetis India Capability Centre, offering a wealth of talent and an incredible Life Sciences innovation ecosystem," said Keith Sarbaugh, Chief Information Officer at Zoetis.

Our choice to grow here demonstrates our dedication to making investments in cutting-edge technology and animal health in the future. We are thrilled to further the development of the area and maintain our collaboration with the Telangana government.

"By leveraging the world-class talent available in Hyderabad, our centre will drive innovation and pioneer transformative advancements, ensuring





sustainable growth and a competitive edge for Zoetis worldwide, while contributing to the development of the region," stated Anil Raghav, Vice President and Head of the Zoetis India Capability Centre.

"Zoetis' commitment to creating new jobs over the coming years reflects the confidence global companies have in Telangana's business-friendly environment," said Shri Sridhar Babu, Minister of Industries and Commerce. I urge Telangana's skilled workforce to join Zoetis and help shape the future of veterinary medicine. We are excited to help Zoetis on their innovative and expansionary journey in Hyderabad.

## FAO Director-General Welcomes Pact for the Future to Accelerate SDG Progress

The approval of the Pact for the Future, an agreement among UN member states intended to accelerate the implementation of the Sustainable Development Goals, has been welcomed by QU Dongyu, Director-General of the Food and



Agriculture Organisation of the United Nations (FAO). The FAO Director-General emphasised the agreement's provisions for more equitable agrifood systems during his speech to the summit's plenary in New York. He also said that hunger has increased since 2015 and that, by 2023, more than 730 million people will be hungry.

Qu said, "We see that huge inequalities persist along various dimensions – including wealth, gender, rural areas, and in accessing assets and opportunities. We are not on track to achieving any of the global SDG targets." "I am happy that the Pact for the Future recognises that more

equitable agrifood systems will shape the future."

Dozens of heads of state and government attended the Summit of the Future, where the head of the FAO was asked to speak in plenary.

The UN Secretary-General Antonio Guterres called the Summit, which has been hailed as a once-in-a-generation chance to rebuild lost confidence and show that collaboration among nations can successfully accomplish shared objectives while addressing new risks and possibilities. Delivering on the 2030 Agenda and other international commitments is its main goal.

The FAO states that providing the





Four Betters—better output, better nutrition, a better environment, and a better life—while leaving no one behind should be the top goal when it comes to ending global hunger. Qu states that there are three essential components needed to achieve the Four Betters: stepping up efforts to bring about the transformation of global agrifood systems in order to end hunger and advance equality; emphasising the development of innovation, public-private partnerships, and more economical investments; and strengthening cooperation between all partners in order to make the best use of one another's resources and experience as well as our comparative advantages. FAO has already created a worldwide plan to end hunger and all types of malnutrition in the context of the climate catastrophe, while staying below the 1.5°C threshold established by the Paris Agreement. The blueprint refutes the widely held belief that rising output equates to rising emissions and worsening environmental conditions. Rather, it highlights the potential for improving production efficiency within agrifood systems in line with goals related to resilience, adaptation, and mitigation of climate change. Qu said, "FAO will keep doing its share to ensure the better future we want."

## President Jokowi Receives FAO Agricola Medal for Transforming Indonesia's Agrifood System

In a ceremony in Jakarta's Merdeka



Presidential Palace, FAO Director-General QU Dongyu awarded Indonesian President Joko Widodo with the Organization's highest accolade, the FAO Agricola Medal. "Under the leadership of President Jokowi, Indonesia has prioritised and made great progress in transforming its agrifood system within the context of sustained economic growth, even in the face of global challenges and uncertainties, including the COVID-19 pandemic," the FAO Director-General said. This emphasis and accomplishment are reflected in the Agricola Medal's inscription: Stronger Together for Resilient and Sustainable Agrifood Systems. Qu said this also reflected his goal since joining FAO in 2019 on transforming global agrifood

systems to ensure food security. We dedicate this Agricola Medal to all farmers, all persons who have actively contributed to boosting the agricultural sector," the Indonesian president said in his acceptance speech. He added hoped "this highest award in the field of food and agriculture can awaken Indonesia's collective energy to contribute more to world food security." FAO Director-General: The medal awarded to the Indonesian President is a milestone because it recognises Indonesia as a major nation of developing significance in the region and the globe. It is also "a recognition of the historic and continued collaboration between FAO and Indonesia, which has lasted for almost seven decades." FAO and Indonesia have



collaborated on food production, food loss and waste reduction, crop biodiversity, climate change adaptation and mitigation, ecosystem restoration, forest monitoring, and natural resources management. Focus is also on the food-forest-water-energy nexus. The recent collaboration between FAO and Indonesia reflects another convergence of future visions: the FAO Strategic Framework with the UN 2030 Agenda for Sustainable Development and the Golden Indonesia 2045 Vision, which will mark 100 years of Indonesia's independence, the Director-General said.

Qu identified three areas of engagement with Indonesia that FAO would help with its technical and professional expertise: Start with E-Agriculture and digital agriculture. The Indonesian Digital Village Initiative encourages young entrepreneurs to digitise agriculture and aquaculture.

Second: Triangular and South-South Cooperation. Indonesia has traditionally received FAO funding for South-South and Triangular Cooperation. In 1985, 4 million Indonesian farmers created the FAO-administered Indonesian Farmers Fund for African farmers. FAO and Indonesia signed a Memorandum of Understanding on South-South and Triangular Cooperation in 2021, and in February, they conducted a workshop to improve cooperation. Third: Aquaculture. In the context of Indonesia's Blue Economy Roadmap and FAO's Blue Transformation Roadmap, FAO and the Ministry of Marine Affairs and Fisheries are reviewing the national aquaculture biosecurity strategy and aquatic genetic resource management strategy.

Qu called the Agricola Medal a symbol of FAO-Indonesia cooperation. The FAO Director-

General informed the Indonesian President: "Your strong leadership was also visible to the world through Indonesia's successful Presidency of the G20 through which you established a stronger collective global leadership." He said President Joko Widodo had alerted world leaders to the importance of an enabling environment and effective partnerships to ensure sustainable and inclusive growth, productivity, resilience, and stability. Qu said the FAO Director-General awards the FAO Agricola Medal to remarkable leaders who have shown dedication and action to eliminate hunger, reduce poverty, and promote food security and nutrition for everyone.

## **Jharkhand's Mobile Veterinary Units to Bring Animal Healthcare to Farmers' Doorsteps**

236 mobile veterinary units (MVUs) were introduced by Chief Minister Hemant Soren on Tuesday in an effort to improve animal healthcare services for livestock producers. According to an official, the MVUs,

or modern ambulances, would contain paramedics and veterinarians in addition to main medical services and testing facilities.

In addition, the CM released the integrated contact center's 1962 toll-free number, which is located in Ranchi and offers ambulance services and health advice. The state's farmers are the target of the government's efforts to improve them.

Speaking at a divisional-level cooperation meeting here, Soren said, "The government has made important decisions and made policies in the last four and a half years, with a special focus on agriculture and allied sectors."

According to him, the government has forgiven farmers' debts up to Rs 2 lakh. "This is for the first time that a policy has been made to ensure insurance coverage even for animals in the state," remarked the governor.

State Agriculture Department Secretary Abu Bakr Siddique addressed the gathering and said that the ambulance service will be provided free of charge in 236 blocks across 24 districts of the state.

Cattle farmers who want to use the ambulance service must first make arrangements with the call centre,







thereafter the call centre will get the farmer's information on the animal. The farmers will be guided by professionals whether it can be treated on call. In the event that the situation is determined to be critical, the farmers will get care from the ambulance, which is outfitted with a

veterinarian and other assistance, according to state Animal Husbandry Director Kiran Kumari Pasi. The same mobile ambulance may be used to refer an animal in serious condition to a veterinary facility.

According to a second official, the specially designed cars will include a hydraulic system that allows the sick animals to be loaded into the mobile video units (MVUs) and transported to the closest veterinary clinic or hospital in an emergency.



# 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>

## Subscription Rates

### Time Period

<b>1 Year</b>	<b>INR 2400</b>	<b>USD 250</b>
<b>3 Year</b>	<b>INR 6500</b>	<b>USD 650</b>
<b>5 Year</b>	<b>INR 10000</b>	<b>USD 1000</b>

\*18% GST Extra

Contact Name : \_\_\_\_\_

Company Name : \_\_\_\_\_

Postal Address : \_\_\_\_\_

City : \_\_\_\_\_ State : \_\_\_\_\_ Mob. No. \_\_\_\_\_

Postal Code : \_\_\_\_\_ Country : \_\_\_\_\_

For more detail, contact:



**Pixie Expomedia Pvt. Ltd.**  
 C/o OmAng Hotel, Namaste Chowk, Near Janta Petrol Pump, KARNAL - 132001 (Haryana) INDIA

### We wish to subscribe the following

#### Poultry Planner

1 Year  3 Year  5 Year  
 from \_\_\_\_\_ to \_\_\_\_\_

#### Dairy Planner

1 Year  3 Year  5 Year  
 from \_\_\_\_\_ to \_\_\_\_\_

#### Poultry Times of India

1 Year  3 Year  5 Year  
 from \_\_\_\_\_ to \_\_\_\_\_

Grand Total: \_\_\_\_\_

### Payment Details:

Send DD or Cheque in favour of Pixie Expomedia Pvt. Ltd. payable at Karnal  
 Address: C/o OmAng Hotel, Namaste Chowk, Near Janta Petrol Pump, KARNAL - 132001 (Haryana) INDIA or Transfer money to Canara Bank  
 Bank address: Sector 12; U Estate Karnal  
 Account Type: Current  
 Account Name: Pixie Expomedia Pvt. Ltd.  
 Account Number: 120000991579  
 IFSC Code: CNRB0003264 | Swift Code: CNRBINBBFD | PAN No. AAMCP6787A

Date: \_\_\_\_\_ Company's Stamp & Signature

By signing this form I acknowledge that I have read and agree to the quoted cost above

\*5% GST Extra **Advertisement Tariffs**

Advertisement Type	Single Issue (cost @)	Advertisement Type	Single Issue (cost @)
Front Page	30000 <input type="checkbox"/>	Back Title	20000 <input type="checkbox"/>
Front Gate Fold	25000 <input type="checkbox"/>	Back Gate Fold	19000 <input type="checkbox"/>
Front Title Inside	20000 <input type="checkbox"/>	Back Title Inside	18000 <input type="checkbox"/>
Front Title Opening	16000 <input type="checkbox"/>	Back Title Opening	16000 <input type="checkbox"/>
Full Page	8000 <input type="checkbox"/>	Center Spread	18000 <input type="checkbox"/>



IRIS  
**MONEY**  
doesn't talk, it swears

# Happy cow Plus milk



## 4 Benefits

1. Money Plus Improves milk yield
2. Improves the fat percentage
3. Improves reproductive performance
4. Helps in better growth

## 2 Goals

1. More Milk
2. More Profit !!!



FOR FURTHER INFORMATION  
please contact +91 80 48663242 or [admin@irides.in](mailto:admin@irides.in)  
or visit our website [www.irides.in](http://www.irides.in)



# INTERNATIONAL EXHIBITION ON DAIRY SECTOR

## THE Dairy EXPO

**28-29-30 AUG. 2025**  
**India Expo Center & Mart,**  
Greater Noida, Delhi - NCR,  
India



### Event Highlights



**200+**  
Exhibitors / Sponsors



**20+**  
Countries



**200+**  
VIP Attendees



Extensive Media Coverage



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+91-741-999-3001 | 999-170-8200 | info@thedairyexpo.in | www.thedairyexpo.in