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Pulse of Livestock Industry

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From the Editor's Desk

Acche Din for the Indian Dairy Sector Ahead

India's dairy industry is entering a new phase of rapid expansion driven by rising milk consumption, urbanisation, organised retail growth, and increasing demand for value-added dairy products. According to IMARC Group, the Indian dairy market reached a value of around USD 192.7 billion in 2025 and is projected to grow to nearly USD 428.7 billion by 2033, expanding at a CAGR of 10.5% during 2025-2033. India continues to maintain its position as the world's largest milk producer, supported by strong rural participation, cooperative networks, and expanding private-sector investments across processing and distribution. India's dairy processing sector is simultaneously undergoing major modernisation through investments in cold-chain infrastructure, automation, digital milk procurement systems, and quality-testing technologies. Government support through dairy development schemes, livestock improvement programs, and infrastructure funding is further strengthening milk productivity and rural dairy entrepreneurship. Despite strong growth prospects, challenges remain around feed costs, fragmented milk supply chains, climate-related risks, and price sensitivity in rural markets. Industry analysts believe future growth

will depend on improving milk productivity, strengthening food safety systems, expanding processing capacity, and enhancing farmer profitability while balancing affordability for consumers.

India's dairy sector could play a major role in reducing the country's dependence on imported LPG, as experts highlight biogas as a scalable and "atmanirbhar" cooking fuel alternative for rural households. India currently imports nearly 60% of the LPG used across its 33 crore kitchens, while the remaining domestic supply also depends heavily on imported crude oil, exposing the country to global energy shocks and price volatility. Experts from the Council on Energy, Environment and Water (CEEW) estimate that India has nearly 40 million cattle-rearing households with three or more animals, particularly across dairy-rich states such as Gujarat, Punjab, Rajasthan, Maharashtra, Tamil Nadu and Uttar Pradesh. A household with just three cattle can potentially generate enough biogas to replace around 100 kg of LPG annually — equivalent to nearly seven cylinders — is sufficient to meet the yearly cooking needs of a rural family. Less than 1% of rural households currently use biogas as their primary cooking fuel.

India's dairy supply chain is facing mounting pressure as temperatures across several regions cross 45°C, raising serious concerns around milk safety, spoilage and cold-chain efficiency. Experts warn that extreme heatwaves are no longer just a climate issue — they are rapidly becoming a major food safety and public health challenge for the dairy industry. While organised dairy players operate with advanced refrigeration and cold-chain systems, a significant share of milk still moves through semi-organised and informal networks where maintaining stable temperatures becomes difficult. Even short delays in chilling raw milk after collection can accelerate bacterial growth, reduce shelf life and increase the risk of food-borne illnesses. Heat stress is also impacting milk production at the farm level. High temperatures reduce cattle feed intake, hydration levels and overall productivity, directly

lowering milk yields and quality.

India's dairy sector is witnessing a major transformation as the National Dairy Development Board (NDDB) expands the use of its indigenous bovine gender-sorting technology, GauSort, across multiple states. Developed by NDDB in collaboration with the Department of Animal Husbandry and Dairying under the Rashtriya Gokul Mission, the technology is helping farmers achieve nearly 91% female calf births — a significant breakthrough for dairy productivity and farmer incomes. The technology addresses the challenge of unwanted male calves while strengthening rural dairy economies.

Uttar Pradesh's dairy sector is emerging as a powerful engine of rural women empowerment, with the government's technology-driven dairy model helping more than 18,000 women in the Awadh region become "Lakhpati Didis." The organised dairy network is now collecting over 4 lakh litres of milk daily, creating a major boost for the rural economy and women-led entrepreneurship.

The Madhya Pradesh government has unveiled an ambitious dairy-led rural development strategy with projects worth ₹38,555 crore aimed at transforming the state into India's "Milk Capital." Madhya Pradesh has already increased daily milk collection from 9 lakh litres to 12 lakh litres and has set a long-term target of reaching 50 lakh litres per day. The state currently supports more than 5 lakh cattle through gaushalas.

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ARTICLE'S INDEX

Content		Page No.
Editorial		04
Article:	Metabolic Diseases in Dairy Animals Prevention and Management	08
Article:	Corn Silage Management for High-Performance Dairy Farms	12
Article:	ਪੰਜਾਬ ਵਿੱਚ ਤਾਜੇ ਦੁੱਧ ਦਾ ਮੰਡੀਕਰਣ	18
Article:	What Criteria Determine Forage Quality in Ruminant Livestock?	24
Article:	बदलते मौसम में बकरी पालन	26
Article:	Rising feed/raw materials (RM) costs? Rethink your protein strategy	30
Article:	Reflecting on Milestones, Advancing into 2026	34
Article:	Beyond Binding: The Science of Advanced Mycotoxin Binders	36
Press Release:	Effect of FineX 1522 on Milk Parameters in Lactating Dairy Animals	28
NEWS:	Swine Technology Magazine Now Officially Released	33
Event Calander		35
Subscription Form		29

ADVERTISER'S INDEX

Company Name	Page No.	Company Name	Page No.
Adisseo Animal Nutrition Pvt. Ltd.	03	Nurture Organics Pvt. Ltd.	Title Fold
Arm & Hammer Animal Nutrition	07	NUQO Animal Nutrition India Pvt. Ltd.	11
Avitech Nutrition Pvt. Ltd.	21	Orffa Animal Nutrition Pvt. Ltd.	37
Biophilia Healthcare	13, 15	Paras Nutrition Pvt. Ltd.	43
Evonik Degussa India Pvt. Ltd.	17	Pari Animal Nutrition	27
Fine Organic Industries Ltd.	02	Phileo Lesaffre Animal Care	Title Page 01
Huvepharma SEA	Back Cover 44	Sai Vaibhav	35, 40
ICC Animal Nutrition	19	Sheetal Industries	05, 39
Jaysons Agritech Pvt. Ltd.	09	Soy Excellence Center Program	22-23
Kemin Industries	31	Techna India Pvt. Ltd.	25
Lallemand Animal Nutrition	41	Value Consultants	40
Novus International Inc.	42		

ARM & HAMMER ANIMAL NUTRITION

Metabolic Diseases in Dairy Animals
Prevention and Management

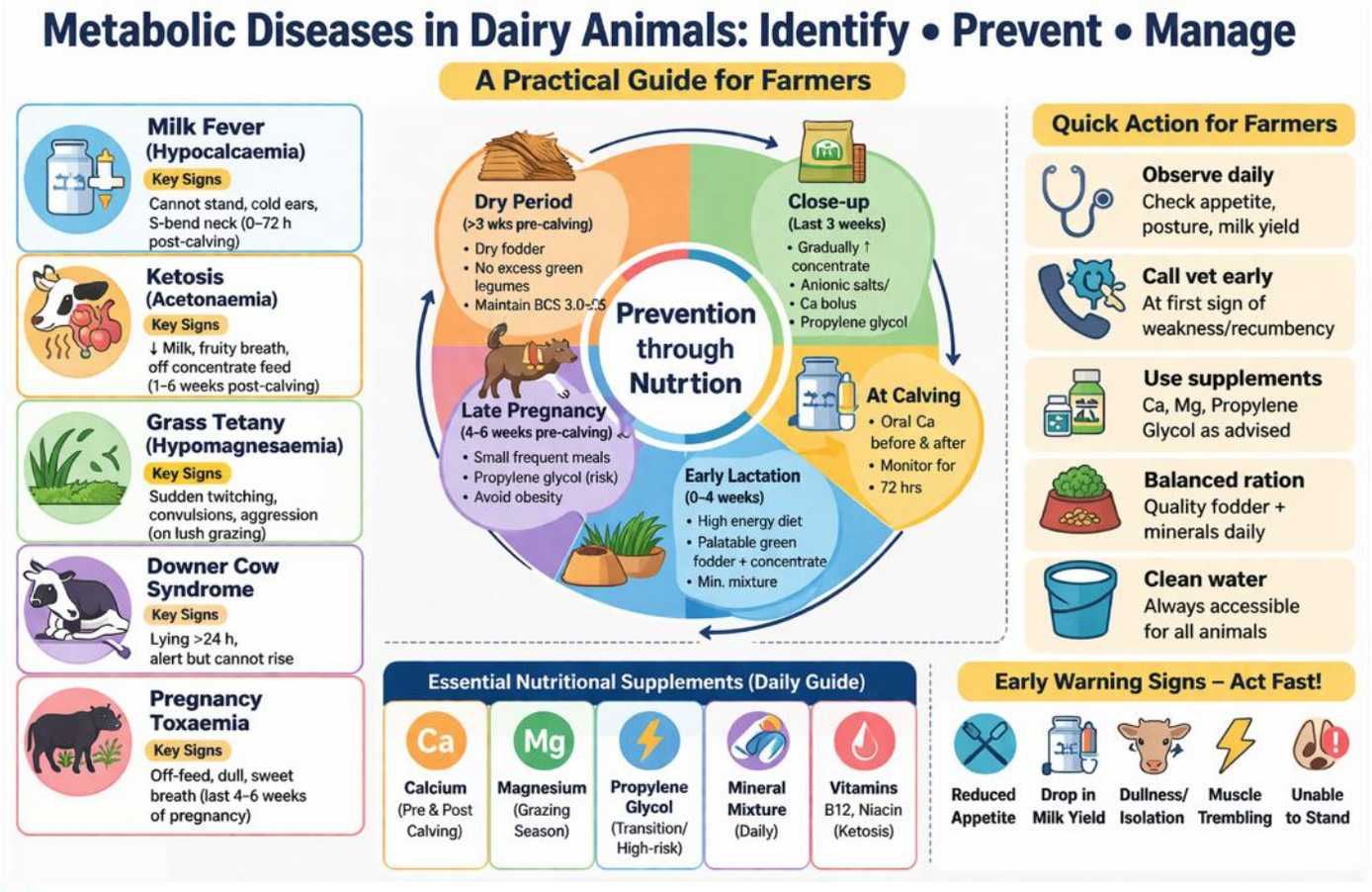
*Tanmay Mondal[1], Mokshata Gupta[2], Chetna Mahajan[1], Rachana Sharma[1] and Ravindra Kumar[3]

Dairy farming success depends greatly on the health and productivity of animals. Among the various health problems, metabolic diseases are often overlooked because they develop internally and are not contagious. These disorders mainly arise when the animal's nutrient intake does not match its physiological needs, particularly during the transition period around calving. High-yielding cows and buffaloes are more vulnerable due to their higher demand for energy, calcium, and minerals. If these requirements are not properly met, the animal starts mobilizing body reserves, which ultimately affects milk production, fertility, and overall health. However, most of these diseases can be prevented through proper feeding and timely management.

Major Metabolic Diseases and Their Nutritional Management

Milk fever, or hypocalcaemia, is caused by a sudden decline in blood calcium levels immediately after calving due to heavy calcium loss in colostrum and milk. Nutritional management plays a crucial role in its prevention. During the dry period, especially in the last two to three weeks before calving, animals should be fed a low-calcium diet mainly consisting of dry fodder such as wheat straw. This helps activate the body's calcium mobilization mechanism. Excess feeding of calcium-rich green fodder like berseem and lucerne should be avoided during this stage. In addition, the use of anionic salts can help maintain proper calcium balance. Around calving, oral calcium supplements should be provided before and after parturition to meet the sudden demand. Maintaining an optimum body condition score and ensuring regular exercise further improves calcium metabolism.

Ketosis is primarily an energy deficiency disorder that occurs in early lactation when feed intake is insufficient compared to the high energy requirement for milk production. Nutritional management focuses on maximizing energy intake and preventing excessive fat mobilization. During the transition period, gradual increase in concentrate feeding (steaming up) helps the rumen adapt to high-energy diets. After calving, animals should be offered highly palatable and digestible feed, including good quality green fodder and balanced concentrates. Supplementation with energy sources such as propylene glycol during late pregnancy and early lactation is highly beneficial. Inclusion of nutrients like niacin, cobalt, and vitamin B_{12} supports liver function and efficient energy metabolism. Avoiding over-conditioning of animals before calving is equally important, as fat animals are more prone to ketosis.



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Pregnancy toxaemia occurs due to severe energy deficiency during late pregnancy, particularly in animals carrying multiple fetuses or those with excessive body fat. Nutritional management aims at ensuring continuous and adequate energy supply despite reduced feed intake. Feeding small, frequent meals of energy-rich and easily digestible feed helps maximize intake. Supplementation with propylene glycol during the last few weeks of pregnancy provides an additional glucose source. Maintaining proper body condition throughout the dry period is essential, as both underfeeding and overfeeding increase the risk. Inclusion of balanced minerals and vitamins supports overall metabolic health and reduces complications.

Grass tetany is associated with low magnesium levels and is commonly seen in animals grazing on lush pastures. Nutritional prevention revolves around maintaining adequate magnesium intake. Regular supplementation of magnesium oxide in feed or mineral mixture is essential during high-risk periods. Animals should not be abruptly shifted to young green pasture; instead, gradual adaptation is recommended. Feeding dry roughage along with green fodder improves rumen function and magnesium absorption. Application of magnesium-containing fertilizers in pasture fields can also enhance the mineral content of fodder. Providing free-access mineral blocks ensures continuous intake of essential minerals by grazing animals.

Downer cow syndrome, though not a primary disease, requires strong nutritional and supportive care. Proper feeding helps in faster recovery and prevents further complications. Affected animals should be provided with easily accessible, highly palatable feed and clean water, as their movement is restricted. Diets should be balanced with adequate calcium, phosphorus, and energy to support muscle and nerve function. In cases where phosphorus deficiency is suspected, appropriate supplementation becomes necessary. Good nutritional support along with soft bedding and frequent repositioning improves the chances of recovery and reduces muscle damage.

Disease	Key Nutritional Cause	Important Signs	Immediate Action	Preventive Nutrition
Milk Fever	Low blood calcium	Cannot stand, cold ears	IV calcium	Low Ca diet pre-calving + Ca supplement
Ketosis	Energy deficiency	Low milk, fruity smell	Glucose/propylene glycol	High-energy diet, steaming up
Grass Tetany	Magnesium deficiency	Convulsions, twitching	IV magnesium	Mg supplementation + gradual grazing
Downer Cow	Secondary (Ca/P deficiency)	Cannot rise >24 hrs	Supportive care	Balanced minerals + good management
Pregnancy Toxaemia	Energy shortage in late pregnancy	Off-feed, dull	Glucose therapy	Energy-rich diet + propylene glycol

Conclusion

Metabolic diseases are largely preventable and mainly result from improper nutritional management, especially during the transition period. Balanced feeding, gradual dietary changes, and timely supplementation of minerals and energy sources are key to prevention. Regular observation of animals for early signs such as reduced appetite, drop in milk yield, or abnormal behavior is equally important.

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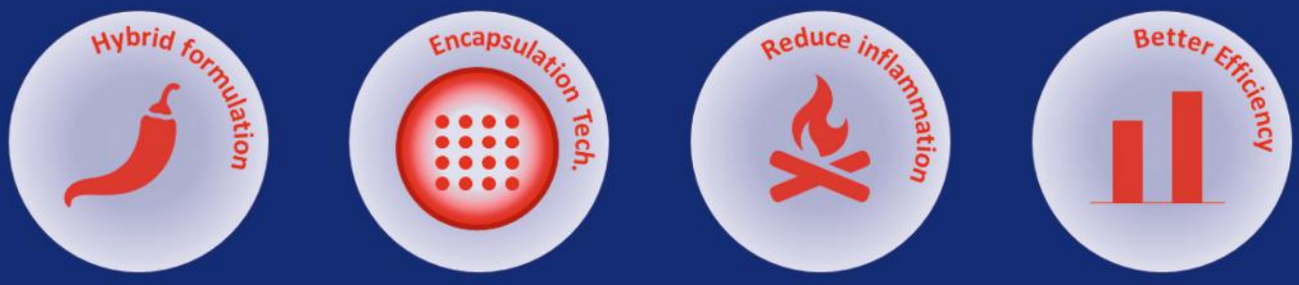

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ARTICLE

CORN SILAGE MANAGEMENT FOR HIGH-PERFORMANCE DAIRY FARMS

Corn silage is one of the most important forage sources for modern dairy production because of its:

- High energy density
- Excellent palatability
- Better starch availability
- Higher milk production potential

However, the quality and performance of corn silage depend largely on:

- Correct harvesting stage
- Proper chopping
- Efficient compaction
- Strict anaerobic fermentation

Poor silage management can lead to:

- Nutrient losses
- Mold growth
- Heating
- Reduced digestibility
- Lower milk production

1 IDEAL TIME OF HARVESTING

The stage of harvest determines:

- Starch content
- Fiber digestibility
- Packing efficiency
- Fermentation quality

Harvesting too early results in:

- Excess moisture
- Nutrient seepage
- Lower starch accumulation
- Poor fermentation

Harvesting too late results in:

- Hard kernels
- Reduced digestibility
- Poor compaction
- Aerobic spoilage

IDEAL DRY MATTER FOR HARVEST

Silage Type	Ideal Dry Matter
Bunker Silage	32–35% DM

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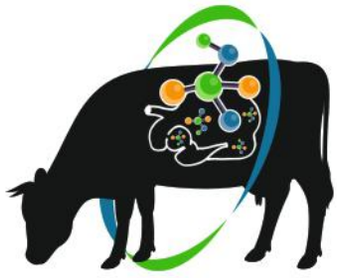

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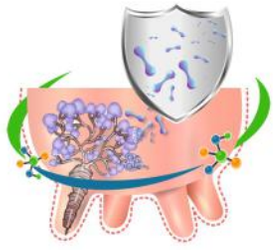

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HOW TO DETERMINE IDEAL HARVEST TIME

1 Milk Line Method (Most Practical)

Break the corn cob and observe the kernel.

Ideal stage 1/2 to 2/3 milk line

At this stage

- Starch accumulation is optimal
- Fiber digestibility remains good
- Moisture is ideal for compaction

2 Whole Plant Observation

Signs of ideal harvest

- Green stalks with partially dried lower leaves
- Moderate moisture in stalk
- Kernels are dented but not completely hard

Quick field method

- Excessive juice on pressing = too wet-Ball formation.
- Completely dry and brittle plant = too dry-the leaves and stem fall apart when pressed in hand.

2 CHOPPING MANAGEMENT

Recommended Chop Length

Condition	Recommended
TLCWithout kernel processor	1.0 – 1.5 cm
With kernel processor	1.5 – 2.0 cm

WHY CHOP LENGTH IS IMPORTANT

Too long

- Poor packing
- More oxygen pockets
- Increased mold and heating

Too short

- Reduced effective fiber
- Lower cud chewing
- Increased acidosis risk

CUTTING HEIGHT FROM GROUND

Recommended Cutting Height:
15–25 cm (6–10 inches) above ground

WHY HIGHER CUTTING HEIGHT IS BENEFICIAL

The lower stalk portion contains

- More lignin
- Lower digestibility
- Higher ash and soil contamination

Leaving 15–25 cm stubble

- Improves energy density
- Reduces indigestible fiber
- Improves fermentation quality
- Reduces soil contamination

3 KERNEL PROCESSING

Objective:

Every kernel should be

- Cracked
- Broken
- Properly processed

Whole kernels reduce

- Starch digestibility
- Feed efficiency
- Milk production response

4 SILAGE FILLING AND COMPACTION

Importance of Proper Compaction

Compaction is one of the most critical steps in silage making.

Poor compaction causes

- Oxygen retention
- Mold growth
- Heating
- Nutrient losses

HOW TO PRESS SILAGE PROPERLY

Key Recommendations

1. Fill in thin layers

- 10–15 cm layers are ideal

2. Continuous tractor packing

- Use heavy tractors for better density - Minimum 4-6 Mts of weight.

3. Slow and uniform filling

- Avoid dumping large heaps at once

TARGET SILAGE DENSITY

Parameter	Ideal
Density	>22-25 kg / cubic feet

Higher density ensures

- Better anaerobic fermentation
- Less spoilage
- Better nutrient preservation

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5 MAINTAINING ANAEROBIC CONDITIONS

Oxygen is the Enemy of Silage

Oxygen causes

- Heating
- Yeast proliferation
- Mold growth
- Nutrient destruction

HOW TO MAINTAIN ANAEROBIC CONDITIONS

1 Immediate Covering

Cover the bunker immediately after filling.

2 Use High-Quality Plastic

- Oxygen barrier film is preferred
- Double-layer plastic improves preservation

3 Proper Sealing

Seal all edges properly using:

- Sand bags
- Soil bags
- Tires

4 Prevent Air Entry

Avoid:

- Holes
- Plastic damage
- Loose edges

Even small air leaks can lead to spoilage zones.

HOW MANY DAYS SHOULD THE BUNKER REMAIN CLOSED?

Recommended Minimum: 45–60 days

WHY THIS PERIOD IS IMPORTANT

During this period

- Lactic acid bacteria dominate
- pH decreases
- Fermentation stabilizes
- Harmful microbes are suppressed

Opening too early can lead to

- Poor fermentation
- Heating
- Reduced digestibility

6 INOCULANTS WITH FIBROLYTIC ENZYMES

Natural fermentation is inconsistent and may lead to:

- Slow pH drop
- Poor preservation
- Nutrient loss

Inoculants improve

- Fermentation speed
- Stability
- Nutrient preservation

COMMON BENEFICIAL MICROBES USED

- Lactobacillus spp.
- Pediococcus spp.
- Enterococcus spp.
- Nitrosomonas spp.

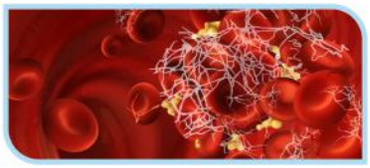
ROLE OF FIBROLYTIC ENZYMES

Fibrolytic enzymes help break

- Cellulose
- Hemicellulose
- Fiber complexes

This improves

- Fiber digestibility
- Nutrient availability
- Dry matter intake



BENEFITS OF INOCULANT + ENZYME COMBINATION

Benefit	Impact
Faster pH drop	Better preservation
Improved fiber digestion	Better intake
Improved starch availability	Higher milk production
Reduced heating	Better aerobic stability
Improved DMI	Better animal performance
Reduced spoilage losses	Improved feed efficiency

COMMON SILAGE MAKING MISTAKES

Mistake	Result
Harvesting too wet	Seepage and poor fermentation
Harvesting too dry	Poor packing
Long chop length	Oxygen pockets
Poor sealing	Mold growth
Inadequate packing	Heating and spoilage
No inoculant use	Variable fermentation quality

How to produce high quality silage

High-quality corn silage is produced through

- Correct harvest timing
- Proper chop management
- Efficient compaction
- Strict anaerobic preservation
- Scientifically managed fermentation

The use of inoculants combined with fibrolytic enzymes significantly improves:

- Nutrient preservation
- Silage stability
- Fiber utilization
- Animal performance

Proper silage management directly contributes to

- Better dry matter intake
- Higher milk production
- Improved milk fat and SNF
- Better farm profitability

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ਪੰਜਾਬ ਵਿੱਚ ਤਾਜੇ ਦੁੱਧ ਦਾ ਮੰਡੀਕਰਣ

ਨੇਹਾ ਮਨਹਾਸ, ਅਰਜਿੰਦਰ ਕੌਰ, ਅਮਿਤ ਗੁਲੇਰੀਆ ਅਤੇ ਸ਼ਰੂਤੀ ਚੋਪੜਾ*

ਪਸ਼ੂ ਪਾਲਣ, ਵਿਸ਼ੇਸ ਤੌਰ ਤੇ ਡੇਅਰੀ ਫਾਰਮਿੰਗ ਪੰਜਾਬ ਦੀ ਖੇਤੀ ਆਰਥਿਕਤਾ ਦਾ ਇੱਕ ਵਿਸ਼ੇਸ਼ ਹਿੱਸਾ ਹੈ। ਸਮੇਂ ਦੇ ਨਾਲ ਇਹ ਫਸਲੀ ਖੇਤੀ ਦਾ ਸੱਭਤੋਂ ਭਰੋਸੇਮੰਦ ਅੰਗ ਬਣ ਕੇ ਉਭੱਰਿਆ ਹੈ। ਪਿਛਲੇ ਕੁੱਝ ਦਹਾਕਿਆਂ ਤੋਂ ਰਾਜ ਵਿੱਚ ਕਣਕ-ਝੋਨੇ ਦੇ ਫਸਲੀ ਚੱਕਰ ਨੂੰ ਕਾਇਮ ਰੱਖਣ ਲਈ ਹੋ ਰਹੀ ਖਾਦਾਂ, ਦਵਾਈਆਂ ਅਤੇ ਧਰਤੀ ਹੇਠਲੇ ਪਾਣੀ ਦੀ ਵਾਧੂ ਵਰਤੋਂ ਕਰਕੇ ਨਾ ਕੇਵਲ ਜਮੀਨ ਅਤੇ ਪਾਣੀ ਬਲਕਿ ਵਾਤਾਵਰਣ, ਇਨਸਾਨੀ ਅਤੇ ਜਾਨਵਰਾਂ ਦੀ ਸਿਹਤ ਉੱਤੇ ਵੀ ਬੁਰਾ ਪ੍ਰਭਾਵ ਪੈ ਰਿਹਾ ਹੈ। ਸੰਸਾਧਨਾਂ ਦੀਆਂ ਵੱਧਦੀਆਂ ਕੀਮਤਾਂ ਨੇ ਕਿਸਾਨਾਂ ਲਈ ਖੇਤੀ ਤੋਂ ਹੋ ਰਹੀ ਆਮਦਨ ਅਤੇ ਮੁਨਾਫੇ ਨੂੰ ਘਟਾ ਦਿੱਤਾ ਹੈ। ਪਰ ਅਜਿਹੇ ਸਮੇਂ ਵਿੱਚ ਡੇਅਰੀ ਫਾਰਮਿੰਗ ਇੱਕ ਲਾਹੇਵੰਦ ਅਤੇ ਵਧੇਰੇ ਸਥਿਰ ਸਹਾਇਕ ਧੰਦਾ ਹੋ ਨਿਬੜਿਆ ਹੈ। ਇਹ ਸਹਿਯੋਗੀ ਕਿੱਤਾ ਜਿੱਥੇ ਕਿਸਾਨਾਂ ਦੀ ਆਮਦਨ ਵਿੱਚ ਇੱਕ ਮਹੱਤਵਪੂਰਨ ਯੋਗਦਾਨ ਪਾਉਂਦਾ ਹੈ, ਨਾਲ ਹੀ ਪੰਜਾਬ ਦੇ ਪੇਂਡੂ ਪਰਿਵਾਰਾਂ ਲਈ ਮੁਕੰਮਲ / ਪਾਰਟ ਟਾਈਮ ਰੁਜ਼ਗਾਰ ਦਾ ਸਾਧਨ ਵੀਹੈ। ਰਾਸ਼ਟਰੀ ਸੰਖਿਆਕੀ ਸੰਸਥਾ ਦੇ ਸਰਵੇਖਣ ਮੁਤਾਬਿਕ ਪੰਜਾਬ, ਪਸ਼ੂਧਨ ਤੋਂ ਹੋਣਵਾਲੀ ਔਸਤ ਮਾਸਿਕ ਆਮਦਨ ਵਿੱਚ, ਹਰਿਆਣੇ ਤੋਂ ਬਾਅਦ ਦੂਜੇ ਸਥਾਨ ਤੇ ਹੈ। ਪਸ਼ੂ ਧਨ ਤੋਂ ਮਿਲਣ ਵਾਲੀ ਕੁਲ ਮਾਸਿਕ ਆਮਦਨ ਵਿੱਚ 91.6 ਫੀਸਦੀ ਦਾ ਯੋਗਦਾਨ ਕੇਵਲ ਦੁੱਧ ਉਤਪਾਦਨ ਤੋਂ ਹੁੰਦਾ ਹੈ। ਪੰਜਾਬ ਵਿੱਚ ਪ੍ਰਤੀ ਵਿਅਕਤੀ ਦੁੱਧ ਦੀ ਉਪਲੱਬਤਾ 1283 ਗ੍ਰਾਮ ਹੈ ਜੋ ਕਿ ਦੇਸ਼ ਭਰ ਵਿੱਚ ਸਭ ਤੋਂ ਵੱਧ ਹੈ। ਇਹ ਸਾਰੇ ਆਂਕੜੇ ਪੰਜਾਬ ਦੀ ਆਰਿਥਕਤਾ ਵਿੱਚ ਡੇਅਰੀ ਫਾਰਮਿੰਗ ਦੇ ਮਹੱਤਵ ਨੂੰ ਭਲੀਭਾਂਤੀ ਸਿੱਧ ਕਰਦੇ ਹਨ ।

ਪਸ਼ੂ ਪਾਲਣ ਦੀ ਆਰਥਿਕਤਾ ਵਿੱਚ ਇੱਕ ਪਾਸੇ ਭੌਤਿਕ ਸਾਧਨਾਂ ਜਿਵੇਂ ਕਿ ਪਸ਼ੂਆਂ ਦੇ ਵੱਗ ਦਾ ਆਕਾਰ, ਸਹਿਤ, ਨਸਲ, ਦੁੱਧ ਦੇਣ ਦੀ ਸਮਰੱਥਾ, ਖੁਰਾਕ ਆਦਿ ਦਾ ਯੋਗਦਾਨ ਹੈ, ਨਾਲ ਹੀ ਪੈਦਾ ਕੀਤੇ ਦੁੱਧ ਦਾ ਸੁੱਚਜਾ ਮੰਡੀਕਰਨ ਵੀ ਜ਼ਰੂਰੀ ਹੈ। ਪੰਜਾਬ ਵਿੱਚ ਦੁੱਧ ਵਿਤਰਣ ਸੰਸਥਾਗਤ, ਜਿਸ ਵਿੱਚ ਸਰਕਾਰੀ ਅਤੇ ਪ੍ਰਾਈਵੇਟ ਡੇਅਰੀ ਸੰਸਥਾਵਾਂ ਮੁੱਖ ਹਨ ਅਤੇ ਗੈਰ ਸੰਸਥਾਗਤ ਜਿਸ ਵਿੱਚ ਦੋਧੀ, ਹਲਵਾਈ, ਡੇਅਰੀਆਂ, ਪ੍ਰਚੂਨ ਦੁਕਾਨਦਾਰ ਆਦਿ ਸ਼ਾਮਿਲ ਹਨ, ਦੋਨੋਂ ਹੀ ਪ੍ਰਚਾਲਿਤ ਹਨ। ਤਾਜੇ ਦੁੱਧ ਦੀ ਸਪਲਾਈ ਲੜੀਦਾ ਅਧਿਐਨ ਕਰਨ ਲਈ ਪੰਜਾਬ ਖੇਤੀਬਾੜੀ ਯੂਨੀਵਰਸਿਟੀ ਦੇ ਆਰਥਿਕ ਅਤੇ ਸਮਾਜਿਕ ਵਿਭਾਗ ਵਿੱਚ ਪੰਜਾਬ ਦੇ ਵੱਖ-ਵੱਖ ਖਿੱਤਿਆਂ ਚੋਂ 180 ਦੁੱਧ ਉਤਪਾਦਕਾਂ ਦਾ ਨਮੂਨਾ ਲਿਆ ਗਿਆ। ਇਹਨਾਂ ਦੇ ਦੁੱਧ ਮੰਡੀਕਰਨ ਤੋਂ ਇਹ ਪਤਾ ਲਗਾ ਕਿ ਲਗਭਗ 53 ਫੀਸਦੀ ਦੁੱਧ ਗੈਰ-ਸੰਸਥਾਗਤ ਸਪਲਾਈ ਲੜੀ ਦੇ ਰਾਹੀਂ ਵੇਚਿਆ ਜਾ ਰਿਹਾ ਅਤੇ ਬਾਕੀ ਰਹਿੰਦਾ ਸੰਸਥਾਗਤ ਏਜੰਸੀਆਂ ਰਾਹੀਂ ਉਪਭੋਗਤਾ ਤੱਕ ਪਹੁੰਚਦਾ ਹੈ । ਤੱਥਾ ਤੋਂ ਇਹ ਸਾਹਮਣੇ ਆਇਆ ਕਿ ਛੋਟੇ ਦੁੱਧ ਉਤਪਾਦਕ, ਪੈਦਾਵਾਰ ਦਾ ਤਕਰੀਬਨ 38 ਪ੍ਰਤੀਸ਼ਤ ਕੋਆਪਰੇਟਿਵ ਸੋਸਾਇਟੀਆਂ ਨੂੰ ਅਤੇ 25 ਫੀਸਦੀ ਸਿੱਧਾ ਉਪਭੋਗਤਾ ਨੂੰ ਵੇਚਦੇ ਹਨ। ਜਦਕਿ ਦਰਮਿਆਨੇ ਦਰਜੇ ਦੇ ਦੁੱਧ ਉਤਪਾਦਕ ਵਧੇਰੇ ਹਿੱਸਾ (33%) ਦੋਧੀਆਂ ਰਾਹੀਂ ਵੇਚਦੇ ਹਨ। ਵੱਡੇ ਦੁੱਧ ਉਤਪਾਦਕਾਂ ਵਿੱਚ ਵੀ ਦੋਧੀਆਂ (38%) ਅਤੇ ਪ੍ਰਾਈਵੇਟ ਡੇਅਰੀਆਂ (28%) ਦਾ ਵਧੇਰੇ ਰੋਲ ਸਾਹਮਣੇ ਆਇਆ ਹੈ। ਜੇ ਸਮੁੱਚੇ ਦੁੱਧ ਉਤਪਾਦਨ ਦਾ ਮੰਡੀਕਰਨ ਦੇਖੀਏ ਤਾਂ ਦੋਧੀ (35%), ਪ੍ਰਾਈਵੇਟ ਡੇਅਰੀਆਂ (23%) ਅਤੇ ਕੋਆਪਰੇਟਿਵ ਸੋਸਾਇਟੀਆਂ ਵੀ 23 ਫੀਸਦੀ ਹਿੱਸਾ ਪਾਉਂਦੇ ਹਨ। ਉਪਭੋਗਤਾ ਨੂੰ ਸਿੱਧੀ ਸਪਲਾਈ ਕੇਵਲ 14 ਪ੍ਰਤੀਸ਼ਤ ਦੇ ਲਗਭਗ ਸੀ, ਜਦਕਿ ਲੋਕਲ ਹਲਵਾਈ ਜਾਂ ਦੁੱਧ ਦੀਆਂ ਹੋਰ ਵਸਤਾਂ ਬਨਾਉਣ ਵਾਲਿਆਂ ਦਾ 4 ਫੀਸਦੀ ਹਿੱਸਾ ਸੀ। ਦੁੱਧ ਉਤਪਾਦਕ ਨੂੰ ਗੈਰ ਰਸਮੀ ਸਪਲਾਈ ਲੜੀ ਵਿੱਚ ਭਾਵੇਂ ਉਹ ਸਿੱਧਾ ਵੇਚੇ, ਦੋਧੀ ਰਾਹੀਂ ਜਾ ਪ੍ਰਾਈਵੇਟ ਡੇਅਰੀਆਂ ਰਾਹੀਂ, ਦੁੱਧ ਦੀ ਕੀਮਤ ਲਗਭਗ ਇੱਕੋ ਜਿਹੀ ਮਿਲਰਹੀਸੀ, ਪਰ ਉਪਭੋਗਤਾ ਨੂੰ ਦੋਧੀ ਅਤੇ ਡੇਅਰੀਆਂ ਤੋਂ ਲਏ ਜਾ ਰਹੇ ਦੁੱਧ ਲਈ ਜਿਆਦਾ ਕੀਮਤ ਦੇਣੀ ਪੈ ਰਹੀ ਸੀ। ਸਪਲਾਈ ਲੜੀ ਵਿੱਚ ਆਉਂਦੇ ਵਿਚੋਲਿਆਂ ਕਾਰਨ, ਉਹਨਾਂ ਦੇ ਖਰਚੇ ਅਤੇ ਮੁਨਾਫੇ ਦਾ ਭਾਰ ਉਪਭੋਗਤਾ ਤੇ ਹੀਆ ਰਿਹਾ ਸੀ। ਰਸਮੀ ਸੰਸਥਾਵਾਂ ਦੁਆਰਾ ਹੋ ਰਹੇ ਦੁੱਧ ਵਿਤਰਣ ਵਿੱਚ ਪ੍ਰਾਈਵੇਟ ਸੰਸਥਾਵਾਂ ਅਤੇ ਮਿਲਕ ਪਲਾਂਟ ਉਤਪਾਦਕ ਨੂੰ ਕੋਅਪ੍ਰੇਵਿਟ ਡੇਅਰੀ ਸੋਸਾਇਟੀਆ ਦੇ ਮੁਕਾਬਲੇ ਵਧੇਰੇ ਕੀਮਤ ਦੇ ਰਹੇ ਸਨ। ਉਪਭੋਗਤਾ ਲਈ ਵੀ ਦੁੱਧ ਦੀ ਕੀਮਤ ਸੱਭ ਤੋਂ ਵੱਧ ਕੋਅਪ੍ਰੇਵਿਟ ਸੋਸਾਇਟੀ, ਮਿਲਕ ਪਲਾਂਟ ਅਤੇ ਪਰਚੂਨ ਵਿਕਰੇਤਾ ਰਾਹੀਂ ਹੋ ਕੇ ਪਹੁੰਚ ਰਹੇ ਦੁੱਧ ਦੀ ਸੀ।

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ਸਪਲਾਈ ਲੜੀ ਦੀ ਚੋਣ ਦੇ ਕਾਰਨਾਂ ਦੀ ਪੜਚੋਲਤੋਂ ਪੱਤਾ ਚੱਲਿਆ ਕਿ ਕੀਮਤਾਂ ਵਿੱਚ ਸਥਿਰਤਾ, ਕੀਮਤਾਂ ਅਤੇ ਮਾਪ ਵਿੱਚ ਪਾਰਦਰਿਸ਼ਤਾ, ਸਮੇਂ ਸਿਰ ਭੁਗਤਾਨ, ਸੰਸਾਧਨਾਂ ਅਤੇ ਵੈਟਰਨਰੀ ਸਿਹਤ ਸੇਵਾਵਾਂ ਦਾਸਮੇਂ ਸਿਰ, ਘੱਟ ਖਰਚੇ ਤੇ ਮੁੱਹਈਆ ਕਰਾਉਣਾ ਸੰਸਥਾਗਤ ਸੈਕਟਰ ਦੇ ਹੱਕ ਵਿੱਚ ਮੁੱਖ ਕਾਰਨ ਹਨ। ਜਦ ਕਿ ਖਰੀਦਦਾਰ ਨਾਲ ਨਿੱਜੀ ਜਾਣ-ਪਛਾਣ, ਆਪਸੀ ਭਰੋਸਾ, ਅਗਾਊਂ ਆਮਦਨ ਦੀ ਪੇਸ਼ਗੀ ਅਤੇ ਦੁੱਧ ਦੀ ਘਰੋਂ ਹੀਚੁਕਾਈ ਗੈਰ ਰਸਮੀ ਸਪਲਾਈ ਲੜੀ ਦੀ ਚੋਣ ਦੇ ਉੱਘੇ ਕਾਰਕ ਸਨ।

ਪੂਰੇ ਖੋਜ ਨਮੂਨੇ ਵਿੱਚੋਂ 44 ਦੁੱਧ ਉਤਪਾਦਕ ਅਜਿਹੇ ਸਨ ਜੋ ਕਿ ਰਸਮੀ ਅਤੇ ਗੈਰਰਸਮੀ ਦੋਹਾਂ ਢੰਗਾਂ ਨਾਲ ਤਾਜੇ ਦੁੱਧ ਦਾ ਮੰਡੀਕਰਨ ਕਰ ਰਹੇ ਸਨ, ਪਰ ਇਨ੍ਹਾ ਵਿੱਚੋਂ ਵੀ 68 ਫੀਸਦੀ ਸੰਸਥਾਗਤ ਅਤੇ ਬਾਕੀ ਦੇ ਗੈਰ ਰਸਮੀ ਢੰਗ ਨੂੰ ਤਰਜੀਹ ਦੇ ਰਹੇ ਸਨ ।

ਸੋ ਇਸ ਖੋਜ ਪ੍ਰਕਿਰਿਆ ਤੋਂ ਇਹ ਸਪਸ਼ਟ ਹੈ ਕਿ ਦੁੱਧ ਉਤਪਾਦਕ ਖਾਸ ਕਰਕੇ ਛੋਟੇ ਅਤੇ ਮੱਧਮ ਸ਼੍ਰੇਣੀ ਦੇ ਹੁਣ ਸੰਸਥਾਗਤ ਸਪਲਾਈ ਲੜੀ ਵੱਲ ਝੁਕਾਅ ਦਿਖਾ ਰਹੇ ਹਨ। ਵੱਡੇ ਡੇਅਰੀ ਪਾਲਕ ਦੁੱਧ ਦੀ ਬਹੁਤਾਤ ਕਾਰਣ ਦੋਧੀਆਂ ਅਤੇ ਪ੍ਰਾਈਵੇਟ ਡੇਅਰੀਆਂ ਨੂੰ ਪਹਿਲ ਦਿੰਦੇ ਹਨ। ਸਰਕਾਰ ਨੂੰ ਵੱਡੇ ਉਤਪਾਦਕਾਂ ਲਈ ਕੋਈ ਸਪੈਸ਼ਲ ਸਕੀਮ ਜਾਂ ਭਰੋਸਾ ਵਧਾਉਣ ਲਈ ਕੋਈ ਛੋਟ ਦੇਣੀ ਚਾਹੀਦੀ ਹੈ। ਸੋਸਾਈਟੀਆਂ ਵਿੱਚ ਦੁੱਧ ਦੀ ਜਾਂਚ ਲਈ ਵੱਡੀ ਸਮਰੱਥਾ ਵਾਲੀਆ ਮਸ਼ੀਨਾਂ, ਗੁਣਵੱਤਾ ਦੀ ਸੰਭਾਲ ਲਈ ਠੰਡੇ ਵਾਹਨਾਂ ਦਾ ਪ੍ਰਬੰਧ, ਛੋਟੇ ਪੱਧਰ ਤੇ ਉਤਪਾਦਕਾਂ ਦੁਆਰਾ ਮਾਈਕਰੋ ਬਰਾਂਡਿੰਗ ਨੂੰ ਉਤਸਾਹਿਤ ਕਰਨ ਨਾਲ ਦੁੱਧ ਦੀਆਂ ਸਪਲਾਈ ਲੜੀਆਂ ਵਿੱਚ ਸੁਧਾਰਕੀਤਾ ਜਾਣਾ ਚਾਹੀਦਾ ਹੈ।

ਨੇਹਾ ਮਨਹਾਸ, ਅਰਜਿੰਦਰ ਕੌਰ,
ਅਮਿਤ ਗੁਲੇਰੀਆ ਅਤੇ ਸ਼ਰੂਤੀ ਚੋਪੜਾ*
ਆਰਿਥਕ ਅਤੇ ਸਾਮਾਜਿਕ ਵਿਭਾਗ
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*ਗੁਰੁ ਅੰਗਦ ਦੇਵ ਵੈਟਨਰੀ ਅਤੇ ਐਨੀਮਲ ਸਾਇੰਸਜ਼
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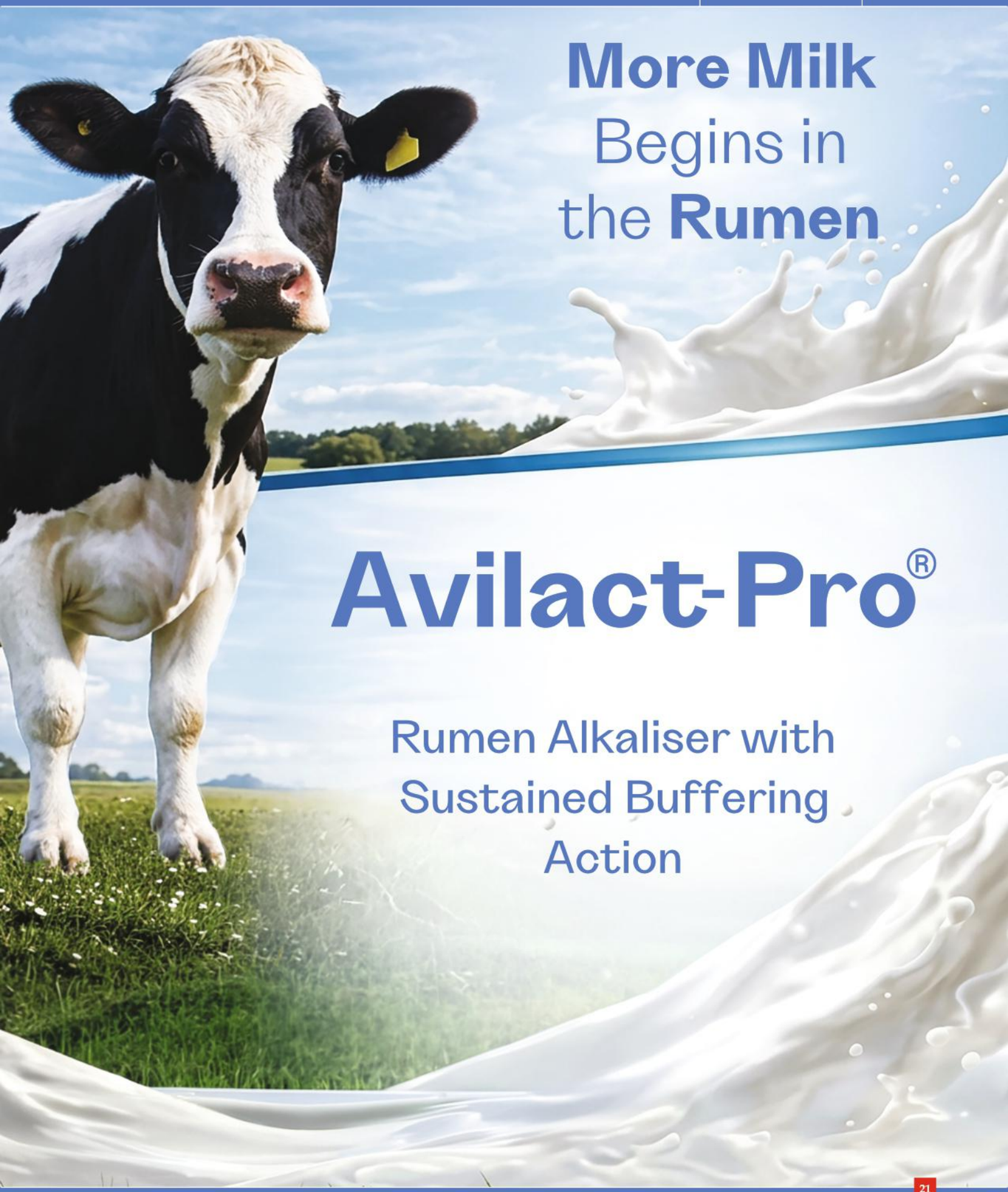

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Feed Formulation Lab 2026

Advancing Data-Driven Feed Formulation Through Practical Learning

The Feed Formulation Lab (FFL) continues to emerge as a flagship community engagement initiative of SEC India, with this being the second successful edition of the program conducted on 28th and 29th April 2026. The lab is designed to provide hands-on exposure to modern feed formulation techniques, aligning with industry needs and keeping pace with technological advancements.

For this edition, Dr. Uday Patil was engaged to lead the two-day technical sessions representing BestMix software for South Asia. In preparation, all 48 registered participants were contacted over Sunday and Monday (26th-27th April) and provided with complimentary two-month access to the software, along with login assistance. This ensured that participants arrived fully prepared, with the software installed and operational on their laptops. Minor technical issues were also resolved on Tuesday (28th April) prior to the commencement of sessions.

Hyderabad's strong ecosystem of leading feed and poultry companies provided an ideal backdrop for the program. To set the tone for the event, **Dr. Sandip Karkhanis**, **Managing Director of Noveltech Feeds** was invited as Guest of Honour for the inaugural session. He emphasized the importance of staying aligned with advancements in feed formulation and evolving industry practices. On the concluding day (29th April), **Suresh Chitturi**, **Chairman of Srinivasa Farms**, joined as Guest of Honour and delivered a motivational address encouraging young professionals to embrace innovation and prepare for emerging challenges in the feed industry. Strategically engaging such industry leaders also aligns with USSEC's objective of strengthening industry collaboration and enhancing the visibility of SEC-led initiatives.

The program commenced with an orientation session covering key dos and don'ts across 11 common areas where formulation errors or assumptions are frequently observed. These principles formed the foundation for the subsequent hands-on learning approach.

Over the two days, participants engaged in intensive practical exercises focused on cost and nutrient optimization using the software platform. One of the key learning outcomes was the transition from subjective decision-making toward data-driven formulation, where the system objectively determines optimal solutions based on nutritional and economic parameters.

Throughout the sessions, the software demonstrations highlighted how formulation decisions are increasingly influenced by ingredient consistency, amino acid profile, digestibility, and overall formulation economics. Through such technical engagements, SEC India aims to equip professionals with broader knowledge on global feed ingredient evaluation and value-based formulation approaches, including U.S. Soy.

The technical depth of the program was further strengthened through expert contributions from industry specialists. A speaker from Evonik provided an in-depth comparison of raw material quality, with particular focus on soybean meal characteristics, analytical parameters, and variability management.

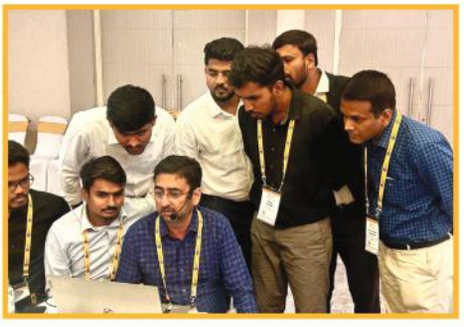
Additionally, Basilisa Reas joined virtually to present insights on how feed industry decisions in the Philippines are increasingly driven by value and quality considerations, particularly in the context of U.S. Soy. Her session offered participants a valuable global perspective on ingredient evaluation and differentiation across international markets.

Further guidance was provided by Jaison John and Franklin Manuel, who shared insights on the upcoming price and supply outlook of soybean meal over the next few months and discussed broader market considerations relevant to the feed industry. Dr. Saikat Saha's insights were especially valuable during the essential session, as raw material quality is the foundation long before an array of feed ingredients enter any formulation software.

The venue was fully equipped to ensure a seamless learning experience. Facilities included ample power access for participant laptops, dedicated high-speed Wi-Fi to support software functionality, multiple display screens for improved visibility during demonstrations, and reliable audio-visual systems. On-site IT support was also available throughout the program to promptly address any technical concerns.

The program concluded with a certificate distribution ceremony attended by SEC RAC members and Suresh Chitturi. RAC members also had the opportunity to observe the final lab sessions, where participants were actively engaged in solving formulation challenges, reflecting the practical and immersive nature of the training.

Overall, the Feed Formulation Lab successfully delivered a high-impact, hands-on learning experience using advanced technologies, reinforcing SEC India's commitment to building technical capability, fostering industry collaboration, and promoting data-driven decision-making in feed formulation.



What Criteria Determine Forage Quality in Ruminant Livestock?

When it comes to **feeding dairy cows** and **beef cattle,** the proportion of forage needed varies significantly according to the **diet.** An accurate analysis of forage quality is essential to ensure the proper functionality of animals' **rumen** and their **digestion** processes, regardless of the type of production considered. How can the value of **forages** be properly assessed? What criteria should be considered to this end?

Thanks to the size of their particles and **fibres, forages** are at the core of rumination and of **ruminant digestion.** Forage quality relates to the characteristics affecting consumption, nutritive value and resulting animal health and performance. Submitting forage to **NIR (near-infrared spectroscopy)** analysis provides an accurate estimation of its quality. In addition to traditional criteria such as moisture, or protein fibers content, other parameters must be used to determine the optimal utilisation of a forage and therefore contribute to the profitability of livestock farming.

What risks does a poor estimation of forage quality pose?

Accurate knowledge of the amount and quality of **forages** used is key to a proper **ruminant diet.** An accurate estimation is essential for determining the amount and characteristics of the additional share of feed needed to meet production targets. Feed concentrates and/or supplements are designed to compensate for the nutritive deficiencies of **forages.** For example, these **concentrates** and/or supplements must be rich in **proteins** if these are lacking in the forage, so that these nutrients are adequately supplied by the whole diet.

Failure to properly consider voluntary intake and forage quality often leads to errors in diet composition. These may result in an improper utilisation of the ration, low levels of performance (i.e below the targets set) and metabolic disorders (acidosis, ketosis, etc...). These inaccuracies can end up having a long-term impact on economic performance.

Moreover, different forage of the same crop species can have very different values depending on crop management, harvesting conditions and conservation.

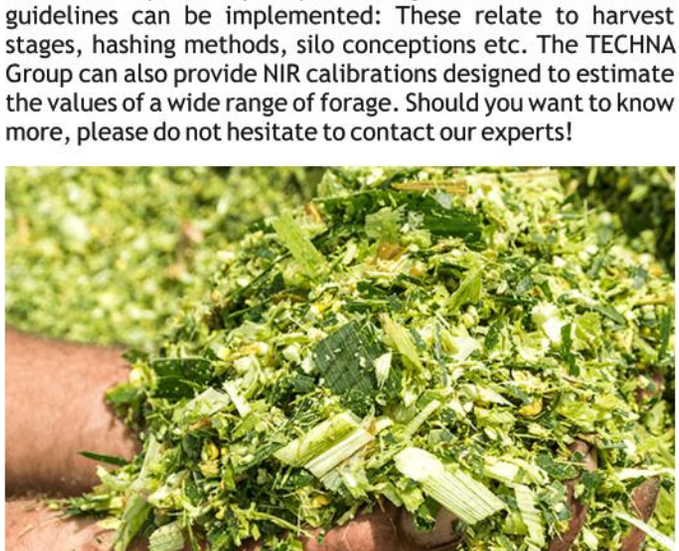
A **ruminant** diet based on **forage** values based on reference tables can therefore lead to unsuitable recommendations. As a result, relying on these tables may negatively impact the profitability of livestock farming.

What criteria can be used for properly estimating forage quality?

A better characterisation of a forage must go beyond the traditional criteria (percentage of dry matter, protein, fiber, starch, minerals), and allow for an accurate estimation of the way ruminants are likely to optimise the forage. In addition to the net energy calculations and the amount of digestible protein in the intestine, the following criteria must be considered:

- **Knowledge of the voluntary intake** of forage is essential as it directly impacts nutritional intakes. One extra kg of DM ingested corresponds to an additional supply of 1.55Mcal NEL / animal/day kg DM. This is more or less equal to the amount of energy necessary for producing 2 kg of milk.
- **Starch degradability in the rumen** (soluble, slowly degradable or bypass): When it comes to predicting the extent of acidogenic risks raised by forage ingestion, starch content is often the main benchmark. However, practical observations have clearly shown significant differences in acidosis risks for forages of similar starch content. Since acidogenic risks are linked to the soluble starch content of forages, these discrepancies mainly relate to the way starch is degraded in the rumen.
- **DM rapidly degraded in the rumen** (within four hours): This criterion allows one to evaluate the extent of likely SARA (sub-acute ruminal acidosis) risk in forage. Consideration of this parameter when designing a ration will lead to striking the right balance between the amount of fermentable energy required for production ends and SARA risk prevention.
- **Fibre digestibility:** Ruminants are able to easily digest the fibres contained in their forages. Fibres largely contribute to the net energy intake. The ruminant's digestion process highly depends on the composition of these fibres.
- **Fractions of fat content (digestible in the rumen and bypass):** Fat is a very concentrated source of energy. Fat is also useful for increasing the total energy intake of animals endowed with strong genetic merit (strong production potential). However, special attention ought to be paid to fat fractions that are too promptly digested in the rumen. These may have a significant impact on the rumen ecosystem and therefore,on the efficiency of fermentation.

Evaluating the different nutrients contained in forages allows an accurate assessment of their values. These values also highly depend on crop/culture conditions and conservation. To ensure optimal quality of forage, various levers and guidelines can be implemented: These relate to harvest stages, hashing methods, silo conceptions etc. The TECHNA Group can also provide NIR calibrations designed to estimate the values of a wide range of forage. Should you want to know more, please do not hesitate to contact our experts!



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बदलते मौसम में बकरी पालन

डॉ. चंदन कुमार

बकरी पालन आज भारत के छोटे एवं सीमांत किसानों के लिए आजीविका का एक मजबूत आधार बन चुका है। कम निवेश, तेजी से बढ़ने वाला बाजार और विविध जलवायु में अनुकूलन की क्षमता के कारण बकरी को 'गरीब की गाय' भी कहा जाता है। नवीनतम आँकड़े यह स्पष्ट करते हैं कि बकरी पालन भारतीय परिस्थितियों में एक आर्थिक रूप से व्यवहार्य और सामाजिक रूप से समावेशी उद्यम है। वैज्ञानिक प्रबंधन, मूल्य संवर्धन और बाजार से जुड़ाव के माध्यम से बकरी पालन ग्रामीण भारत की आय वृद्धि में निर्णायक भूमिका निभा सकता है। वर्तमान समय में जलवायु परिवर्तन, बढ़ती लागत और उपभोक्ताओं की बदलती मांग ने बकरी पालन को अधिक वैज्ञानिक, तकनीक–आधारित और मूल्य संवर्धन उन्मुख बनाने की आवश्यकता पैदा की है। भारत में अनियमित वर्षा, तापमान में वृद्धि, सूखा और बाढ़ जैसी परिस्थितियाँ पशुपालन के लिए चुनौती बन रही हैं। बकरियाँ कम पानी और सीमित चारे में भी जीवित रह सकती हैं, इसलिए इन्हें जलवायु–सहनीय पशुपालन प्रणाली का महत्वपूर्ण हिस्सा माना जा रहा है। उचित नस्ल चयन, बेहतर आवास व्यवस्था और संतुलित पोषण से बकरी पालन को बदलते मौसम में भी लाभकारी बनाया जा सकता है।

क्यों 'क्लाइमेट–रेजिलिएंट' (जलवायु–सहनीय) बकरी पालन जरूरी है?

वर्तमान समय में जलवायु परिवर्तन पशुपालन क्षेत्र के सामने एक बड़ी चुनौती बनकर उभरा है। अनियमित वर्षा, अत्यधिक गर्मी, ठंड की तीव्र लहरें, सूखा एवं बाढ़ जैसी घटनाएँ पारंपरिक पशुपालन प्रणालियों को प्रभावित कर रही हैं। ऐसी परिस्थितियों में ऐसी पशु प्रजातियों को बढ़ावा देना आवश्यक हो गया है, जो बदलते मौसम के साथ स्वयं को आसानी से ढाल सकें। बकरियाँ स्वभाव से ही जलवायु–सहनीय पशु मानी जाती हैं। इन्हें अपेक्षाकृत कम पानी की आवश्यकता होती है, ये विविध प्रकार के प्राकृतिक व झाड़ीदार चारे का उपयोग कर सकती हैं और कठिन पर्यावरणीय परिस्थितियों में भी जीवित रहने की बेहतर क्षमता रखती हैं। यही कारण है कि शुष्क, अर्ध–शुष्क एवं पर्वतीय क्षेत्रों में बकरी पालन एक भरोसेमंद आजीविका स्रोत के रूप में स्थापित है। शोध अध्ययनों से यह भी स्पष्ट हुआ है कि यदि स्थानीय जलवायु के अनुकूल नस्लों का चयन, संतुलित चारा प्रबंधन तथा समुचित स्वास्थ्य एवं टीकाकरण रणनीतियाँ अपनाई जाएँ, तो बकरी पालन न केवल अधिक उत्पादक बनता है बल्कि जलवायु जोखिमों के प्रति भी अधिक सुरक्षित हो जाता है। इस दृष्टि से 'क्लाइमेट–रेजिलिएंट बकरी पालन' भविष्य के टिकाऊ पशुपालन की दिशा में एक प्रभावी और व्यावहारिक समाधान प्रस्तुत करता है।

आज की सबसे नवीन और व्यावहारिक अवधारणा है एकीकृत बकरी पालन मॉडल। इसमें बकरी पालन को फसल उत्पादन, बागवानी, वर्मी–कम्पोस्ट, चारा उत्पादन और कृषि–अपशिष्ट प्रबंधन से जोड़ा जाता है। इस प्रणाली से संसाधनों का पूर्ण उपयोग होता है, उत्पादन लागत घटती है और किसान की आय के कई स्रोत विकसित होते हैं। बकरी पालन में रोग नियंत्रण सफलता की कुंजी है। पीपीआर, एंटरोटॉक्सिमिया और खुरपका–मुंहपका जैसे रोग भारी आर्थिक नुकसान पहुंचा सकते हैं। नियमित टीकाकरण, कृमिनाशक दवाओं का उपयोग, स्वच्छ बाड़ा और समय पर पशु चिकित्सकीय परामर्श बकरी झुंड को स्वस्थ बनाए रखने में सहायक होते हैं। मोबाइल ऐप, डिजिटल रिकॉर्ड–कीपिंग और ऑनलाइन परामर्श सेवाएँ आज बकरी पालकों के लिए उपयोगी साधन बन रही हैं। इनके माध्यम से टीकाकरण अनुस्मारक, बाजार भाव, चारे की उपलब्धता और प्रशिक्षण सामग्री आसानी से प्राप्त की जा सकती है। कम लागत वाली ये तकनीकें छोटे किसानों के लिए विशेष रूप से लाभकारी हैं। घरेलू स्तर पर सस्ते डिजिटल टूल्स और मोबाइल–आधारित सन्देश सेवाओं के जरिए संचालक पशु–स्वास्थ्य अलर्ट, चारे–सूचना और बाजार भाव पा सकते हैं। इसके साथ–साथ स्मार्ट बाड़े (बेहतर हवादार भवन), पानी की बचत करने वाले पेय–उपकरण और दवाध्टीकाकरण रिमाइंडर छोटे निवेश में लाभ बढ़ा देते हैं। राष्ट्रीय और स्थानीय प्रतिष्ठान इन तकनीकों के लिए प्रशिक्षण और सब्सिडी भी दे रहे हैं स्थानीय KVK/ICAR कार्यालय से बदलती योजनाएँ पूछ सकते हैं। बकरी के दूध और उससे बने उत्पाद जैसे पनीर, दही और घी की मांग शहरी क्षेत्रों में तेजी से बढ़ रही है। इसी प्रकार बकरी मांस (चेवोन) का बाजार भी निरंतर विस्तार कर रहा है। छोटे स्तर पर प्रसंस्करण, पैकेजिंग और प्रत्यक्ष विपणन अपनाकर किसान बेहतर मूल्य प्राप्त कर सकते हैं।

व्यावहारिक सुझाव किसानों के लिए

- स्थानीय जलवायु के अनुकूल नस्लों का चयन करें।
- संतुलित आहार और सूखे चारे का भंडारण सुनिश्चित करें।
- नियमित टीकाकरण और स्वास्थ्य जांच कराएँ।
- बकरी पालन को फसल और जैविक खाद उत्पादन से जोड़ें।
- सहकारी समितियों या एफपीओ से जुड़कर बाजार तक सीधी पहुँच बनाएं।

बकरी पालन भारतीय परिस्थितियों में एक टिकाऊ, लाभकारी और भविष्य उन्मुख उद्यम है। वैज्ञानिक प्रबंधन, नवीन तकनीक और मूल्य संवर्धन को अपनाकर किसान न केवल अपनी आय बढ़ा सकते हैं, बल्कि ग्रामीण अर्थव्यवस्था को भी सशक्त बना सकते हैं।

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Effect of FineX 1522 on
Milk Parameters in Lactating Dairy Animals

FINE ORGANICS

1. Introduction

Optimizing nutrition is critical for enhancing productivity, digestive efficiency, and overall health in lactating dairy animals. The use of functional feed additives that support rumen stability and gut health has become an essential strategy in modern dairy management.

FineX 1522 is a nutritional supplement designed to improve digestibility, support gut health, and help maintain milk quality parameters. This field trial was conducted to evaluate the practical impact of FineX 1522 supplementation on milk composition

2. Objectives

The trial was undertaken with the following objectives:

- To evaluate the effect of FineX 1522 on **milk composition**, particularly **milk fat and SNF**

3. Materials and Methods

3.1 Experimental Site

- **Farm Name:** Atul Dairy Farm
- **Location:** Igatpuri, India
- **Herd Size:** 200+ lactating dairy animals
- **Trial Conducted By:** Dr. Nagare

3.2 Experimental Animals

- **Number of Animals Selected:** 40 lactating dairy animals
- Animals were selected based on:
  - Similar stage of lactation
  - Comparable production levels

3.3 Experimental Design

- **Trial Duration:** 20 days
- **Dosage:** FineX 1522 @ **30 g per animal per day**
- **Mode of Administration:** Mixed with regular daily feed

3.4 Parameter Recorded

- **Milk Composition** (milk fat and SNF levels)

Milk fat and SNF levels showed a **moderate improvement** during the trial period.

	Day	Milk Fat %		SNF %	
No FineX 1522	1	4.3	4.21	8.3	8.21
	2	4.2		8.2	
	3	4.3		8.3	
	4	4.1		8.1	
	5	4.2		8.2	
	6	4.3		8.3	
	7	4.2		8.2	
	8	4.2		8.2	
	9	4.1		8.1	
	10	4.2		8.2	
FineX 1522 @ 30g	11	4.2	4.43	8.2	8.43
	12	4.1		8.1	
	13	4.3		8.3	
	14	4.4		8.4	
	15	4.5		8.5	
	16	4.4		8.4	
	17	4.5		8.5	
	18	4.5		8.5	
	19	4.4		8.4	
	20	4.6		8.6	
	21	4.5		8.5	
	22	4.5		8.5	
	23	4.3		8.3	
	24	4.5		8.5	
	25	4.4		8.4	
	26	4.6		8.6	
	27	4.5		8.5	
	28	4.5		8.5	
	29	4.4		8.4	
	30	4.6		8.6	

Results:

Average Performance Comparison

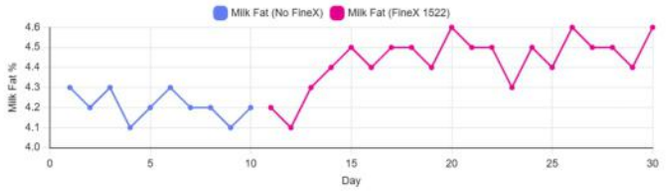
Phase	Avt Milk Fat %	Avt SNF %
No FineX 1522	4.21 %	8.21 %
FineX 1522 @ 30g	4.46 %	8.46 %

Average Performance Comparison

- Milk Fat: ↑ 0.25 percentage points (~6.0% relative improvement)
- SNF: ↑ 0.25 percentage points (~3.0% relative improvement)

Trend Analysis (Day-wise)

Milk Fat Trend



Interpretation:

- Baseline fat % remained mostly between 4.1 - 4.3
- After FineX 1522 introduction, fat % stabilized and increased to 4.4 - 4.6
- Indicates improved rumen efficiency and better fiber utilization

SNF Trend

Interpretation:

- Baseline SNF fluctuated around 8.1 - 8.3
- With FineX 1522, SNF consistently moved to 8.4 - 8.6
- Suggests for enhanced microbial protein synthesis and better nutrient absorption

4. Discussion

The results of the trial suggest that supplementation with FineX 1522 positively influenced digestive efficiency in lactating dairy animals. Improved digestibility is a key driver for better nutrient absorption, which in turn supports milk quality parameters such as fat and SNF.

Stable and normal dung consistency observed during the trial further reflects enhanced rumen health and digestive stability. These findings highlight the role of FineX 1522 in supporting gastrointestinal function under field conditions, which is essential for sustaining productivity in lactating animals.

5. Conclusion

Supplementation of FineX 1522 at 30 g per animal per day resulted in a significant and consistent improvement in milk quality parameters. Average milk fat increased from 4.21% to 4.46%, while SNF increased from 8.21% to 8.46%. The sustained upward trend postsupplementation indicates improved rumen function, enhanced digestibility, and better nutrient utilization.

ARTICLE

Rising feed/raw materials (RM) costs? Rethink your protein strategy

Dr. Medha Singh, Product Manager
Dr. Sudhir Singh, GM, Technical Services

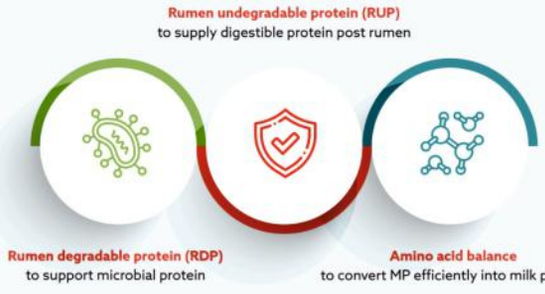
Introduction

Volatility is now a constant in India's feed market: maize, soybean meal, rapeseed, sunflower meal, and rice bran shift in price and availability fast. The bigger risk is **quality variability**—inconsistent nutrient density and processing, higher mycotoxin pressure, and, at times, adulteration—so "least-cost" on paper can become the most expensive at the farm. So, the strategic question is: are you optimizing the **lowest cost per kg feed,** or **lowest cost per liter of milk?** This article argues for the second—by building a protein strategy that protects output during reformulation.

You can try several nutritional maneuvers to manage volatility—but it still comes back to one question: **"What is your protein strategy?"** A protein strategy cannot be just about crude protein—or the cheapest CP% on paper. It must protect metabolizable protein (MP), improve efficiency, and keep milk output stable through reformulation.

The protein system has three pillars:

We usually use RDP & RUP to switch between different RM like soybean meal, rapeseed meal, sunflower meal, DDGS, or other co-products while keeping rumen stability—without unnecessarily increasing CP. While you must be well aware of the first two pillars, RDP and RUP but now is time to think critically about the third Pillar - Amino Acid Balance.



1. Shift the objective of reformulation: from "cheapest formulation" to "most stable output"

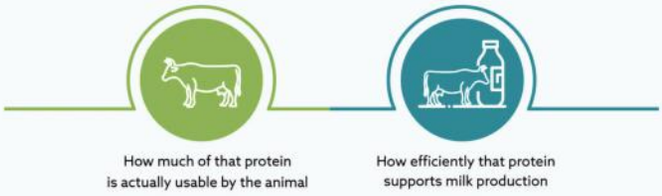
The first and most important shift is **the mindset,** not math. Many of us start the month by asking: "How do I reduce formulation cost?" In volatile markets, a better question is: **"How do I protect milk yield, milk components, and feed efficiency while still managing cost?"**

In practice, this means: Build formulas **that tolerate raw-material change** without performance swings. Doing reformulations around **digestible nutrients** (fiber and starch behavior, effective fiber, and MP supply), not only crude specs. These levers keep intake and rumen function more stable when raw materials vary—so performance is more predictable for the farmer, and complaints are fewer for the feed brand.

2. Stop designing protein strategy purely on crude protein (CP)

CP% has long been treated as a proxy for feed quality—but it can be misled. Two feeds with the same CP can deliver very different milk responses, especially when frequent reformulation changes protein degradability and amino acid supply.

Crude protein measures only the total nitrogen content of a feed—it does not tell us:



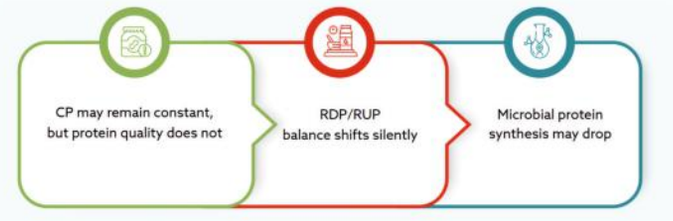
KEMTRACE® BMX

Balanced Micronutrient Premix for Buffaloes

Proven to Outlast

KEMIN®
Compelled by Curiosity™

That's why, whenever raw materials change and the formulation is designed only around CP%:



- CP may remain constant, but protein quality does not
- RDP/RUP balance shifts silently
- Microbial protein synthesis may drop

In volatile times, protein strategy should not depend on: "Which protein meal is cheapest this month?" Instead, think of it like this: "If soybean meal becomes expensive or unavailable, what combination of other proteins can maintain **MP and amino acid balance** without overfeeding CP?" This approach reduces formulation shocks, nitrogen wastage, and inconsistent milk performance. **Therefore, CP% should no longer be treated as a feed quality indicator. MP adequacy should be your internal benchmark for formulation quality.**

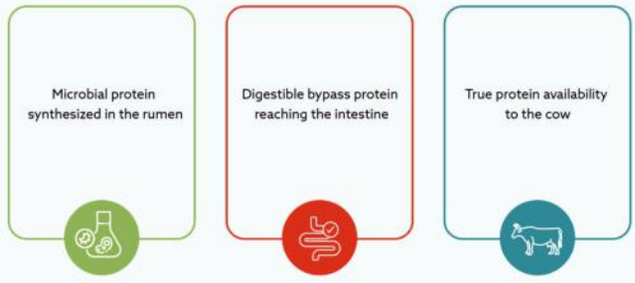
3. Lower CP is not cost-cutting—it is efficiency building

Lower CP isn't just cost-cutting—it's about reducing waste and improving biological efficiency.

By optimizing MP and amino acids instead of chasing high CP:

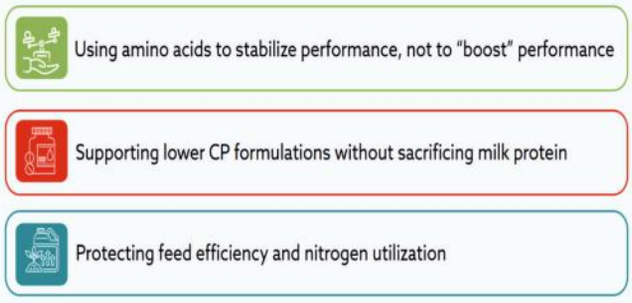
In volatile times like this, **efficiency is the most stable currency.** If feed quality is to be defined by animal output, then the relevant protein metric is not crude protein, but **metabolizable protein (MP)**—the protein that is absorbed and used by the animal for maintenance and milk synthesis.

MP is a better internal quality benchmark than CP because it reflects:



4. Treat amino acids as nutrients, not premium add-ons.

Amino acids help protect efficiency when protein sources are unstable. Traditionally, amino acids have been treated as costly additives and used only in premium feeds—which often makes them the first thing removed when raw material prices rise. However, modern nutrition recognizes amino acids as essential nutrients, which means:



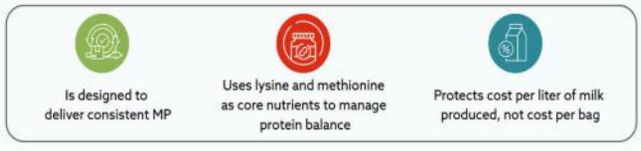
Lysine and methionine are mandatory, not optional. They are a non-negotiable part of your protein strategy and can demonstrate more consistent performance across RM variability and other challenges.

5. Strengthen quality and consistency over aggressive cost-cutting

In volatile times, quality risk rises (variation, adulteration, and more frequent ingredient switches), so consistency controls matter more than ever. Tighten raw material acceptance criteria and monitor variability closely when you switch ingredients.

A cheaper raw material with poor consistency often costs more at the farm level.

Putting it together: the new definition of feed quality



In today's geopolitical and market environment, a **high-quality ruminant feed** should be defined as one that:

The winning capability will be **controlled reformulation:** who can switch ingredients without losing intake, rumen function, or output by using digestibility-based targets and MP/AA precision. In the end, the goal stays the same: optimize **cost per liter of milk** by protecting efficiency, not just lowering the feed bill.

Swine Technology Magazine Now Officially Released

In a significant move for the Indian livestock sector, SR Publications officially launched its newest, First in segment, specialized magazine, "Swine Technology," at the inaugural VIV Select India 2026 trade show.

The launch took place at the Yashobhoomi Convention and Expo Centre (IICC) in Dwarka, New Delhi, during the prestigious "Feed to Food" international exhibition, which take place from April 22 to 24, 2026.

A Milestone for the Swine Industry :

The unveiling ceremony featured a gathering of prominent industry leaders, experts, and stakeholders who came together to celebrate a publication dedicated exclusively to innovations and updated information in pork production.

"Swine Technology" (Vol. 1, Issue 1) enters the market at a pivotal time when India's animal protein sector is seeking modernization and smarter production solutions. The magazine aims to be the "first choice of every pig farmer and entrepreneur," providing a bridge between global technological advancements and local farming needs.

Key Highlights of the Magazine :

- The inaugural issue, themed for April-May 2026, focuses on the future of digitized and sustainable farming. Key focus areas include:
- Smart Farming Solutions: Implementing AI and IoT for precise farm management.
- Advanced Health & Nutrition: Modern dietary strategies and veterinary care to improve yield.
- Latest Biosecurity Strategies: Essential protocols to safeguard farms against emerging diseases.
- Expert Knowledge: A reliable source for industry news, market trends, and technical research.

Strategic Launch at VIV Select India

SR Publications' expansion into the swine segment complements their existing portfolio in poultry and livestock technology.

"The poultry and livestock sectors are entering a phase where scale must be matched by efficiency and resilience," noted industry observers at the event. "The introduction of a specialized medium like Swine Technology is a necessary step toward professionalizing the swine industry in India."

About SR Publications

SR Publications is a leading voice in the livestock media landscape, known for its comprehensive coverage of the poultry and animal husbandry sectors. With the launch of Swine Technology, the group reinforces its commitment to empowering farmers with the knowledge needed to stay "future-ready" in a competitive global market.

For more information and digital editions, visit: www.srpublication.com

Alltech® IFM

Reflecting on Milestones, Advancing into 2026

Over the past decade, the Alltech In Vitro Fermentation Model (Alltech IFM®) has become a cornerstone analytical platform supporting dairy nutrition decisions across India and South Asia. In 2025, the IFM laboratory continued to expand both its scale and impact, providing robust and practical insights for feed manufacturers, nutritionists and dairy producers.

2025 at a glance: Scale and scope

In 2025, the IFM laboratory analysed over 550 feed samples, reflecting growing industry confidence in IFM as a decision-support tool. Since its inception, the IFM lab has analysed more than 5,650 samples, creating one of the most comprehensive rumen fermentation data sets in the region. In parallel, starch analysis continues to expand, with 730+ starch analyses completed overall, including 280 samples analysed in 2025 alone.

- **Consistent improvements in fibre digestibility:**

NDF digestibility (NDFD) remains one of the most critical drivers of rumen efficiency, dry matter intake and milk performance. Across diverse feed matrices evaluated in 2025, IFM studies consistently demonstrated the ability of Alltech solutions, particularly Yea-Sacc® and Optimase™, to enhance fibre utilisation.

Yea-Sacc vs. competitor supplement study:

A key focus during 2025 was comparative evaluation of commercial yeast products under identical IFM conditions. Across multiple trials and feed types, Yea-Sacc consistently outperformed competitor yeast products, delivering an overall 2-4% higher NDFD under controlled in vitro rumen fermentation.

Silage quality: Regional insights through IFM

Silage evaluation remained a key focus area in 2025, with IFM used to assess fermentation quality and nutritive value across regions.

- Average silage pH was ~3.7, indicating good fermentation and stability.
- Marked regional variations were noted in starch and fibre content, factors that influence energy release and rumen function
- Higher NDFD was observed; this is strongly associated with improved feed utilisation and milk performance.

IFM studies showed that Alltech solutions improved silage NDFD by ~5-6% on average, enhancing rumen fermentation even in low-starch or high-fibre silages.

OPTIMASE™

IFM evaluations confirmed the value of Optimase, Alltech's precision blend of enzymes and non-protein nitrogen (NPN), in improving feed utilisation. The evaluations showed:

- Higher true dry matter digestibility (TDMD) and NDFD

Improved partitioning factor (PF), indicating better conversion of digested nutrients into microbial biomass

- Reduced gas production, reflecting improved rumen efficiency and lower energy losses

Under IFM conditions, Optimase improved TDMD by

~1% and NDFD by ~5% in cattle feeds, translating into better feed efficiency, higher predicted microbial protein synthesis and potential milk yield benefits.

Unlike static chemical analyses, IFM provides dynamic fermentation kinetics, enabling customers to:

- Identify hidden inefficiencies in feeds and TMRs
- Compare nutritional solutions before field implementation
- Optimise rations faster and at lower cost than with in vivo trials
- Reduce feed wastage and environmental losses

This science-led approach directly supports better return on investment (ROI) for feed manufacturers and dairy producers alike.

Looking ahead: IFM in 2026

As the dairy industry continues to navigate rising feed costs, variable forage quality and sustainability

pressures, IFM will play an even more strategic role in 2026 and beyond.

Key focus areas for 2026 include:

- More solution-based IFM studies combining yeast, enzymes and NPN technologies
- Microbial protein and protein fractionations
- Stronger collaboration with feed mills, dairy cooperatives and nutrition consultants
- Leveraging the growing IFM database to generate region-specific benchmarks

The 2025 IFM recap highlights not only the scale of analytical work completed but, more importantly, the consistency and reliability of the insights generated. With over 550 samples analysed in 2025 and 5,650+ samples since the lab was established, Alltech IFM continues to strengthen its position as a trusted partner in feed optimisation.

As we move into 2026, Alltech IFM remains committed to transforming advanced rumen science into practical, profitable and sustainable nutrition solutions for the dairy industry.

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- Raksha P R, Asst Marketing Manager - India & Sri Lanka

EVENT CALENDER

AUGUST 2026

4-6 AUGUST – SIAVS

Venue : Anhembi District - São Paulo - Brazil - Av. Olavo Fontoura, 1209
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E-mail : siavs@abpa-br.org
Web : www.siavs.com.br

SIAVS SALÃO INTERNACIONAL DE PROTEÍNA ANIMAL

SEPTEMBER 2026

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Venue : Parc-Expo, Rennes, France
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Email : info@space.fr
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SPACE

SEPTEMBER / OCTOBER 2026

WORLD DAIRY EXPO

September 29 October 2, 2026

Venue : Alliant Energy Center Madison, Wi, Usa
Phone : 608-224-6455
Email : wde@wdexpo.com
Web : www.worlddairyexpo.com

WORLD DAIRY EXPO

Beyond Binding: The Science of Advanced Mycotoxin Binders

By Dr. Madri Brink, Global Technical Manager – Gut Health and Immunity, Orffa Additives B.V., The Netherlands. Sopaphan Pruekvimolphan, Technical Manager, Orffa (Thailand) Ltd.

In modern livestock production, mycotoxins are among the most critical yet often underestimated constraints on performance and profitability. These persistent fungal metabolites contaminate feed raw materials and cannot be removed or detoxified during the normal feed manufacturing processes. Their effects are frequently subclinical - impairing immunity, nutrient utilization, and gut integrity and increasing performance variability. Therefore, mycotoxin binders based on aluminosilicates such as clinoptilolite and layered phyllosilicates are key tools to mitigate risk in animals.

Known and emerging mycotoxins:

Feed contamination extends beyond the major mycotoxins (aflatoxins, deoxynivalenol, zearalenone, fumonisins, and ochratoxin A) produced by Aspergillus, Fusarium, and Penicillium. Emerging mycotoxins, including enniatin B and beauvericin, are frequently detected but remain less regulated despite their potential toxicity (Table 1).

Table 1. Emerging mycotoxins and key toxic effects

Mycotoxins	Key toxic effects
Enniatin B	Depolarizes mitochondria. Disrupts cellular metabolism.
Beauvericin	Oxidative stress: apoptosis, mitochondrial pathway and immune system. Immunosuppressive.
Alternariol	No acute toxicity, but cytotoxic and mutagenic *in vitro*, disruption of reproductive cycle, impaired fertility. Immunosuppressive.
Moniliformin	Broilers are very susceptible, genotoxic, immunosuppressive; causes heart damage, muscular weakness, and respiratory distress.
Fusaric acid	Mitochondrial dysfunction, oxidative stress, inhibits cell proliferation/DNA synthesis and synergistic with fumonisins.
Sterigmatocystin	Aflatoxin precursor; causes aflatoxin B1-like effects in animals but with lower acute toxicity. Bloody diarrhea, reduced milk yield and feed intake.

In modern livestock production, mycotoxins are among the most critical yet often underestimated constraints on performance and profitability. These persistent fungal metabolites contaminate feed raw materials and cannot be removed or detoxified during the normal feed manufacturing processes. Their effects are frequently subclinical - impairing immunity, nutrient utilization, and gut integrity and increasing performance variability. Therefore, mycotoxin binders based on aluminosilicates such as clinoptilolite and layered phyllosilicates are key tools to mitigate risk in animals.

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Bacterial toxins

In addition to fungal mycotoxins, bacteria like Clostridium perfringens also produce several toxins which are key virulence factors associated with necrotic enteritis in poultry.

- **Alpha toxin,** a phospholipase, is cytotoxic to various host cells, including erythrocytes and endothelial cells, contributing to tissue damage.
- **NetB toxin,** a pore-forming protein, plays a primary role in disease pathogenesis by disrupting intestinal cell membranes, leading to cell lysis and necrotic lesions in the gut.

The combined activity of these toxins contributes to intestinal damage, impaired nutrient absorption and reduced animal performance. Therefore, choosing binders with a proven binding capacity of targeted fungal and bacterial toxins are crucial.

Physical and chemical properties driving efficacy

A wide range of clays (aluminosilicates) are used as mycotoxin binders. In general, they are often grouped into two main classes: **tectosilicates (framework silicates)** and **phyllosilicates (sheet silicates)** - which differ in structure and, therefore, in how they interact with known and emerging mycotoxins and bacterial toxins produced by Clostridium spp. in the gastrointestinal tract.

Tectosilicates (framework silicates e.g., clinoptilolite)

Tectosilicates are crystalline aluminosilicates. They are made up of SiO_4 and AlO_4 tetrahedra that are connected to form a rigid, three-dimensional, honeycomb-like framework with a microporous system. Under the broad category of zeolite, clinoptilolite is one the most effective and widely used due to its high porosity which form the basis of its adsorption capacity. Highly polar mycotoxins such as aflatoxins are small enough to enter these pores where they interact with K^+ and Ca^{2+} cations.

5-COMPONENT
MYCOTOXIN PROTECTION

Hepatoprotector / Intestinal integrity

Inhibition of mould growth / Immune support

Three Binders

wide spectrum
adsorption

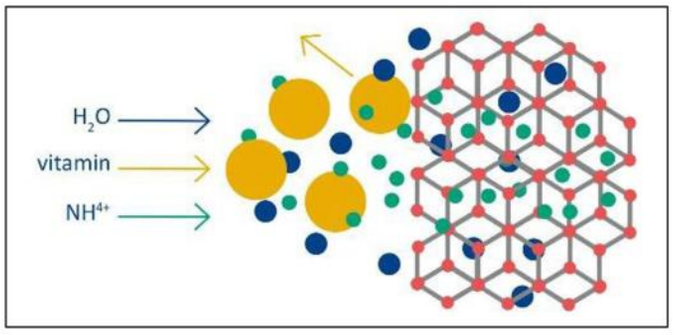
Broad spectrum solutions for mycotoxin management

Excential Toxin Plus and **Excential Toxin A**,
an effective approach for optimal mycotoxin management

ORFFA

- Broad spectrum solutions
- Combined approach for mycotoxin management
- Available for multi animal species
- Support animal health and performance
- Insurance for contaminated ingredients

Figure 1 An illustration of the 3-dimensional, honeycomb-like framework of clinoptilolites



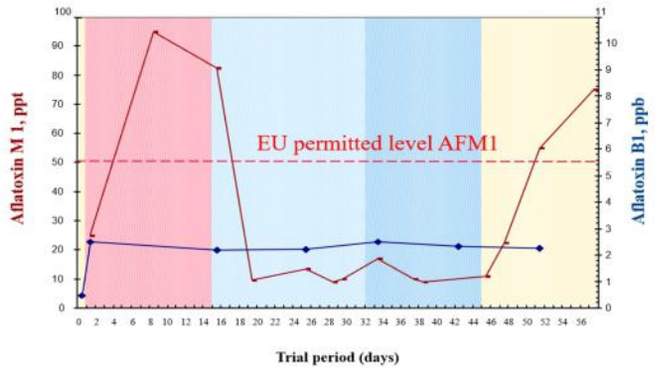
The small pores of clinoptilolite (~400 picometer: pm) help to prevent the unintended binding of nutrients such as glucose (molecular size of 700 - 900 pm) or some of thevitamins (molecular size of 500 - 2000 pm) (Figure 1). In addition, clinoptilolite is not known to interact with macrolides or coccidiostats. Unlike bentonite, especially for poultry, the simultaneous use with coccidiostats other than robenidine is contraindicated with levels of bentonite above 5000 mg/kg of complete feed (EU Regulation No. 1060/2013).

Key benefits of clinoptilolites

- **Aflatoxin binding:** consistent high binding efficacy across a broad pH range (3 – 7) during in vitro studies over multiple years.
- **Proven to bind emerging toxins and bacterial toxins** produced by Clostridium perfringens.
- **Gut support:** ammonia and water binding supports gut health and litter quality in poultry.
- **Feed processing:** improves flow, reduces caking, and supports pellet quality (lower friction, higher durability).

In an Italian study with 300 dairy cows, Excential Toxin A (clinoptilolite) demonstrated a strong Aflatoxin B1 (AFB1) binding capacity by reducing the carry-over of Aflatoxin M1 (AFM1) in milk (Figure 2). During the supplementation of Excential Toxin A at 100 or 200 g/head/day between days 15-32 and 32-45 of the trial, respectively, AFM1 in milk dropped sharply (below the EU legal limit of 0.05 µg/L) and increased again after withdrawal of Excential Toxin A from the feed. The supplementation of mycotoxin binder did not affect the milk quality characteristics (casein, lactose, fat) or milk productivity.

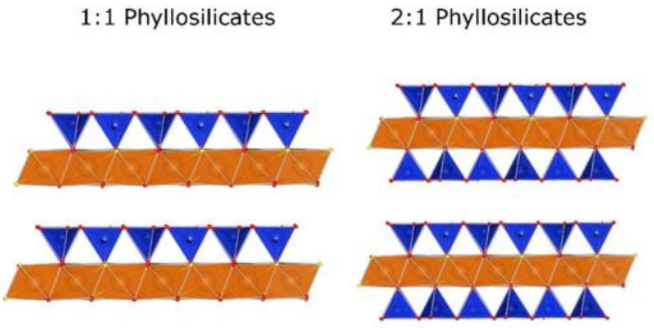
Figure 2. AFM1 levels in milk throughout the 60-day trial *period.*



Phyllosilicates (sheet or layer silicates)

Phyllosilicates are formed by the stacking of tetrahedral silicate sheets and octahedral sheets. The two main combinations are 1:1 tetrahedral and octahedral layers (e.g., kaolinite) and 2:1 tetrahedral and octahedral layers (e.g., smectite) (Figure 3). The stacked sheets create interlayer spaces and an expandable structure, enabling adsorption, ion exchange, and swelling. However, some phyllosilicates are naturally non-swelling. Additional processing, including thermal treatment and ultrafine milling, can optimize these clays for use as mycotoxin binders (e.g., phyllosilicate used in Excential Toxin Plus).

Figure 3 The two main types of phyllosilicate structures (Pavón and Alba, 2021)



Excential Toxin Plus is a synergistic five-component formulation: **(1) clinoptilolite** (tectosilicate) for high-affinity binding of small, highly polar mycotoxins via a rigid 3D pore network; (2) an activated, **non-swelling European phyllosilicate** that supports the adsorption of mycotoxins such as fumonisins as well as bacterial toxins; (3) **yeast cell wall** to extend the binding to toxins with low adsorption affinity, such as zearalenone and ochratoxin; (4) **betaine** to reduce the negative impact of DON on the intestinal integrity and to support intestinal recovery and liver health, damaged by mycotoxins; and (5) **ammonium propionate** to help limit mold growth and mycotoxin formation during feed storage.

A 42-day trial was carried out at the School of Veterinary Medicine of the University of Dakar, Senegal with 600 Cobb 500 broilers. From 11 days of age, the birds received 0, 1, or 5 kg of Excential Toxin Plus (ETP) per MT feed. The birds were fed a corn-groundnut meal-based diet naturally contaminated with aflatoxin (160.4 µg/kg). The supplementation of 1 kg ETP/MT of feed tended to increase the final body weight of the birds by 2.4% ($P< 0.1$) and numerically improved FCR by 5.6%, compared to the control. The supplementation of 5 kg ETP/MT of feed improved FCR by 4.0% with no change in final body weight compared to the control (Table 2).

Table 2 The zootechnical performance of broilers - between 0 - 42 days of age

Parameters	Control	1 kg/MT ETP	5 kg/MT ETP
Body weight (kg)	1.97^{x}	2.02^{y}	1.96^{x}
Average daily gain (g/d)	55.3	57.5	55.5
Average daily feed intake (g/d)	143.0	140.4	139.8
Feed conversion ratio	2.520	2.380	2.420

C-25 Plus

दूध बढ़ाए.....सेहत बनाए

AFLATOXIN CONTROLLED FEED

NABL Accredited ISO 17025 • World Class R&D Lab Facility

C-25 प्लस के फायदे

- प्रति दिन 20-25 लीटर तक दूध देने वाली गायों के लिए उत्कृष्ट तैयार पोषण।
- खनिज और विटामिन से युक्त, बेहतर उत्पादकता और रोग प्रतिरोधक क्षमता के लिए।
- बेहतर दूध उत्पादन, वसा (फैट) और एस.एन.एफ के लिए।
- रुमन माइक्रोब द्वारा आर.डी.पी. (R.D.P) में सुधार।
- बेहतर स्वास्थ्य और बीसीएस में सुधार के लिए।
- बेहतर एवं सम्पूर्ण उत्पादक काल (लैक्टेशन पीरियड) हेतु पशुओं के लिए सर्वोत्तम आहार।
- मक्की के साइलेज के साथ खिलाने से अधिकतम लाभ।
- दूधारू पशुओं के शीघ्र गर्भधारण में सहायक।
- 1 किलो फीड प्रति 2.5 लीटर दूध उत्पादन के लिए।

सेफ्टी
बेहतर इम्युनिटी
एफ्लाटॉक्सिन कंट्रोल्ड

उत्पादन
अधिक दूध उत्पादन
अधिक फैट और एस.एन.एफ

मुनाफा
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In layers, a 12-week study was carried out at the University of Lomé, Togo with a total of 840 Isa Brown old (62 - 74 weeks) and young (47 - 59 weeks) layers with an average body weight of 1.75 kg. The hens received either 0 or 1.5 kg ETP/MT of feed. The supplementation of ETP increased egg production (+8.7% in old hens, P < 0.05; +2.4% in young hens) and improved FCR (−9.2% in old hens; −4.6% in young hens). In old hens, egg weight increased by 4.0 g due to a significant increase in albumen and eggshell weights (P < 0.05) (Table 3).

***Table 3** Effect of Excential Toxin Plus (ETP) on performance and egg parameters of old and young laying hens*

	Old hens		Young hens	
Performance	Control	ETP	Control	ETP
Average daily feed intake (g/day)	112.5	110.9	112.5	110.1
Egg production rate (%)	64.5[a]	70.1[b]	70.1[b]	71.8[b]
Feed conversion ratio	2.881[b]	2.615[a]	2.642[b]	2.520[a]
Egg parameters				
Egg weight (g)	59.4	63.4	59.0	60.8
Yolk weight (g)	15.2	15.6	15.5	15.4
Albumen weight (g)	36.3[a]	39.6[b]	35.6[a]	37.6[ab]
Shell weight (g)	7.9[a]	8.5[b]	7.9[a]	7.7[a]

Row with different superscripts differ significantly (p < 0.05).

Not all clay binders perform the same

Each type of clay binder has a specific binding capacity that can vary substantially with the source deposit (even within the same clay family) and the processing applied (chemical, physical, or thermal treatment). As a result, some adsorbents offer broader mycotoxin mitigation, while others show high affinity only for specific mycotoxins.

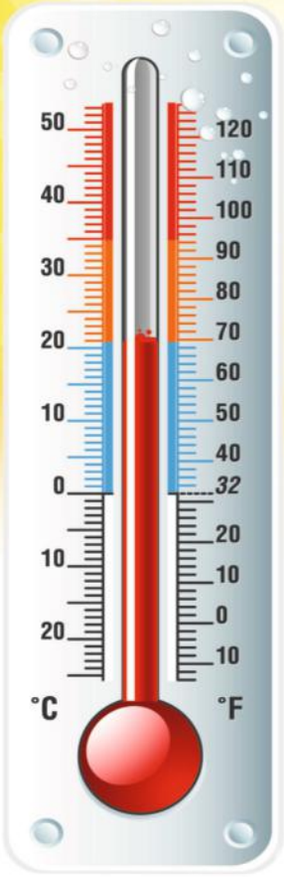
Quality control and safety assurance system

A comprehensive quality and safety standard for mycotoxin binder selection should start with rigorous raw material qualification, extend through controlled manufacturing, and completed via stringent and continuous monitoring of finished goods. This holistic approach ensures that the final product consistently meets expectations not just for efficacy, but also for safety, and regulatory compliance. Safety parameters e.g. heavy metals, dioxins/dioxin-like compounds needs to be controlled and in line with EU/US directives, according to the market requirements.

Conclusion

Excential Toxin A provides high adsorption of highly polar mycotoxins (including aflatoxins) and emerging contaminants such as enniatins. Excential Toxin Plus extends protection via broader-spectrum adsorption (e.g., fumonisins, zearalenone, ochratoxin, and emerging toxins) and complementary components to support gut function, resilience, and performance under multi-mycotoxins and bacterial toxins challenge. Backed by European quality assurance, Orffa mycotoxin binder product range offer reliable and practical risk mitigation in increasingly complex feed environments.

Temperature is rising...



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

Levucell® SC
Rumen Specific Yeast®

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

Heat stress adversely impacts dairy cow performance

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

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

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

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

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

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

**Marfola, et al, ADSA 2010.*

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

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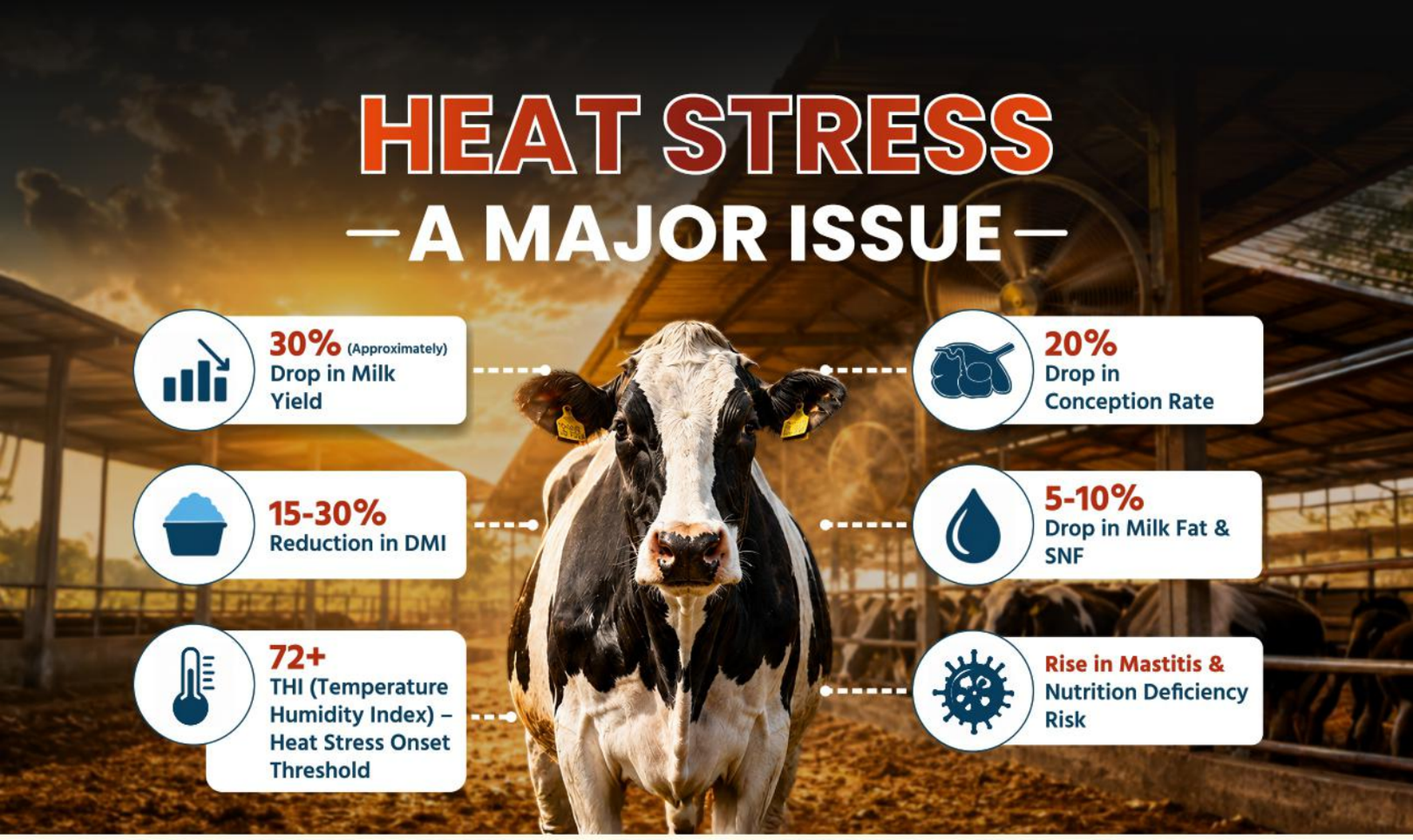
Bis-chelated trace minerals are designed for consistent performance and better mineral utilization. Supporting cows during hot weather with reliable mineral nutrition.

- Helps maintain biohydrogenation to support milk fat yield
- Contributes to the amino acid balance of the cow
- Helps to deliver consistent nutrient utilization to support milk components

Real mineral science, built on decades of experience. That's what it means to be designed with bis-chelation.

HEAT STRESS
—A MAJOR ISSUE—



What is THI and why does it matter?

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

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

Comfortable **Severe stress**

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

Estimated Financial Loss Due to Heat Stress

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

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

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