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From the Editor's Desk

Himachal Pradesh becomes the first state to offer MSP for milk

Himachal Pradesh government is procuring cow milk from over 38,000 farmers, collecting an average of 2.25 lakh litres of milk daily at a support price of Rs 51 per litre, based on quality standards. Additionally, approximately 1,482 buffalo rearers contribute 7,800 litres of milk per day, which is purchased at Rs 61 per litre. The move reflects a strong commitment of the government to support livestock farmers and enhance rural livelihoods. Over the past two-and-a-half years, the government has introduced several reforms towards empowering dairy farmers and strengthening the co-operative institutions. To ease logistical challenges, especially in hilly and remote regions, the government is also providing a Rs 2 per litre transport subsidy for dairy farmers. The Him Ganga Yojana aimed to transform dairy farming at the grassroots level, one of the most ambitious undertakings of the state. In the first phase of the scheme, a dedicated committee has been formed to visit villages and establish milk producer co-operative societies at the grassroots level. In another initiative, the government has launched a pilot project for goat milk procurement. The government is offering Rs 70 per litre to goat rearers.

India's retail inflation cooled to a six-year low of 2.82% in May 2025, easing from 3.16% in April and 4.8% a year ago, driven by a sharp moderation in food prices, according to provisional data released by the Ministry of Statistics and Programme Implementation (MoSPI). This marks the fourth consecutive month of sub-4% inflation—the longest such run in over five years. Food inflation dropped to 0.99% in May from 1.78% in April and 8.69% in May 2024. Prices of meat, fish, vegetables, and pulses declined, offering relief to households. However, prices of milk, dairy products, edible oils, and beverages remained sticky.

Karnataka's Bamul dairy cooperative has launched trials of the country's first biodegradable milk packets, aiming to significantly reduce plastic usage in daily dairy packaging. These new pouches are made from plant-based, compostable materials that degrade naturally within months, unlike conventional plastic sachets that can linger in landfills for over 400 years. This pilot addresses two pressing challenges: cutting costs tied to compliance with India's ban on single-use plastics and aligning with rising consumer demand for sustainable packaging. Estimates suggest that if scaled across regional and state cooperatives, this innovation could eliminate up to 100 million plastic milk sachets annually, delivering material cost savings and stronger brand positioning.

Amul is accelerating its transition to a solar-powered cold chain in 2025, aiming to reduce spoilage, cut diesel costs, and build climate resilience amid India's rising heatwaves. Leveraging its vast network—18,000+ village collection centres and IoT-enabled refrigerated trucks—this initiative upgrades both chilling infrastructure and transportation. Rural milk from smallholder farmers is chilled rapidly at solar-powered bulk milk chillers, stabilising quality. A 1500L unit in Uttar Pradesh saved ₹190,000 annually and cut 20.2 tonnes of CO_2 emissions. Amul's "Logistics of the Future" program integrates IoT sensors, AI-enabled tankers, and solar-powered hubs—boosting farmer income, ensuring freshness, and reducing carbon footprints in India's USD 163 billion dairy market.

To promote awareness about the purity of milk and dairy products, the Bhopal Sahakari Dugdh Sangh has launched a modern mobile laboratory campaign titled "Sanchi Rath." This initiative is touring various residential colonies across Bhopal under the campaign name "Doodh ka Doodh – Pani ka Pani." The mobile lab is equipped with state-of-the-art testing equipment and conducts on-the-spot checks of milk, curd, paneer, ghee, and other dairy products. Test results are immediately shared with consumers through WhatsApp and mobile messages, offering a convenient and transparent way to verify product quality.

Kerala's state co-operative, MILMA, is exploring a potential milk price revision following farmer demands driven by rising feed and operational costs. Regional unions across Malabar, Ernakulam, and Thiruvananthapuram are compiling reports for the federation's end-of-month board meeting. Currently, retail milk sells at ₹52/litre, while farmers receive ₹42–48/litre based on quality. Production costs now average around ₹65/litre, exceeding procurement rates. Milma procures an impressive 1.26 million litres/day and sells 1.7 million litres/day, sourcing additional milk from Karnataka and Maharashtra.

GBPUAT researchers from Pantnagar have developed and patented a sex-sorted bovine semen technology capable of producing up to 90% female calves, addressing a crucial gap in India's dairy genetics. NDDB's field trials from March at the Alamadhi Semen Station show successfully sorted doses priced at roughly ₹300–500, a third of current US-derived semen costs (₹1,000). Approximately 5,000 doses have been produced to date, with purchase agreements in progress to ensure wide accessibility via 67 semen stations nationwide. By enabling farmers to reliably breed female calves, this innovation is expected to optimise dairy herd composition, reduce male calf wastage, and significantly enhance milk yields. It represents a major step toward self-reliance in agri-biotech while unlocking commercial benefits across India's dairy supply chain.

Editor

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- 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।
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Beyond Palmitic Acid:
A New Perspective on Bypass Fat for Dairy Performance

Dr Mukesh Sharma and Dr Kranti Sharma*
*Assistant Professor, Dau Shree Vasudev Chandrakar Kamdhenu Vishwavidyalaya, Anjora Durg, Chhattisgarh
"Dairy Guru"
Dairy Consultant Chhattisgarh

In today's dairy nutrition landscape, the focus is shifting from simply increasing milk fat to optimizing energy balance, improving fertility, and achieving sustainable productivity. Bypass fat—fat that escapes rumen fermentation and is digested in the small intestine—is a cornerstone in ration balancing for high-yielding cows. However, it's time to rethink the type of bypass fat we're feeding.

Currently, the industry primarily uses palm-based calcium soap and fractionated palmitic acid fats (C16:0). But emerging research and on-farm observations show that Balanced bypass fat, offers a more balanced, digestible, and cost-effective solution, particularly for tropical systems like India.

Not all bypass fats are equal. Their fatty acid profile affects:

- Digestibility in the small intestine
- Milk composition (volume vs. fat%)
- Metabolic balance during early lactation
- Reproductive performance

Thus, understanding and choosing the right type of bypass fat is essential for economic and physiological efficiency.

Types of Bypass Fat Available in Market

Calcium Soap Fat: High in C16:0 (Palmitic acid), boosts milk fat%, but limited digestibility and fertility impact. But energy level is limited and also high smell create palatability issue.

Fractionated Fat: 99% C16:0. Excellent for fat %, not for yield or reproductive improvement. High cost. But a good source of energy for high yielding dairy animals.

Comparative Table

Parameter	Fractionated Fat (99% C16:0)	Calcium Soap (87%)	Balanced By Fat (Balanced 99%)
Rumen Bypass (%)	High	High	High
Digestibility in Intestine	Moderate	Moderate	High
Milk Fat % Impact	Very High	High	Moderate
Milk Volume Impact	Low	Moderate	High
Fertility Impact	Neutral	Neutral to Negative	Positive
DMI Influence	Neutral/Negative	Decrease DMI	Increases DMI
Energy Partitioning	More to fat	Fat > yield	Balanced (yield + fertility)
Cost	High	Moderate	Low
Local Sourcing	No	Partially	Yes
Sustainable Use	Limited	Moderate	High

Balanced Bypass Fat: Balanced profile of C16:0, C18:1 (oleic), and C18:2 (linoleic). Better digestibility, DMI, and fertility support.

Fatty acid diversity supports energy partitioning, immune health, and fertility. Improved DMI leads to better total energy intake and rumen health. Fertility benefit from C18:1 and C18:2 supports hormonal function. Enhances milk yield and animal recovery post-calving. High palmitic fat have short term fat correction but no impact on fertility while balanced fatty acid profile will improve milk yield and fertility both which is major concern in high yielding dairy cows.

Role of different fatty acid for dairy cattle

1. Palmitic Acid (C16:0) –

Primary Role:

- Stimulates **milk fat synthesis** in the mammary gland
- Promotes energy-dense milk without interfering with rumen function (in bypass form)

Mode of Action:

- Directly used by the mammary epithelial cells for **de novo fat synthesis**
- Increases **milk fat percentage**, especially during peak lactation
- Less effective for improving DMI or fertility

2. Oleic Acid (C18:1) –

Primary Role:

- Supports **milk yield**, improves **palatability**, and enhances **fat digestibility**

Mode of Action:

- Increases **intestinal absorption** of fats
- Promotes **energy availability** for **body condition recovery**
- Modulates immune response and supports **liver metabolism**
- Crucial for **postpartum energy balance**, especially in negative energy status

Fertility Link:

- Enhances ovarian function and progesterone production
- Shown to improve **conception rates** in transition cows

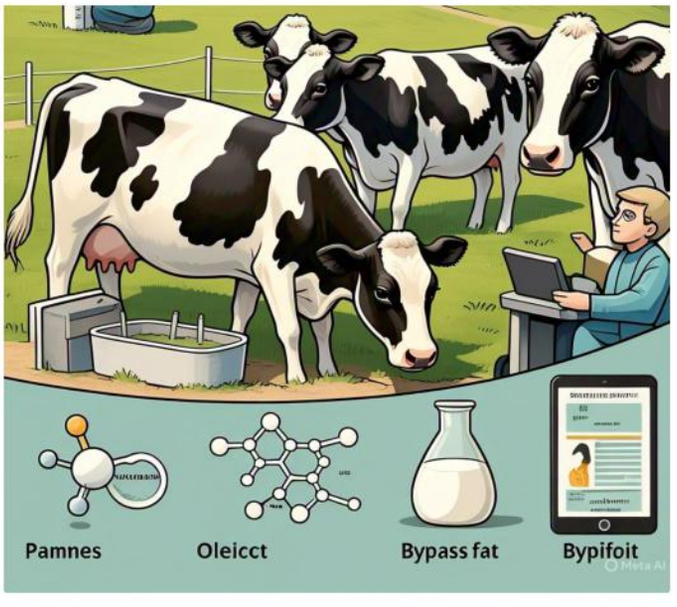
3. Linoleic Acid (C18:2, Omega-6) –

Primary Role:

- Key for **reproductive efficiency**, **immune regulation**, and **anti-inflammatory balance**

Mode of Action:

- Precursor of prostaglandins (PGs), which regulate **ovulation and uterine tone**



- Enhances **corpus luteum function** (increased progesterone levels)
- Modulates cytokine activity, supporting **immunity in early lactation**
- Promotes **estrus expression** and ovulation when energy corrected

4. Linolenic Acid (C18:3, Omega-3)

Primary Role:

- Anti-inflammatory, supports **fertility and uterine health**

Mode of Action:

- Balances Omega-6 effects, improving the **Omega-6:3 ratio**
- Reduces **uterine inflammation** and **embryonic loss**
- Enhances early **embryo development** and improves **placental function**

In short we can understand the following points

Fatty Acid	Action Area	Physiological Impact
C16:0	Mammary gland	Increases milk fat %
C18:1	Digestive tract, liver	Boosts digestibility, DMI, energy availability
C18:2	Reproductive tract	Improves conception, hormone synthesis
C18:3	Uterus, immune system	Reduces inflammation, supports embryo survival

Conclusion

The industry must move from 'fat-loading' to balanced energy correction. Balanced Bypass bypass fat offers a scientifically valid and field-tested alternative to expensive and metabolically limiting palm-based or fractionated fats.

For India and similar tropical markets, where cost, cow health, and fertility are interlinked, a balanced bypass fat formulation can provide optimal returns in liters, lactation performance, and long-term herd profitability.

- Unlike single-source or **fractionated C16:0 fats**, a **balanced bypass fat** provides **complementary fatty acids** that enhance:
- **Milk volume and fat %**
- **Dry matter intake (DMI)**
- **Postpartum recovery**
- **Reproductive performance**
- **Immune resilience**

पशु चिकित्सक होने का गर्व

बात उन दिनों की हैं, जब मैं खगड़िया के पशु चिकित्सालय चौथम में कार्यरत था। जिला खगड़िया! नदी नालों और झाड़ झाड़ियों से आच्छादित जिला! पशुपालन सम्पदा से सम्पन्न जिला! कहते है, खगड़िया जिला के अनेक स्थान का नाम किसी न किसी रूप में पशुपालन से जुड़ा हैं। खग, गौ गृह, महिष शब्दों से जुड़ा कुछ स्थान खगड़िया, गोगरी, महेशरखूँट, महेषलेट, उदाहरण स्वरूप उल्लेखनीय हैं। पशु चारा के अभाव वाले समय में गंगा के पार दक्षिणी क्षेत्र से पशु, चारागाह में चराने के लिए आज भी चौथम के पार बागमती और कोशी नदी के बीच वाले भूखंड में लाये जाते हैं। यात्रा के दौरान ये पशुपालक आज भी चौथम में ठहरते है। (चौथ–पशु आश्रयी)। उस समय चौथम का पदस्थापन पशुचिकित्सक समाज में संतोषप्रद नहीं माना जाता था। उस समय का चौथम आधुनिक सुख सुविधाओं से वंचित था। बिजली नहीं, हर वर्ष बाढ की संभावना, बेघर होते पशु और पशुपालक, घरेलु गैस का नामोनिशान नहीं, यातायात की दुर्गमता और उसपर पशुरोगों की भरमार। यह क्षेत्र आधुनिक सुख सुविधाओं से जितना विहीन था पशु धन सम्पदा से उतना ही परिपूर्ण। विशिष्ट स्वाद वाले दूध, दूध–उत्पादों तथा मछलियों के लिए यह क्षेत्र आज भी अपनी पहचान बनाये रखने में कामयाब है। पशुपालन यहां के लोगों के लिए जीविका का मुख्य स्त्रोत तब भी था, आज भी हैं। मेरे लिए तो यह स्थान कर्मभूमि ही सिद्ध हुआ, जिसने मुझे पशुचिकित्सा संबंधी कई अनुभवों को सहेजने का अवसर प्रदान किया।

डॉ॰ जय नारायण सिंह,
बी.भी. एससी एंड ए एच.एम.भी. एससी (वेट मेडिसिन) गेस्ट फैकल्टी, स्कोप ट्रेनिंग सेंटर, बेलदारी चक, पटना, बिहार

बागमति नदी की सुरक्षा बांध के किनारे स्थित था मेरा पशु चिकित्सालय। पशु चिकित्सालय के परिसर में खड़ा था एक घना, बड़ा सा बरगद का वृक्ष। गर्मी के दिनों में राहगिरों तथा प्रखंड में आये ग्रामीणों के लिए शीतलदायिनी वृक्ष अपनी सार्थकता पर गर्व महसूस करता दिखता था। चिकित्सालय के दैनिक कार्यों से निपटने के बाद इसी वट वृक्ष के नीचे अक्सर शाम कटती। वृक्ष के नीचे एक छोटी सी खाट बिछ जाती, एक छोटा सा टेबल लग जाता और सहयोगी कर्मियों साथ महफिल जम जाती। कभी कभार गाँव के युवाओं का भी साथ हो जाता तो संगीत की हल्की फुल्की लहरों से माहौल संगीतमय हो जाया करता। इसी मनोरंजन मयी माहौल में, लालटेन की रोशनी में अस्पताल के पंजियों, का मैं अद्यतन कर लिया करता। सो समय बड़े मजे में कट जाया करता।

ऐसी एक शाम। फरवरी–मार्च का महीना। जाड़े का समापन और ग्रीष्म के आगमन का आभास होने लगा था। हँसी खुशी के विनोदपुर्ण माहौल में समय धीरे–धीरे सरकता जा रहा था। रात्रि के करीब 9 बजे होगें। एक व्यक्ति परेशानी की हालत में अपने घायल घोड़े की चिकित्सा का अनुरोध लेकर आ धमका। घोड़े को बहियार के बथान में होने की बात बतायी गयी। रात्रि का समय, टूटी फूटी नाम मात्र कहने को सड़क वाला पथ, बहियार का उबड़–खाबड़ दुलर्भ रास्ता। बड़ी ही असमंजस की स्थिति थी। कर्त्तव्य–बोध, कुसमय और अज्ञात भय की आशंका से मन में अन्तर्द्वन्द उत्पन्न होने लगा। अंत में कर्त्तव्य–बोध की जीत हुयी और मैं अपने सरकारी सहयोगी कर्मी के साथ राजदूत मोटर साईकिल से चलने को तैयार हुआ। पत्नी की खामोश मुखाकृति बता रही थी कि इस समय जाना उचित नहीं है। बच्चे तो समझ ही नहीं पा रहे थे कि मामला क्या है। सबकुछ समझते हुए भी चल पड़ा अपने निर्दिष्ट स्थान की ओर। आगे–आगे पशु स्वामी साईकिल से, पीछे–पीछे मैं सहयोगी के साथ मोटरसाईकिल से। पशुस्वामी ने पूरी ताकत झोंक डाली थी साइकिल चलाने में। मैं भरपूर प्रयास करता कि मैं उनके पीछे ही रहूँ, सो कभी–कभी गति को विराम दिया करता था। खैर अंत में बहियार की झोपड़ी में पशुस्वामी के घायल घोड़े का इलाज के बाद लौटने की बारी थी। पशुस्वामी के अनुरोध के बावजूद भी मैं अकेले ही सहयोगी के साथ लौटने को तैयार हुआ। रात गहरी हो चली थी इसलिए पशुस्वामी को साथ लेना उचित नहीं समझा। पता नहीं वह किस चरित्र, स्वभाव का व्यक्ति है। कहीं उसके चलते मैं भी खतरे मे न आ जाऊँ। इसलिए अकेले ही लौटने का निर्णय लिया। फिर वही खेत, पगडंडियों का वहीं उबड़–खाबड़ कच्चा रास्ता। मोटर साईकिल को संभालते, अपने आप को संतुलन बनाये रखते, आखिर तथा कथित पक्की सड़क पर आ गया। रात कुछ ज्यादा ही गहरी हो चली थी। अंधियारे का साम्राज्य विस्तृत हो चला था। अपने कर्त्तव्य परायणता और चिकित्सा की सफलता पर मन शांत हो चला था। खुशी मन चला जा रहा था। अंधेरी रात में भी, भीड़भाड़ से दूर वाले खुले क्षेत्र में कुछ न कुछ प्रकाश का आभास हो ही जाता है। सड़क एक जगह थोड़ी मुड़ सी रही थी। सड़क के बगल में पीपल का पेड़ और उसके बगल में मिट्टी कटाव से स्थायी रूप से बन गया पानी से भरा पोखर। लोग उस स्थान को "भूतहा पीपल" के नाम से जानते थे। सो मेरे मन में भी तरह तरह के भाव उभर रहे थे, परन्तु घर पहूँचने की उत्सुकता और चिकित्सीय सफलता का गर्व अन्य भावों पर भारी पड़ रहा था।

तभी राजदूत मोटरसाईकिल की धीमी रोशनी और अज्ञात श्रोत से रात्रि की कालिमा को छेदते हलके प्रकाश में चार पांच व्यक्तियों के होने का आभास हुआ। पसीने की बूंदे चेहरे पर छा गयी। वद्हवासी की हालात में और तो कुछ नहीं देख पाया। सभी चादर आदि ओढे हुए थे। एक के कंधे पर टिका तो दूसरे के हाथ में लटका बन्दूक सा कुछ दिखा। बन्दूक ही था शायद। पता नहीं इस भय वाले माहौल में भी दिमाग कैसे काम कर गया और मैने मोटरसाईकिल का हेड लाइट को ऑफ कर दिया। बत्ती बुझते ही उधर से दो तीन टॉर्च की रोशनी मुझ पर डाल दी गयी। मेरी मोटरसाईकिल की गति लगभग शून्य सी हो गयी थी। पता नहीं भयवश या स्वतः, याद नहीं। अब तो चेहरे के पसीने का बिस्तार लगभग पूरे शरीर तक फैल गया था। सहसा, आश्चर्य और खुशी का ठिकाना नहीं रहा जब उस झूंड से ही आवाज आयी।–प्रणाम डॉक्टर साहब'। जान में जान आयी और मैं भी बोल उठा–'प्रणाम'। कहाँ से आ रहे हैं, "इतनी रात में" दोनो प्रश्न साथ साथ ही पूछा गया। मेरी खामोशी को वे लोग ताड़ गये और बोल बैठे "चलिए आप तो किसी के पशु का इलाज करके ही आ रहे होंगे" "निर्भीक चले जाइये" कहिए तो कुछ दूर छोड़ दूं" नहीं नहीं, हमलोग यहीं दो चार मिनट रूक जाते है" "आप जाइये"–सारे वाक्य एक के बाद एक वे कह गए। मेरी मोटरसाईकिल की स्पीड स्वतः बढती गयी और मैं विजय गर्व के साथ मन ही मन सीना फुलाये घर की ओर चल पड़ा।

एक बार पुनः पशुचिकित्सक होने का गर्व हुआ।

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ਗ਼ੈਰ-ਖੇਤੀ ਧੰਦਿਆਂ ਦਾ ਵੱਧਦਾ ਮਹੱਤਵ

ਸੁਖਦੀਪ ਸਿੰਘ, ਅਰਜਿੰਦਰ ਕੌਰ ਅਤੇ ਹਰਸਿਮਰਨ ਕੌਰ ਮਾਵੀ
ਆਰਥਿਕ ਅਤੇ ਸਮਾਜਿਕ ਵਿਭਾਗ
ਪੰਜਾਬ ਐਗਰੀਕਲਚਰਲ ਯੂਨੀਵਰਸਿਟੀ, ਲੁਧਿਆਣਾ-141004

ਪੰਜਾਬ ਇੱਕ ਖੇਤੀ ਪ੍ਰਧਾਨ ਸੂਬਾ ਹੈ ਅਤੇ ਮੁੱਢ ਤੋਂ ਹੀ ਇੱਥੇ ਖੇਤੀ ਨਾਲ ਸੰਬੰਧਤ ਗਤੀਵਿਧੀਆਂ ਦਾ ਮਹੱਤਵ ਰਿਹਾ ਹੈ। ਮੌਜੂਦਾ ਸਮੇਂ ਵਿੱਚ ਲਗਭਗ 24.64% ਪ੍ਰਤੀਸ਼ਤ ਲੋਕ ਰੋਜ਼ਗਾਰ ਲਈ ਖੇਤੀਬਾੜੀ ਅਤੇ ਸਹਾਇਕ ਧੰਦਿਆਂ ਤੇ ਨਿਰਭਰ ਹਨ ਅਤੇ ਰਾਜ ਦੀ ਕੁੱਲ ਆਮਦਨ ਦਾ 26.68 ਪ੍ਰਤੀਸ਼ਤ ਹਿੱਸਾ ਇਹਨਾਂ ਧੰਦਿਆਂ ਤੋਂ ਆ ਰਿਹਾ ਹੈ। ਪੰਜਾਬ ਹਰੀ ਕ੍ਰਾਂਤੀ ਦਾ ਮੋਢੀ ਹੋਣ ਕਰਕੇ ਪਿਛਲੇ ਚਾਰ ਤੋਂ ਵੱਧ ਦਹਾਕਿਆਂ ਤੋਂ ਹੀ ਖੇਤੀ ਦੇ ਨਵੀਨੀਕਰਣ ਨੂੰ ਅਪਣਾ ਰਿਹਾ ਹੈ। ਫ਼ਸਲਾਂ ਦੀਆਂ ਵਧੇਰੇ ਝਾੜ ਦੇਣ ਵਾਲੀਆਂ ਕਿਸਮਾਂ, ਰਸਾਇਣਕ ਖਾਦਾਂ ਅਤੇ ਸਿੰਚਾਈ ਸਾਧਨਾਂ ਦੀ ਸੁਚੱਜੀ ਵਰਤੋਂ ਸਦਕਾ ਪੰਜਾਬ ਦੇਸ਼ ਦਾ ਅੰਨ ਭੰਡਾਰ ਬਣਿਆ। ਅਨਾਜ ਖਾਸ ਕਰਕੇ ਕਣਕ ਅਤੇ ਝੋਨੇ ਵਿੱਚ ਪੰਜਾਬ ਦਾ ਵਧੇਰੇ ਯੋਗਦਾਨ ਰਿਹਾ ਹੈ। ਪਰ ਪਿਛਲੇ ਕੁੱਝ ਸਮੇਂ ਤੋਂ ਪ੍ਰਤੀ ਵਿਅਕਤੀ ਘਟਦੀ ਖੇਤੀ ਆਮਦਨ, ਖੇਤੀ ਪਰਿਵਾਰਾਂ ਤੇ ਵੱਧ ਰਿਹਾ ਕਰਜ਼ਾ, ਕਿਸਾਨਾਂ ਵੱਲੋਂ ਕੀਤੇ ਜਾ ਰਹੇ ਆਤਮਦਾਹ ਖੇਤੀ ਦੀ ਡਾਵਾਂ ਡੋਲ ਸਥਿਤੀ ਵੱਲ ਸੰਕੇਤ ਕਰਦੇ ਹਨ ।

ਖੇਤੀ ਤੇ ਵੱਧ ਰਹੇ ਖਰਚੇ ਦੇ ਕਈ ਕਾਰਣ ਹਨ। ਖੇਤੀ ਸੰਸਾਧਨਾਂ ਦੀਆਂ ਵੱਧ ਰਹੀਆਂ ਕੀਮਤਾਂ ਜਿਵੇਂ ਕਿ ਬੀਜ, ਕੀਟਨਾਸ਼ਕ ਰਸਾਇਣ, ਖਾਦਾਂ, ਡੀਜ਼ਲ ਅਤੇ ਕਾਮਿਆਂ ਦਾ ਖਰਚਾ (ਲੇਬਰ) ਆਦਿ ਇਸ ਤੋਂ ਹੋਣ ਵਾਲੇ ਮੁਨਾਫ਼ੇ ਨੂੰ ਪ੍ਰਭਾਵਿਤ ਕਰਦੇ ਹਨ। ਦੂਜੇ ਪਾਸੇ, ਝਾੜ ਵਿੱਚ ਆਈ ਖੜੋਤ ਅਤੇ ਫ਼ਸਲਾਂ ਦੀਆਂ ਕੀਮਤਾਂ ਵਿੱਚ ਮਾਮੂਲੀ ਵਾਧਾ ਕਿਸਾਨਾਂ ਦੀ ਆਮਦਨ ਨੂੰ ਬਹੁਤ ਨਹੀਂ ਵਧਾਉਂਦਾ। ਇਸ ਦੇ ਨਾਲ ਹੀ ਕਈ ਹੋਰ ਖਰਚੇ ਖੇਤੀ ਲਾਭ ਤੇ ਅਸਰ ਪਾਉਂਦੇ ਹਨ। ਧਰਤੀ ਹੇਠਲੇ ਪਾਣੀ ਦੇ ਡਿੱਗਦੇ ਪੱਧਰ ਕਾਰਨ ਹਰ ਦੂਹੀਂ-ਚੌਂਹੀ ਸਾਲੀਂ ਬੋਰ ਨੂੰ ਡੂੰਘਾ ਕਰਾਉਣਾ, ਵੱਧ ਰਹੇ ਮਸ਼ੀਨੀਕਰਨ ਕਰਕੇ ਨਵੇਂ ਸੰਦ ਖਰੀਦਣਾ ਜਾਂ ਕਿਰਾਏ ਤੇ ਲੈਣਾ, ਖਰੀਦ ਲਈ ਲਏ ਗਏ ਕਰਜ਼ੇ ਦੀ ਕਿਸ਼ਤ ਆਦਿ ਵੀ ਲਾਭ ਨੂੰ ਘਟਾਉਂਦੇ ਹਨ। ਨਾਲ ਹੀ ਵੱਧ ਰਹੇ ਘਰੇਲੂ ਖਰਚੇ, ਖੁਸ਼ੀ-ਗਮੀ ਦੇ ਸਮਾਗਮ, ਬੱਚਿਆਂ ਨੂੰ ਵਿਦੇਸ਼ ਭੇਜਣਾ, ਵੱਡੀਆਂ ਕਾਰਾਂ, ਵੱਡੀਆਂ ਕੋਠੀਆਂ, ਮਹਿੰਗੀਆਂ ਕਾਰਾਂ ਆਦਿ ਕਿਸਾਨ ਪਰਿਵਾਰ ਦੀ ਪੂਰੀ ਨਹੀਂ ਪੈਣ ਦਿੰਦੇ। ਇਸੇ ਸੰਬੰਧ ਵਿੱਚ ਗ਼ੈਰ-ਖੇਤੀ ਧੰਦਿਆਂ ਦਾ ਬਹੁਤ ਮਹੱਤਵ ਹੈ, ਖਾਸ ਕਰਕੇ ਸੀਮਾਂਤ ਅਤੇ ਛੋਟੇ ਕਿਸਾਨ ਪਰਿਵਾਰ ਇਨ੍ਹਾਂ ਉੱਤੇ ਵਧੇਰੇ ਨਿਰਭਰ ਹਨ। ਪੰਜਾਬ ਖੇਤੀਬਾੜੀ ਯੂਨੀਵਰਸਿਟੀ, ਲੁਧਿਆਣਾ ਵਿਖੇ ਇਸੇ ਸੰਬੰਧ ਵਿੱਚ ਕੀਤੇ ਗਏ ਇੱਕ ਅਧਿਐਨ ਤੋਂ ਇਹ ਗੱਲ ਸੱਪਸ਼ਟ ਹੋ ਕਿ ਸਾਹਮਣੇ ਆਈ ਹੈ ਕਿ ਛੋਟੇ ਕਿਸਾਨ ਖੇਤੀ ਦੇ ਨਾਲ ਸਹਾਇਕ ਧੰਦੇ ਜਿਵੇਂ ਕਿ ਮੁਰਗੀ ਪਾਲਣ, ਪਸ਼ੂ ਪਾਲਣ ਤੋਂ ਵੀ ਕੁੱਲ ਆਮਦਨ ਦਾ ਕਾਫ਼ੀ ਹਿੱਸਾ ਪ੍ਰਾਪਤ ਕਰ ਰਹੇ ਹਨ। ਗ਼ੈਰ-ਖੇਤੀ ਧੰਦਿਆਂ ਵਿੱਚ ਨੌਕਰੀ, ਸਰਕਾਰੀ ਜਾਂ ਪ੍ਰਾਈਵੇਟ ਅਤੇ ਛੋਟੇ ਪੱਧਰ ਦੇ ਵਪਾਰ/ਦੁਕਾਨ ਆਦਿ ਸ਼ਾਮਿਲ ਹਨ। ਜਦੋਂ ਕਿ ਵੱਡੇ ਕਿਸਾਨ ਆਮਦਨ ਦਾ ਵਧੇਰੇ ਹਿੱਸਾ ਖੇਤੀ ਤੋਂ ਹੀ ਪ੍ਰਾਪਤ ਕਰ ਰਹੇ ਹਨ।

ਇਸੇ ਤਰ੍ਹਾਂ ਹੀ ਰੋਜ਼ਗਾਰ ਲਈ ਵੀ ਛੋਟੇ ਕਿਸਾਨ (20%) ਨੌਕਰੀਆਂ ਤੇ ਵਧੇਰੇ ਕਰਕੇ ਨਿੱਜੀ ਖੇਤਰ ਵਿੱਚ ਲੱਗੇ ਹੋਏ ਹਨ। ਜਦੋਂਕਿ ਮੱਧਮ ਅਤੇ ਵੱਡੇ ਕਿਸਾਨ ਪਰਿਵਾਰ ਵਪਾਰ ਜਾਂ ਦੁਕਾਨਦਾਰੀ ਆਦਿ ਗ਼ੈਰ-ਖੇਤੀ ਕਿੱਤਿਆਂ ਵਿੱਚ ਹਨ ਅਤੇ ਗ਼ੈਰ ਖੇਤੀ ਆਮਦਨ ਦਾ ਵੱਡਾ ਹਿੱਸਾ ਵਿਦੇਸ਼ਾਂ ਤੋਂ ਭੇਜੀ ਗਈ ਰਕਮ ਤੋਂ ਵੀ ਪ੍ਰਾਪਤ ਕਰ ਰਹੇ ਹਨ।

ਕੀਤੇ ਗਏ ਸਰਵੇਖਣ ਵਿੱਚ ਕਿਸਾਨ ਪਰਿਵਾਰਾਂ ਨੇ ਖਾਸ ਕਰਕੇ ਛੋਟੀ ਸ਼੍ਰੇਣੀ ਨੇ ਇਨ੍ਹਾਂ ਗ਼ੈਰ-ਖੇਤੀ ਧੰਦਿਆਂ ਨੂੰ ਚੰਗਾ ਮੰਨਿਆ ਹੈ। ਇਨ੍ਹਾਂ ਨੂੰ ਉਪਨਾਉਣ ਨਾਲ ਵਧੀ ਹੋਈ ਆਮਦਨ, ਚੰਗਾ ਰਹਿਣ ਸਹਿਣ ਅਤੇ ਸਮਾਜਿਕ ਰੁਤਬੇ ਵਿੱਚ ਵੀ ਵਾਧਾ ਹੁੰਦਾ ਹੈ। ਕਈ ਧੰਦਿਆਂ ਵਿੱਚ ਘਰ ਦੀਆਂ ਔਰਤਾਂ ਦੀ ਵੀ ਸ਼ਮੂਲੀਅਤ ਹੋਣ ਕਾਰਨ ਉਨ੍ਹਾਂ ਨੂੰ ਵੀ ਰੋਜ਼ਗਾਰ ਦੇ ਮੌਕੇ ਉਪਲੱਬਧ ਹੋ ਜਾਂਦੇ ਹਨ ਜਿਵੇਂ ਕਿ ਪਸ਼ੂ ਪਾਲਣ, ਮੁਰਗੀ ਪਾਲਣ ਆਦਿ।

BUFERON™

A natural rumen pH regulator

JAYSONS Agritech
A ZEUS Group Company

ਸਰਕਾਰੀ ਜਾਂ ਨਿੱਜੀ ਖੇਤਰ ਤੋਂ ਇਲਾਵਾ ਆਪਣੇ ਕੰਮ ਜਿਵੇਂ ਕਿ ਬਿਊਟੀ ਪਾਰਲਰ, ਕੱਪੜੇ ਡਿਜ਼ਾਇਨ ਵਾਲੇ ਬੂਟੀਕ, ਅਚਾਰ/ਮੁਰੱਬੇ ਅਤੇ ਮਸਾਲਿਆਂ ਆਦਿ ਨੇ ਔਰਤਾਂ ਨੂੰ ਆਰਥਿਕ ਪੱਖੋਂ ਬਹੁਤ ਮਜ਼ਬੂਤ ਕੀਤਾ ਹੈ ਅਤੇ ਘਰਾਂ ਵਿੱਚ ਉਨ੍ਹਾਂ ਦੀ ਇਜ਼ਤ ਵਧਾਈ ਹੈ। ਗ਼ੈਰ ਖੇਤੀ ਧੰਦੇ ਅਪਨਾਉਣ ਵਾਲੇ ਸਿਰਫ ਖੇਤੀ ਤੇ ਨਿਰਭਰ ਘਰਾਂ ਦੇ ਵਿੱਚ ਹਰ ਪੱਖ ਤੇ ਤੁਲਨਾ ਭਾਵੇਂ ਉਹ ਪੜ੍ਹਾਈ ਹੋਵੇ, ਸਿਹਤ ਹੋਵੇ, ਖਾਣ ਪੀਣ, ਨਿਵੇਸ਼ ਜਾਂ ਸਮਾਜਿਕ ਰਸਮਾਂ ਤੇ ਵਧੇਰੇ ਖਰਚਾ ਕਰਦੇ ਹਨ।

ਪੰਜਾਬ ਦੀ ਖੇਤੀ ਵਿੱਚ ਸੰਸਾਧਨਾਂ ਦੀ ਵੱਧਦੀ ਕੀਮਤ, ਫ਼ਸਲਾਂ ਦੀਆਂ ਕੀਮਤਾਂ ਵਿੱਚ ਨਾ-ਬਰਾਬਰ ਵਾਧਾ, ਇਕੱਲੀ ਖੇਤੀ ਆਮਦਨ ਤੇ ਨਿਰਭਰਤਾ ਖੇਤੀ ਸੰਕਟ ਵੱਲ ਸੰਕੇਤ ਕਰਦੀ ਹੈ। ਇਹ ਸੰਕਟ ਛੋਟੇ ਅਤੇ ਸੀਮਾਂਤ ਕਿਸਾਨਾਂ ਦੀ ਸ਼੍ਰੇਣੀ ਵਿੱਚ ਵਧੇਰੇ ਹੈ। ਇਸੇ ਲਈ ਉਨ੍ਹਾਂ ਨੂੰ ਸਹਾਇਕ ਧੰਦੇ ਅਤੇ ਨਾਲ ਹੀ ਗ਼ੈਰ ਖੇਤੀ ਕਿੱਤੇ ਅਪਨਾਉਣ ਦੀ ਵਧੇਰੇ ਲੋੜ ਹੈ।

ਪਰ ਇਸ ਸੁਝਾਅ ਤੇ ਅਮਲ ਕਰਨ ਵਿੱਚ ਕੁੱਝ ਵੱਡੀਆਂ ਔਕੜਾਂ ਪੇਸ਼ ਆਉਂਦੀਆਂ ਹਨ। ਸਭ ਤੋਂ ਪਹਿਲਾਂ ਕਿਸਾਨ ਪਰਿਵਾਰਾਂ ਦੇ ਜੀਆਂ ਨੂੰ ਆਪਣੇ ਆਪ ਨੂੰ ਕੋਈ ਮਿਹਨਤ ਵਾਲਾ ਹੱਥੀਂ ਕੰਮ ਕਰਨ ਲਈ ਤਿਆਰ ਕਰਨਾ ਹੈ। ਸਮਾਜਿਕ ਤੌਰ ਤੇ ਵੀ ਅੱਜ ਦੇ ਸਮੇਂ ਵਿੱਚ ਸਿਰਫ਼ ਮੇਜ਼ ਤੇ ਬੈਠਣ (Desk Job) ਵਾਲੀਆਂ ਨੌਕਰੀਆਂ ਨੂੰ ਹੀ ਚੰਗਾ ਸਮਝਿਆ ਜਾਂਦਾ ਹੈ। ਇਸ ਲਈ ਨੌਜਵਾਨ ਨਿੱਜੀ ਖੇਤਰ ਦੇ ਵਿੱਚ ਹੱਥੀਂ/ਮਸ਼ੀਨੀ ਕੰਮ ਲਈ ਰਾਜੀ ਨਹੀਂ ਹੁੰਦੇ।

ਅਜੋਕੇ ਸਮੇਂ ਵਿੱਚ ਬਹੁਤ ਸਾਰੇ ਕੰਮ ਕੰਪਿਊਟਰ ਅਤੇ ਇੰਟਰਨੈੱਟ ਨਾਲ ਹੋ ਰਹੇ ਹਨ। ਪਰ ਬਹੁਤ ਸਾਰੇ ਕਿਸਾਨ ਪਰਿਵਾਰ ਦੇ ਬੱਚੇ ਇਸ ਲਈ ਲੋੜੀਂਦੀ ਤਕਨੀਕ ਵਿੱਚ ਮਾਹਿਰ ਨਹੀਂ ਹੁੰਦੇ ਅਤੇ ਰੋਜ਼ਗਾਰ ਦੇ ਚੰਗੇ ਮੌਕਿਆਂ ਤੋਂ ਖੁੰਝ ਜਾਂਦੇ ਹਨ ।

ਗ਼ੈਰ ਖੇਤੀ ਕੰਮਾਂ ਵਿੱਚ ਦੁਕਾਨ/ਵਪਾਰ ਦਾ ਵੀ ਬਹੁਤ ਮਹੱਤਵ ਹੈ। ਪਰ ਖੇਤੀ ਪਰਿਵਾਰਾਂ ਵਿੱਚ ਇਸ ਲਈ ਲੋੜੀਂਦੀ ਪੂੰਜੀ ਅਤੇ ਤਜ਼ਰਬੇ ਦੀ ਘਾਟ ਹੁੰਦੀ ਹੈ ਅਤੇ ਇਸ ਕੰਮ ਲਈ ਉਹ ਬਾਹਰੋਂ ਕਰਜ਼ਾ ਲੈਣ ਤੋਂ ਝਿਜਕਦੇ ਹਨ। ਨਵੇਂ ਕੰਮ ਵਿੱਚ ਜੋਖਿਮ ਹੋਣ ਕਾਰਨ ਜ਼ਿਆਦਾ ਨਿਵੇਸ਼ ਤੋਂ ਡਰਦੇ ਹਨ। ਪਹਿਲਾਂ ਹੀ ਉਨ੍ਹਾਂ ਤੇ ਖੇਤੀ ਲਈ ਲਏ ਗਏ ਕਰਜ਼ੇ ਦਾ ਬੋਝ ਹੁੰਦਾ ਹੈ ।

ਪਿਛਲੇ ਕਈ ਦਹਾਕਿਆਂ ਤੋਂ ਪੰਜਾਬ ਉਦਯੋਗਿਕ ਵਿਕਾਸ ਵਿੱਚ ਪੱਛੜ ਗਿਆ ਹੈ। ਪੇਂਡੂ ਖੇਤਰਾਂ ਦੇ ਨੇੜੇ ਕੋਈ ਬਹੁਤੀਆਂ ਫੈਕਟਰੀਆਂ ਨਹੀਂ ਲੱਗੀਆਂ, ਜਿਸ ਤੋਂ ਕਿ ਨੇੜੇ ਦੇ ਨੌਜਵਾਨਾਂ ਨੂੰ ਰੋਜ਼ਗਾਰ ਮਿਲ ਸਕੇ। ਜਿਹੜਾ ਕੰਮ ਫੈਕਟਰੀਆਂ ਵਿੱਚ ਸਰੀਰਕ ਬਲ ਨਾਲ ਹੁੰਦਾ ਹੈ ਪੰਜਾਬੀ ਨੌਜਵਾਨ ਉਸ ਵਿੱਚ ਘੱਟ ਰੁਚੀ ਦਿਖਾਉਂਦੇ ਹਨ ਅਤੇ ਘਰੋਂ ਦੂਰ ਜਾ ਕੇ ਕੰਮ ਕਰਨ ਤੋਂ ਵੀ ਗੁਰੇਜ਼ ਕਰਦੇ ਹਨ। ਘਰਦਿਆਂ ਤੋਂ ਵੀ ਉਨ੍ਹਾਂ ਨੂੰ ਇਸ ਤਰ੍ਹਾਂ ਜਾਂ ਕੋਈ ਨਵਾਂ ਕੰਮ ਕਰਨ ਲਈ ਕੋਈ ਬਹੁਤੀ ਹੱਲਾਸ਼ੇਰੀ ਨਹੀਂ ਦਿੱਤੀ ਜਾਂਦੀ। ਇਨ੍ਹਾਂ ਸਾਰੇ ਕਾਰਨਾਂ ਕਰਕੇ ਸਾਡੇ ਪਿੰਡਾਂ ਦੇ ਇਲਾਕਿਆਂ ਵਿੱਚ ਗ਼ੈਰ-ਖੇਤੀ ਕੰਮਾਂ ਦੀ ਘਾਟ ਹੈ ।

ਪਰ ਸਮੇਂ ਮੁਤਾਬਕ ਇਨ੍ਹਾਂ ਔਕੜਾਂ ਨੂੰ ਦੂਰ ਕਰਨ ਦੀ ਵੱਡੀ ਲੋੜ ਹੈ। ਇਸ ਲਈ ਕਿਸਾਨੀ ਪਰਿਵਾਰਾਂ ਨੂੰ ਵਧੇਰੇ ਜਾਗਰੂਕ ਕਰਨ ਦੀ ਲੋੜ ਹੈ ਤਾਂ ਜੋ ਉਹ ਵੱਖ-ਵੱਖ ਕਿੱਤਿਆਂ ਲਈ ਟ੍ਰੇਨਿੰਗਾਂ ਵਿੱਚ ਵੱਧ-ਚੜ੍ਹ ਕੇ ਹਿੱਸਾ ਲੇਣ ਅਤੇ ਇਨ੍ਹਾਂ ਨੂੰ ਅਪਨਾਉਣ ਲਈ ਕਦਮ ਚੁੱਕਣ। ਵਧੇਰੇ ਰੋਜ਼ਗਾਰ ਨੂੰ ਮੌਕੇ ਮੁਹੱਈਆ ਕਰਾਉਣ ਲਈ, ਪਿੰਡਾਂ ਦੇ ਨੇੜੇ ਲਘੂ ਉਦਯੋਗ ਸਥਾਪਿਤ ਕਰਨ ਦੀ ਲੋੜ ਹੈ। ਸਭ ਤੋਂ ਵੱਡੀ ਲੋੜ ਹੈ, ਮਾਪਿਆਂ ਦੀ ਮਾਨਸਿਕਤਾ ਬਦਲਣ ਦੀ, ਤਾਂ ਜੋ ਉਹ ਆਪਣੇ ਬੱਚਿਆਂ ਨੂੰ ਵੱਖ-ਵੱਖ ਧੰਦੇ ਅਪਨਾਉਣ ਲਈ ਉਤਸ਼ਾਹਿਤ ਕਰਨ। ਨਵੇਂ ਕੰਮਾਂ ਵਿੱਚ ਜੋਖਿਮ ਘਟਾਉਣ ਲਈ ਸਵੈ-ਸਹਾਇਤਾ ਸਮੂਹ (SHGs) ਜਾਂ ਕਿਸਾਨ ਉਤਪਾਦਨ ਕੰਪਨੀਆਂ (FPOs) ਨੂੰ ਉਤਸ਼ਾਹਿਤ ਕਰਨ ਦੀ ਲੋੜ ਹੈ। ਇਸ ਵਿੱਚ ਗ਼ੈਰ ਸਰਕਾਰੀ ਸੰਸਥਾਵਾਂ (NGOs) ਜਾਂ ਕ੍ਰਿਸ਼ੀ ਵਿਗਿਆਨ ਕੇਂਦਰ (KVKs) ਵੱਡੀ ਭੂਮਿਕਾ ਨਿਭਾ ਸਕਦੇ। ਬੈਂਕਾਂ ਦੁਆਰਾ ਵੱਖ-ਵੱਖ ਇਲਾਕਿਆਂ ਦੇ ਸਰਵੇ ਮੁਤਾਬਕ ਚੋਣਵੀਆਂ ਕਿਰਿਆਵਾਂ ਲਈ ਵਧੇਰੇ ਕਰਜ਼ੇ ਦੀ ਸਹੂਲਤ ਹੋਣੀ ਚਾਹੀਦੀ ਹੈ। ਗ਼ੈਰ-ਖੇਤੀ ਧੰਦਿਆਂ ਵਿੱਚ ਆਮ ਅਤੇ ਤਕਨੀਕੀ ਸਿੱਖਿਆ ਦੇ ਮਹੱਤਵ ਕਰਕੇ, ਪ੍ਰਾਂਤ ਵਿੱਚ ਸਿੱਖਿਆ ਪ੍ਰਣਾਲੀ ਨੂੰ ਇਸ ਪਾਸੇ ਵੱਲ ਮਜ਼ਬੂਤ ਕਰਨ ਦੀ ਲੋੜ ਹੈ ਤਾਂ ਜੋ ਲੋਕ ਵਧੇਰੇ ਕੁਸ਼ਲ ਅਤੇ ਹੁਨਰਮੰਦ ਹੋਣ ਅਤੇ ਅਜੋਕੇ ਸਮੇਂ ਦੀ ਲੋੜ ਮੁਤਾਬਿਕ ਇਨ੍ਹਾਂ ਧੰਦਿਆਂ ਨੂੰ ਅਪਨਾ ਕੇ ਆਪਣੀ ਜੀਵਨ ਸ਼ੈਲੀ ਦਾ ਪੱਧਰ ਉੱਚਾ ਚੁੱਕ ਸਕਣ।

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Mycotoxin risk management through 3D Approach in Dairy Animals

By- Dr. Amit Kumar, Manager Dairy Nutritionist, Trouw Nutrition South Asia

Mycotoxin are the secondary metabolites produced during fungal growth and mycotoxicosis is the condition which occurs when these mycotoxins are consumed by the animals and produce adverse effects. As we all know Dairy animals are fed the most diversified diet including concentrates, forages and silages which makes dairy animals more vulnerable to mycotoxicosis, Also the diagnosis of mycotoxicosis in ruminant animals is more difficult due to nonspecific symptoms.

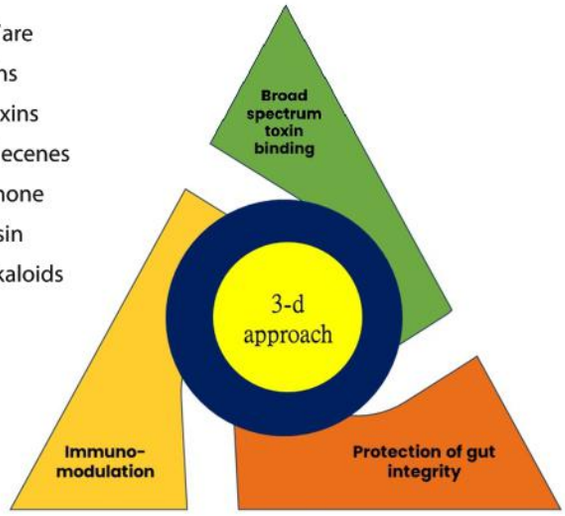
Production of mycotoxin starts from infield fungal growth on the plant then subsequently added on by improper handling and management of feed raw material like cereal grains and seed cakes during transportation & storage. Various Steps of feed production in feed milling operation are the critical points and may be responsible for further fungal growth. The finished feed storage and hygiene also play an important role in fugal growth since high moisture and temperature favours fungal growth.

Non availability of conventional raw material and the rising cost of raw materials increases the demand for unconventional feed ingredients, which are relatively more contaminated with mycotoxins than their parent grains and oil seeds.

More than 600 mycotoxins are being produced by various species & strains of fungus especially fungal species belonging to *Aspergillus., Fusarium & Penicillium* Among these "Big 6" mycotoxins are Studied extensively -and more efforts should be made to understand the negative effects of other mycotoxins also.

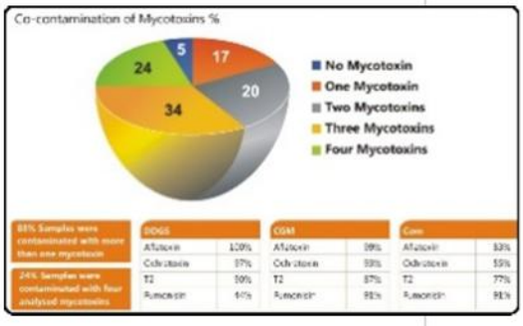
The "Big 6" are

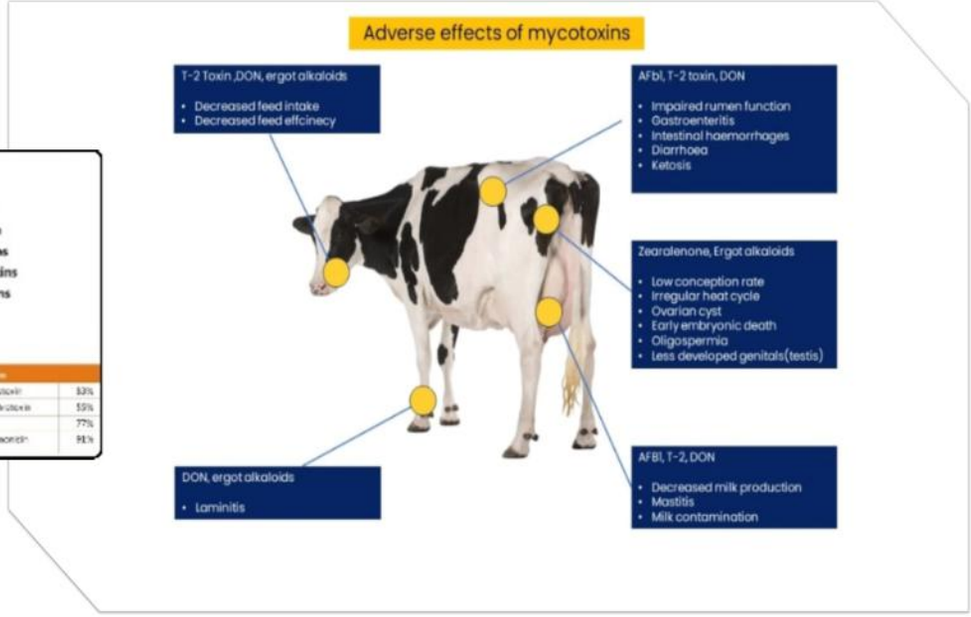
1. Aflatoxins
2. Ochratoxins
3. Trichothecenes
4. Zearalenone
5. Fumonisin
6. Ergot alkaloids



Recently conducted research has shown that more than 78% percent of animal feed samples were contaminated with more than one mycotoxin.

These mycotoxins after reaching the intestine damage the intestinal cells and then gets absorbed into the blood stream and reaches to various organs like liver, kidney and other immune organs and produces adverse effect and damage. Additionally, it also increases somatic cell counts which further predisposes dairy animals for subclinical & clinical mastitis.





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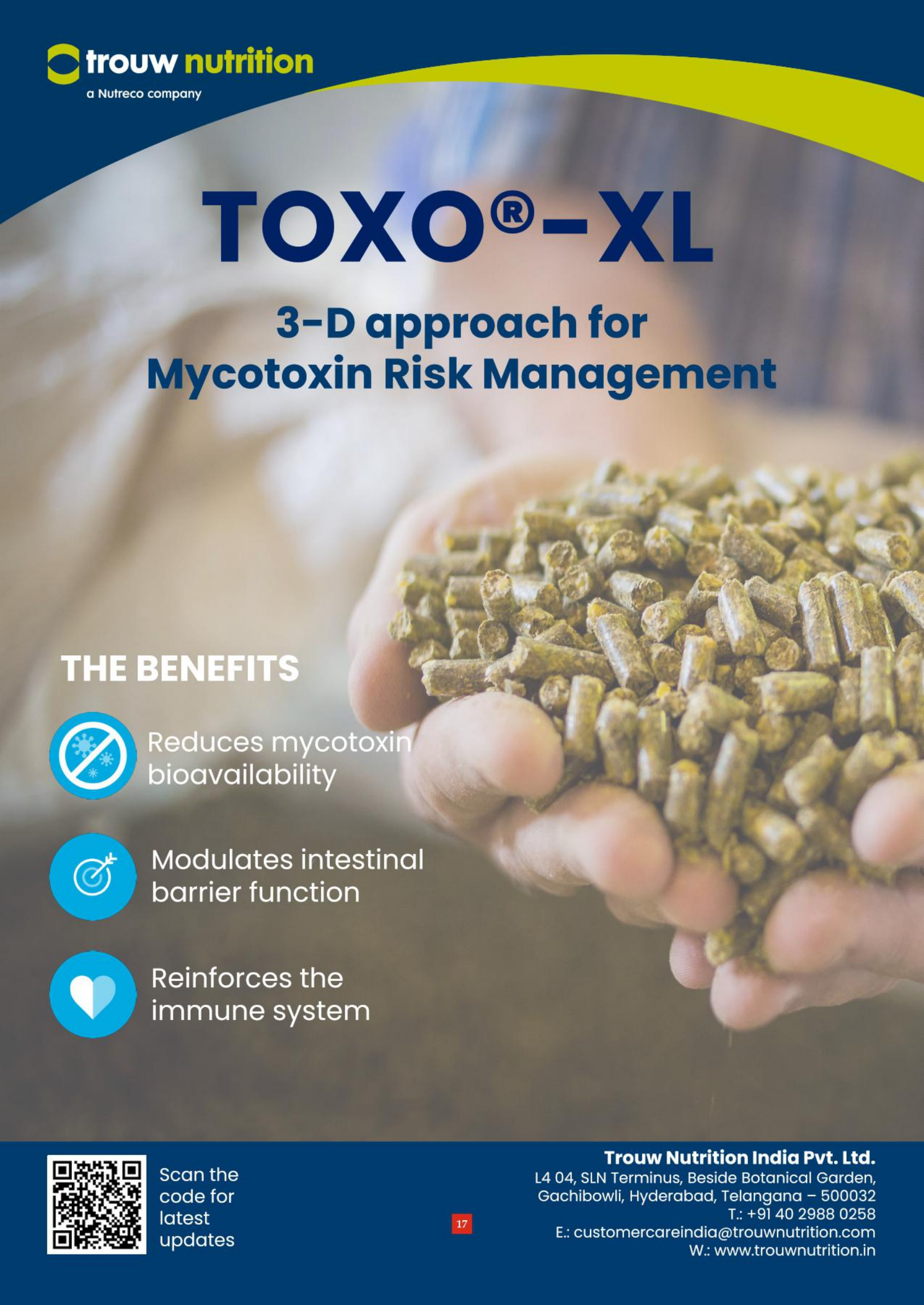
3-D approach for Mycotoxin Risk Management



THE BENEFITS

- Reduces mycotoxin bioavailability
- Modulates intestinal barrier function
- Reinforces the immune system

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Major impact of these mycotoxins starts from intestine because this is the organ which is responsible for nutrient absorption and immunity. They cause damage to intestinal cells; villi and the tight junctions present in-between two intestinal cells. This can further lead to enteritis, diarrhoea, poor nutrients absorption and ultimately loss of body condition and productivity. Increased translocation of pathogens via intestinal cells can also increase incidences of subclinical and clinical mastitis.

It is also known that mycotoxin binding approach alone is not sufficient for effective mycotoxin risk management. Although a good quality bentonite can bind aflatoxins, ergot toxins and bacterial toxins, their binding efficacy against T-2 toxin, zearalenone and ochratoxins is moderate. On top of this, bentonites are ineffective against DON and fumonisin, which are the major global challenge today. As a result, we believe in 3D approach for effective and holistic mycotoxin risk management.

This 3D approach includes.

1. Potential binding of mycotoxins in the intestine to avoid damage to the intestinal integrity.
2. Strategy to strengthen gut integrity & tight junctions which are responsible for extracellular nutrient absorption and prevents toxins & pathogen entry.
3. Modulation of immune response against the mycotoxins.

Toxo-XL, a broad-spectrum mycotoxin binder from Trouw Nutrition, has been scientifically proven to protect animals against multiple mycotoxins through 3D mechanisms. It has unique combination of highly effective smectite bentonites that can bind multiple mycotoxins and prevent their entry into the blood stream. As a result, it prevents the negative effects of mycotoxins on various organs. Glucose biopolymers of yeast origin helps in maintaining gut integrity and health of tight junction proteins, which are responsible for preventing the entry of toxins & pathogens into blood stream. This ultimately reduces the incidences of enteritis & diarrhoea. Third component, the patented purified beta glucans from selected strains of yeast, improve the innate immunity of animals ultimately leading to better protection against pathogens. Such an effect can also reduce somatic cell counts in milk, which is an important parameter of milk quality across the globe.

Conclusion

Latest research conducted on mycotoxins indicates that mycotoxin contamination of concentrates, forages and TMR of dairy cows is substantial and if proper attention is not given, the economic losses can be very high. Research has also shown that mycotoxin binding approach alone is not sufficient to manage multiple mycotoxin risk in animals.

It is important to adapt multiple mode of actions to effectively manage mycotoxins. We believe that combining an effective smectite bentonite with gut health and immunity modulators, called as 3D approach, will provide a complete and sustainable protection against multiple mycotoxins.

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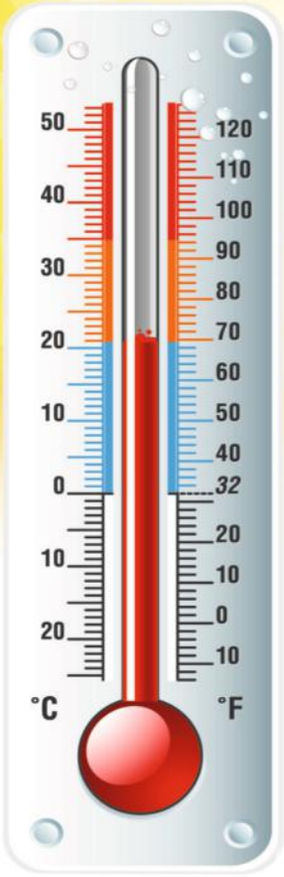

...LEVUCELL®SC maximizes milk production during heat stress

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€ 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.

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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.

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- 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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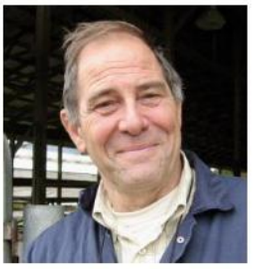

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What SEC Members Have to Say

Dr. Sharad Durge, PhD
Manager Formulation & Technical Services India

The main objective of joining SEC India Dairy Basic Course, was to enrich my knowledge on practical aspect and learn worldwide dairy practices followed for quality milk production.I really enjoyed self-paced course because of time flexibility to learn and complete the course. Also it was really great interacting with the experts in real time to clear my doubts by asking multiple question.I encourage budding professionals to involve more in the activity to get benefit of the online courses as well as seminars orgnised with very unique topics and distinguish experts.

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कृषि-पारिस्थितिक भू-दृश्य: पुष्पकृषि पद्धतियों के माध्यम से चारा उत्पादन में वृद्धि

जलवायु परिवर्तन और सतत कृषि प्रथाओं की बढ़ती मांगों के मद्देनजर, कृषि–पर्यावरणीय भू–दृश्य (एग्रो–इकोलॉजिकल लैंडस्केपिंग) की अवधारणा एक आशाजनक दृष्टिकोण के रूप में उभर रही है (सिनक्लेयर, एट अल., 2019)। परंपरागत रूप से, पुष्पकृषि और चारा उत्पादन को दो अलग–अलग उद्यमों के रूप में देखा जाता रहा है (राबिया, 2024)। दृ एक का उद्देश्य सुंदरता और सौंदर्यात्मक मूल्य पर केंद्रित होता है, जबकि दूसरा पशुपालन के पोषण और उत्पादकता को बढ़ाने पर आधारित होता है।

हालांकि, चारा उत्पादन के भू–दृश्यों में पुष्पकृषि प्रथाओं को एकीकृत करने से ऐसे बहुआयामी प्रणालियाँ बन सकती हैं जो न केवल पशुपालन के लिए चारा प्रदान करती हैं, बल्कि मिट्टी के स्वास्थ्य, जैव विविधता और ग्रामीण आजीविका में भी योगदान देती हैं (फ्रांजल्यूबर्स – मार्टिन, 2022)।

यह लेख इस बात पर प्रकाश डालता है कि किस प्रकार सजावटी पौधे और भू–दृश्य तकनीकें चारा उत्पादन को बढ़ाने में सहायक हो सकती हैं, साथ ही कृषि प्रणालियों को सौंदर्यात्मक रूप से आकर्षक और पारिस्थितिक रूप से सुदृढ़ बना सकती हैं। कुछ फूलों वाले पौधों और सजावटी घासों की दोहरी भूमिका का उपयोग करके, किसान और भू–दृश्य डिजाइनर ऐसी प्रणालियों को तैयार कर सकते हैं जो सौंदर्य–वर्धन और सतत पशुपालन पोषण के दोहरे लक्ष्यों को पूरा करती हैं।

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कृषि–पर्यावरणीय भू–दृश्य को समझना

कृषि–पर्यावरणीय भू–दृश्य (एग्रो–इकोलॉजिकल लैंडस्केपिंग) का तात्पर्य है कृषि भूमि को प्राकृतिक पारिस्थितिकी तंत्रों की तरह डिजाइन और प्रबंधित करना। इसमें कृषि–पर्यावरण के सिद्धांत जैसे कि जैव विविधता, पोषक चक्रण और पारिस्थितिक संतुलन को भू–दृश्य डिजाइन प्रथाओं के साथ मिलाकर बहु–उद्देशीय कृषि क्षेत्र तैयार किए जाते हैं (मंडल – पलीत, 2021)।

मुख्य सिद्धांतों में शामिल हैं:

विविधता: विभिन्न कार्यों (सौंदर्य, पोषण, पारिस्थितिक) को पूरा करने वाली विभिन्न पौध प्रजातियों को शामिल करना।

मृदा और जल संरक्षण: पौधों की जड़ों का उपयोग करके कटाव को कम करना, मृदा संरचना को सुधारना और नमी बनाए रखना।

आवास संवर्धन: परागणकर्ताओं और लाभकारी कीटों के लिए संसाधन उपलब्ध कराना।

सतत संसाधन उपयोग: रासायनिक इनपुट को न्यूनतम रखना और पारिस्थितिकी तंत्र सेवाओं का अधिकतम लाभ उठाना।

इन सिद्धांतों को इस तरह लागू किया जा सकता है कि पुष्पकृषि और चारा उत्पादन दोनों को पशुपालन और पर्यावरण के हित में एकीकृत किया जा सके।

चारा संवर्धन के लिए पुष्पकृषि का उपयोग

पुष्पकृषि में विभिन्न प्रकार की पौध प्रजातियाँ शामिल होती हैं, जिनमें से कई में चारे की क्षमता होती है या वे चारा पारिस्थितिकी तंत्र का समर्थन करती हैं। भू–दृश्य में आमतौर पर प्रयुक्त कुछ सजावटी पौधे और घासें उच्च गुणवत्ता वाला चारा भी प्रदान कर सकती हैं (घेवारे एट अल., 2025)।

उदाहरण:

सजावटी घासें: जैसे च्मददपेमजनउ चनतचनतमनउ (नेपियर घास), Miscanthus giganteus और Cenchrus ciliaris न केवल दृश्यात्मक रूप से आकर्षक हैं, बल्कि उत्कृष्ट चारा भी हैं।

दलहनी पुष्प पौधे: जैसे क्लोवर (Trifolium spp.), अल्फाल्फा (Medicago sativa) और ल्यूपिन्स (Lupinus spp.)। ये अपने सुंदर फूलों के लिए प्रसिद्ध हैं और उच्च प्रोटीन युक्त चारा भी प्रदान करते हैं।

परागणकर्ता–अनुकूल फूल: सूरजमुखी (Helianthus annuus), गेंदा (Tagetes spp.) और कॉसमॉस (Cosmos bipinnatus) जैसे पौधे परागणकर्ताओं को समर्थन प्रदान करते हैं, जिससे चारा फसलों के परागण और मृदा उर्वरता में अप्रत्यक्ष रूप से सुधार होता है।

झाड़ियाँ और बाड़: Leucaena leucocephala और Gliricidia sepium जैसी सजावटी झाड़ियाँ आकर्षक बाड़ के रूप में विकसित की जा सकती हैं, जबकि ये महत्वपूर्ण चारा वृक्षों के रूप में भी काम करती हैं।

ये पौधे न केवल भू–दृश्यों को सुंदर बनाते हैं, बल्कि चारा संसाधनों की पौष्टिक गुणवत्ता में भी सुधार करते हैं।

दोहरी उद्देश्य के लिए भू–दृश्य डिजाइन

फूलों की खेती और चारा उत्पादन को एकीकृत करने वाला कृषि–पर्यावरणीय भू–दृश्य तैयार करने के लिए सावधानीपूर्वक योजना की आवश्यकता होती है:

पौधों का चयन: ऐसी प्रजातियाँ चुनें जो स्थानीय जलवायु में अच्छी तरह से विकसित होती हैं और सौंदर्य व पोषण दोनों लाभ प्रदान करती हैं।

स्थानिक व्यवस्था: पौधों को इस तरह से व्यवस्थित करें कि वे परतदार और आकर्षक भू–दृश्य बनाएं, साथ ही पशुओं के लिए चारे की पहुँच भी सुनिश्चित करें।

मौसमी फेरबदल: अलग–अलग समय पर फूलने और बढ़ने वाली प्रजातियों को शामिल करें, ताकि पूरे वर्ष चारे की उपलब्धता बनी रहे।

मृदा स्वास्थ्य पर ध्यान: जमीन को ढकने वाले पौधों और फूलदार दलहनी पौधों का उपयोग करके नाइट्रोजन को स्थिर करें, मृदा संरचना में सुधार करें और खरपतवारों के दबाव को कम करें।

उदाहरण के लिए, सजावटी घासों की सीमा (बॉर्डर) एक ओर जहाँ पवन–रोक (विंडब्रेक) का काम करती है, वहीं चारा भी उपलब्ध कराती है। इसी तरह, बगीचे की क्यारियों में फूलदार दलहनी पौधे आस–पास की चारा फसलों के लिए मृदा उर्वरता को बढ़ाते हैं।

पर्यावरणीय और आर्थिक लाभ

फूलों की खेती और चारा उत्पादन का एकीकरण कई प्रकार के लाभ प्रदान करता है:

मृदा उर्वरता और संरचना (Soil Fertility and Structure): गहराई तक जड़ें फैलाने वाले सजावटी पौधे मृदा को हवादार बनाते हैं और उसमें कार्बनिक पदार्थ की मात्रा बढ़ाते हैं।

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जैव विविधता (Biodiversity): फूल परागणकर्ताओं और लाभकारी कीटों को आकर्षित करते हैं, जो पारिस्थितिकी तंत्र की सेहत को बेहतर बनाते हैं।

आर्थिक विविधीकरण (Economic Diversification): किसान फूलों की खेती (कट फ्लावर्स, सजावटी पौधे) से आय अर्जित कर सकते हैं, साथ ही पशुपालन के लिए चारे का प्रबंधन भी कर सकते हैं।

सौंदर्य और सामाजिक मूल्य (Aesthetic and Social Value): भू–दृश्य क्षेत्र ग्रामीण सौंदर्यीकरण में योगदान देते हैं और इन्हें कृषि पर्यटन (एग्रो–टूरिज्म) पहलों के लिए भी इस्तेमाल किया जा सकता है।

वास्तविक दुनिया के उदाहरण

पूर्वी अफ्रीका के कुछ हिस्सों में नेपियर घास (जो सजावटी घास जैसी दिखती है) को जीवित बाड़ (लिविंग फेंस) और चारे के स्रोत के रूप में लगाया जाता है, जिससे खेत की सीमाएँ आकर्षक और कार्यात्मक बनती हैं।

यूरोप के किसान तिपतिया घास और अल्फाल्फा के साथ फूलों वाले घास के मैदान तैयार करते हैं, जो पशुओं को चारा देने के साथ–साथ ग्रामीण परिदृश्य को सुंदर बनाते हैं।

भारत में छोटे किसान खेतों की सीमाओं पर गेंदे के फूल लगाते हैं। ये फूल सांस्कृतिक आयोजनों में इस्तेमाल होते हैं और साथ ही परागणकर्ताओं को आकर्षित कर दलहनी चारा फसलों की उपज को बेहतर बनाते हैं।

ये उदाहरण पुष्पकृषि और चारा उत्पादन के संयोजन की बहुमुखी प्रतिभा को दर्शाते हैं, जो उत्पादकता और पर्यावरणीय सततता दोनों को बढ़ावा देती है।

चुनौतियाँ और विचार

हालांकि इसके कई लाभ हैं, फिर भी पुष्पकृषि और चारा उत्पादन का एकीकरण कुछ चुनौतियाँ भी पेश करता है:

सौंदर्य और चारे की आवश्यकताओं का संतुलन:

ऐसा भू–दृश्य तैयार करना जो सुंदर भी हो और उत्पादक भी, इसके लिए सावधानीपूर्वक पौध चयन और डिजाइन की जरूरत होती है।

कीट और रोग प्रबंधन:

मिश्रित पौधारोपण से कीट और रोगों की विविधता बढ़ सकती है, जिससे एकीकृत कीट प्रबंधन (IPM) रणनीतियों की आवश्यकता होती है।

स्थानीय परिस्थितियों के अनुरूप ढलना:

ऐसी पौध प्रजातियों का चयन करना, जो स्थानीय वातावरण में पनपती हों और पशुपालन की जरूरतों को पूरा करें, सफलता के लिए महत्वपूर्ण है।

किसानों की सीमित जागरूकता:

कई किसान कृषि–पर्यावरणीय भू–दृश्य की अवधारणा से अपरिचित हैं, इसलिए लक्षित शिक्षा और विस्तार प्रयासों की आवश्यकता होती है।

चुनौतियों का समाधान

इन बाधाओं को दूर करने के लिए नीतिगत समर्थन, तकनीकी मार्गदर्शन, और पौध संयोजनों एवं भू–दृश्य डिजाइन पर सहयोगात्मक अनुसंधान की जरूरत होगी, ताकि कार्यात्मक और सौंदर्यात्मक दोनों लक्ष्यों को पूरा किया जा सके।

भविष्य की दिशा और सिफारिशें

कृषि–पर्यावरणीय भू–दृश्य के पूर्ण लाभों को प्राप्त करने के लिए निम्नलिखित रणनीतियाँ महत्वपूर्ण हैं:

अनुसंधान और नवाचार: विभिन्न जलवायु और पशुपालन आवश्यकताओं के लिए उपयुक्त सजावटी–चारा पौधों की नई किस्में विकसित करना।

विस्तार सेवाएँ: किसानों और भू–दृश्य डिजाइनरों को बहु–उद्देशीय भू–दृश्य तैयार करने के लिए प्रशिक्षित करना।

नीतिगत समर्थन: ऐसे सतत कृषि तरीकों को अपनाने वाले किसानों को प्रोत्साहन देना।

हितधारकों का सहयोग (Stakeholder Collaboration):

किसानों, शोधकर्ताओं और भू–दृश्य डिजाइनरों को एक साथ लाकर क्षेत्र–विशिष्ट दिशानिर्देश तैयार करना।

निष्कर्ष

कृषि–पर्यावरणीय भू–दृश्य सजावट की सुंदरता और कार्यात्मक कृषि उत्पादन के बीच सेतु बनाने का एक नवाचारी मार्ग प्रस्तुत करता है। चारा प्रणालियों में पुष्पकृषि प्रथाओं का उपयोग करके किसान ऐसे जीवंत भू–दृश्य तैयार कर सकते हैं जो पशुओं को पोषण देते हैं, जैव विविधता का समर्थन करते हैं और अतिरिक्त आय के स्रोत भी उत्पन्न करते हैं। जैसे–जैसे वैश्विक स्तर पर सतत कृषि में रुचि बढ़ रही है, कृषि–पर्यावरणीय भू–दृश्य के माध्यम से पुष्पकृषि और चारा उत्पादन का समन्वय टिकाऊ, दृढ़ और दृष्टिगत रूप से आकर्षक कृषि प्रणालियों के लिए एक उज्जवल भविष्य प्रस्तुत करता है।

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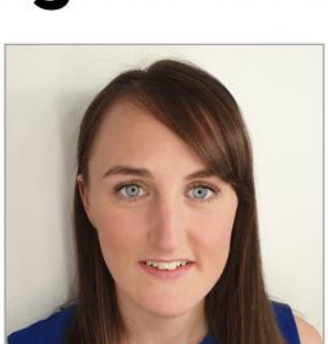
Feed Efficiency: the Challenge of a Dairy Cow



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Ruminant Nutritionist
Techna Nutrition France

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Techna Nutrition UK and Ireland

It is well known that the most efficient diets are the most profitable. Maximising feed intake and milk production is thus essential to improve the gross margin of the dairy farm. In fact, a + 0.1 point improvement in the milk index - ratio between the quantity of fat corrected milk + primiparous correction and DMI - leads to an increase of 0.5 euros/cow/day in the margin on feed cost (Techna Research). Feed efficiency is something you need to manage from the beginning to the end of the career of the dairy cow.

WHAT IS FEED EFFICIENCY?

The definition of efficiency is a ratio of outputs to inputs. Therefore, feed efficiency is a measure of an animal's ability to transform ingested feed into metabolically available nutrients for production. A feed efficient animal should eat less whilst maintaining production or eat the same with increasing production. For example, for a 30 L dairy cow, to improve feed efficiency from 1.4 (l/Kg DM) to 1.5 means that we save around 1.4 Kg DM intake/cow/day.

It was long assumed that digestibility was similar across individuals. However, it is now evident that individual cows differ in their ability to digest various feedstuffs. These differences in digestibility among dairy cows is due to many factors such as nutrition (being one of the main focuses), breed (selecting genetically more efficient animals), health of the animal, days in milk, weather, and management etc. As an industry we can make incremental changes to factors such as management, nutrition and selecting

more feed efficient animals which will have a big impact overall on feed efficiency. In terms of nutrient digestibility and uptake there are two main focuses: Rumen and small intestine. The rumen is the most well discussed part of the dairy cows' digestive tract; it is often called the engine of the cow. The rumen's anaerobic environment and a pH of between 5.8 - 6.8 favours the growth of microbes. These microbes digest or ferment feed within the rumen and make volatile fatty acids (VFAs) which are absorbed through the rumen wall where they can be used as a source of energy by the cow. The major nutrients required by rumen microbes are carbohydrate and protein in which there is a fine balance between the two to meet the microbial requirement. An imbalance can affect the microbial population and have a negative impact on nutrient digestibility, feed efficiency and the production of the dairy cow. Optimal rumen function is crucial for maximising microbial protein synthesis and the quality of the protein reaching the small intestine.

The small intestine is not as widely discussed in dairy cows, however it has a role to play in the digestive process. The small intestine consists of three sections: The duodenum, jejunum and ileum. The small intestine completes most of the digestive process and absorbs many nutrients through villi (small finger-like projections). From the villi the nutrients enter into the blood and lymphatic systems.

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RUMEN NUTRITION

Carbohydrates

Carbohydrates are the primary source of energy in the dairy cows' diets. The majority of carbohydrates are digested in the rumen through microbial fermentation where almost all the digestible carbohydrates are converted to VFA's (acetic, propionic and butyric acid) and absorbed through the rumen wall as a source of energy. The ratio of acetate, butyrate, and propionate is determined by the source of carbohydrates and the rate of digestion. It is one of the major factors controlling the energy available for microbial growth and consequently the energy and protein available to the cow.

Ruminal fermentation of carbohydrates affects productivity and is a critical consideration for diet formulation.

Protein

Protein is a key nutrient but in deficit (less RDP) or in excess (high RDP) it can have a negative effect on the cow. A lactating cow's protein requirement is between 14% and 17%, depending on yield. Cows have a greater bypass protein (DUP) requirement as their yield increases.

Within the rumen, the digestion of proteins results in the production of peptides - peptides are further hydrolyzed to amino acids, some of which are deaminated, producing ammonia. Peptides, amino acids, and ammonia all individually serve as sources of N for various microbes. However, problems can occur when there is a high level of RDP present which can accumulate in the rumen. Energy is then needed to excrete excess nitrogen, rather than using energy for milk production.

Feeding the cow a specific blend of essential oils— such as NOVATAN—increases protein use and reduces ammonia emissions. It improves protein efficiency and rebalances protein partitioning—with more bypass and less RDP. Therefore, the cow can utilise protein that would otherwise be wasted and which would be having a negative effect on the cow and on the environment.

Fats and oils

Fats and oils are concentrated sources of energy to the dairy cow where the majority of it is digested in the small intestine. The type and level of fat in the diet influences the milk fat content and fatty acid profile. Also feeding a lot of unsaturated fatty acids can be toxic to rumen bacteria, slow fiber digestion, and lower rumen pH which will negatively impact feed efficiency.

RUMEN HEALTH

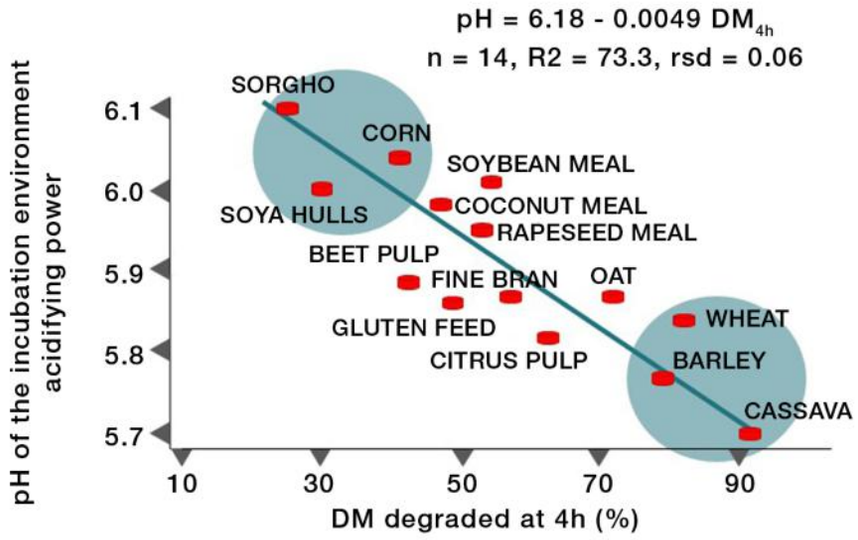
Subacute Ruminal Acidosis (SARA)

The rumen should ideally be at pH 6-7. Throughout the day there will be periods when the pH drops below pH 6, but it is for how long it stays below pH 6 that has a negative impact and this is when subacute ruminal acidosis (SARA) occurs. SARA in dairy cows is a common metabolic disease characterised by a prolonged, but not severe, decrease in rumen pH. The decrease in rumen pH can be caused by diets high in readily fermentable carbohydrates and low in fiber.

SARA is associated with decreased fiber degradation, decreased acetate to propionate ratio, and decreased CH4 formation, which can reduce feed intake, milk yields and milk fat. Not only that but it can cause 'leaky gut' where the gut wall is compromised and will reduce the efficiency of nutrient absorption and increase the risk of unwanted bacteria and toxins getting into the blood. When bacteria or toxins are absorbed into the blood, this initiates an immune response, which is an energy cost to the animal.

To assess the degree of safety regarding the risk of SARA, a rumen indicator was integrated into the data management tool EASY MAP, considering several parameters such as fat/protein ratio, fat equivalent lactation and fat drop.

In addition, following research in collaboration with the INRA in France, Techna developed a DM4 criteria. This is a measure that can be used to determine the proportion of dry matter that has been degraded after four hours in the rumen—starch, sugars, NDF, pectins, protein and so on. DM4 is a criterion used to predict the risk of acidosis across all major raw materials (Figure 1). Fresh grass—in particular young grass—has a high DM4 value. Anything that has a DM4 of 50% and above is a feed that is putting the rumen at risk of a SARA and acidosis. Ensuring rumen pH is stable and optimal will help keep the rumen in good health. Buffer feeding and/or using feed additives such as yeasts, buffers and essential oils, will help stabilise rumen pH. Rumen buffers act by alkalising the rumen, while a specific blend of essential oils will switch the lactate into propionate—securing rumen pH.



Source: According to Sauvant et al., 2010

Figure 1. Relationship between the acidogenic value of feeds and the degradation of their DM in sacco at 4h

Mycotoxins

Mycotoxins are toxic secondary metabolites produced by certain fungi (molds) that can contaminate feedstuffs like forages and grains. Mycotoxins can negatively impact dairy cows, leading to reduced milk production, decreased feed intake, impaired immune function, and potential health issues; ultimately impacting feed efficiency.

Cows are usually able to manage some level of mycotoxins in their diet but as the load grows so does the risk. It tends to be at times of stress that cows will be affected most but these can be as small as a routine foot trimming or vaccination. By the time you see the effects of mycotoxins, such as swollen hocks, increased temperatures or reduced intakes, milk yield will already have suffered.

To help manage mycotoxins, feed should be stored properly, tested for mycotoxins, and if mycotoxins are present then use feed additives such as VITALPROTECT that help mitigate mycotoxins while maintaining digestive tract integrity.

SMALL INTESTINE

Not all nutrients are fermented in the rumen, a portion escapes fermentation and flows into the small intestine. The small intestine is the absorption centre for many nutrients such as starch and protein. Starch that avoids rumen digestion is broken down and absorbed in the small intestine, providing glucose directly to the cow.

Protein absorbed in the small intestine is delivered as microbial protein from rumen microbes and undegraded protein (RUP). Both microbial and dietary proteins are digested by enzymes, breaking them down into amino acids. These amino acids are then absorbed into the bloodstream for use by the animal and are a significant source of amino acids for the ruminant. The intestinal crypts in particular are the site of intense nutrient absorption and increasing the capacity of absorption is a way to improve feed efficiency (Figure 2). Some feed additives help with increasing the villi size and crypt depth within the small intestine such as essential oils, prebiotics, enzymes, etc.

MONITORING PERFORMANCES

Many factors can contribute to improvements in feed efficiency, but without good monitoring practices then how can the herd's improvements be known and future goals be achieved? To meet this need, EASY MAP, a decision making tool, collects the herd's milk data, processes it and provides a detailed analysis of the herd's performance. The aim is to provide a cutting-edge zootechnical interpretation, by creating various indicators that link feed and zootechnical performance: Milk production, rumen safety, energy coverage and protein efficiency.

Data management tools like EASY MAP allow an insight into what the farm is achieving so that changes can be implemented and future goals to be set.

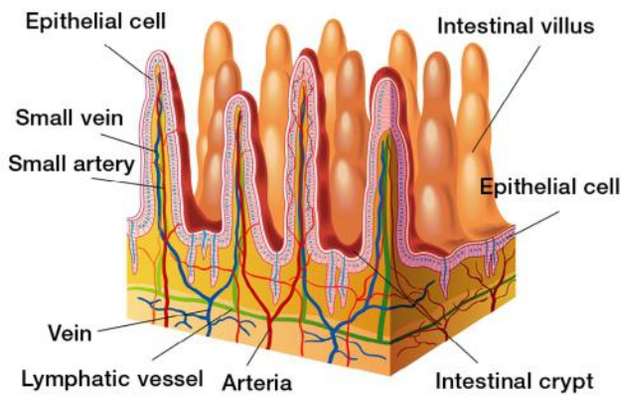
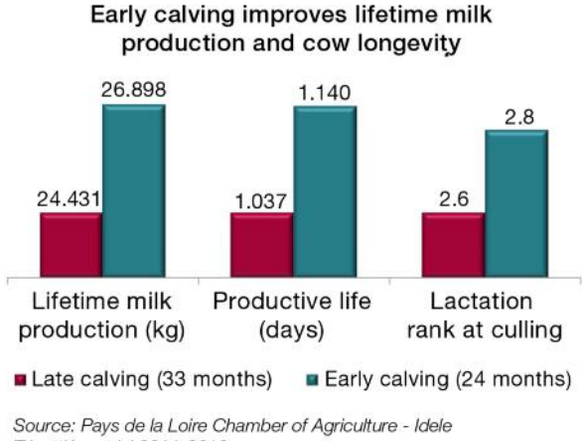


Figure 2. Diagram of an intestinal villi



Source: Pays de la Loire Chamber of Agriculture - Idele Trinottiéres trial 2011-2012

Figure 3. Impact of early calving on the dairy cow's caree

GOOD MANAGEMENT PRACTICES

It is based on several important levers:

- A good preparation for breeding will improve the efficiency of the feed diet and thus positively improve the reproduction, health, production of the herd, and age at first calving (Figure 3). A calving age between 22-25 months can lead to higher lifetime milk production, improved reproductive health, and reduced rearing costs,
- Ensuring adequate feeding space to prevent bullying, injuries, and stress, which can reduce feed intake,
- Providing adequate lighting in cubicle and roaming areas to stimulate feeding,
- Cows should always have access to clean water, which is extremely important for the production, health and welfare of the cow.

GENETICS

Feed efficiency is one of the most economically important traits and is sufficiently heritable to respond to genetic selection. Currently, selecting for feed efficient traits is done through research and industry settings with special facilities designed for this purpose. This is costly and limits the number of animals measured in the research projects and by cattle breeders. Therefore, progress has been slow. However, as the size of dairy herds increase, automated milking is becoming more and more widespread. Milking robots can help interpret ration efficiency thanks to the various data they can provide instantaneously (feed intake, rumination and milk production).

CONCLUSION

By selecting the right feed components, managing the balance of VFAs through optimising pH, good management practices and data monitoring; dairy farmers can optimise the feed efficiency of their cows for better performance and profitability. With an improvement in feed efficiency less nutrients should be wasted, and it should lead to less land and resources required for feed production. Striving to be as efficient as possible benefits the farm no matter the situation.

Feed efficiency of dairy cows is a crucial objective. At Techna, we remain committed to advancing our knowledge and expertise to enable the industry to become more efficient.

About Alizé Philouze

Alizé Philouze holds an engineering degree in ruminant production from ESA in Angers (France) and has several years' experience in ruminant nutrition and breeding. She is currently a ruminant nutritionist at TECHNA, where she combines scientific research and practical applications to support ruminant feed manufacturers in France and abroad.

About Jamie-Leigh Douglas

With a doctorate in ruminant nutrition from Aberystwyth University, Wales, Douglas has over 10 years expertise in the field. She works closely with feed mills and nutritionists focusing on developing tailored solutions that address balancing zootechnical and environmental performance, animal welfare, economical profitability in the ruminant sector.

EVENT CALENDER

AUGUST 2025

22-23 AUG. 2025 – CLFMA 58th AGM & 66th NATIONAL SYMPOSIUM 2025

Venue : Hyderabad at Taj Deccan, Road No.1, Banjara Hills, Hyderabad – 500034, India
Phone : 022 22026103
Email : admin@clfma.org
Web : www.clfma.org

AUGUST 2025

27-29 AUG. 2025 – LIVESTOCK MALAYSIA

Venue : Kuala Lumpur Convention Center, Kuala Lumpur, Malaysia
Phone : +60 3 9771 2688
Email : livestockmalaysia-my@informa.com
Web : www.livestockmalaysia.com

SEPTEMBER 2025

16-18 SEP. 2025 – SPACE

Venue : Rennes Expo-Park, France
Phone : +33 (0) 223482879
Email : c.berthier@space.fr | info@space.fr
Web : www.space.fr

SEPTEMBER 2025

30 SEP 04 OCT 2025 – World Dairy Expo, USA

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

OCTOBER - NOVEMBER 2025

30 OCT. 01 NOV. 2025 – Ethio Poultry Expo, Africa Livestock Expo

Venue : Millennium Hall, Addis Ababa, Ethiopia
Phone : +249912273795
Email : simsim362002@yahoo.com
Web : www.ethiopoultryexpo.com

NOVEMBER 2025

19-21 NOVEMBER 2025 – ANSICON

Venue : C.V.Sc.& A.H., A.N.D.U.A.&T., Kumargaj, Ayodhya (U.P.), India
Name : Dr. V.K. Singh (Organizing Secretary)
Phone : +91 7068583719, 9452284121, 9456906902
Name : Dr. Udeybir Singh Chahal
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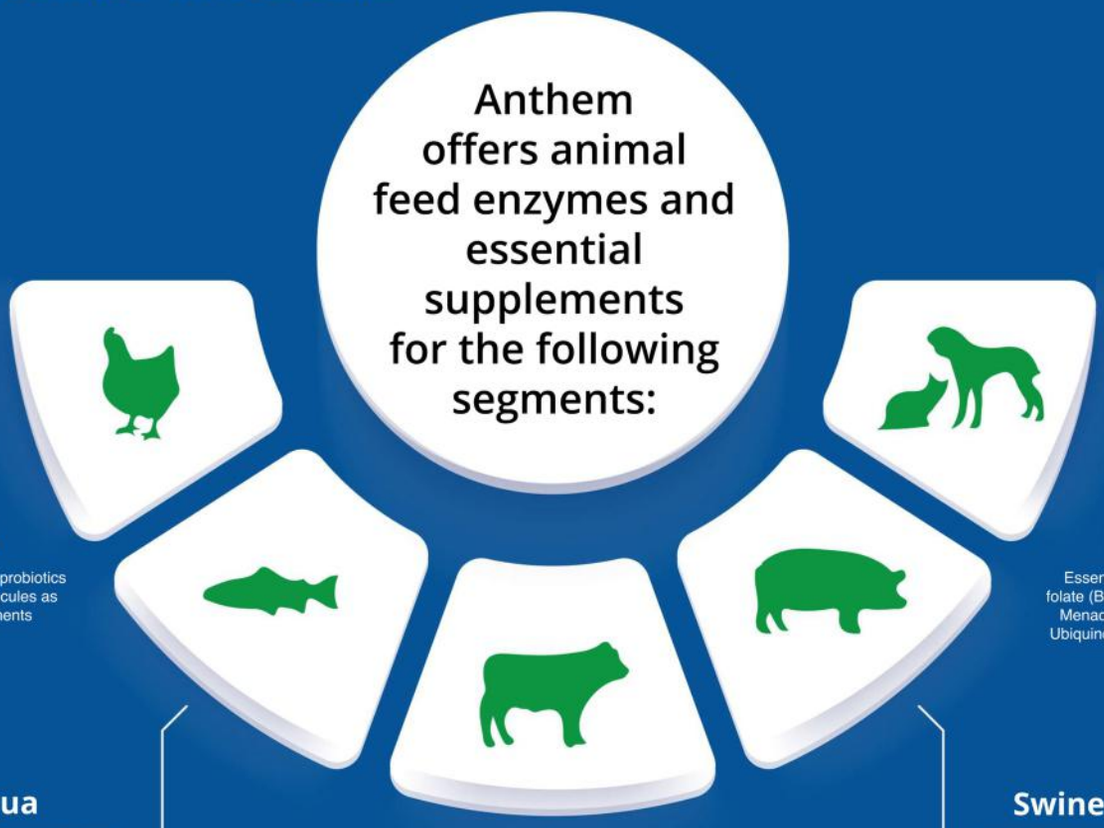

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डायमंड

- प्रति दिन 30 लीटर तक दूध देने वाली गायों के लिए उत्कृष्ट तैयार पोषण।
- खनिजों और विटामिनों से युक्त, बेहतर उत्पादकता और रोग प्रतिरोधक क्षमता के लिए।
- बेहतर दूध उत्पादन, वसा (फैट) और एस.एन.एफ के लिए।

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HELPLINE
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Dairy Farmers Gather for Insightful Seminar on Organic Trace Minerals, Hosted by Nurture Organics

In an effort to empower dairy farmers with cutting-edge knowledge and sustainable practices, Nurture Organics successfully conducted a seminar on the pivotal "Role of organic trace minerals" in dairy cattle health and productivity.

Held at Bhatinda Punjab on 10th May'25, the event welcomed a strong turnout of progressive dairy farmersfrom across the region. The seminar focused on the scientifically backed benefits of organic trace minerals in enhancing immunity, improving reproductive efficiency, and increasing milk yield—without compromising animal welfare or environmental sustainability.

"Trace minerals may be required in minute quantities, but their impact is monumental," said Mr. Parvinder Singh [Head Ruminant Business], one of the keynote speakers at the event. "GLYADD 4P allow better absorption, meaning healthier livestock and better returns for farmers."

The day's biggest strength? The stories from the ground.

"I had no idea small changes in mineral intake could make such a difference," said Kulwinder Singh Ji of Bhatinda. "After switching to organic sources GLYADD 4 P recommended by NOPL, my cows are healthier and milk production is up."

Echoing the sentiment, Ramandeep Singh Ji shared, "My veterinary bills have dropped in the last six months after adapting GLYADD 4P . This seminar gave us the science behind what we've been seeing in our farms."

"Nurture Organics believes that empowering farmers through education is as important as delivering high-quality products," said Mr. Swaran Singh Dhillon (Business Head Punjab).

As participants left with practical knowledge and renewed enthusiasm, the event stood as a reminder that sustainable farming isn't just a theory—it's a movement already underway in Indian dairies.As the seminar drew to a close, Mr. Anurag Wadhwa, Country Head of Nurture Organics, extended his heartfelt appreciation to all attendees.

"We are truly grateful to every farmer, expert, and partner who joined us today. Your enthusiasm and willingness to embrace sustainable practices drive us forward," said Mr. Anurag Wadhwa (Country Head}. "At Nurture Organics, we believe that real change starts on the ground—with informed and empowered farmers. This seminar is just the beginning of our shared journey toward healthier herds and a more sustainable dairy future."

His words were met with resounding applause, bringing a sense of unity and shared purpose to the event's conclusion.

ARTICLE

Precision Livestock Nutrition

Balancing the Supply and Demand of Nutrients

As the livestock industry faces increasing pressure to meet the nutritional needs of a growing global population while minimizing environmental impact, precision livestock nutrition has emerged as a transformative approach. By focusing on the accurate supply and demand balance of nutrients, precision livestock nutrition aims to optimize animal health, improve productivity, and reduce environmental impact.

Dr. Sushil Kumar and Dr. Narender Singh

Understanding Precision Livestock Nutrition (PAN)

Precision livestock nutrition is a tailored approach to animal feeding that applies data-driven methods to meet the specific nutrient requirements of each animal or group. Unlike conventional nutrition strategies, which often assume average needs across an entire herd or flock, precision nutrition evaluates individual animal requirements, considering factors such as age, breed, reproductive status, health condition, and production stage. Advanced tools and technology help measure these needs accurately, leading to better decision-making and more efficient nutrient utilization. This method ensures animals receive exactly what they need and no more, maximizing the benefits of each nutrient while minimizing waste. It offers significant advantages in areas like growth rates, feed efficiency, reproductive performance, disease resistance, and overall sustainability.

Key Components of Precision Nutrition

To achieve a balance in the supply and demand of nutrients, precision livestock nutrition incorporates several advanced techniques:

1. **Individualized Feeding Systems:** Advanced systems, including automatic feeding stations and RFID (Radio Frequency Identification) tags, enable real-time monitoring and adjustment of each animal's diet based on its unique requirements. For instance, dairy cows with high milk production needs can receive tailored protein and energy levels to sustain their output.
2. **Nutrient Profiling:** Precision livestock nutrition involves creating detailed nutrient profiles that reflect the exact amounts of proteins, carbohydrates, fats, vitamins, and minerals required by different types of livestock. Nutritional profiles are adjusted based on production goals, whether for growth, reproduction, or milk and meat production.
3. **Smart Sensors and Monitoring Tools:** By using smart sensors to track parameters such as body weight, growth rates, and feed intake, farmers can adjust diets to prevent nutrient deficiencies or excesses. Sensors also monitor health indicators, such as body temperature or activity levels, to provide early warning of health issues, further ensuring that animals maintain peak health and productivity.
4. **Nutritional Modelling Software:** Advanced software models allow producers to simulate various feeding strategies and predict outcomes based on nutrient supply and demand. These models can assess economic feasibility, optimize feed formulations, and even integrate environmental factors, such as greenhouse gas emissions, to improve the overall sustainability of livestock production.
5. **Real-Time Data Analysis:** Precision nutrition relies heavily on real-time data. Advanced analytical tools can process vast amounts of data, providing insights on nutrient utilization rates and adjusting feeding regimens in response to changing needs. By continuously collecting and analysing data, precision nutrition helps producers adapt to fluctuations in nutrient demands due to factors like weather, seasonal production changes, and animal health status.

Benefits of Precision Livestock Nutrition

1. **Enhanced Productivity:** Precision nutrition ensures that animals receive the precise nutrients they need to achieve their growth and production potential. With nutrient supply closely aligned to demand, animals can convert feed into body mass, milk, or eggs more efficiently, which can boost productivity.
2. **Reduced Feed Costs:** Feed typically accounts for 60-70% of livestock production costs. By minimizing nutrient wastage, precision nutrition lowers overall feed expenses, allowing producers to allocate resources more effectively.
3. **Improved Animal Health and Welfare:** A balanced diet contributes to stronger immune function, reduces the risk of diseases, and promotes faster recovery. Healthy animals are less likely to require antibiotics or other medications, improving overall welfare and supporting consumer demand for antibiotic-free products.

4. **Environmental Sustainability:** Precision nutrition reduces nitrogen and phosphorus excretion by minimizing nutrient oversupply. This leads to lower greenhouse gas emissions, reduced nutrient run-off into water sources, and a smaller environmental footprint for livestock operations.
5. **Data-Driven Decision-Making:** Precision nutrition provides producers with a comprehensive understanding of each animal's nutrient utilization, enabling data-driven decisions for future growth. These insights help optimize feed formulas, improve resource allocation, and support long-term planning in livestock management.

Challenges of Implementing Precision Livestock Nutrition

While the benefits are substantial, precision livestock nutrition faces several challenges:

- **Technology Investment:** Advanced sensors, automated feeders, and data analytics software require a considerable upfront investment, which may be difficult for smaller farms to afford.
- **Data Management Complexity:** Collecting, storing, and analysing large datasets can be complex, and requires knowledgeable staff to interpret the data and make informed adjustments to nutrition plans.
- **Knowledge and Skill Gaps:** Implementing precision nutrition demands expertise in animal nutrition, data analysis, and digital tools. Training personnel in these areas is essential for effective adoption.
- **Variable Results:** Although precision nutrition generally leads to better results, variations in individual animal responses can still occur, especially due to genetic differences and environmental factors.
- **Future Trends in Precision Livestock Nutrition**
- As technology advances, the potential for precision livestock nutrition will continue to grow. Key trends include:
- 1. **Genomic Insights:** Genetic profiling can help tailor diets to individual animals based on genetic markers related to feed efficiency, growth rates, and nutrient utilization.
- 2. **Artificial Intelligence (AI) and Machine Learning:** AI and machine learning models are increasingly being integrated into precision nutrition, using historical data and real-time inputs to make precise adjustments to animal diets and predict future nutrient needs.
- 3. **Microbiome Optimization:** Understanding the gut microbiome of livestock opens new opportunities for enhancing feed conversion rates and animal health by customizing diets that foster beneficial microbial populations in the digestive system.
- 4. **Sustainable Feed Sources:** As part of a broader push for sustainability, alternative protein sources such as insect meal, algae, and food industry by-products are being explored as components of precision diets.
- **Conclusion**
- Precision livestock nutrition represents a significant shift in animal agriculture, offering the potential for more sustainable, efficient, and productive livestock production. Despite the challenges, ongoing advancements in technology, data analysis, and genetic research promise to make precision livestock nutrition more accessible and effective across the industry.

Dr. Sushil Kumar and Dr. Narender Singh
College of Veterinary Science, LUVAS, Hisar-125004

BULLETIN

Avitech Nutrition Hosts Life-Saving CPR and BLS Training for Team Members

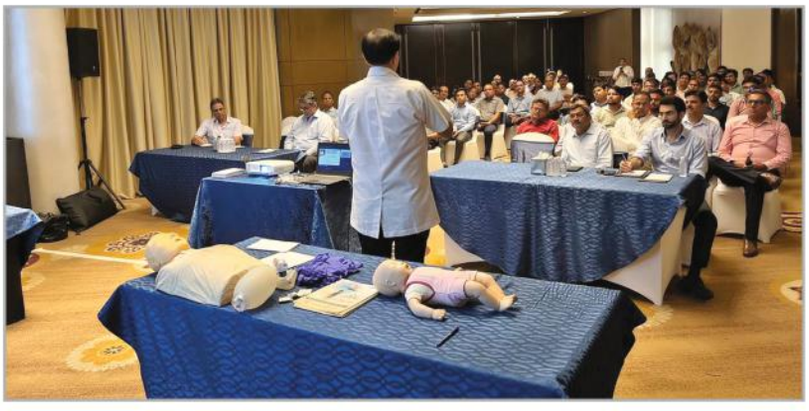
Avitech
Knowledge | Nutrition | Innovation

Avitech Nutrition, amember of the Keggfarms group, recently organized a CPR (Cardiopulmonary Resuscitation) and Basic Life Support (BLS) training program for the group. Held on **June 10, 2025**, in Gurugram, the initiative aimed to empower employees with critical skills to confidently respond during medical emergencies.

The training session wasconducted by **Dr. Rajinder Saini**, a renowned first aid training instructor with extensive experience with multiple disaster management agencies.

The program was designed to provide attendees with the essential knowledge and confidence needed to act swiftly and effectively in urgent situations such as heart attacks, choking incidents, or cases of unconsciousness. Through a blend of practical demonstrations and realistic scenarios, the session made it easier for everyone to grasp the immediate actions required during a crisis.

This vital training underscores Avitech Nutrition's commitment to fostering **employee safety**, promoting **health awareness**, and contributing to overall **community well-being**.



When the monsoon arrives, it brings both challenges and opportunities.

Preparation becomes the cornerstone of resilience, especially for those in agriculture and animal husbandry. Monsoon-Proofing Tips for Feed Millers and Dairy Farmers

Monsoon-Proofing Tips for Feed Millers and Dairy Farmers
By a Practicing Veterinarian & Animal Nutritionist

- Every year when the first monsoon showers hit, I get a call.
- Sometimes it's a feed mill owner frustrated with raw material losses.
- Sometimes it's a farmer worried about cows going off feed or a sudden mastitis outbreak. And every time, the root cause is the same.
- We underestimated the rain.
- The truth is, rain is not the problem. Poor preparation is.

This article is not about theory. It's what I've seen again and again in the field, from rural sheds to fully automated mills. This is what actually works when it starts pouring.

Feed Millers

Don't Let Humidity Steal Your Margins
I've been inside mills where feed turned lumpy before dispatch. Where fungal smells came from unopened bags. Where mold turned a full godown into a loss. And every time, it could've been avoided.

Here's what must be done — phase by phase.

1 Raw Material Intake

- Moisture testing at unloading — Assign this to QC. Don't accept material above 12%. A digital meter costs ₹2,000–3,000. Saves lakhs.
- Cover unloading areas — ₹1,500 worth of tarpaulin prevents ₹50,000 worth of wet maize losses.
- Schedule deliveries to avoid evening rains. Even staggering by two hours makes a difference.

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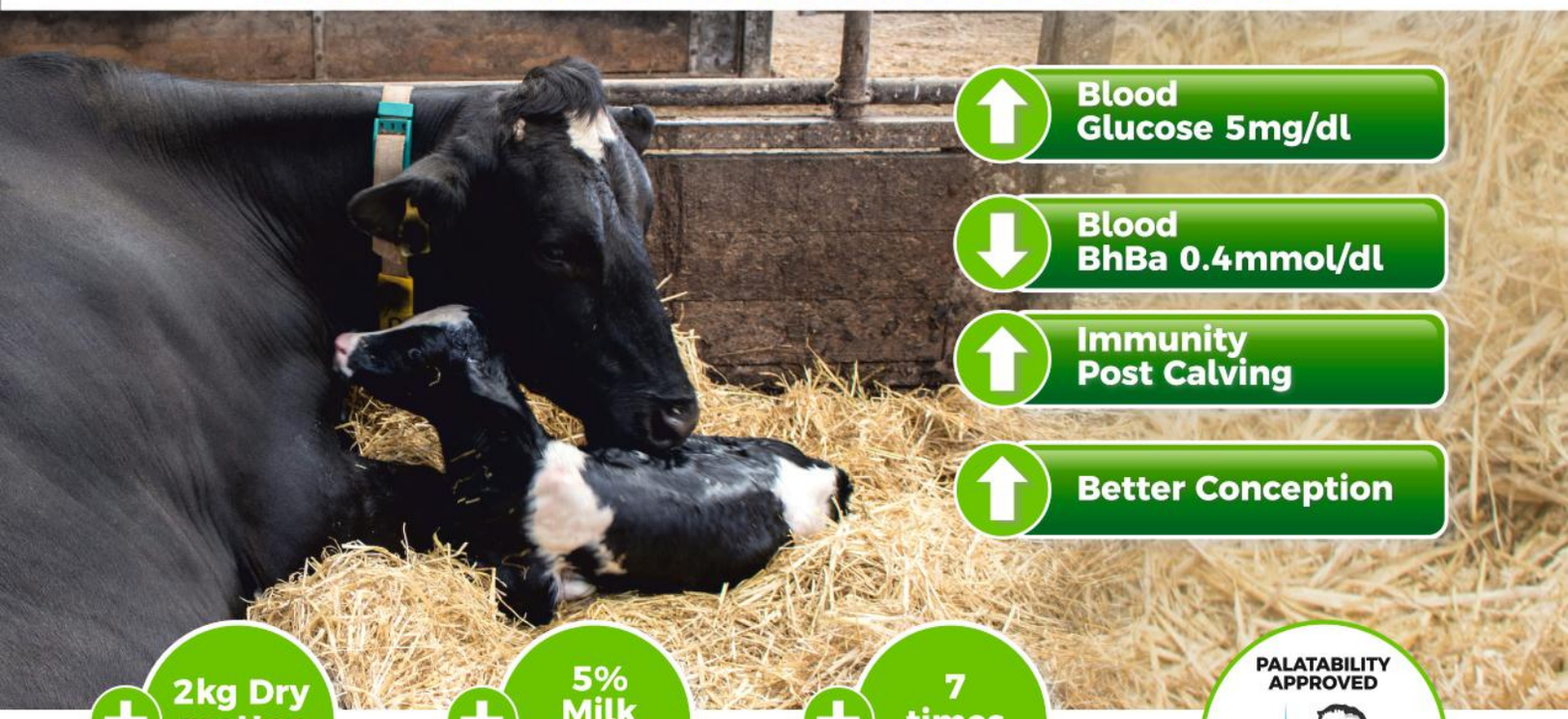

- Blood Glucose 5mg/dl
- Blood BhBa 0.4mmol/dl
- Immunity Post Calving
- Better Conception

+ 2kg Dry matter intake

+ 5% Milk Production

+ 7 times ROI

PALATABILITY APPROVED

Leader on the market, Glycoline is super palatable.
It combines a selection of high-performance glucose precursors and active agents.

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39

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2 Storage

- Always use pallets. Never let any bag or ingredient touch the floor directly.
- Open windows daily early morning and post-evening to balance condensation.
- Label and rotate stock. Most toxins don't wait - they grow fast in static stock.

3 Premix and Micro Lab

- Desiccants in vitamin and mineral containers protect stability.
- Refrigerate sensitive ingredients like enzymes and probiotics, or use insulated cabinets.

4 Mixing and Pelleting

- Pellet at 60–65°C, but more importantly, cool down fully before bagging.
- Check for condensation inside the cooler hood and near pellet elevators.
- Add 1-2 kg toxin binder per MT and use mold inhibitors in premix during monsoon months. Cost is ₹20–30 per MT — return is 10x in performance.

5 Bagging and Dispatch

- Use laminated or HDPE bags. Yes, they cost ₹2–3 more — but they preserve everything inside.
- Stack with at least 6-inch wall gap. Weekly restacking prevents fungal bridges.
- Don't dispatch uncovered. Wrap trucks with plastic sheets even on short routes.

6 Training Your Teams

- Every worker from loader to lab assistant should know what 14% moisture looks like.
- Put up one laminated poster in the QC room and one in the godown.
- Assign monsoon audit duties to someone weekly — just 20 mins a day prevents disasters.

Dairy Farmers

What You Do During the Rains Shows Up in the Milk Can

I walked into a farm last year.

Cows were licking stale feed, calves were coughing in the corner, and water was dripping near the bedding. The farmer looked at me and said, "Baarish mein toh sab sambhalna mushkil lagta hai, doctor saab."

But it isn't — not if we simplify.

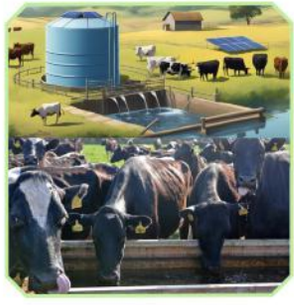
1 Silage Must Stay Dry

- Double-layer plastic and tight seal — non-negotiable.
- Use sandbags, tyres. Open only what you'll feed in 48 hours.
- Aerobic spoilage is 5x faster in monsoon.

2 Feed Troughs Are Where Diseases Start

- Never feed on wet ground.
- Use concrete or stone base. Rinse and dry once daily.
- Don't reuse old feed. Damp TMR = fermentation, pH drop, and off-feed issues.

3 Water Should Not Be a Risk



- Algae forms in 24–48 hours. Scrub tanks once every two days.
- Use overhead or stored water during flood risk.
- Ensure runoff doesn't contaminate drinking or feed zones.

4 Adjust for Green Fodder Surge

- Lush grass = high moisture, low energy. Mix with straw or hay.
- Add live yeast or probiotics to maintain rumen stability.
- Watch for mycotoxin signs — dull coat, poor dung consistency, reduced milk.

5 Mastitis Prevention Saves Litres

- Lime powder in wet zones.
- Use separate towels per cow. Disinfect after every shift.
- Teat dip before and after. ₹1/day can save ₹300/loss in milk.

6 Reproduction: Silent Heats Are Common

- Use tail paint or chalk.
- Track AI schedules with wall calendars, always keep an eye on the dates.
- Teat dip bef- Don't skip hygiene in semen handling — wet gloves = poor conception.ore and after. ₹1/day can save ₹300/loss in milk.

7 Calf Pens- last but not least

- Raise platforms. Change bedding daily.
- Colostrum within 4 hours. Add Vit A, D, E for immunity.
- Pneumonia in calves during monsoon is more dangerous than FMD.

What It All Comes Down To

Monsoon is the test of everything — your team, your storage, your systems.

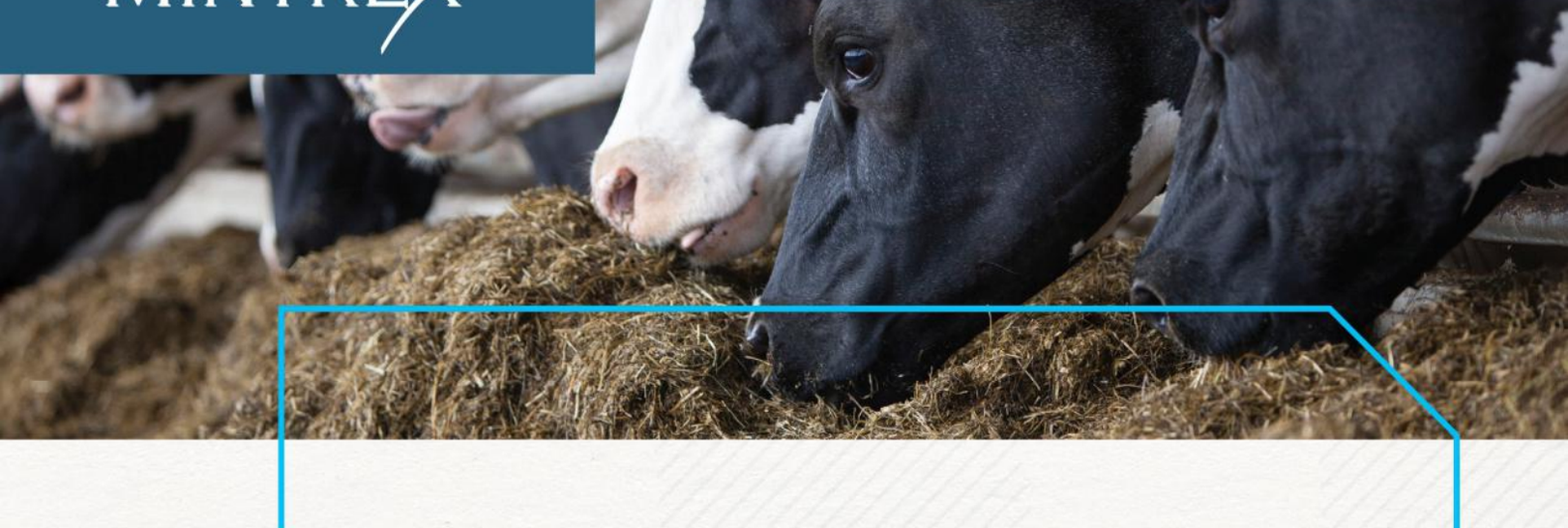
Some feed mills will lose lakhs in rejected feed. Some farms will lose 50 litres a day without knowing why. But others — the ones who prepared early — will thrive.

Because the rain isn't just a threat. It's a mirror. It shows you what was always weak — and gives you a chance to strengthen it.

We're not here to sell anything. We're here to solve. And we do it with you — not for you.

Let the rains come.
Let them test us.
And let's pass with flying colors.

MINTREX®



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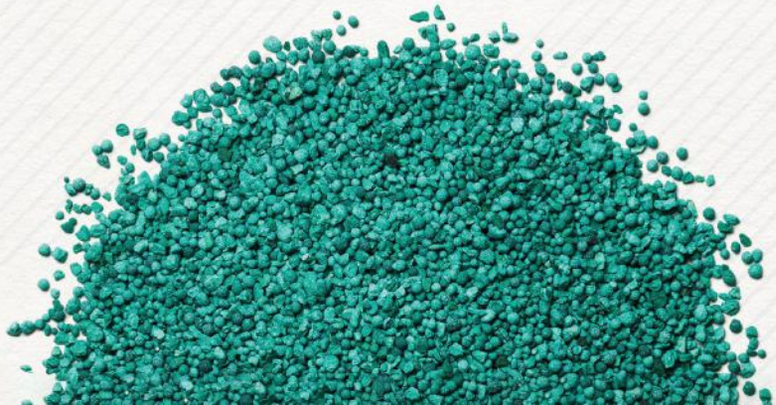

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