

# LIVESTOCK TECHNOLOGY

Pulse of Livestock Industry

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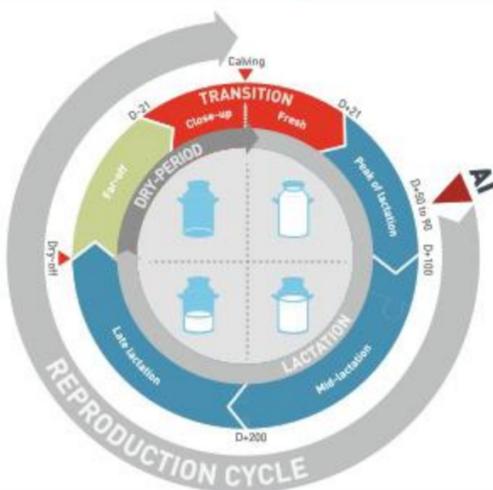


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03

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## Will India be allowed to import soybean, maize and a few dairy products from the USA?

India and the U.S. are reportedly on the verge of finalising a trade deal that would reduce tariffs and allow India to import soybeans, maize, and a few dairy products duty-free. Tariff cuts under discussion could bring duty rates down to between 12 and 15% or 15-19% on various industrial and agricultural goods. The deal will provide India with access to U.S. maize for ethanol production, potentially benefiting both the livestock feed and biofuel sectors. India faces a tough balancing act: protecting its smallholder dairy farmers from cheap imports while leveraging cheaper feed inputs.

India and New Zealand are in advanced talks for a bilateral free-trade agreement (FTA), yet dairy remains a politically sensitive sector for the Indian side. Trade negotiations must reflect “the size and scale of each country”, and cannot blindly adopt standards used with large economies. For India’s vast cooperative dairy sector – involving millions of small and marginal farmers – the announcement is a major reassurance. The Indian minister reaffirmed that “India never compromises on the interests of dairy, farmers and MSMEs.” Bilateral cooperation with New Zealand could focus on dairy machinery, automation and “mini-dairy” units, rather than full market liberalisation of export-facing dairy commodities.

India’s milk consumption is poised for further expansion in 2025, buoyed by improving incomes, changing consumption habits and stronger organised dairy infrastructure. According to FAS’s recent Global Agricultural Information Network (GAIN) report, household demand for fluid milk in India is set to reach around 91 million metric tons (MMT) in 2025, up from about 89 MMT in 2024. At the same time, factory-use consumption of fluid milk—i.e., milk processed in the organised sector—is projected at 125.5 MMT in 2025, up from 122.7 MMT in 2024. This growth is being driven by several structural factors. First, the sheer size of India’s population and its growing middle class mean that even modest upward shifts in milk consumption per household translate into large incremental volumes. Second, rising disposable incomes and heightened awareness about nutrition are leading consumers to favour branded, packaged dairy products (milk, yoghurt, cheese, butter, etc.), which in turn drives the organised sector’s share. The GAIN report highlights that while per-capita consumption remains below the benchmark set by the Indian Council of Medical Research (ICMR), there is clear momentum in both rural and urban markets. Despite robust production capabilities, there are regional disparities in consumption and supply chain constraints such as cold chain logistics, variable productivity of milch animals and feed/fodder shortages. Volume growth alone is no longer sufficient. With consumption rising, the premium will shift to quality, traceability and value-addition.

India’s dairy sector is showing a mix of resilience and volatility, as highlighted in Zerodha’s *Glass Half Full for Indian Dairy*. The latest quarterly results of listed dairy companies—Hatsun Agro, Heritage Foods, and Dodla Dairy—reflect both the opportunities and pressures shaping the industry. These results paint a picture of a sector where companies with diversified sourcing and strong VAP offerings outperform those more dependent on a single region or bulk milk trade. A major theme emerging from the analysis is the pressure of raw milk inflation. Unusually heavy monsoon rainfall this quarter created fodder shortages, hindered milk collection networks, and tightened supply. Dairies were simultaneously pushed to divert milk toward cream, butter and ghee production, which saw surging festive demand. This dual squeeze—tightening supply and higher fat-product demand—placed upward pressure on procurement prices. Companies with wider catchment areas or strong fat inventories were better positioned to absorb the shock, while others saw margin compression. Value-added products have become the defining factor for profitability. Strong branding combined with VAP capability appears to be the strongest formula for growth in the Indian dairy landscape.

Banglar Dairy, the West Bengal government’s own milk brand, has raised its retail milk prices by Rs 4 per litre, effective November 2025. According to the state’s Animal Resources Development department, the price revision was necessitated by rising production costs – notably heavy rainfall this year that disrupted fodder supplies, increasing raw material and transportation expenses. Milk production in Bengal has been growing at about 9.76 % annually, but input cost pressures meant the co-operative needed to adjust pricing to remain viable. But prices of other dairy products such as ghee, paneer and curd remain unchanged at present.

Editor



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# LIVESTOCK TECHNOLOGY

PULSE OF LIVESTOCK INDUSTRY

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# Stop the Fodder Famine:

## Smart Strategies for Year-Round Green Feed

Dr Chandan Kumar

If you're a dairy farmer, you know the struggle all too well: the scorching summer heat burns away green pastures, the cost of concentrate feed pinches your pocket, and the sight of burning paddy straw fills the air with smoke and regret. Our livestock, the backbone of our rural economy, often bear the brunt of this "fodder famine." But a quiet revolution is brewing. From the labs of our agricultural universities to the fields of progressive farmers, a new model of fodder production is taking root. It's not about farming more land; it's about farming smarter. It's about turning waste into wealth and every drop of water into nutritious feed.

### The Pillars of the New Fodder Revolution

This new approach stands on three powerful pillars: **Green, Smart, and Circular.**

#### 1. The Green Pillar: Super Fodders and Always-Green Systems

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- **The Farmer's Benefit:** More milk. A small piece of land can support more animals, making it a perfect solution for small and marginal farmers.

And for those with even less land or in water-scarce regions, **Hydroponic Fodder** is a game-changer. Growing lush, green barley or wheat sprouts in 7 days, without soil and using 90% less water, is now a viable technology for high-yielding animals. It's like a fresh, nutrient-packed salad for your bovines, available 365 days a year.

#### 2. The Smart Pillar: Preserving today's Surprise for Tomorrow's Need

The biggest loss occurs when we have surplus fodder during the monsoon but nothing during the summer. The solution? **Preservation.**

- **Silage is the new Silos:** Making silage from maize or sorghum is no longer just for big farms. Custom hiring services are now available where service providers come to your field with choppers and balers, helping you preserve your green fodder in airtight bales. This "pickled fodder" retains over 90% of its nutrients and is a lifesaver during lean periods.
- **Urea Molasses Straw Treatment (UMST):** This is the ultimate "waste to wealth" magic. By simply treating low-quality paddy or wheat straw with a solution of urea and molasses, you can **double its digestibility and protein content.** This single, low-cost technique can solve the twin problems of stubble burning and winter fodder scarcity.

#### 3. The Circular Pillar: Your Farm's Waste is Your Animal's Meal

The future of fodder lies not just in new crops, but in reimagining what we already have.

- **The UMMB Lick: The Urea Molasses Mineral Block (UMMB)** is a powerful supplement. Animals lick it to get a direct dose of energy, protein, and essential minerals, helping them extract more nutrients from even the dry fodder they eat.
- **Total Mixed Ration (TMR):** Pioneered by successful cooperatives, TMR is a scientifically formulated "complete meal" for livestock. It mixes chopped roughage (like treated straw), concentrates (de-oiled rice bran, mustard cake), minerals, and vitamins. This ensures every bite is balanced, improving health and feed efficiency.
- **Fodder Trees:** Don't forget the old wisdom. Planting trees like **Subabul and Glyricidia** on bunds provides a free, perennial source of protein-rich green leaves, especially during dry seasons.

#### The Role of Technology and Community

This revolution is being powered by community spirit and technology. **Fodder Producer Companies (FPCs)** are emerging, allowing farmers to collectively invest in silage plants and TMR units. Meanwhile, the NDDB is aggressively promoting these technologies to create a national impact.

#### The Bottom Line: More Milk, More Profit, A Greener Planet

Adopting these sustainable practices is a win-win-win.

- **For the Farmer:** Consistent, high-quality fodder supply leads to **higher milk yield, better animal health, and reduced feed costs.**
- **For the Animal:** A balanced and nutritious diet year-round means less disease and better productivity.
- **For the Nation:** We solve the crisis of stubble burning, reduce the pressure on water and land, and secure the nutritional future of our livestock sector.

The message is clear: The era of fodder scarcity is over for those who embrace this new vision. It's time to move from being a fodder buyer to a fodder producer. The tools are here. The knowledge is available. The future of dairying in India is green, smart, and sustainable.

#### Final Takeaway:

The challenge of fodder security in India is formidable, but the path forward is clear. By embracing a sustainable, integrated, and technology-powered approach, India can transform its fodder sector from a perennial crisis into a story of resilience and abundance. This will not only secure the livelihood of millions of farmers but also ensure the health of the national herd and the environment for generations to come.

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# पशुपालन में आधुनिक तकनीक की भूमिका

गुरप्रीत सिंह<sup>1</sup>, प्रियंका<sup>1</sup>, रिचु देवी<sup>1</sup>

भारत एक कृषि प्रधान देश है और पशुपालन यहाँ की ग्रामीण अर्थव्यवस्था और किसानों की आय का महत्वपूर्ण आधार है। परंपरागत रूप से पशुपालन केवल दूध, मांस, अंडा और ऊन उत्पादन तक ही सीमित था, लेकिन बदलते समय और बढ़ती मांग ने इसे आधुनिक तकनीक से जोड़कर एक संगठित और वैज्ञानिक व्यवसाय का रूप दे दिया है। आधुनिक तकनीक के उपयोग ने न केवल पशुपालन को आसान बनाया है बल्कि उत्पादन क्षमता, गुणवत्ता, स्वास्थ्य प्रबंधन और पर्यावरण संरक्षण में भी नई क्रांति ला दी है।

आधुनिक तकनीकों के उपयोग से सबसे पहले पशुओं की नस्ल सुधार में बड़ा परिवर्तन आया है। कृत्रिम गर्भाधान और भ्रूण प्रत्यारोपण तकनीकों के माध्यम से उच्च गुणवत्ता वाली नस्लों का विकास किया जा रहा है, जिससे दूध और मांस उत्पादन में वृद्धि हो रही है। साथ ही, बायोटेक्नोलॉजी द्वारा जेनेटिक सुधार कर पशुओं को अधिक उत्पादक और रोग प्रतिरोधक बनाया जा रहा है।

स्वास्थ्य प्रबंधन में भी तकनीक अहम भूमिका निभा रही है। आज सेंसर और मोबाइल एप्लीकेशन की मदद से पशुओं की शारीरिक गतिविधियों, तापमान और रोग लक्षणों की निगरानी संभव हो गई है। इससे समय रहते रोगों का निदान और उपचार किया जा सकता है। इसी तरह, स्मार्ट फीडिंग सिस्टम और पोषण संबंधी सॉफ्टवेयर पशुओं को संतुलित आहार उपलब्ध कराते हैं, जिससे उत्पादकता और स्वास्थ्य दोनों में सुधार होता है।

दुग्ध उत्पादन और प्रसंस्करण के क्षेत्र में भी तकनीकी बदलाव देखने को मिलते हैं। स्वचालित मिलकिंग मशीनें और रोबोटिक सिस्टम न केवल समय की बचत करते हैं, बल्कि दुग्ध उत्पादन को स्वच्छ, सुरक्षित और गुणवत्तापूर्ण भी बनाते हैं। दूसरी ओर, डिजिटल मार्केटिंग और ई-कॉमर्स प्लेटफॉर्म पशुपालकों को अपने उत्पाद सीधे उपभोक्ताओं तक पहुँचाने का अवसर देते हैं, जिससे उनकी आय में उल्लेखनीय वृद्धि हो रही है।

इसके अलावा, पर्यावरण संरक्षण में भी तकनीक का योगदान है। पशुपालन फार्मों में सौर ऊर्जा और बायोगैस संयंत्र का प्रयोग कर ऊर्जा की बचत और प्रदूषण नियंत्रण दोनों संभव हो रहे हैं। इससे पशुपालन अधिक टिकाऊ और पर्यावरण अनुकूल बन रहा है। पशुपालन भारत की अर्थव्यवस्था और ग्रामीण आजीविका का एक महत्वपूर्ण हिस्सा है।

## पशुपालन में आधुनिक तकनीक की भूमिका

आज के समय में पशुपालन केवल पारंपरिक तरीकों तक सीमित नहीं रहा है, बल्कि आधुनिक तकनीक ने इसे अधिक वैज्ञानिक, सुरक्षित और लाभकारी बना दिया है।

### 1. नस्ल सुधार तकनीक

- त्रिम गर्भाधान (तजपपिबपंस प्देमउपदंजपवद)रु उच्च उत्पादक नस्लों का विकास कर दूध और मांस उत्पादन बढ़ाना।
- भ्रूण प्रत्यारोपण तकनीक (मउइतलव ज्तंदेमि)रु उच्च गुणवत्ता वाले पशुओं से तेजी से बेहतर नस्लें तैयार करना।
- जेनेटिक सुधार (ळमदमजपब प्चतवअमउमदज)रु बायोटेक्नोलॉजी की मदद से पशुओं को अधिक उत्पादक और रोग प्रतिरोधक बनाना।

### 2. स्वास्थ्य प्रबंधन

- सेंसर और मोबाइल ऐप से पशुओं का तापमान, हृदयगति और गतिविधियों की निगरानी।
- समय रहते रोगों का पता लगाकर उपचार करना।
- टीकाकरण और स्वास्थ्य रिकॉर्ड डिजिटल रूप से संचित करना।

### 3. आहार और पोषण

- स्मार्ट फीडिंग सिस्टमरु स्वचालित मशीनें पशुओं को संतुलित और पौष्टिक आहार उपलब्ध कराती हैं।
- विशेष सॉफ्टवेयर पशुओं की पोषण आवश्यकताओं का विश्लेषण कर सही आहार योजना बनाते हैं।

### 4. दुग्ध उत्पादन और प्रसंस्करण

- स्वचालित मिलकिंग मशीनें और रोबोटिक सिस्टम स्वच्छ और सुरक्षित दुग्ध उत्पादन सुनिश्चित करते हैं।
- गुणवत्ता नियंत्रण तकनीक से दूध का शुद्धिकरण और पैकेजिंग बेहतर ढंग से होती है।

### 5. डिजिटल मार्केटिंग और ई-कॉमर्स

- ऑनलाइन प्लेटफॉर्म के जरिए पशुपालक सीधे ग्राहकों तक दूध, मांस और अन्य उत्पाद पहुँचा सकते हैं।
- इससे बिचौलियों की भूमिका घटती है और किसानों की आय बढ़ती है।

### 6. पर्यावरण अनुकूल तकनीक

- सौर ऊर्जा का उपयोग कर बिजली की बचत।
- बायोगैस संयंत्रों से ऊर्जा उत्पादन और अपशिष्ट प्रबंधन।

आज जनसंख्या वृद्धि और पशु-आधारित खाद्य पदार्थों की बढ़ती मांग के कारण पारंपरिक पशुपालन पद्धतियाँ पर्याप्त नहीं रह गई हैं। ऐसे समय में आधुनिक प्रौद्योगिकी ने पशुपालन प्रबंधन में क्रांतिकारी परिवर्तन लाए हैं।

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स्वचालित दुग्ध मशीनें, रोबोटिक फीडर तथा जलवायु-नियंत्रित पशु-आवास जैसी तकनीकें न केवल किसानों का श्रम कम करती हैं बल्कि पशुओं के स्वास्थ्य, स्वच्छता और आराम में भी सुधार करती हैं।

आधुनिक तकनीक का सबसे बड़ा योगदान प्रिसिजन लाइवस्टॉक फार्मिंग (त्तमबपेपवद स्पअमेजवबा थंतउपदह) के रूप में देखा जाता है। इसमें सेंसर, जीपीएस ट्रैकर और पहनने योग्य उपकरणों के माध्यम से प्रत्येक पशु के स्वास्थ्य और व्यवहार की वास्तविक समय में निगरानी की जाती है। ये उपकरण हृदय गति, शरीर का तापमान, भोजन की खपत और गतिविधि स्तर जैसी जानकारीयाँ रिकॉर्ड करते हैं, जिससे रोगों का जल्दी पता चल जाता है और प्रजनन क्षमता में सुधार होता है।

कृत्रिम बुद्धिमत्ता (AI) और बिग डाटा एनालिटिक्स किसानों को भविष्य की जरूरतों का अनुमान लगाने में मदद करते हैं, जैसे भोजन की मात्रा, दूध उत्पादन या पशु के विकास की दर। इससे अनावश्यक खर्च कम होते हैं, संसाधनों की बर्बादी रुकती है और लाभ में वृद्धि होती है।

आधुनिक तकनीक पशु कल्याण और पर्यावरणीय स्थिरता पर भी ध्यान देती है। स्वचालित अपशिष्ट प्रबंधन प्रणाली प्रदूषण को कम करती है, वहीं जलवायु-समर्थ आवास पशुओं को गर्मी, ठंड और मौसम से फँलने वाली बीमारियों से बचाता है। ड्रोन और सैटेलाइट

इमेजिंग के माध्यम से चरागाह भूमि की निगरानी और चारे का प्रभावी प्रबंधन किया जा रहा है। इसके अलावा, अनुवांशिक अभियांत्रिकी और कृत्रिम गर्भाधान जैसी तकनीकों द्वारा बेहतर नस्लें विकसित की जा रही हैं, जिससे उत्पादन क्षमता और गुणवत्ता दोनों में वृद्धि हो रही है।

समग्र रूप से देखा जाए तो पशुपालन प्रबंधन में आधुनिक प्रौद्योगिकी केवल उत्पादन बढ़ाने तक सीमित नहीं है, बल्कि यह पशुओं के स्वास्थ्य, किसानों की आय और प्राकृतिक संसाधनों के स्थायी उपयोग पर भी ध्यान केंद्रित करती है। इन तकनीकों को अपनाकर पशुपालन उद्योग भविष्य की खाद्य सुरक्षा की मांगों को पूरा कर सकता है और साथ ही पशु कल्याण तथा पर्यावरण संरक्षण के बीच संतुलन बनाए रख सकता है।

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# ALVING

can either set the cow up for a productive lactation or create avoidable problems that stay for months.

**Most metabolic disorders, fertility delays, and early calf losses can be traced back to poor calving preparation.**

**Below is a practical, field-tested protocol that many herds need to implement in their calving and transition pens.**

## 1 CALVING PEN & SPACE (24 HOURS BEFORE CALVING)

A cow needs a **clean, dry, stress-free** calving environment.

Ideally, move her into an individual pen **12-24 hours** before expected calving so that calving can happen without stress.

### Recommendations:

- ▶ Minimum pen size: **10 x 12 ft**
- ▶ Good airflow, proper light and absolutely no overcrowding
- ▶ Floor should be dry and non-slippery
- ▶ Pen must be disinfected before the cow enters

### Why this is non-negotiable:

Cows calving in poorly prepared pens consistently show more **mastitis**, more **calf diarrhea**, and higher **post-calving stress**.

### Real farm example:

At a farm I supervise, shifting calving to a dedicated pen reduced fresh cow mastitis cases by **over 40%** in one season.

### Loss if ignored:

A single mastitis case can cost ₹3,000-₹9,000 in treatment + discarded milk.

## 2 BEDDING QUALITY

Calving is physically demanding. Cows need a **soft, deep, dry** bed.

### Practical guidelines:

- ▶ 2-3 inches of clean straw, husk, or sawdust
- ▶ Change bedding immediately after calving
- ▶ Avoid calving on concrete or mud floors

### What happens in many farms:

Cows calving on hard surfaces frequently develop downer cow syndrome (sub-clinical milk fever also), bruising, hip strain, and slow recovery.

### Loss if ignored:

Downer cows result in ₹5,000-₹16,000 in treatment, prolonged recovery and lost milk.



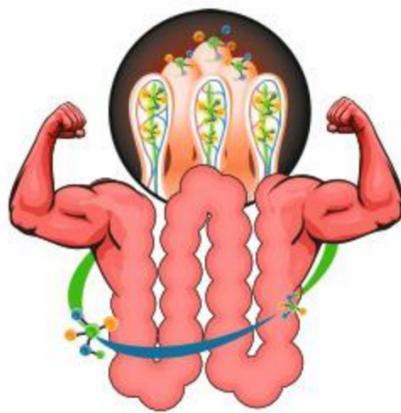


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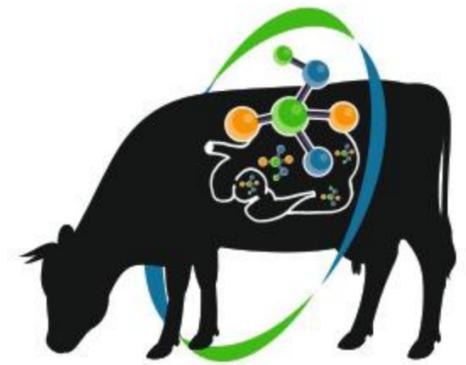
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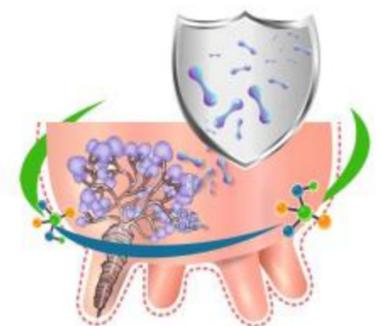
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### 3 FEEDING BEFORE & AFTER CALVING

Feeding errors around calving are one of the biggest causes of metabolic disorders.

#### Before calving:

- ▶ Provide **high-quality dry fodder**
- ▶ Moderate green fodder; **avoid heavy concentrate feeding**
- ▶ Ensure free access to clean water

#### Immediately after calving:

- ▶ Offer **warm water with electrolytes**
- ▶ Begin gradual increase of concentrate
- ▶ Maintain good-quality green and dry fodder balance

#### What goes wrong if you don't do this:

Cows fed heavy concentrates before calving often go off-feed after calving. I see it on farms every season—appetite drops, milk drops, and subclinical acidosis appears.

#### Potential loss:

Reduced intake post-calving → ₹2,500–₹7,000 loss in milk and recovery costs.

### 4 GLUCOGENIC PRECURSORS & CALCIUM SUPPORT

(MPG + Glycerol + Sorbitol + Calcium Propionate)

Fresh cows face a sudden spike in energy and calcium demand. Without support, ketosis and milk fever become common.

#### What I prescribe on farms:

- ▶ **MPG** (Mono Propylene Glycol): **300–350 ml/day for 3–5 days**
- ▶ **Glycerol: 200 ml/day**
- ▶ **Sorbitol: 150–200 ml/day**
- ▶ **Calcium Propionate: 200–250 g/day** mixed in feed

Many farms prefer branded transition blends containing all four.

#### Why this works:

These ingredients support liver function, energy metabolism, blood calcium levels, and help the cow resume normal appetite faster.

#### Actual impact:

Farms using these supplements see far lower incidents of ketosis, milk fever, and slow starters.

#### Loss if ignored:

Ketosis can cost ₹1,500–₹5,000 per cow in lost milk and treatment.

### 5 PLACENTA MANAGEMENT (0–12 HOURS POST CALVING)

A normal placenta should pass within **2–8 hours**. Do **not** pull or tug on it under any circumstance.

#### Field protocol:

- ▶ Monitor quietly
- ▶ If placenta remains beyond **12 hours**, call a vet
- ▶ Maintain hygiene around the vulva area

#### Why:

Forced removal can cause internal tearing, infection, and long-term infertility.

#### Loss if ignored:

Metritis + delayed conception → ₹2,500–₹6,000 in costs and lost cycles if it is an conventional semen, if someone uses sexed semen, losses are even higher.



### 6 CALF CARE: FIRST 48 HOURS

This is where most farms lose money without realizing. The newborn calf must be handled correctly from the first minute.

#### My standard protocol:

- ▶ Clear mucus from nose and mouth
- ▶ **Dip the navel** in tincture iodine
- ▶ Feed **colostrum within 1 hour** of birth
- ▶ Give **10% of calf bodyweight** colostrum in first 12 hours
- ▶ Use a **clean cuddle box or calf pen**
- ▶ Protect from cold, wind and wet bedding

#### Why this matters:

Calves get all their immunity from colostrum — there is no second chance.

#### Example from the field:

Farms that introduced strict colostrum timing saw calf mortality drop from **18% to under 6%**.

#### Loss if ignored:

Calf death = ₹8,000–₹25,000, depending on breed and sex.



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## 7 CUDDLE BOX / INDIVIDUAL CALF PEN

This is one of the simplest improvements a farm can make.

### What I advise:

- ▶ Keep a clean, disinfected calf box ready
- ▶ Shift the calf immediately after wiping
- ▶ Ensure dry bedding and zero drafts

### Why:

Reduces early exposure to pathogens, prevents joint/navel infections and pneumonia.

### Loss if ignored:

Joint/navel infection treatment = ₹300-₹1,500,  
Plus slower growth = ₹500-₹2,000.



## 8 MONITORING THE COW (FIRST 48 HOURS)

Most post-calving metabolic diseases start silently.

### Signs to watch:

- ▶ Appetite
- ▶ Drinking behavior
- ▶ Temperature
- ▶ Milk fever signs
- ▶ Abnormal discharge
- ▶ Swelling or pain
- ▶ Cow not standing normally

### Why:

Early detection prevents expensive treatments later and protects the cow's entire lactation curve.

### Loss if ignored:

Even one day of reduced intake can result in ₹700-₹2,000 in dropped milk depending on the animal potential.

### Biophilia Field experience data shows:

Across the farms we manage, consistent calving management has shown the greatest return on investment.

Skipping these steps can cost ₹12,000 to ₹45,000 per animal through:

- ▶ Mastitis
- ▶ Metabolic disorders
- ▶ Poor peak milk
- ▶ Calf losses
- ▶ Delayed conception

Whereas following this protocol costs a fraction of that.

**Calving care is not an expense – it's the foundation of a profitable lactation.**





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# CLFMA of India Delegation Strengthens U.S.-India Agricultural & Livestock Collaboration Through In-Depth Knowledge Exchange



- *The CLFMA of India delegation visited the United States to study sorghum, corn, and dairy farming practices and engage with top agricultural stakeholders.*
- *Meetings included live farm demonstrations, industry interactions, and discussions with senior U.S. officials, including the Governor and Agriculture Secretary of Iowa.*
- *The visit reinforces ongoing MoUs between CLFMA, the State of Iowa, and Maharashtra, promoting knowledge exchange and bilateral cooperation.*

The Compound Livestock Feed Manufacturers Association (CLFMA) of India successfully concluded a week-long delegation visit to the United States, marking a significant step in advancing international cooperation in agriculture and livestock feed. Invited by the U.S. Grains Council, the delegation, led by Chairman Mr Divya Kumar Gulati, engaged with policymakers, industry leaders, and farmers to explore best practices in sorghum (jowar), corn, and dairy production.

The visit commenced in San Antonio, Texas, where the delegation participated in a series of technical sessions led by experts from the United Sorghum Checkoff Program, Kansas State University, Clemson University, and the U.S. Grains Council. Discussions spanned global sorghum markets, grain standards, sustainable farming practices, and the role of sorghum in poultry, swine, and pet food diets. Sessions also highlighted efficiencies within the U.S. grain supply chain and emerging trends in global demand.

Next, the delegation travelled to Amarillo, Texas, to witness sorghum cultivation and processing firsthand. Visits included Will Braack and Kathy Broman Farms, Joe Rohrbach Farms, and the Richardson Seed Company in Vega. The program also featured a tour of Myles Frische Farms and an engagement with Bunge in Etter, Texas, offering an in-depth look at planting, harvesting, and supply chain operations. The Texas leg concluded with a debrief session hosted by the United Sorghum Checkoff Program in Amarillo.

In Iowa, the delegation explored the integrated grain-to-feed ecosystem through visits to POET Bioprocessing facilities in Jewell and Shell Rock, as well as Mark Mueller's farm in Waverly, where the team was hosted for a farmer-organized cookout. Additional stops included Stuart Swanson Farms in Galt, the Gold Eagle Feed Mill in Eagle Grove, and Dutchland Dairy in Rolfe, providing insights into ethanol production, feed manufacturing, and large-scale dairy operations.

The Iowa program culminated in strategic engagements, featuring a high-level meeting with the Governor of Iowa at the State Capitol, followed by discussions with the Iowa Agriculture Secretary and members of the Iowa Corn Growers Association. These interactions focused on agricultural policy, trade, and technology adoption, underscoring opportunities for long-term collaboration in livestock feed and dairy sectors.

This visit reinforces ongoing efforts under the MoU signed between CLFMA and the State of Iowa (September 2024), and the sister-state agreement between Maharashtra and Iowa (August 2025).

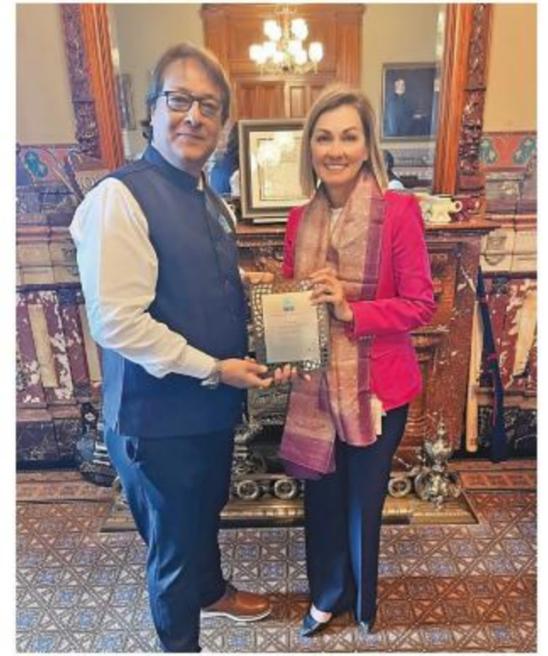
Both frameworks aim to facilitate joint research, knowledge sharing, and adoption of sustainable practices in the livestock feed and broader agricultural sector.

Commenting on the visit, Mr Divya Kumar Gulati, Chairman, CLFMA of India, said, "This visit provided invaluable insights into advanced agricultural practices, particularly in sorghum, corn, and dairy production. With India's animal feed market valued at approximately USD 14.34 billion in 2024 and projected to reach USD 21.02 billion by 2034,<sup>1</sup> the need for sustainable and efficient feed solutions is paramount. Engaging with U.S. counterparts has highlighted the importance of knowledge exchange in addressing challenges such as feed shortages and productivity gaps. By adopting proven practices and fostering international collaboration, we aim to enhance the sustainability and competitiveness of India's livestock sector."

The CLFMA delegation included:

- Mr. Divya Kumar Gulati, Chairman
- Mr. Abhay Shah, Deputy Chairman
- Mr. Abhay Parnekar, Deputy Chairman
- Mr. Nissar F. Mohammed, Honorary Secretary
- Mr. R. Ramkuttu, Treasurer
- Mr. Sameer Chotai, President - East Zone
- Mr. Sumeet Surekha, Deputy Chairman
- Mr. Suresh Deora, Immediate Past Chairman
- Mr. Naveen Pasupathy, Deputy Chairman

Through direct engagement with U.S. farmers, industry representatives, and policymakers, the CLFMA delegation reinforced India's commitment to sustainable agricultural practices, livestock feed innovation, and international collaboration.



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**DR. CARLOS CAMPABADAL**  
**Faculty Member, Department of Grain Science and Industry, Kansas State University**

Dr. Carlos Campabadal is a faculty member at the Department of Grain Science and Industry at Kansas State University focusing his work on the International Grains Program Institute (IGP) as an extension specialist and leader focused on outreach in the areas of grain storage, quality and processing, U.S. grain grading, export systems, and feed manufacturing. He conducts applied research in stored product protection focusing on grains, oilseeds and its co-products. He is active in international development with several projects with USAID and USDA in Central America and in Africa. He was born and raised in Costa Rica, Central America.

He obtained his doctoral degree in Agricultural and Biological Engineering from Purdue University focusing on Stored Product Protection and was a part of the Post-Harvest Education and Research Center (PHERC). He obtained his master's degree in Agricultural Engineering at the University of Illinois focused on grain processing. Before, his graduate studies and after obtaining a B.S. degree in Mechanical Engineering from the University of Costa Rica, he worked in his family feed mill company for three and a half years as a process and maintenance engineer. His previous experience includes animal farm management in beef cattle and swine farms. Dr. Carlos has travelled throughout Latin America, Africa, Asia, and Europe as a technical consultant, and speaker in more than 35 countries and 50 short courses and seminars in the areas of grain storage and feed manufacturing for U.S. Grains Council, U.S. Soybean Export Council, U.S. Wheat Associates, USDA, WISHH, World Bank, and private companies. He has also presented his research at several scientific and professional conferences, and has several publications in scientific journals. He is still involved in his family feed manufacturing and farm business operations.



**DR. WILMER JAVIER PACHECO**  
**Extension Specialist and Associate Professor, Department of Poultry Science, Auburn University**

Dr. Wilmer Pacheco was born in Honduras where he obtained a BS in Food Science in 2005. Shortly after graduation, Dr. Pacheco began a feed mill manager training program with Murphy Brown, LLC in Laurinburg, North Carolina where he was responsible for overseeing the production of approximately 10,000 tons of pellet feed per week. In June 2009, Dr. Pacheco was awarded a fellowship in the Department of Poultry at North Carolina State University, where he earned his Master's in Poultry Science and his Ph.D. in Physiology and Nutrition. Currently, Dr. Pacheco is an Associate Professor and Extension Specialist at Auburn University in the State of Alabama. His research activities are focused on understanding the interrelationships between feed processing and nutrition on broiler performance. Additionally, Dr. Pacheco conducts research on nutrition strategies to reduce production costs, improve broiler performance, and nutrient digestibility. Dr. Pacheco is lead or supporting author of 32 research articles and 88 news articles primarily in Feedstuffs magazine, which is the leading source of news for animal agriculture in the United States with 12,500 accredited subscribers. Dr. Pacheco has been invited to give more than 165 presentations in 16 countries, has served as chair or member of 25 graduate student committees, and has mentored 21 visiting scholars from 12 countries.

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**MR. MEENAKSHISUNDARAM KANAGARAJ**  
**Consultant**

Mr. Meenakshisundaram Kanagaraj is a freelancing consultant, technical trainer, and speaker on feed milling. He holds a Post Graduate Diploma in Digital Instrumentation and a Bachelor's degree in Physics. He has worked for an instrumentation company, an auto ancillary components manufacturer, and a multinational animal feed additive manufacturer. He has successfully completed a course on Lean Six Sigma Black Belt by the American Society for Quality (ASQ) and a course on Fundamentals of Feed Milling Technology conducted by the American Feed Industry Association (AFIA). As a consultant, he is involved in new feed mill projects from design to commissioning. He has helped feed milling organizations improve quality and productivity.

**What SEC Community Members Have to Say**



**MR. RAJ KAPOOR**  
Managing Director  
Assocom India Pvt. Ltd.

Coming from a Food sector background, this was my first Feed industry course, and it proved to be an exceptional learning experience. The SEC India Feed Mill Course provided a strong foundation for understanding the complete feed manufacturing chain from raw material handling to pelleting and post-pellet application. As someone who has long worked in food processing and market development, the course helped me see clear parallels between food safety, quality control, and process efficiency in both industries. It also introduced me to new technical dimensions like conditioning parameters, CV% for mixing uniformity, and cooling-airflow relationships, which broadened my understanding of feed technology and quality assurance.

The course design, with its practical approach and technical clarity, made complex feed concepts accessible even for participants transitioning from the food sector. Overall, this program has strengthened my perspective as a Market Development Expert, allowing me to bridge knowledge between the food and feed industries more effectively.

Thank you once again for organizing such a well-structured and insightful program



# Recent Advancements in Animal Identification methods

Sanjeet Kumar Verma and Indu Devi\*

The process of uniquely identifying livestock involves assigning a specific label to each animal and verifying its identity. In modern animal husbandry, this practice is essential for several reasons. It enhances disease prevention and management, ensures product traceability and food safety, boosts breeding efficiency and economic outcomes, and supports the promotion of sustainable practices in animal husbandry. Identifying animals is key for dairy farming operations, including production, feeding, breeding management, handling disease outbreaks, insurance, and trading animals. It enables producers to maintain records of birth rates, production data, health histories, and various other management details. Accurate records equip producers with sufficient information to make informed decisions regarding individual animals or entire herds or flocks. Moreover, it is vital for establishing ownership of a specific animal.

## Methods of Identification -

There are various methods for individual identification, which can be classified in the following ways -

- 1 Mechanical (Branding, tagging, tattooing, Ear notching)
- 2 Electrical (RFID)
- 3 Biometric marker (Muzzle print, Iris, Retinal imaging, DNA fingerprinting, etc.)

**1.a) Branding** - Hot iron was the earliest cattle identification method. The branding irons undergo fire until they become red-hot, and these are applied to the cattle's hide to kill the cells that grow hair follicles, creating permanent markings. Freeze branding is another type of branding that is similar to hot branding but differs in method; instead of using iron branding, liquid nitrogen or dry ice and alcohol are employed to chill the branding irons.

**1.b) Tagging**-There are various methods for applying tags; they can be utilized with a neck chain or through piercing. To attach tags to cattle, the ears are pierced between the second and third cartilage ribs, allowing for easy visual identification from both the front and back. While tags are fairly inexpensive and easily readable, the procedure for applying them can be harmful.

**1.c) Tattooing**-Tattooing is a widely used and lasting technique for identifying cattle by marking a unique combination of permanent letters and numbers onto their skin. As ungulate animals, cattle have their tattoos placed in the ear just above the first cartilage rib to avoid ear tag interference.

**1.d) Ear notching**-This is a traditionally organised approach commonly used for identifying herds, where the identification of cattle is determined by their birth order within the available breeding, provided it is executed correctly. The litter number, which is often used for piglet identification, is notched onto the right ear of the cattle, referred to as the litter ear, while the individual identification for the cattle is notched on the left ear, known as the individual cattle ear.

**2) Radio Frequency Identification (RFID)**-This method for identifying animals electronically is particularly suited for ungulates like cattle. RFID consists of a microchip equipped with a small transmitter, radio,

and antenna that allows communication with a reader. Various application methods are available for RFID technology, with common forms including microchip implants, ear tags, ruminal boluses, and neck collars. Regardless of the RFID technology applied, a scanner is required to read the microchip, interpret the radio signal as a numerical code, and retrieve the recorded information about the cattle from the herd management software.

## Limitations of the above classical animal identification methods-

The application of brands can easily lead to damage or make them hard to read due to improper methods. Cattle movement is restricted when branding, and this process can inflict significant pain from the extremely hot or cold metal. When it comes to tagging, like ear tags, their visual readability can diminish over time. Although the process of placing an ear tag requires little strength and restraint and is generally painless if performed correctly, there is a high risk of infection using this method. Tattooing, a widely used approach for permanent identification in cattle, can be painful and carries the risk of infection if not done in hygienic conditions. The process of ear-notching is relatively painful, and since it relies on visual reading, inaccuracies may occur. Many RFID technologies have a limited range, making them unreliable for monitoring and biometric applications in cattle. Setting up these technologies is costly, and there is a tendency to lose transponders.

**3) Biometric features**- They are used for identification and must adhere to the requisite standards of uniqueness, stability, and harmlessness to ensure that they are suitable for practical applications. Currently, the biometric features commonly used to distinguish between livestock individuals include retinal vascular patterns, iris patterns, muzzle patterns, facial features, and body patterns.

**Advantages of biometric methods**-Identification based on facial features does not require any marking or wearing of marking devices on the animal. Visual livestock biometrics have emerged as a highly promising research focus due to their non-invasive nature, with a convenient, fast, and livestock-friendly method.

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### 3.1) Retinal Vascular Patterns-

The arrangement of blood vessels in the retina is a distinctive characteristic that remains unchanged during an animal's lifetime and can even help differentiate identical twins (Alsaadi, 2015). Consequently, retinal vascular patterns can serve as unique visual identifiers for livestock.

The earlier implementation of livestock identification using retinal vascular patterns was based on the principle of image matching. Although image processing techniques have somewhat mitigated the impact of environmental changes on this matching process, challenges remain. Identifying livestock through retinal patterns is a viable option; however, it comes with difficulties, such as the challenge of acquiring clear retinal images and the effects of external conditions like lighting and flash on image quality. Moreover, obtaining retinal images requires proximity to the livestock, which can induce stress reactions in the animals. Additionally, if the cornea of the livestock's eye is injured, the system may fail to identify the animal. (Alturket *et al.*, 2019)



Sheep retinal image acquisition (Barronet *et al.*, 2008)

### 3.2) Iris Patterns-

The iris in livestock possesses a structure akin to that of the human iris, characterized by a detailed texture that remains consistent throughout the animal's life once it matures (Sheng, 2010). Issues such as identifying the iris area and differentiating between the sclera and iris are often associated with iris recognition due to the unique placement of the iris.

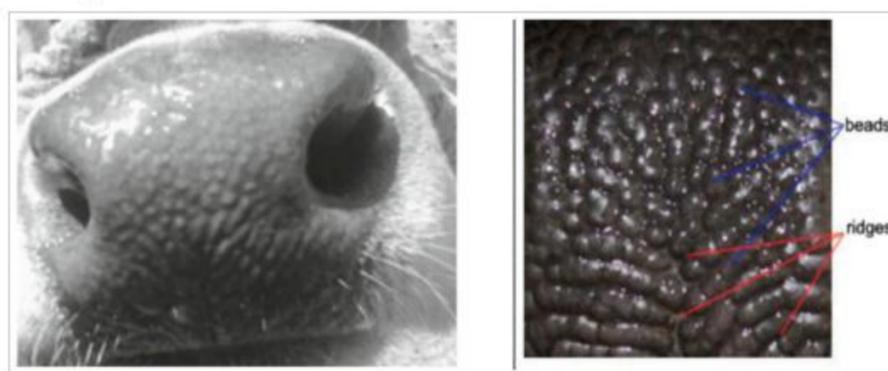


Examples of iris images. (He *et al.*, 2008)

### 3.3) Muzzle Pattern-

The texture pattern on the muzzles of livestock features a dense arrangement of various grooves or bumps, referred to as beads, as well as some flowing structures known as ridges. Muzzle dermatoglyphics resemble human fingerprints and are distinct, serving as a basis for identification (Mishra *et al.*, 1995). In the past, muzzle images were collected by applying ink to the animal's muzzle and transferring the prints onto paper. With advancements in image acquisition technology, cameras were later used to capture these images.

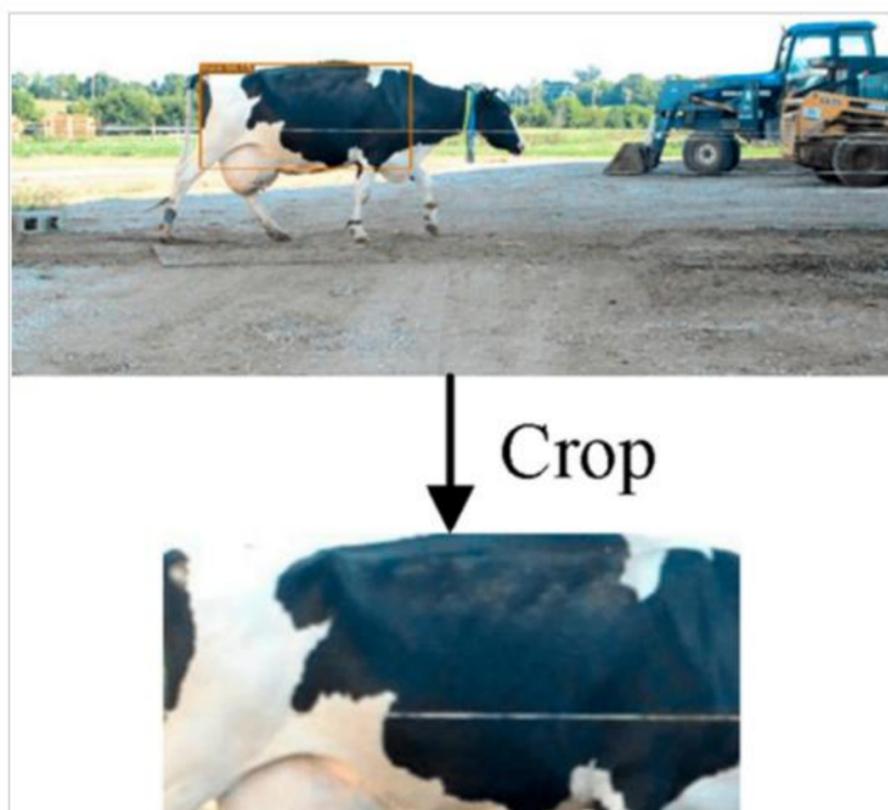
Gathering images of muzzles is a simpler task compared to collecting retina or iris images. Nonetheless, during the implementation stage, various external factors, such as dirt, sweat around the muzzle area, and lighting conditions, may affect image quality. Furthermore, the movement of livestock can also impact the precision of recognition.



Muzzle image and the unique pattern on the cattle muzzle (Kumaret *et al.*, 2017)

### 3.4) Body Pattern-

The pattern of the body describes the consistent arrangement of hair in various colors on the body of cattle. It is essential to note, however, that not every livestock species has a unique body pattern. Furthermore, certain cattle breeds possess distinct skin colors or markings that can be utilized for identification.



The body pattern image of a dairy cow (Zhang *et al.*, 2023)

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- ▶ मक्की के साइलेज के साथ खिलाने से अधिकतम लाभ।
- ▶ दूधारू पशुओं के शीघ्र गर्भधारण में सहायक।
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### 3.5) Facial Features-

The facial characteristics of livestock consist of eyes, ears, nose, mouth, facial shape, skin, and hair. These features provide the most immediate visual cues about an individual. Although using facial characteristics for identifying livestock has several benefits, it also has its limitations. For example, various environmental factors like changes in lighting, different angles of imaging, and distances can greatly alter the facial features of livestock. This variation can lead to errors in the identification process. Additionally, the differences in facial features among individuals of the same breed and similar body size in livestock are quite minor.

#### Challenges of Biometric Methods-

The rapid growth of science and technology, along with the increasing need to modernize the livestock industry, provides a great chance to use computer vision technology for accurately identifying livestock. However, this area faces several challenges, including collecting data, understanding data similarities and differences, and achieving model accuracy and real-time performance.

**Challenges in Data Collection-** Finding a wide range of high-quality images can be very difficult, especially when dealing with uncooperative animals or working in remote farm areas. Deep learning methodologies frequently require voluminous data for training and learning purposes. Computer vision-based livestock individual recognition requires annotating a substantial number of images to achieve satisfactory performance. However, image annotation requires a lot of time and is a laborious process.

In agriculture, getting good data is challenging because ideal conditions are rarely found on farms. As a result, the data collected often has problems due to various environmental factors. For example, livestock can be hidden by other animals or equipment, and their visibility may change with different lighting conditions.

Keeping livestock in the same posture during data collection can be difficult. This varying posture can cause important details in the images to become blurred, distorted, or missing altogether.

#### Challenges in Model Accuracy and Generalization-

To tackle the challenges of livestock identification, using complex models is often necessary. These models can extract features and learn more effectively, but they require significant computational power for training and use. Therefore, finding a balance between accurate identification and the complexity of the model is essential. Generalization ability pertains to a model's

capacity to operate effectively on novel, unseen data. Normally, models are evaluated using images that resemble those in the training dataset, and while these models may achieve high performance in evaluations, their performance may drop when faced with images that have different traits.

#### Conclusions-

Reliable systems for identifying animals are essential for data collection and various important management practices. Recognising animals within a herd or flock helps producers and managers make informed decisions based on the records of each animal. Over time, the methods for identifying livestock have significantly advanced. They have transitioned from basic techniques such as branding and ear cutting to the modern, sophisticated computer vision-based identification systems in use today. These identification methods vary, and each comes with its advantages. All methods can be effective when applied appropriately and under suitable conditions. Often, multiple methods are employed together to achieve the highest level of accuracy. With this in mind, it is advisable to assess the needs and anticipated uses of animal identification on a farm before selecting the most suitable identification methods.

**Sanjeet Kumar Verma and Indu Devi\***

\*Scientist, ICAR-NDRI, Karnal



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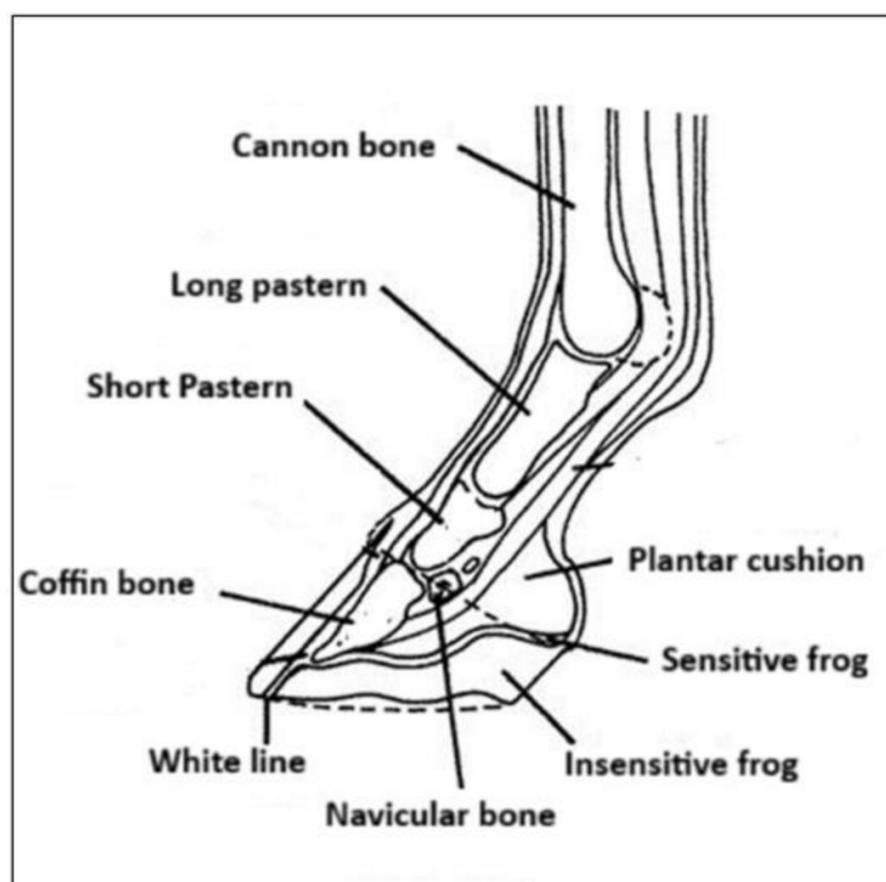
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# Happy Hooves, Healthy Herd: A Farmer's Guide To Lameness Prevention

Dr. R. Selvakkumar

Enhancing the productivity of dairy cattle is linked to several contributing factors, primarily including breeding, reproduction, healthcare, nutrition, housing, and various management practices that are directly associated with production performance and economic benefits for farmers at large. As farmers increasingly adopt crossbred cows in their quest for higher milk yields and greater income, the incidence of diseases has surged significantly, presenting a considerable challenge for both dairy farmers and their operations. In contrast to indigenous cows, which exhibit resistance to many infectious diseases, exotic and crossbred cows such as Jersey and Holstein Friesian are vulnerable to a range of infectious diseases, including those of viral, bacterial, blood protozoan, and parasitic origins. Furthermore, numerous diseases also arise from inadequate nutrition.

The hoof is a crucial component of an animal's body. While an animal experiencing hoof issues may still manage to function, the likelihood of optimal production and performance diminishes based on the severity of the issue. A cow suffering from foot pain is less inclined to walk, which in turn decreases its motivation to reach a feed bunk or grazing land, ultimately leading to reduced weight gain or milk production compared to an animal that can consume its full daily feed ration. Although some hoof issues are inevitable, effective hoof management practices can significantly lower the occurrence of hoof problems across various animal types.



A comprehensive hoof care program not only reduces treatment costs for issues but also minimizes losses associated with diminished performance and

productivity. Although hoof structure varies among species, the fundamental anatomy remains quite similar across different species. To effectively care for the hoof, it is essential for an owner to grasp the basic structure and anatomy of the hoof.

A cattle hoof has several parts, including the outer *hoof wall*, the flexible *white line* where the wall meets the sole, the *sole* on the underside of the hoof which includes the *toe* and *heel bulbs*, and the V-shaped *frog* for shock absorption. Internal structures include the *corium* which produces horn, the fatty *digital cushion* for shock absorption, and the *pedal bone* which provides the hoof's structure and is connected to the corium by sensitive *laminae*.

## Common Hoof Problems in cattle

High-yielding cattle are prone to hoof problems due to a combination of genetic, environmental, and nutritional factors. Hoof issues are generally categorized as infectious or non-infectious.

### Non-Infectious Lesions

Non-infectious hoof lesions are damage to the hoof caused by factors like trauma, genetics, or poor management, rather than bacteria. Common examples include sole hemorrhages (bruising), white line separation, sole ulcers, and overgrown claws

#### a. Sole Ulcers

Sole ulcers refer to areas of the sole horn that are either damaged or penetrated, resulting from excessive pressure and repeated compression of the corium (the tissue responsible for horn production). This condition often arises from prolonged standing on hard surfaces or



hormonal fluctuations around calving that compromise the integrity of supportive hoof structures. Typically, these ulcers develop beneath the flexor tuberosity of P3. They are linked to different levels of pain and subsequent alterations in weight bearing.

#### Sole Ulcers

Sole ulcers are generally identified by the protrusion of the corium at the site of the ulcer. The exposed corium may vary in appearance from fresh and red to brown and necrotic. Typically, sole ulcers develop in the lateral hoof of the hind legs, as this area supports more weight than the medial hoof.

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To prevent sole ulcers, the primary goal is to reduce pressure on the corium. This can be achieved by limiting the duration the animal spends standing on hard surfaces, as well as minimizing negative energy balance and the related inflammatory processes. The comfort and design of the lying surface, stocking density, and heat stress management, as well as strategies to reduce issues during the transition period, all play a significant role in reducing the time spent standing.

#### b. White Line Disease

The white line denotes the area on the hoof's sole where the wall horn meets the sole horn. This particular horn is relatively weaker, rendering it more vulnerable to damage, particularly from lateral (shearing) forces exerted on the foot. White line disease in cattle is a condition marked by the detachment of the hoof wall from the sole, leading to a fissure that can allow dirt and bacteria to infiltrate, which may result in an abscess. This condition can develop due to trauma, stress, and subpar hoof quality stemming from insufficient nutrition. Treatment generally includes trimming the detached horn, applying a hoof block to redistribute weight, and improving housing and handling practices to reduce hoof stress.

#### c. Sole haemorrhages and Thin Soles

These result from bruising of the corium, which can lead to ulcers, and are caused by excessive wear, abrasive surfaces, or over-trimming. This condition is marked by the appearance of red and occasionally yellow spots or areas on the sole, and it may manifest in regions where the sole is especially thin.

#### d. Toe Ulcers/Necrosis(Toe tip necrosis syndrome)

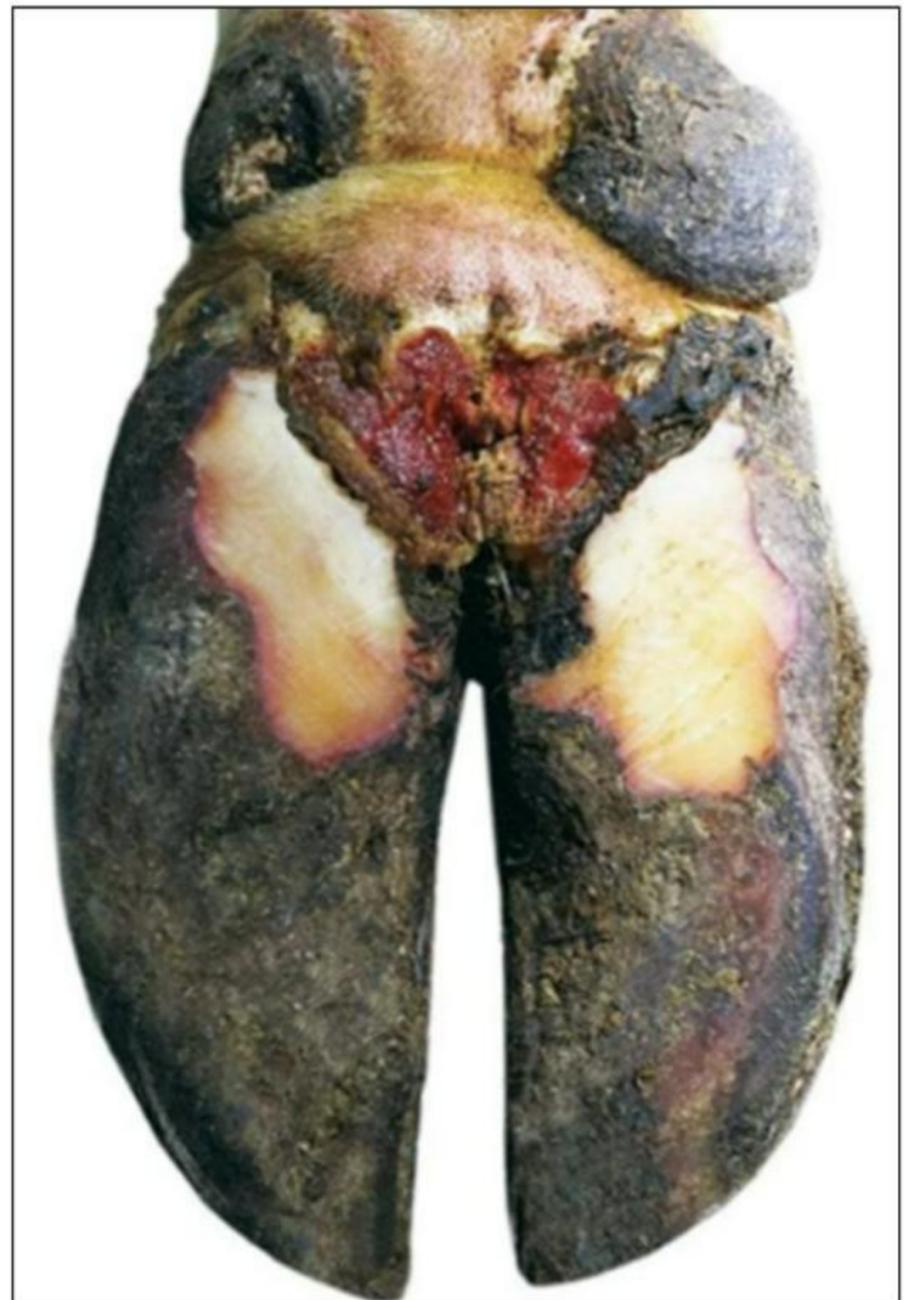
Toe ulcers and necrosis in cattle are painful lesions on the hooves that occur due to excessive wear, resulting in a rupture of the white line where bacteria can infiltrate, leading to infection and, in severe instances, bone necrosis. This condition is frequently associated with rough surfaces in feedlots, causing lameness that can vary from mild to severe. Initial symptoms may include serum or blood staining in the hoof, while more advanced cases can lead to noticeable tissue prolapse and may potentially result in joint infections or other systemic complications if not addressed.

### Infectious Lesions

#### a. Digital Dermatitis (Hairy Heel Warts):

Digital dermatitis in cattle is a painful and infectious bacterial condition that leads to lameness and lesions on the feet, often found in the interdigital cleft. This disease is caused by a combination of bacteria, including the spirochete *Treponema* species, and can manifest as painful, red, and ulcerated skin or as a less painful, gray-black, circular lesion. Treatment emphasizes hygiene, the use of topical antibiotics, pain management, and preventive measures such as footbaths to limit its spread within herds.

The primary strategy for preventing digital dermatitis is maintaining hygiene. Ensuring a clean environment free from wet and/or abrasive walking surfaces reduces the likelihood of compromising the skin barrier. Regular use of foot baths is a preventive strategy that should be implemented as frequently as needed to reduce the incidence of active painful lesions. These foot baths are generally filled with disinfectant solutions like copper sulfate or formalin.

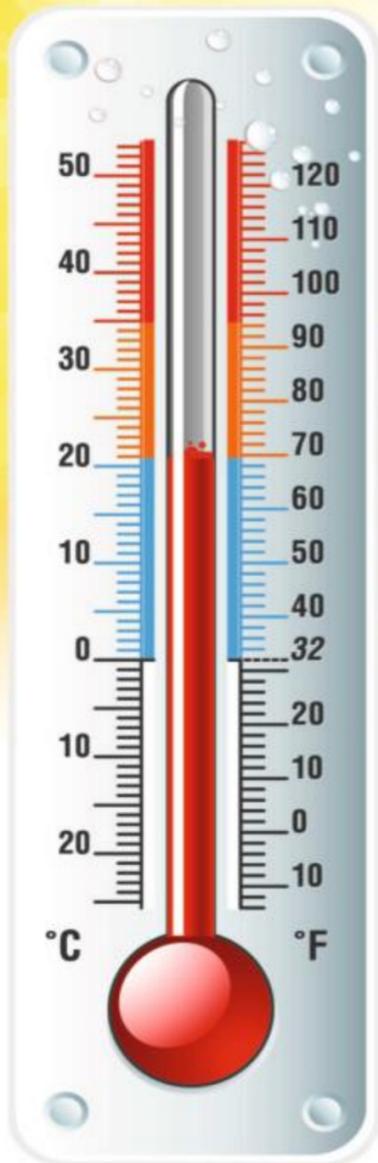


#### b. Foot Rot (Interdigital Phlegmon):

Foot rot in cattle, known as interdigital phlegmon, is a bacterial infection affecting the skin between the toes, leading to sudden lameness, swelling, and a foul-smelling wound. This condition is caused by *Fusobacterium necrophorum*, a common bacterium present in the environment, and is frequently triggered by wet or muddy conditions that harm the skin.

To prevent foot rot, the primary focus should be on avoiding skin damage, thus eliminating the chance for bacterial infection. Skin damage, usually of mechanical nature, occurs due to contact with rocks, sharp edges, cables, and other dangerous objects or protrusions in the animal's living environment. Additionally, chronic exposure to wet conditions in muddy or dirty environments can also lead to skin damage. On dairy farms, employing foot baths with various disinfectants helps to clean and disinfect the interdigital skin.

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<sup>1</sup> Saint Pierre et al., 2003 - <sup>2</sup> Burgos & Collier, 2011.

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\*Marfola, et al, ADSA 2010.

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### c. Heel Horn Erosion/Interdigital Dermatitis:

Interdigital dermatitis is a contagious bacterial infection that leads to the erosion of heel bulbs or a mild form of dermatitis (distinct from digital dermatitis) that usually does not result in lameness. Heel horn erosion is a component of the interdigital dermatitis disease complex.

The primary bacterium linked to heel horn erosion and interdigital dermatitis is *Dichelobacternodosus*, which is a gram-negative, anaerobic, commensal, and opportunistic bacterium. Generally, these bacteria penetrate skin and horn that have been compromised by wet and unsanitary conditions. This invasion initiates a cycle of additional damage due to their virulence factors and the body's reaction of excessive horn growth.

To prevent heel horn erosion, it is essential to minimize prolonged exposure to wet and unsanitary environments. Similar to other infectious hoof conditions, regularly and properly using foot baths to clean and disinfect hooves serves as a preventive strategy for housed dairy cows.

### Effective Hoof Care and Prevention Strategies

Effective hoof care for cattle involves a multi-faceted approach including regular hoof trimming, maintaining a clean and dry environment, implementing a proper nutrition plan, and using footbaths. These strategies, when combined, prevent infections and injuries, promote proper weight distribution, and ensure overall hoof health, reducing the risk of lameness.

### Environmental Management:

- **Provide Comfortable Housing:** Ensure ample space and comfortable, deeply bedded lying areas to encourage sufficient resting time (12-14 hours per day), which reduces pressure on hooves.
- **Optimize Walking Surfaces:** Use rubber matting in high-traffic areas like the milking parlor exit and walkways to provide better traction and reduce injury and wear.
- **Hygiene:** Maintain a clean and dry environment in stalls, walkways, and around milking parlors to prevent infections from spreading.
- **Drainage:** Ensure good drainage to prevent muddy conditions and minimize the time cattle spend in wet areas.
- **Flooring:** Provide a dry, smooth surface in walking areas to reduce injury and prevent slipping.
- **Bedding:** Keep bedding areas dry and replace them regularly to minimize contamination.
- **Overcrowding:** Avoid overcrowding to reduce the risk of injuries

### Nutritional Management

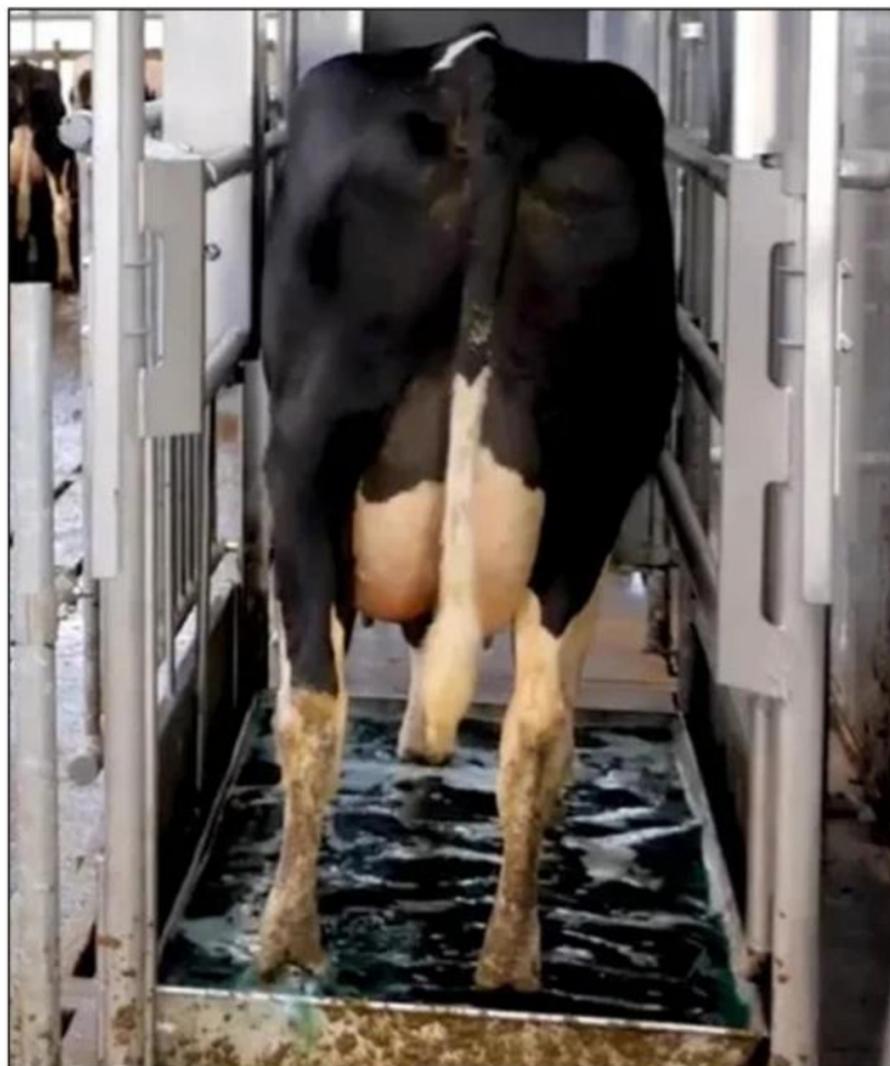
- Nutrition is a significant factor in healthy hoof horn growth. Some minerals, amino acids, and vitamins are

involved in the keratinization process, which ensures healthy horn growth and the structural binding of keratin proteins.

- **Balance the Diet:** Prevent subacute ruminal acidosis (SARA) by ensuring a balanced ratio of concentrate to high-quality fiber/roughage. Avoid sudden diet changes.
- **Supplement Minerals and Vitamins:** Ensure adequate levels of key nutrients. Zinc and copper are vital for strong connective tissue and immune function, while biotin supplementation (around 20 mg/day) has been proven to improve horn quality and reduce lesions.

### Routine Hoof Care:

- **Regular Hoof Trimming:** Perform maintenance trimming twice yearly (e.g., at dry-off and around 100 days in milk) by a skilled professional to balance weight-bearing and prevent overgrowth. Heifers should also be trimmed before their first calving.
- **Footbaths:** Implement a regular footbath program (using solutions like copper sulfate or formalin) to clean and disinfect hooves and prevent infectious diseases.



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# ਸਰਦੀਆਂ ਆ ਗਈਆਂ - ਸਾਵਧਾਨ!

ਡਾ. ਪਰਮਿੰਦਰ ਸਿੰਘ

ਅਪਰ ਨਿਰਦੇਸ਼ਕ ਪਾਸਾਰ,  
ਗੁਰੂ ਅੰਗਦ ਦੇਵ ਵੈਟਨਰੀ ਐਂਡ ਐਨੀਮਲ  
ਸਾਇੰਸਜ਼ ਯੂਨੀਵਰਸਿਟੀ, ਲੁਧਿਆਣਾ

ਸੂਆ ਪੈ ਕੇ ਅਜੇ ਦੁੱਧ ਵੱਧਣਾ ਸ਼ੁਰੂ ਹੋਗਿਆ ਹੀ ਸੀ ਕਿ ਮੱਘਰ ਚੜ੍ਹਦਿਆਂ ਸਰਦੀ ਕਾਰਣ ਫਿਰ ਘਟਣਾ ਸ਼ੁਰੂ ਹੋਗਿਆ। ਸਿਆਣੇ ਕਿਹੰਦੇ ਕਿ ਆਉਂਦੀ ਤੇ ਜਾਂਦੀ ਸਰਦੀ ਖਤਰਨਾਕ ਹੁੰਦੀ ਹੈ; ਕਿਉਂਕਿ ਦਿਨ ਅਤੇ ਰਾਤ ਦੇ ਤਾਪਮਾਨ ਵਿੱਚ ਜ਼ਿਆਦਾ ਫਰਕ ਹੁੰਦਾ ਹੈ। ਦਿਨੇ ਗਰਮੀ ਅਤੇ ਸ਼ਾਮ ਵੇਲੇ ਅਚਨਚੇਤ ਪਾਰੇ ਦੀ ਗਿਰਾਵਟ ਕਾਰਨ ਗਰਮ-ਸਰਦ ਹੋਣ ਦਾ ਖਤਰਾ ਬਣਿਆ ਰਿਹੰਦਾ, ਜਿਸਦਾ ਲਵੇਰਿਆਂ ਦੀ ਪੈਦਾਵਾਰ ਤੇ ਮਾੜਾ ਅਸਰ ਪੈਂਦਾ ਹੈ। ਤਾਪਮਾਨ ਇਸ ਲੇਖ ਨੂੰ ਲਿਖਣ ਸਮੇਂ 23-09° ਸੈਂਟੀਗ੍ਰੇਡ ਚਲ ਰਿਹਾ ਹੈ, ਪੜ੍ਹਦਿਆਂ ਹੋਰ ਹੋ ਸਕਦਾ ਹੈ। ਇਹ ਵੀ ਅਕਸਰ ਸੁਣਨ ਨੂੰ ਮਿਲਦਾ ਕਿ “ਸਿਆਲ ਸਿਰ ਤੇ, ਕੱਟਾ ਸਾਈਕਲ ਤੇ”, ਸ਼ਾਇਦ ਅਜਕਲ ਮੋਟਰ ਸਾਈਕਲ ਤੇ! ਸਾਨੂੰ ਸਮੇ ਸਿਰ ਤਿਆਰ ਰਿਹਣਾ ਚਾਹੀਦਾ ਹੈ।

ਲਵੇਰਿਆਂ ਲਈ ਢੁਕਵਾਂ ਤਾਪਮਾਨ 15 ਤੋਂ 25 ਡਿਗਰੀ ਹੁੰਦਾ ਹੈ ਤੇ ਨਮੀ ਲਗਭਗ 70% ਚਾਹੀਦੀ ਹੈ। ਘੱਟ ਤਾਪਮਾਨ ਤੇ ਖਾਸ ਕਰਕੇ ਜੇ ਨਮੀ 80% ਤੋਂ ਵੱਧਦੀ ਹੈ, ਲਵੇਰੇ ਬਹੁਤ ਦਬਾਅ ਮਿਹਸੂਸ ਕਰਦੇ ਹਨ। ਇਸ ਸਿਥਤੀ ਦਾ ਟਾਕਰਾ ਕਰਨ ਲਈ ਜਾਨਵਰ ਖੁਦ ਕਈ ਯਤਨ ਕਰਦੇ ਹਨ। ਸੱਭ ਤੋਂ ਪਿਹਲਾਂ ਉਹ ਆਪਣੇ ਸਰੀਰਕ ਤਾਪਮਾਨ ਨੂੰ ਬਰਕਰਾਰ ਰੱਖਣ ਲਈ ਆਪਣੀ ਖੁਰਾਕ ਵਧਾਉਂਦੇ ਹਨ। ਬੈਠਣ ਨੂੰ ਸੁੱਕੀ ਅੱਤੇ ਨਿੱਘੀ ਜਗਾਹ ਲੱਭਦੇ ਹਨ। ਬਾਹਰ ਜੇ ਧੁੱਪ ਹੈ, ਤਾਂ ਉੱਥੇ ਜਾਣਾ ਚਾਹੁੰਦੇ ਹਨ ਅੱਤੇ ਪਾਣੀ ਘੱਟ ਪੀਂਦੇ ਹਨ। ਪਰ ਲਵੇਰਿਆਂ ਦੀ ਜਰੂਰਤਾਂ ਨੂੰ ਕੌਣ ਪੁੱਛਦਾ ਹੈ?

ਕਿੱਲੇ ਨਾਲ ਬੰਨ੍ਹੇ, ਖੁਰਲੀਆਂ ਤੂੜੀ/ਪਰਾਲੀ ਨਾਲ ਭਰੀਆਂ, ਸੱਸਤੀ ਤੋਂ ਸੱਸਤੀ ਬਾਜਾਰੀ ਫੀਡਾਂ, ਘਰ ਦੇ 5-10 ਕਿਲੋ ਪੱਠੇ (ਉਹ ਵੀ ਗਿਲੇ), ਜੇ ਆਚਾਰ ਹੈ ਵੀ ਉਹ ਵੀ ਬਾਜਾਰੀ ਜਾਂ ਪੁਰਾਣਾ, ਬਨਉਟੀ ਵੜੈਵਿਆਂ ਦੀ ਖਲਾਂ ਤੇ ਉਲੀ ਵਾਲੀ ਵੰਡਾਂ ਨੇ ਲਵੇਰਿਆਂ ਨੂੰ ਬਿਮਾਰ ਹੀ ਕਰਨਾ ਹੈ। ਦੁੱਧ ਅੱਧਾ ਰਿਹ ਜਾਂਦਾ ਹੈ, ਦੁੱਧ ਵਿੱਚਲੀ ਫੈਟ ਤੇ ਗਰੇਵਿਟੀ ਸਦਕਾ ਰੇਟ ਵੀ ਸਹੀ ਨੀ ਮਿਲਦਾ। ਉਪਰੋਂ ਉਲੀ ਸਦਕਾ ਤੂ ਜਾਣ ਦੀ ਬਿਮਾਰੀ, ਲੇਵੇ ਦੀ ਸੋਜ, ਬੋਲਦੀ ਨਹੀਂ, ਠਿਹਰਦੀ ਨਹੀਂ, ਮੂੰਹ ਖੁਰ, ਗਲ ਘੋਟੂ ਅਦਿ ਸਾਰੀਆਂ ਨਾਮੁਰਾਦ ਬਿਮਾਰੀਆਂ ਇਸੇ ਮੌਸਮ ਵਿੱਚ ਜ਼ਿਆਦਾ ਹੁੰਦੀਆਂ ਹਨ। ਬਰਸਾਤ ਤੋਂ ਬਾਅਦ ਵੱਧੀ ਹੋਈ ਨਮੀ ਤੇ ਚਲਦੀ ਹਵਾ ਹੋਰ ਵੀ ਘਾਤਕ ਹੁੰਦੀ ਹੈ। ਸਰਦੀਆਂ ਦਾ ਅਸਰ ਘੱਟ ਕਰਨ ਲਈ ਹੇਠ ਲਿਖੇ ਨੁਕਤੇ ਅਪਣਾਏ ਜਾ ਸਕਦੇ ਹਨ:

ਸ਼ੈਡ ਉੱਤੇ ਹਮੇਸ਼ਾ ਘੱਟ ਤੋਂ ਘੱਟ ਖਰਚਾ ਕਰੋ ਪਰ ਸ਼ੈਡ ਬਣਾਉ ਵਿਉਂਤਬੰਦੀ ਨਾਲ। ਸ਼ੈਡ ਦੀ ਲੰਬਾਈ ਹਮੇਸ਼ਾ ਚੜ੍ਹਦੇ-ਲਿਹੰਦੇ ਪਾਸੇ ਹੋਣੀ ਚਾਹੀਦੀ ਹੈ। ਖੁਰਲੀ ਉਤਰ ਵਾਲੇ ਪਾਸੇ ਬਣਾਓ ਅਤੇ ਦੱਖਣ ਵਾਲਾ ਪਾਸਾ ਖੁੱਲ੍ਹਾ ਰੱਖੋ। ਅਿਜਹਾ ਕਰਨ ਨਾਲ ਪਸ਼ੂ ਸਰਦੀ ਤੋਂ ਬਚੇ ਰਿਹਣਗੇ ਕਿਉਂਕਿ ਦੱਖਣ ਤੋਂ ਸੂਰਜ ਦੀਆਂ ਕਿਰਨਾਂ ਸਿੱਧੀਆਂ ਸ਼ੈਡ ਅੰਦਰ ਜਾ ਕਿ ਇੱਕ ਤਾਂ ਨਿੱਘ ਦੇਣਗੀਆਂ ਤੇ ਫਰਸ਼ ਸੁੱਕਾ ਰਹੇਗਾ। ਖੁਰਲੀ ਉੱਤੇ ਖੜਨ ਲਈ ਇੱਕ ਪਸ਼ੂ ਨੂੰ 4 ਫੁੱਟ ਜਗ੍ਹਾ ਚਾਹੀਦੀ ਹੈ ਭਾਵ 10 ਪਸ਼ੂਆਂ ਲਈ ਖੁਰਲੀ ਦੀ ਲੰਬਾਈ 40 ਫੁੱਟ ਹੋਣੀ ਚਾਹੀਦੀ ਹੈ। ਖੁਰਲੀ ਦੀ ਬਾਹਰਲੀ ਕੰਧ ਸਿਰਫ 5-6 ਫੁੱਟ ਉੱਚੀ ਹੀ ਬਣਾਓ ਤਾਂ ਕਿ ਕੁੱਤੇ ਆਦਿ ਸ਼ੈਡ ਅੰਦਰ ਨਾ ਦਾਖਲ ਹੋਣ ਤੇ ਹਵਾ ਦਾ ਨਿਕਾਸ ਸਹੀ ਹੋਏ। ਇਟ-ਬਾਲੇ ਦੀ ਛੱਤ ਸਸਤੀ ਅਤੇ ਬੜੀ ਟਿਕਾਉ ਹੁੰਦੀ ਹੈ। ਲੈਂਟਰ ਆਦਿ ਤੇ ਬਹੁਤ ਜ਼ਿਆਦਾ ਖਰਚ ਆਉਂਦਾ ਹੈ। ਸਰਕੰਡੇ ਦੀ ਛੱਤ ਬੜੀ ਸੱਸਤੀ ਪੈਂਦੀ ਹੈ ਪਰ ਇਸ ਵਿੱਚ ਚਿੱਚੜ ਅਤੇ ਚਿੱੜੀਆਂ ਦੇ ਘੋਂਸਿਲਿਆਂ ਦੀ ਸਮੱਸਿਆ ਆਉਂਦੀ ਹੈ। ਅਜਕਲ ਟੀਨਾਂ ਵਾਲੇ ਸ਼ੈਡਾਂ ਦੀ ਰੀਸ ਹੋ ਰਹੀ ਹੈ। ਚਾਦਰ ਦੇਖ ਕੇ ਪੈਰ ਪਸਾਰਿਉ। ਜੇ ਕਰ 3-4 ਸਾਲ ਡੇਅਰੀ ਕਰਦੇ ਨੂੰ ਹੋ ਗਏ, ਕੋਈ ਟ੍ਰੇਨਿੰਗ ਕੇਰਸ ਕੀਤਾ ਹੈ ਤਾਂ ਹੀ ਵੱਡੇ ਸ਼ੈਡ ਬਣਾਉਣ ਬਾਰੇ ਸੋਚਿਉ।

ਸ਼ੈਡ ਅੰਦਰ ਸਾਫ ਸੁਥਰੇ ਪੀਣ ਵਾਲੇ ਪਾਣੀ ਦੀ ਵਿਵਸਥਾ ਸਹੀ ਹੋਣੀ ਚਾਹੀਦੀ ਹੈ ਕਿਉਂਕਿ ਸਰਦੀਆਂ ਵਿੱਚ ਪਾਣੀ ਦੀ ਮਿਕਦਾਰ 50% ਘੱਟ ਜਾਂਦੀ ਹੈ। ਦੁੱਧ ਦੀ ਚੋਆਈ ਤੋਂ ਅਕਸਰ ਬਾਅਦ ਲਵੇਰੇ ਪਾਣੀ ਪੀਣਾ ਚਾਹੁੰਦੇ ਹਨ ਇਸ ਕਰਕੇ ਪਾਣੀ ਵਾਲੀ ਹੋਂਦੀ ਤੇ ਜ਼ਿਆਦਾ ਇੱਕਠ ਨਾ ਹੋਣ ਦਿਉ। ਦਸ ਪਸ਼ੂਆ ਲਈ 8 ਫੁੱਟ ਲੰਬੀ ਅਤੇ 3 ਫੁੱਟ ਚੌੜੀ ਪਾਣੀ ਦੀ ਕੁੰਡ ਕਾਫੀ ਹੈ। ਇਸ ਦੀਆਂ ਕੰਧਾ ਉੱਤੇ ਕਲੀ ਦਾ ਲੇਪ ਜਰੂਰ ਕਰੋ। ਅਿਜਹਾ ਕਰਨ ਨਾਲ ਕੰਧਾ ਉੱਤੇ ਹਿਰਆਲੀ (ਕਾਈ) ਨਹੀਂ ਜੰਮਦੀ। ਹਰੇਕ ਹਫਤੇ ਪਾਣੀ ‘ਚ ਪਾਈ ਕਲੀ ਬਦਲ ਦਿਓ। ਪਾਣੀ ਵਾਲੀ ਮੋਟਰ ਹਰ 2-3 ਘੰਟਿਆਂ ਬਾਅਦ ਚਲਾਉ ਤਾਂ ਕਿ ਪਾਣੀ ਤਾਜਾ ਤੇ ਨਿਘਾ ਮਿਲੇ, ਨਹੀਂ ਤਾਂ ਲਵੇਰਿਆਂ ਨੇ ਰੱਜਵਾਂ ਪਾਣੀ ਨਹੀਂ ਪੀਣਾਂ। ਜੇ ਪੀ ਵੀ ਲਿਆ ਤਾਂ ਪਾਣੀ ਦੇ ਘੱਟ ਤਾਪਮਾਨ ਕਾਰਨ, ਉੱਝਰੀ ਅੰਦਰ ਜੀਵਾਣੂਆਂ ਤੇ ਮਾੜਾ ਅਸਰ ਪੈਂਦਾ ਹੈ ਤੇ ਕਈ ਵਾਰ ਲਵੇਰੇ ਨਮੋਨੀਏ ਦੇ ਸ਼ਿਕਾਰ ਹੋ ਸੱਕਦੇ ਹਨ।



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ਲਵੇਰੇ ਦੀ ਪਿਹਲੀ ਪੰਸਦ ਹਰਾ ਚਾਰਾ ਹੁੰਦਾ ਹੈ, ਜੇ ਰੱਜਵੇਂ ਦੀ ਗਲ ਕਰੀਏ ਤਾਂ ਘੱਟੋ ਘੱਟ 35-40 ਕਿਲੋ ਪ੍ਰਤੀ ਦਿਨ ਮਿਲਣਾ ਚਾਹੀਦਾ ਹੈ। ਇਹ ਮਿਲਣਾ ਮੁਸ਼ਕਲ ਹੈ ਕਿਉਂਕਿ ਇਸ ਲਈ 5-6 ਲਵੇਰਿਆਂ ਲਈ ਇਕ ਕਿਸਾਨ ਕੋਲ ਇਕ ਕਿਲਾ ਚਾਰਿਆਂ ਹੇਠ ਰੱਕਬਾ ਹੋਣਾ ਚਾਹੀਦਾ ਹੈ। ਪਿਹਲੀ ਗਲ ਚਾਰਾ ਪੂਰਾ ਹੈ ਹੀ ਨਹੀਂ ਦੂਸਰਾ ਜਿਹੜਾ ਵੀ ਹੈ ਉਸਨੂੰ ਕੱਢ ਕੱਟਿਆ ਇਹ ਜਰੂਰੀ ਹੈ। ਹਰੇ ਚਾਰੇ ਦੀ ਖੁਰਾਕੀ ਗੁਣਵੱਤਾ ਉਸ ਦੀ ਕਟਾਈ ਤੇ ਨਿਰਭਰ ਕਰਦੀ ਹੈ। ਜੇ ਪਿਹਲਾਂ ਵੱਢ ਲਿਆਂ ਤਾਂ ਚਾਰਾ ਨਰਮ ਹੋਊ, ਸਰਦੀਆਂ ਵਿੱਚ ਹਰੇ ਵਿਚ ਪਾਣੀ ਦੀ ਮਾਤਰਾ ਜ਼ਿਆਦਾ ਹੋਣ ਕਰਕੇ ਮੋਕ ਲਗਣ ਦਾ ਖਤਰਾ, ਜੇ ਬਾਅਦ 'ਚ ਕੱਟਿਆ ਤਾਂ ਕੈੜਾ ਹੋਜੂ, ਨਹੀਂ ਖਾਣਾ। ਅੱਜਕਲ ਬਰਸੀਮ, ਜਵੀ, ਲੂਸਣ, ਰਾਈ ਘਾਹ ਆਦਿ ਉਪਲੱਭਦ ਹੋਣੇ ਚਾਹੀਦੇ ਹਨ, ਜਿੰਨ੍ਹਾਂ ਵਿੱਚ ਪ੍ਰੋਟੀਨ ਅਤੇ ਕੈਲਸ਼ੀਅਮ ਦੀ ਮਾਤਰਾ ਸਾਉਣੀ ਦੇ ਚਾਰਿਆਂ ਨਾਲੋਂ ਜ਼ਿਆਦਾ ਹੁੰਦੀ ਹੈ। ਪਰ ਅਫਸੋਸ, ਬਹੁਤਿਆਂ ਡੇਅਰੀ ਪਾਲਕਾਂ ਦੇ ਝੋਨੇ ਦੀ ਕਟਾਈ 'ਚ ਦੇਰੀ ਕਾਰਣ ਇਨ੍ਹਾਂ ਚਾਰਿਆਂ ਦੀ ਬਿਜਾਈ ਵੀ ਲੇਟ ਹੋਈ। ਜਿਸ ਕਰਕੇ ਕਈ ਫਾਰਮਾਂ ਤੇ ਦਸੰਬਰ ਦੇ ਮਹੀਨੇ ਹਰੇ ਦੀ ਘਾਟ ਰਿਹਣੀ ਹੈ; ਦੁੱਧ ਤਾਂ ਫਿਰ...। ਮਜ਼ਬੂਰਨ ਵੱਧ ਤੂੜੀ / ਪਰਾਲੀ ਖੁਆਉਣ ਸਦਕਾ ਖੂਨ ਵਿਚਲਾ ਯੂਰੀਆ ਵੱਧ ਸਦਕਾ ਜੋ ਕਿ ਕਈ ਬਿਮਾਰੀਆਂ ਦਾ ਕਾਰਣ ਬਣਦਾ ਹੈ। ਇਸੇ ਤਰ੍ਹਾਂ ਵੱਧ ਕੈਲਸ਼ੀਅਮ ਦੀਆਂ ਪੀਪੀਆਂ ਸਦਕਾ ਫਾਸਫੋਰਸ ਦੀ ਕਮੀ ਹੁੰਦੀ ਹੈ ਤੇ ਕਈ ਲਵੇਰੇ ਇੱਕ ਦੂਜੇ ਦਾ ਪਿਸ਼ਾਬ ਪੀਣ ਲੱਗ ਜਾਂਦੇ ਹਨ ਤੇ ਸਿਆਣਿਆਂ ਨੇ ਧਾਂਤਾਂ ਦੇ ਚੂਰੇ ਦੇ ਨੁਕਸ ਕੱਢ ਦੇਣੇ ਹਨ। ਇਸ ਕਰਕੇ ਸਰਦੀਆਂ ਵਿੱਚ ਆਪਣੇ ਹਰੇ ਚਾਰੇ ਨੂੰ ਮੁੱਖ ਰੱਖਕੇ ਵੰਡ ਵਿੱਚ ਤਬਦੀਲੀ ਕਰੋ। ਕੁੱਝ ਖਲਾਂ ਘੱਟਾਕੇ ਅਨਾਜ ਵਧਾਉ। ਸਰਦੀਆਂ 'ਚ ਕੈਲਸ਼ੀਅਮ ਦੀ ਪੀਪੀਆਂ ਦੀ ਵਰਤੋਂ ਘੱਟ ਕਰੋ। ਸਰਦੀਆਂ ਦੇ ਮੌਸਮ ਵਿੱਚ ਵੰਡ ਦੀ ਭੂਮਿਕਾ ਵੱਧ ਜਾਂਦੀ ਹੈ ਕਿਉਂਕਿ ਲਵੇਰੇ ਨੂੰ ਰਜਾਉਣ, ਪੈਦਾਵਾਰ ਵਧਾਉਣ ਲਈ ਕਈ ਕਿਸਮਾਂ ਦੇ ਸੂਖਮ ਪਦਾਰਥਾਂ ਦੀ ਜਰੂਰਤ ਪੈਂਦੀ ਹੈ।

ਹਰ ਇਕ ਪਸ਼ੂ ਪਾਲਕ ਦੀ ਆਪਣੀ ਹੀ ਰਵਾਇਤ ਹੈ। ਕਈ ਬਾਜ਼ਾਰੀ ਫੀਡਾਂ ਪਾਉਂਦੇ ਹਨ। ਕਈ ਫੀਡ ਮਿਲਾਂ ਤੋਂ ਆਪ ਵੰਡ ਬਣਵਾ ਕੇ ਲਿਆਉਂਦੇ ਹਨ। ਬਹੁਤੇ ਪਸ਼ੂ ਪਾਲਕ ਅਜੇ ਵੀ ਤਰਤੀਬ ਨਾਲ ਵੰਡ ਨਹੀਂ ਖੁਆਉਂਦੇ। ਪਾਉਣ ਲਗੇ ਤਾਂ ਖਲਾਂ ਹੀ ਪਾਈ ਜਾਂਦੇ ਹਨ ਜਾਂ ਕਦੇ ਚੋਕਰ, ਕਦੇ ਪਾਲਿਸ਼ ਜਾਂ ਕਈ ਵਾਰ ਅਨਾਜ ਹੀ ਵੱਧ ਪਾ ਦੇਂਦੇ ਹਨ। ਬਾਜ਼ਾਰੀ ਫੀਡਾਂ ਤੇ ਅਕਸਰ ਭਰੋਸਾ ਨਹੀਂ ਕੀਤਾ ਜਾਂਦਾ। ਬਹੁਤ ਘੱਟ ਫੀਡ ਨਿਰਮਾਤਾ ਹਨ ਜਿਨ੍ਹਾਂ ਦੀ ਫੀਡ ਦਾ ਮਿਆਰ ਉੱਤਮ ਦਰਜੇ ਦਾ ਹੁੰਦਾ ਹੈ। ਫੀਡ ਕੰਪਨੀਆਂ ਜਦੋਂ ਆਪਣੇ ਬਰੈਂਡ ਦੀ ਫੀਡ ਬਣਾਉਂਦੀਆਂ ਹਨ ਤਾਂ ਉਨ੍ਹਾਂ ਨੇ ਕਿਸੇ ਖਾਸ ਪਸ਼ੂ ਪਾਲਕ ਨੂੰ ਧਿਆਨ 'ਚ ਰੱਖ ਕੇ ਫੀਡ ਨਹੀਂ ਬਣਾਉਣੀ, ਉਨ੍ਹਾਂ ਨੇ ਤਾਂ ਸਰਕਾਰ ਦੁਆਰਾ ਲਾਗੂ ਕਾਨੂੰਨ ਨੂੰ ਮੱਦੇ ਨਜ਼ਰ ਰੱਖ ਕੇ ਫੀਡ ਬਣਾਉਣੀ ਹੈ, ਹੋ ਸਕਦਾ ਹੈ ਕਿਸੇ ਪਸ਼ੂ ਪਾਲਕ ਨੂੰ ਨਤੀਜੇ ਵਧੀਆ ਮਿਲਣ ਤੇ ਕਿਸੇ ਨੂੰ ਨਹੀਂ। ਇਕ ਪਸ਼ੂ ਪਾਲਕ, ਫੀਡ ਦੇ ਘੱਟ ਪੈਸੇ, ਵੱਧ ਉਧਾਰ ਭਾਲਦਾ ਹੈ। ਉਹ ਤਾਂ ਬੜੀ ਵਿਚ ਪਏ ਗਲਾਸ ਤੇ ਕੋਲੀਆਂ ਦਾ ਸ਼ਿਕਾਰ ਹੋ ਕੇ ਆਪਣਾ ਤੇ ਆਪਣੇ ਲਵੇਰਿਆਂ ਦਾ ਨੁਕਸਾਨ ਕਰਵਾਈ ਜਾ ਰਿਹਾ ਹੈ।



ਫਾਰਮੂਲਾ ਤੁਹਾਡੀ ਸਿਹਮਤੀ ਵਾਲਾ ਹੋਣਾ ਚਾਹੀਦਾ ਹੈ। ਉਸ ਵਿਚ ਪਾਈਆਂ ਜਾਣ ਵਾਲੀਆਂ ਵੱਖ-ਵੱਖ ਜਿਣਸਾਂ ਦਾ ਭਾਅ ਤੁਹਾਨੂੰ ਪਤਾ ਹੋਣਾ ਚਾਹੀਦਾ ਹੈ। ਵੰਡ ਵਿਚ ਪਾਏ ਜਾਣ ਵਾਲੇ ਅਨਾਜ, ਖਲਾਂ, ਪਾਲਿਸ਼ ਆਦਿ ਦੀ ਕੁਆਲਿਟੀ ਵੀ ਤੁਹਾਡੀ ਮਰਜ਼ੀ ਦੀ ਹੋਣੀ ਚਾਹੀਦੀ ਹੈ। ਮੱਕੀ ਦਾ ਦਾਣਾ ਵੱਡਾ, ਸੁਸਰੀ ਤੇ ਉੱਲੀ ਰਿਹਤ ਹੋਣਾ ਚਾਹੀਦਾ ਹੈ। ਇਸ ਵਿਚਲੀ ਨਮੀ ਦਾ ਪੱਤਾ ਚੱਬ ਕੇ ਚਲ ਜਾਂਦਾ ਹੈ। ਖਲਾਂ ਗਾਹੜੇ ਭੂਰੇ ਰੰਗ ਦੀਆਂ ਹੋਣੀਆਂ ਚਾਹੀਦੀਆਂ ਹਨ। ਪਾਪੜੀ ਖੱਲੂ ਦੋਹਾਂ ਉਗਲਾਂ ਵਿਚਾਲੇ ਰੱਖ ਕੇ ਅੰਗੂਠੇ ਨਾਲ ਆਸਾਨੀ ਨਾਲ ਟੁਟਣੀ ਚਾਹੀਦੀ ਹੈ। ਜਿੰਨੀਆਂ ਵੀ ਬਗੈਰ ਤੇਲ ਵਾਲੀਆਂ ਖਲਾਂ ਹੋਣ ਉਨ੍ਹਾਂ ਵਿਚ ਰੇਤੇ ਦੀ, ਛਿੱਲਕੇ ਦੀ ਮਿਲਾਵਟ ਨਾ ਹੋਵੇ। ਚੂਰੀਆਂ ਵਿਚ ਵੀ ਛਿਲਕਿਆਂ ਦੀ ਮਿਲਾਵਟ ਨਾ ਹੋਵੇ। ਬਿਨੋਲਾ ਖਲੂ ਨੂੰ ਤੋੜਨ ਤੇ ਆਸਾਨੀ ਨਾਲ ਟੁੱਟ ਜਾਏ ਤੇ ਟੁੱਟਦਿਆਂ ਵਿਚਾਲੇ ਰੇਸ਼ੇ ਦਿਖਦੇ ਹੋਣ। ਪਾਲਿਸ਼ ਵਿੱਚ ਵੀ ਕੋਈ ਕਿਰਕੀ ਨਾ ਹੋਵੇ। ਪਾਲਿਸ਼ ਨੂੰ ਹਥੇਲੀ ਵਿਚ ਦਬਾਉਣ ਤੇ ਉਂਗਲਾਂ ਛੱਪਣ। ਧਾਤਾਂ ਦੇ ਚੂਰੇ, ਦਵਾਈਆਂ ਆਦਿ ਪ੍ਰਮਾਣਤ ਕੰਪਨੀਆਂ ਦੀ ਹੀ ਵਰਤੋ। ਗਾਹੇ-ਬਿਗਾਹੇ ਅਚਾਰ, ਵੰਡ, ਖੱਲਾਂ ਆਦਿ ਦੀ ਜਾਂਚ ਕਿੱਸੇ ਭਰੋਸੇ ਦੀ ਪ੍ਰਯੋਗਸ਼ਾਲਾ ਤੋਂ ਜਰੂਰ ਕਰਵਾਓ। ਅਜਕਲ ਕੁਝ ਡੇਅਰੀ ਪਾਲਕ ਵੰਡ ਦਾ ਰੰਗ ਪੀਲੇਪਣ 'ਚ ਭਾਲਦੇ ਹਨ ਜਿਸ ਵਿੱਚ ਮੱਕੀ ਜਿਆਦਾ, ਸਰੋ ਦੀ ਖਲਾਂ ਘੱਟ ਤੇ ਵਾਧੂ ਕੈਲਸ਼ੀਅਮ ਪਾਉਡਰ ਪਾਇਆ ਜਾਂਦਾ ਹੈ। ਦੁੱਧ ਤਾਂ ਕੁਝ ਦਿਨ ਤੁਣਕਾ ਮਾਰਦਾ ਹੈ ਪਰ ਬਾਅਦ ਵਿੱਚ ਤੇਜਾਬੀ ਪਣ ਹੋ ਸਕਦਾ ਹੈ।

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ਆਮ ਹਲਾਤਾਂ ਵਿੱਚ 15 ਲਿਟਰ ਦੁੱਧ ਦੇਣ ਵਾਲੀ ਮੱਝ ਇਕ ਦਿਨ ਦਾ 7 ਕਿਲੋ ਵੰਡ ਖਾ ਸਕਦੀ ਹੈ। ਪਰ ਅਜਕਲ ਸਰਦੀਆਂ ਕਾਰਣ ਇਸਨੂੰ 8-8.5 ਕਿਲੋ ਵੰਡ ਮਿਲਣਾ ਚਾਹੀਦਾ ਹੈ, ਜਿਹੜਾ ਕਿ ਨਹੀਂ ਮਿਲਦਾ। ਇਸ ਲਈ 7 ਕਿਲੋ ਵਾਲੇ ਤੱਤ ਸਾਨੂੰ ਹੁਣ 8 ਕਿਲੋ ਤੋਂ ਪੂਰੇ ਕਰਨੇ ਚਾਹੀਦੇ ਹਨ। ਜਿੱਸ ਕਰਕੇ ਸਰਦੀਆਂ ਵਿੱਚ ਵੰਡ ਹਮੇਸ਼ਾਂ ਸੱਸਤਾ ਬਣਦਾ ਹੈ ਪਰ ਲਵੇਰਿਆਂ ਨੂੰ ਜ਼ਿਆਦਾ ਚਾਹੀਦਾ ਹੈ।

ਡੇਅਰੀ ਪਾਲਕ ਉਹੀ ਮਿਕਦਾਰ ਪਾਈ ਜਾਂਦੇ ਹਨ, ਨਤੀਜਾ ਦੁੱਧ ਘੱਟਣਾ ਸ਼ੁਰੂ ਹੋ ਜਾਂਦਾ ਹੈ ਕਿਉਂਕਿ ਲਵੇਰੇ ਨੇ ਬਹੁਤੀ ਊਰਜਾ ਆਪਣੇ ਸਰੀਰਕ ਤਾਪਮਾਨ ਨੂੰ ਬਰਕਰਾਰ ਰਖਣ ਲਈ ਵਰਤਣੀ ਹੈ। ਯਾਦ ਰੱਖੋ ਕਿ ਖੁਰਾਕੀ ਤੱਤ ਜਰੂਰੀ ਹਨ ਨਾ ਕਿ ਜਿਣਸਾਂ। ਅਜਕਲ ਮੱਕੀ ਕੁੱਝ ਸੱਸਤੀ ਹੋ ਗਈ ਹੈ, ਜੇ ਕੁਆਲਿਟੀ ਵਾਲੀ ਮਿਲਦੀ ਹੈ ਤਾਂ ਇਸਤੇਮਾਲ ਕਰੋ। ਬਾਜਰਾ ਵੀ ਉਪਲੱਭਦ ਹੈ, ਇਸਦਾ ਉਪਯੋਗ ਕਰਕੇ ਵੰਡ ਸੱਸਤਾ ਬਣਾਇਆ ਜਾ ਸੱਕਦਾ ਹੈ। ਘਰ ਦੀ ਕਣਕ ਜੇ ਹੈ ਤਾਂ ਇਹ ਵੀ ਗੁਣਕਾਰੀ ਸਿੱਧ ਹੋਏਗੀ। ਸ਼ੀਰਾ ਸੱਸਤਾ ਹੈ, ਇਸ ਵਿਚਲੇ ਪੋਟਾਸ਼ੀਅਮ ਸਦਕਾ ਦੁੱਧ ਵਿੱਚ ਵਾਧਾ ਹੁੰਦਾ ਹੈ। ਸਰੋਂ ਦੀ ਖ਼ਲ ਦੇ ਤਰ੍ਹਾਂ ਦੀ ਉਪਲੱਭਦ ਹੈ; ਪਾਪੜੀ ਜਾਂ ਬਿਨਾ ਤੇਲ ਵਾਲੀ। ਪਰ ਬਹੁਤੇ ਪਸ਼ੂ ਪਾਲਕ ਸਰੋਂ ਦੀ ਖ਼ਲ ਨੂੰ ਕੌੜੀ ਖ਼ਲ ਕਿਹ ਕੇ ਇਸ ਦੀ ਵਰਤੋਂ ਤੋਂ ਗੁਰੇਜ਼ ਕਰਦੇ ਹਨ। ਸਰੋਂ ਦੀ ਖ਼ਲ ਬਹੁਤ ਉਪਯੋਗੀ ਹੈ, ਇਸ ਦੀ ਵਧੇਰੇ ਵਰਤੋਂ (ਪਸ਼ੂ ਨੂੰ ਗਿਝਾ ਕਿ) ਨਾਲ ਦੁੱਧ ਬਿਣਾ ਰਿਹੰਦਾ ਹੈ। ਵੜੇਵੇਂ ਜਾਂ ਵੜੇਵਿਆਂ ਦੀ ਖ਼ਲ ਦੀ ਵਰਤੋਂ ਲੋੜ ਨਾਲੋਂ ਵੱਧ ਹੀ ਹੈ, ਫੈਟ ਦੀ ਪ੍ਰਾਪਤੀ ਲਈ। ਇਸ ਵਿਚਲੇ ਰੇਸ਼ੇ ਕਰਕੇ ਦੁੱਧ ਦੀ ਫੈਟ ਵੱਧਦੀ ਹੈ ਪਰ ਮਿਹੰਗੀ ਹੈ, ਮਿਲਾਵਟੀ (Dupilcate) ਮਿਲਦੀ ਹੈ, ਉਲੀ ਲੱਗੀ, ਬਾਰਦਾਨਾ, ਕੰਬਲ ਦੇ ਰੇਸ਼ੇ ਅਕਸਰ ਇਸ ਵਿਚ ਰਲੇ ਹੁੰਦੇ ਹਨ। ਜੇ ਕਿਧਰੇ ਸੂਰਜਮੁਖੀ ਦੀ ਖ਼ਲ ਮਿਲ ਜਾਏ ਤਾਂ ਬਹੁਤ ਵੱਧੀਆ। ਜੇ ਕਰ ਆਪਣੇ ਲਵੇਰੇ ਗੁਆਰ ਕੋਰਮੇ ਤੇ ਗਿਝਾਏ ਹੋਏ ਹਨ ਤਾਂ ਇਹ ਇਕ ਬਹੁਤ ਸੱਸਤਾ ਬਾਈਪਾਸ ਪ੍ਰੋਟੀਨ ਦਾ ਸੋਮਾ ਹੈ। ਅਜਕਲ ਮੱਕੀ ਤੇ ਚੌਲਾਂ ਦਾ ਡੀ ਡੀ ਜੀ ਐਸ ਵੀ ਉਪਲੱਭਦ ਹੈ, ਵਰਤਣ ਤੋਂ ਪਿਹਲਾਂ ਇਨ੍ਹਾਂ ਵਿੱਚਲੇ ਮਿਅਰ ਯਕੀਨੀ ਬਣਾਏ ਜਾਣ।

ਜਦ ਵੀ ਕੋਈ ਚੀਜ਼ ਸਵਾਦ ਬਣਾਉਣੀ ਹੋਏ ਤਾਂ ਅਕਸਰ ਘਿਓ ਦਾ ਇਸਤੇਮਾਲ ਹੁੰਦਾ ਹੈ। ਰਾਈਸ ਪਾਲਿਸ਼ ਅਜਕਲ ਵਧੀਆ ਮਿਲ ਰਹੀ ਹੈ ਇਸ ਲਈ ਇਸ ਨੂੰ 8-10 ਕਿਲੋ ਪ੍ਰਤੀ ਕੁਇੰਟਲ ਵਰਿਤਆ ਜਾ ਸੱਕਦਾ

ਹੈ। ਤੇਲ ਦੀ ਪੂਰਤੀ ਲਈ ਫੁਲ ਫੈਟ ਸੋਇਆ, ਸਰੋਂ ਦੀ ਖ਼ਲ ਅਤੇ ਬਾਈਪਾਸ ਫੈਟ ਦੀ ਵਰਤੋਂ ਵੀ ਕੀਤੀ ਜਾ ਸਕਦੀ ਹੈ। ਪਰ ਬਾਈਪਾਸ ਫੈਟ ਦੀ ਕੁਆਲਿਟੀ ਚੈਕ ਕਰਨ ਦੀ ਜ਼ਿੰਮੇਦਾਰੀ ਕਿਸਾਨ ਦੀ ਆਪਣੀ ਹੈ। ਬਹੁਤੇ ਪਸ਼ੂ ਪਾਲਕ ਭਾਅ ਹੀ ਦੇਖਦੇ ਹਨ ਕਿ ਕਿਹੜੀ ਸੱਸਤੀ ਹੈ, ਇਸ ਫੈਟ ਵਿਚਲੀ ਊਰਜਾ, ਇਸ ਨੂੰ ਬਣਾਉਣ ਦੇ ਤਰੀਕੇ ਤੇ ਨਿਰਭਰ ਕਰਦੀ ਹੈ। ਬਾਈਪਾਸ ਫੈਟ ਅੱਧਾ ਕਿਲੋ ਤੋਂ ਲੈ ਕੇ ਦੋ ਕਿਲੋ ਪ੍ਰਤੀ ਕੁਇੰਟਲ ਵਰਤੀ ਜਾ ਸਕਦੀ ਹੈ। ਇਸ ਨੂੰ ਗਿਲਾ ਨਾ ਕਰੋ ਨਹੀਂ ਤਾਂ ਲਵੇਰੇ ਨਹੀਂ ਖਾਣਗੇ।

ਸਰਦੀਆਂ ਵਿੱਚ ਵੱਧ ਖਾਣ ਨਾਲ ਇਕ ਲਵੇਰੀ ਤੇਜਾਬੀ ਪਣ ਦਾ ਸ਼ਿਕਾਰ ਹੋ ਸੱਕਦੀ ਹੈ। ਜੁਗਾਲੀ 'ਚ ਕਮੀ ਹੋਏਗੀ ਜਿਸ ਕਰਕੇ ਖੁੱਕ ਵੀ ਘੱਟ ਬਣੂਗਾ। ਇਸ ਕਰਕੇ ਉਝਰੀ ਵਿਚ ਤੇਜਾਬ ਦੀ ਮਾਤਰਾ ਵੱਧ ਸਕਦੀ ਹੈ। ਬਫਰ ਦੀ ਵਰਤੋਂ ਕਰਨ ਨਾਲ ਤੇਜਾਬੀਪਣ ਤੋਂ ਬਚਿਆ ਜਾ ਸਕਦਾ ਹੈ। ਬਫਰ ਵਿਚਲੇ ਮਿੱਠੇ ਸੋਡੇ ਅਤੇ ਮੈਗਨੀਸ਼ੀਅਮ ਆਕਸਾਈਡ ਸਦਕਾ ਉਝਰੀ ਅੰਦਰ ਤੇਜਾਬ ਸੀਮਤ ਰਿਹੰਦਾ ਹੈ। ਸਰਦੀਆਂ ਵਿਚ ਯੀਸਟ (ਖ਼ਮੀਰ) ਦੀ ਵਰਤੋਂ ਨਾਲ ਜਿਥੇ ਪਸ਼ੂ ਦੀ ਭੁੱਖ ਵੱਧਦੀ ਹੈ ਉਥੇ ਦੁੱਧ ਦੀ ਫੈਟ 'ਚ ਵਾਧਾ ਹੁੰਦਾ ਹੈ, ਦੁੱਧ ਵੀ ਵੱਧਦਾ ਹੈ। ਯੀਸਟ ਵੀ ਕਈ ਕਿਸਮ ਦੇ ਉਪਲੱਭਦ ਹਨ; ਲਾਈਵ, ਮੈਟਾਬੁਲਾਇਟ, ਇੰਜ਼ਾਇਮ ਆਦਿ। ਇਹ ਤਾਂ ਇੱਕ ਪਸ਼ੂ ਪਾਲਕ ਨੇ ਦੇਖਣਾ ਹੈ ਕਿ ਕਿੰਨੀ ਮਾਤਰਾ ਅਤੇ ਕਿਹੜੇ ਭਾਅ ਦੀ ਯੀਸਟ ਮਿਲਦੀ ਹੈ। ਸਰਦੀਆਂ ਵਿੱਚ ਹਰਾ ਤਾਂ ਵੱਧ ਹੁੰਦਾ ਹੈ, ਪਰ ਬਹੁਤਾ ਸਮਾਂ ਧੁੰਦ ਸਦਕਾ/ ਸੂਰਜ ਦੇ ਨਾਂ ਚੜਨ ਕਰਕੇ, ਵਿਟਾਮਿਨ ਦੀ ਘਾਟ ਹੋ ਸਕਦੀ ਹੈ ਇਸ ਕਰਕੇ ਜੇ ਵਿਟਾਮਿਨ ਦਾ ਇਸਤੇਮਾਲ ਕੀਤਾ ਜਾਏ ਤਾਂ ਜਾਨਵਰ ਬਿਮਾਰ ਘੱਟ ਹੁੰਦੇ ਹਨ, ਪ੍ਰਜਨਣ ਸੰਬਧੀ ਮੁਸ਼ਕਲਾਂ ਘੱਟਦੀਆਂ ਹਨ।

ਸਰਦੀਆਂ ਵਿੱਚ ਹਰਾ ਅਕਸਰ ਜਰੂਰਤ ਨਾਲੋਂ ਜ਼ਿਆਦਾ ਗਿਲਾ ਹੁੰਦਾ ਹੈ ਜਿਸ ਕਰਕੇ ਗੋਹਾ ਪਤਲਾ ਆਉਂਦਾ ਹੈ, ਇਸ ਲਈ ਸੁੱਕੀ ਤੂੜੀ ਵੱਧ ਪਾਣੀ ਪੈ ਜਾਂਦੀ ਹੈ। ਪਰ ਵਧੇਰੇ ਤੂੜੀ/ਪਰਾਲੀ ਸੱਦਕਾ ਉਲੀ ਲਗਣ ਦਾ ਖਤਰਾ ਵੀ ਵੱਧ ਹੁੰਦਾ ਹੈ ਇਸ ਕਰਕੇ ਖੁਰਾਕ ਵਿੱਚ ਟਾਕਿਸਨ ਬਾਈਡਰ ਦਾ ਇਸਤੇਮਾਲ ਜਰੂਰ ਕੀਤਾ ਜਾਏ। ਅੱਜਕਲ ਫੀਡ ਜਾਂ ਵੰਡ ਗਿਲੀ ਨਾ ਕਰੋ। ਜੇ ਕਰ ਲਵੇਰਿਆਂ ਦੀ ਸੁੱਕਾ ਮਾਦਾ ਖਾਣ ਦੀ ਪੂਰਤੀ ਹੋ ਰਹੀ ਹੈ ਤਾਂ ਉਸ ਤੇ ਸਰਦੀ ਦਾ ਅਸਰ ਘੱਟ ਹੋਏਗਾ। ਕੋਸ਼ਿਸ਼ ਕਰੋ ਕਿ ਜਿਹੜਾ ਵੀ ਹਰਾ ਚਾਰਾ ਹੈ ਉਸ ਦੇ ਕੁਤਰੇ ਦਾ ਆਕਾਰ ਛੋਟਾ ਹੋਏ ਤਾਂ ਕਿ ਪਸ਼ੂ ਵੱਧ ਖਾਏ।



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