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LT

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From the Editor's Desk

The Indian Government should ban the sale of synthetic paneer

The Indian Dairy sector is facing a significant challenge due to synthetic paneer products made from vegetable oils, starches, and additives that mimic traditional paneer in appearance and texture. This paneer variant is infiltrating markets, particularly in regions with high paneer consumption, posing health risks to consumers and affecting the business of genuine dairy producers. The Indian Dairy Association has criticized this malpractice. If the customer is paying for paneer, he should get it. Paneer should have nothing but milk—total paneer sales are worth ₹40,000 crore per year. The Food Safety and Standards Authority of India(FSSAI) has been alerted to these malpractices and is expected to enforce stricter regulations to curb the distribution of counterfeit dairy products. The dairy industry is urging enhanced vigilance and stringent enforcement to protect both consumers and dairy businesses.

India's quick commerce sector is enhancing consumer access to dairy products, reshaping traditional distribution models. Platforms like Swiggy Instamart, Zepto, and Blinkit are facilitating rapid delivery of dairy items, including milk pouches, curd, paneer, and butter, directly to consumers' doorsteps. This improves convenience and will help to expand the market reach for dairy cooperatives and private brands. Industry leaders from Amul, Mother Dairy, NDDB, and Milma have started using q-commerce to increase brand visibility and consumer engagement. The ease of product discovery on these platforms is enabling consumers to explore a wider range of dairy products. Health-conscious consumers can seek functional and fortified options. The q-commerce market in India is expanding at a CAGR of 25% and is projected to reach ₹3,00,000 crores by 2030. Dairy products currently account for over 30% of daily orders in this space.

India contributed less than 0.5% to global dairy exports. This limited export share is attributed to structural challenges within the Indian dairy sector, including a predominant focus on fluid milk, high production costs, and inconsistent quality standards. The United States holds a 6.7% share in global dairy export products. They export products like concentrated and sweetened milk cream (41%), cheese, curd (36%), and whey-based products (14%).

India's exports are primarily butter and milk fats (40%), with lesser shares in skimmed milk powder (16%) and cheese (15%). The recent imposition of retaliatory tariffs on American Dairy products presents a potential opportunity for India to expandits presence in global markets. However, to capitalize on this, India must address its internal inefficiencies by modernizingprocessing facilities, enhancing quality control, and aligning with international standards.

India plans to use the World Trade Organization's safe non-tariff barriers to shield its dairy sector from U.S. market access as part of the ongoing bilateral trade negotiations aimed at more than doubling two-way commerce to 500 billion dollars by 2030. The customs department is working closely with the commerce ministry to ensure sensitive sectors such as dairy and agriculture are protected.The negotiations with the United States come at a time when USA announced a 26 percent tariff on U.S. imports from India. The move has raised concerns among Indian exporters. The Indian government is hoping to exclude dairy from the trade deal by invoking NTBs tied to food safety and cultural standards, particularly due to the possibility that Americann cattle may be fed non-vegetarian feed, which goes against Indian norms.

The recent ₹2 milk price increase is a signal. A signal that India's dairy system, despite its global scale and cooperative strength, is under pressure. Consumers have grown accustomed to periodic price revisions, this latest hike sheds light on a more persistent and structural challenge - the increasing cost of milk production at the farm level.One of the most significant drivers of this strain has been the sharp rise in feed and fodder costs. Maize prices have gone up, as part of maize production is diverted towards ethanol production. Maize DDGS is available as protein source, but consistent quality is a challenge. Dairy farmers should not feed more than one kg Maize DDGS to animals directly per day per cow. It can be added at level of 5-10% in compound cattle feeds. Outbreaks of Lumpy Skin Disease also affected cattle population and productivity. Therefore, it is critical to look beyond retail pricing and examine the foundational economics of milk production.

Editor

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ਸੂਰ ਪਾਲਣ ਦੀਆਂ ਵਿਸ਼ੇਸ਼ਤਾਈਆਂ

ਡਾ. ਸਰਬਜੀਤ ਸਿੰਘ ਸਿੱਕਾ, ਡਾ. ਜਸਵਿੰਦਰ ਸਿੰਘ

ਸੂਰਾਂ ਤੋਂ ਪ੍ਰਾਪਤ ਹੋਣ ਵਾਲੇ ਮਾਸ ਨੂੰ ਪੋਰਕ (ਫੋਰਕ) ਕਹਿੰਦੇ ਹਨ। ਜੋ ਕਿ ਪ੍ਰੋਟੀਨ ਅਤੇ ਬੀ ਕੰਪਲੈਕਸ ਵਿਟਾਮਿਨਾਂ ਤੋਂ ਇਲਾਵਾ ਬਾਕੀ ਪਸ਼ੂਆਂ ਦੇ ਮੀਟ ਦੇ ਮੁਕਾਬਲੇ ਊਰਜਾ ਭਰਪੂਰ ਹੁੰਦਾ ਹੈ। ਇਸ ਵਿੱਚੋਂ ਕਢੇ ਹੋਏ ਤੇਲ ਨੂੰ ਲਾਰਡ (ਲਓਰਦ) ਕਹਿੰਦੇ ਹਨ ਜੋ ਕਿ ਸਬਜ਼ੀਆਂ ਆਦਿ ਬਣਾਉਣ ਲਈ ਰਸੋਈ ਵਿਚ ਵਰਤਿਆ ਜਾਂਦਾ ਹੈ ਦੇਸੀ ਘਿਉ ਦੇ ਮੁਕਾਬਲੇ ਤੇ ਲਾਰਡ ਦੂਸਰੇ ਨੰਬਰ ਤੇ ਆਉਂਦਾ ਹੈ ਇਸ ਤੋਂ ਇਲਾਵਾ ਇਸ ਨੂੰ ਮੋਮਬਤੀਆਂ, ਗਰੀਸ, ਸਾਬਨ ਬਣਾਉਣ ਲਈ ਵੀ ਵਰਤਿਆ ਜਾਂਦਾ ਹੈ। ਚਮੜੇ ਨੂੰ ਪਾਣੀ ਤੋਂ ਬਚਾਉਣ ਲਈ ਉਸ ਉਪਰ ਵੀ ਲਗਾਇਆ ਜਾ ਸਕਦਾ ਹੈ।

ਮੀਟ ਤੋਂ ਇਲਾਵਾ ਸੂਰ ਦੀ ਪਿੱਠ ਅਤੇ ਗਰਦਨ ਤੋਂ ਉਤਾਰੇ ਹੋਏ ਵਾਲਾਂ ਨੂੰ ਬਰਿਸਲਜ਼ (ਭਰਸਿਟਲਏਸ) ਕਹਿੰਦੇ ਹਨ। ਇਹ ਰੰਗ ਕਰਨ ਵਾਲੇ ਬੁਰਸ਼ ਬਣਾਉਣ ਲਈ ਵਰਤਿਆ ਜਾਂਦਾ ਹੈ। ਇਨ੍ਹਾਂ ਚੀਜ਼ਾਂ ਤੋਂ ਇਲਾਵਾ ਸੂਰ ਪਾਲਣ ਕਿੱਤੇ ਦੀਆਂ ਕੁਝ ਅਜਿਹੀਆਂ ਵਿਸ਼ੇਸ਼ਤਾਈਆਂ ਹਨ ਜੋ ਕਿ ਦੂਸਰੇ ਪਸ਼ੂ ਪਾਲਣ ਦੇ ਕਿੱਤਿਆਂ ਵਿੱਚ ਨਹੀਂ ਹਨ ਅਜਿਹੀਆਂ ਹੀ ਖਾਸ ਖਾਸ ਵਿਸ਼ੇਸ਼ਤਾਵਾਂ ਹੇਠਾਂ ਦਿਤੀਆਂ ਹਨ।

ਘੱਟ ਪੂੰਜੀ ਦੀ ਲੋੜ

ਸੂਰ ਫਾਰਮ ਸ਼ੁਰੂ ਕਰਨ ਤੇ ਲਗਾਈ ਜਾਣ ਵਾਲੀ ਪੂੰਜੀ ਦੂਸਰੇ ਪਸ਼ੂ ਪਾਲਣ ਕਿੱਤਿਆਂ ਦੇ ਮੁਕਾਬਲੇ ਤੇ ਕਾਫੀ ਘੱਟ ਲੋੜੀਂਦੀ ਹੈ।

ਜਲਦੀ ਆਮਦਨ

ਮੁਰਗੀ ਪਾਲਣ ਧੰਦੇ ਤੋਂ ਛੁੱਟ ਹੋਰ ਦੂਜੇ ਪਸ਼ੂ ਪਾਲਣ ਦੇ ਧੰਦਿਆਂ ਦੇ ਮੁਕਾਬਲੇ ਸੂਰ ਪਾਲਣ ਦੇ ਧੰਦੇ ਤੋਂ ਆਮਦਨ ਬੜੀ ਜਲਦੀ ਆਉਣੀ ਸ਼ੁਰੂ ਹੋ ਜਾਂਦੀ ਹੈ। ਨਸਲਕਸ਼ੀ ਲਈ ਰੱਖੇ ਗਏ ਸੂਰਾਂ ਤੋਂ ਪਰਾਪਤ ਬੱਚੇ ਦੋ ਮਹੀਨੇ ਦੀ ਉਮਰ ਤੇ ਜਦੋਂ ਬੱਚਿਆਂ ਨੂੰ ਮਾਂ ਤੋਂ ਵੱਖਰਿਆ ਕੀਤਾ ਜਾਂਦਾ ਹੈ, ਵੇਚ ਕੇ ਆਮਦਨ ਅਰੰਭ ਕੀਤੀ ਜਾ ਸਕਦੀ ਹੈ ਜਦੋਂ ਕਿ ਦੋ ਮਹੀਨੇ ਦੇ ਬੱਚੇ ਖਰੀਦ ਕੇ 5 ਮਹੀਨੇ ਰੱਖ ਕੇ ਮੀਟ ਵਾਸਤੇ ਵੇਚੇ ਜਾ ਸਕਦੇ ਹਨ।

ਉੱਤਮ ਜਨਣ ਕਿਰਿਆ

ਜੇਕਰ ਵਾਤਾਵਰਨ ਸੂਰਾਂ ਦੇ ਅਨੁਕੂਲ ਹੋਵੇ ਤਾਂ ਇੱਕ ਸਾਲ ਵਿੱਚ ਹੀ ਇੱਕ ਸੂਰੀ ਤੋਂ ਬੜਾ ਵੱਡਾ ਸੂਰ ਫਾਰਮ ਬਣਾਇਆ ਜਾ ਸਕਦਾ ਹੈ, ਕਿਉਂਕਿ ਸੂਰੀ ਦਾ ਗਰਭ ਦਾ ਸਮਾਂ ਸਿਰਫ 114 ਦਿਨ ਹੈ ਅਤੇ ਇਕ ਸੂਰੀ ਤੋਂ ਸਾਲ ਵਿੱਚ ਘੱਟ ਤੋਂ ਘੱਟ ਦੋ ਸੂਏ ਸਹਿਜੇ ਹੀ ਲਏ ਜਾ ਸਕਦੇ ਹਨ।

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ਗਾਵਾਂ ਅਤੇ ਮੱਝਾਂ ਦੇ ਮੁਕਾਬਲੇ ਸੂਰ ਅਤੇ ਸੂਰੀਆਂ ਛੇ ਮਹੀਨੇ ਦੀ ਉਮਰ ਤੇ ਹੀ ਨਸਲਕਸ਼ੀ ਦੇ ਕਾਬਲ ਹੋ ਜਾਂਦੇ ਹਨ। ਇਸ ਨਾਲ ਸਹੀ ਮਾਤਰਾ ਵਿਚ ਖੁਰਾਕ ਦਿੱਤੀ ਜਾਵੇ ਤਾਂ ਸੂਰੀਆਂ ਨੂੰ ਛੋਟੀ ਉਮਰ (ਪੱਠ ਸੂਰੀ 8-9) ਤੇ ਪਹਿਲੀ ਵਾਰੀ ਗੱਭਣ ਕਰਵਾ ਕੇ ਇਕ ਸਾਲ ਦੀ ਉਮਰ ਦੇ ਕਰੀਬ ਪਹਿਲਾ ਸੂਆ ਲਿਆ ਜਾ ਸਕਦਾ ਹੈ। ਇਸੇ ਤਰ੍ਹਾਂ ਸਾਨ੍ਹ ਸੂਰ ਨੂੰ ਵੀ ਨਸਲਕਸ਼ੀ ਲਈ ਛੋਟੀ ਉਮਰ ਤੇ ਹੀ ਵਰਤਿਆ ਜਾ ਸਕਦਾ ਹੈ।

ਘੱਟ ਖੁਰਾਕ ਖਾ ਕੇ ਵਧੇਰੇ ਮੀਟ ਪੈਦਾ ਕਰਨਾ

ਸਿਵਾਏ ਬਰਾਏਲਰਾਂ ਦੇ ਸੂਰ ਬਾਕੀ ਜਾਨਵਰਾਂ ਦੇ ਮੁਕਾਬਲੇ ਘੱਟ ਖੁਰਾਕ ਖਾ ਕੇ ਵਧੇਰੇ ਭਾਰ ਵਧਾਉਣ ਵਿੱਚ ਨਿਪੁੰਨ ਹੈ। ਜੇਕਰ ਸੰਤੁਲਿਤ ਖੁਰਾਕ ਸਹੀ ਮਾਤਰਾ ਵਿੱਚ ਦਿੱਤੀ ਜਾਵੇ ਤਾਂ ਇਕ ਸੂਰ 3 ਕਿਲੋ ਖਰਾਕ ਖਾ ਕੇ ਇਕ ਕਿਲੋ ਭਾਰ ਵਧਾਉਂਦਾ ਹੈ।

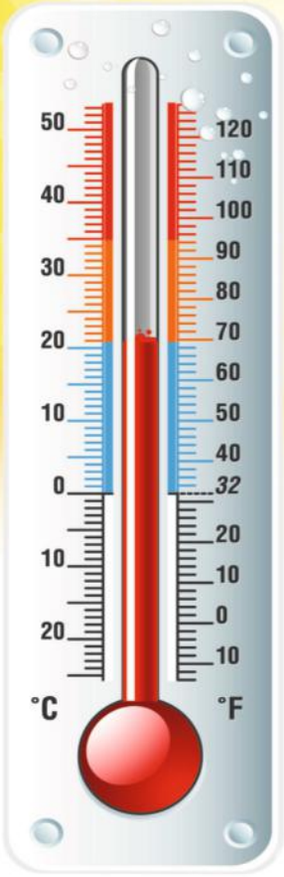
ਸਾ-ਉਪਜਾਂ ਅਤੇ ਬੱਚੀਆਂ ਖੁਚੀਆਂ ਚੀਜਾਂ ਨੂੰ ਵਧੀਆ ਮਾਸ ਵਿੱਚ ਬਦਲਣਾ

ਪਸ਼ੂ ਜਗਤ ਵਿਚ ਸੂਰ ਇਕ ਅਜਿਹਾ ਜਾਨਵਰ ਹੈ ਜੋ ਕਿ ਬੱਚੀਆਂ, ਖਰਾਬ ਚੀਜਾਂ ਖਾ ਕੇ ਗੁਜ਼ਾਰਾ ਕਰ ਸਕਦਾ ਹੈ। ਮਨੁੱਖੀ ਵਰਤੋਂ ਵਿਚ ਨਾ ਆਉਣ ਵਾਲੀਆਂ ਬੱਚੀਆਂ ਖੁੱਚੀਆਂ ਵਸਤਾਂ ਜਿਵੇ ਕਿ ਘਰਾਂ, ਲੰਗਰਾਂ, ਹੋਟਲਾਂ, ਕੰਨਟੀਨਾਂ, ਮਿਲਟਰੀ ਕੰਨਟੂਨ ਮੈਂਟ ਆਦਿ ਤੋਂ ਬਚੀ ਹੋਈ ਜੂਠ, ਗੰਨੇ ਦੀ ਮੈਲ, ਖੇਤਾਂ ਵਿੱਚ ਟੁਕੇ ਆਲੂ, ਗਾਜਰਾਂ, ਸ਼ਲਗਮ, ਚੁਕੰਦਰ, ਆਦਿ ਸਬਜੀ ਮੰਡੀ ਦੀਆਂ ਜਾਇਆ ਸਬਜ਼ੀਆਂ, ਫਲ ਫਰੂਟ, ਕੋਲਡ ਸਟੋਰਾਂ ਦੇ ਖਰਾਬ ਆਲੂ ਅਤੇ ਫਲ, ਘਰ ਵਿੱਚ ਖਰਾਬ ਹੋਇਆ ਦੁੱਧ, ਲੱਸੀ ਆਦਿ ਖਾ ਕੇ ਵੀ ਸੂਰ ਵਧੀਆ ਕਿਸਮ ਦਾ ਪੋਸ਼ਟਿਕ ਮਾਸ ਪੈਦਾ ਕਰਦਾ ਹੈ। ਜਿਸ ਨਾਲ ਖੁਰਾਕ ਦਾ ਖਰਚ ਬਹੁਤ ਹੀ ਘਟਾਇਆ ਜਾ ਸਕਦਾ ਹੈ। ਇਸ ਤੋਂ ਇਲਾਵਾ ਮਰੇ ਹੋਏ ਪਸ਼ੂਆਂ, ਬੁਚੜ ਖਾਨੇ ਦੀਆਂ ਵਸਤੂਆਂ (ਲਹੂ ਆਂਦਰਾਂ, ਫੇਫੜੇ ਆਦਿ) ਵੀ ਸੂਰਾਂ ਨੂੰ ਖੁਆਈਆਂ ਜਾ ਸਕਦੀਆ ਹਨ।

ਘਟ ਸਾਂਭ ਸੰਭਾਲ

ਮੁਰਗੀ ਪਾਲਣ ਅਤੇ ਬਾਕੀ ਪਸ਼ੂ ਪਾਲਣ ਧੰਦਿਆਂ ਦੇ ਮੁਕਾਬਲੇ ਤੇ ਸੂਰ ਪਾਲਣ ਵਿੱਚ ਸਾਂਭ ਸੰਭਾਲ ਬਹੁਤ ਹੀ ਘੱਟ ਹੈ ਜਿਸ ਨਾਲ ਕੁਲ ਖਰਚੇ ਦੀ ਬਹੁਤ ਬੱਚਤ ਹੋ ਜਾਂਦੀ ਹੈ।

Temperature is rising...



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

Levucell® SC
Rumen Specific Yeast

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

Heat stress adversely impacts dairy cow performance

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

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

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

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

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

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

**Marfola, et al, ADSA 2010.*

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

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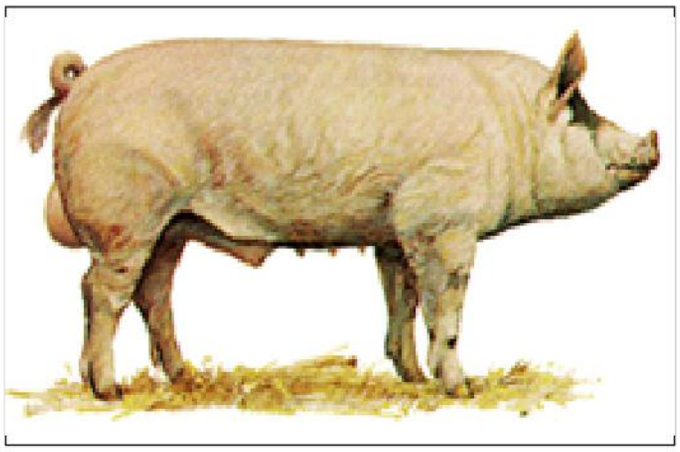
ਵਧੀਆ ਖਾਦ

ਸੂਰਾਂ ਤੋਂ ਨਾ ਕੇਵਲ ਮੀਟ ਪੈਦਾ ਕਰਕੇ ਹੀ ਆਮਦਨ ਲਈ ਜਾ ਸਕਦੀ ਹੈ, ਸਗੋਂ ਸੂਰਾਂ ਦੇ ਮਲ ਮੂਤਰ ਨੂੰ ਖਾਦ ਦੇ ਤੌਰ ਤੇ ਖੇਤਾਂ ਵਿੱਚ ਵਰਤਿਆ ਜਾ ਸਕਦਾ ਹੈ ਅਤੇ ਇਸ ਨੂੰ ਵੇਚ ਕੇ ਵੀ ਆਮਦਨ ਵਧਾਈ ਜਾ ਸਕਦੀ ਹੈ। ਇਹ ਜ਼ਮੀਨ ਦੀ ਬਣਤਰ ਨੂੰ ਠੀਕ ਕਰਦਾ ਹੈ ਅਤੇ ਜਮੀਨ ਵਿਚ ਲਾਭਦਾਇਕ ਜੀਵ ਜੰਤੂਆਂ ਦੀ ਉਤਪਤੀ ਵਿਚ ਕਾਫੀ ਸਹਾਇਤਾ ਕਰਦਾ ਹੈ। ਆਮਤੌਰ ਤੇ ਇਕ ਵੱਡਾ ਸੂਰ ਰੋਜਾਨਾ 2.7 ਕਿਲੋ ਗੋਹਾ ਅਤੇ 1.7 ਲਿਟਰ ਪਿਸ਼ਾਬ ਕਰਦਾ ਹੈ। ਸੂਰਾਂ ਦੀ ਮੱਲ ਮੂਤਰ ਵਾਲੀ ਖਾਦ ਮੱਝਾਂ ਗਾਵਾਂ ਦੀ ਰੂੜੀ ਦੀ ਖਾਦ ਤੋਂ ਬਹੁਤ ਵਧੀਆ ਹੁੰਦੀ ਹੈ। ਵੱਖ-ਵੱਖ ਪਸ਼ੂਆਂ ਦੇ ਮਲ ਮੂਤਰ ਤੋਂ ਮਿਲਣ ਵਾਲੇ ਖੁਰਾਕੀ ਤੱਤ ਜਿਵੇਂ ਨਾਈਟਰੋਜਨ, ਫਾਸਫੋਰਸ ਅਤੇ ਪੋਟਾਸ਼ੀਅਮ ਸਾਰਨੀ ਵਿੱਚ ਦਰਸਾਏ ਗਏ ਹਨ।

ਬਹੁਨੁਕਾਤੀ ਖੇਤੀ

ਸੂਰ ਪਾਲਣ ਦੇ ਕਿੱਤੇ ਨੂੰ ਬਹੁਨੁਕਾਤੀ ਖੇਤੀ ਧੰਦੇ ਵਿੱਚ ਅਪਨਾਉਣ ਨਾਲ ਘੱਟ ਖਰਚ ਕਰਕੇ ਆਮਦਨੀ ਵਿੱਚ ਕਾਫੀ ਵਾਧਾ ਕੀਤਾ ਜਾ ਸਕਦਾ ਹੈ। ਸੂਰ ਪਾਲਣ ਨਾਲ ਜੇਕਰ ਮੱਛੀ ਫਾਰਮ ਵੀ ਬਣਾਇਆ ਜਾਵੇ ਤਾਂ ਇਨ੍ਹਾਂ ਦਾ ਮੱਲ ਮੂਤਰ ਮੱਛੀਆਂ ਲਈ ਖੁਰਾਕ ਦੇ ਤੌਰ ਤੇ ਵਰਤਿਆ ਜਾ ਸਕਦਾ ਹੈ। ਇਸ ਤੋਂ ਇਲਾਵਾ ਸੂਰਾਂ ਨੂੰ ਖੇਤਾਂ ਦੀ ਜ਼ਮੀਨ ਪੋਲੀ ਕਰਨ ਵਾਸਤੇ ਵੀ ਫਸਲ ਕੱਟਣ ਤੋਂ ਬਾਅਦ ਖੇਤਾਂ ਵਿੱਚ ਛਡਿਆ ਜਾ ਸਕਦਾ ਹੈ।



ਵੱਖੋ ਵੱਖ ਪਸ਼ੂਆਂ ਦੇ ਮਲ ਮੂਤਰ ਤੋਂ ਮਿਲਣ ਵਾਲੇ ਖਾਦ ਦੇ ਤੱਤ

ਪਸ਼ੂ	ਔਸਤਨ ਭਾਰ (ਕਿਲੋ)	ਮੱਲ ਮੂਤਰ / ਦਿਨ (ਕਿਲੋ)	ਨਮੀ (%)	ਨਾਈਟਰੋਜਨ (%)	ਫਾਸਫੋਰਸ (%)	ਪੋਟਾਸ਼ੀਅਮ (%)
ਗਾਂ	310	11.6	-	1.9-2.4	2-2.5	0.90-1
ਮੱਝਾਂ	375	12.2	-	1.9-2.4	2-2.5	0.8-1.2
ਭੇਡ	33	0.7	64	2.4-3.2	2-3	0.7-1.2
ਸੂਰ	70	2.9	87	2.4-4.0	2-3	1.9-0.2
ਮੁਰਗੀ	2.0	0.1	68	4.0-5.1	4-5	2.3-2.6

ਸੂਰ ਪਾਲਣ ਦੇ ਔਗੁਣ

1. ਪਸ਼ੂਆਂ ਦੀਆਂ ਬਾਕੀ ਸ਼੍ਰੇਣੀਆਂ ਤੋਂ ਇਲਾਵਾ ਮੁਰਗੀਆਂ ਵਾਂਗ ਸੂਰਾਂ ਨੂੰ ਪਰਜੀਵਾਂ ਅਤੇ ਬਿਮਾਰੀਆਂ ਤੋਂ ਨੁਕਸਾਨ ਹੋ ਸਕਦਾ ਹੈ। ਇਸ ਲਈ ਸੂਰਾਂ ਨੂੰ ਟੀਕੇ ਜ਼ਰੂਰ ਲਗਵਾਉਂਣੇ ਚਾਹੀਦੇ ਹਨ।
2. ਸੂਰਾਂ ਦਾ ਪੇਟ ਦੁਧਾਰੂ ਪਸ਼ੂਆਂ ਤੋ ਭਿੰਨ ਇਕਹਿਰਾ ਹੁੰਦਾ ਹੈ। ਜਿਸ ਕਰਕੇ ਇਹ ਘਾਹ ਆਦਿ ਦੀ ਬਹੁਤ ਘੱਟ ਵਰਤੋਂ ਕਰ ਸਕਦੇ ਹਨ ਇਸੇ ਕਰਕੇ ਇਹ ਮਨੁੱਖਾਂ ਨਾਲ ਅਨਾਜ ਵਾਸਤੇ ਸਿੱਧਾ ਮੁਕਾਬਲਾ ਕਰਦੇ ਹਨ।
3. ਸੂਰਾਂ ਦੇ ਗੋਹੇ ਵਿਚੋਂ ਖਾਸ ਕਿਸਮ ਦੀ ਬੂ ਆਉਂਦੀ ਹੈ ਜਿਸ ਦੇ ਕਰਕੇ ਇਨਾਂ ਨੂੰ ਇਨ੍ਹਾਂ ਦੇ ਵਾੜਿਆਂ ਦੀ ਸਫਾਈ ਕਰਨੀ ਮੁਸ਼ਕਿਲ ਹੁੰਦੀ ਹੈ।
4. ਇਨ੍ਹਾਂ ਤੋਂ ਇਲਾਵਾ ਸੂਰ ਜਮੀਨ ਦਾ ਨੁਕਸਾਨ ਕਰਦੇ ਹਨ ਕੁਦਰਤੀ ਤੌਰ ਤੇ ਇਨਾਂ ਦਾ ਮੂੰਹ ਤੇ ਨਕ ਕਾਫੀ ਸਖਤ ਹੋਣ ਕਰਕੇ ਇਹ ਜ਼ਮੀਨ ਅਤੇ ਫਰਸ਼ ਨੂੰ ਪੱਟ ਦਿੰਦੇ ਹਨ ਇਸ ਸਮੱਸਿਆ ਨੂੰ ਹੱਲ ਕਰਨ ਲਈ ਸੂਰ ਵਾੜੇ ਦਾ ਫਰਸ਼ ਖੜਵੀਆਂ ਇਟਾਂ ਦਾ ਲਗਾਉਣਾ ਚਾਹੀਦਾ ਹੈ।

ਸੂਰ ਪਾਲਣ ਦੇ ਕਿੱਤੇ ਚੋਂ ਜ਼ਿਆਦਾ ਮੁਨਾਫਾ ਲੈਣ ਲਈ ਸੂਰ ਪਾਲਕ ਨੂੰ ਚਾਹੀਦਾ ਹੈ ਕਿ ਉਹ ਹੇਠ ਲਿਖੀਆਂ ਗੱਲਾਂ ਵੱਲ ਖਾਸ ਧਿਆਨ ਰੱਖੇ

1. ਸੂਰ ਦੀ ਨਸਲ ਅਤੇ ਨਸਲ ਸੁਧਾਰ ਦਾ ਪ੍ਰਬੰਧ
2. ਸੂਰੀ ਸੂਣ ਤੋ ਤਿੰਨ ਹਫਤੇ ਬਾਅਦ ਤੱਕ ਜ਼ਿਆਦਾ ਦੁੱਧ ਦੀ ਮਾਤਰਾ ਦੇਵੇ।
3. ਸੂਰੀ ਇਕ ਸੂਏ ਵਿਚ ਵੱਧ ਤੋਂ ਵੱਧ ਬੱਚੇ ਪੈਦਾ ਕਰੇ ਅਤੇ ਬੱਚਿਆਂ ਦੀ ਵੱਧਣ ਫੁੱਲਣ ਦੀ ਰਫਤਾਰ ਤੇਜ਼ ਹੋਵੇ।
4. ਚੰਗੇ ਖੁਰਾਕੀ ਅੰਸ਼ ਅਸਾਨੀ ਨਾਲ ਉਪਲੱਬਧ ਹੋਣ।
5. ਬਿਮਾਰੀਆ ਅਤੇ ਪ੍ਰਜੀਵੀ ਕੀਟਾਣੂਆਂ ਤੋਂ ਬਚਾਓ।
6. ਮੀਟ ਦੀ ਕਿਸਮ ਚੰਗੀ ਹੋਵੇ ਜਿਸਦੀ ਮੰਡੀ ਵਿਚ ਮੰਗ ਹੋਵੇ।
7. ਸੂਰ ਦਾ ਮੀਟ ਵੇਚਣ ਦੀਆਂ ਮੰਡੀਆਂ ਵਿਚ ਸਹੂਲਤਾਂ ਹੋਣ।

ਜਿਸ ਤਰ੍ਹਾਂ ਪੰਜਾਬ ਦੇ ਕਿਸਾਨਾਂ ਦੇ ਫਸਲਾਂ ਦੇ ਝਾੜ ਵਿਗਿਆਨਕ ਤਰੀਕੇ ਵਰਤ ਕੇ ਵਧਾਏ ਹਨ ਉਸੇ ਤਰ੍ਹਾਂ ਸੂਰ ਪਾਲਣ ਦੇ ਧੰਦੇ ਨੂੰ ਹਰ ਪ੍ਰਕਾਰ ਦੀ ਨਵੀਂ ਜਾਣਕਾਰੀ ਨਾਲ ਜ਼ਿਆਦਾ ਸੂਰ ਦਾ ਮੀਟ ਪੈਦਾ ਕੀਤਾ ਜਾ ਸਕਦਾ ਹੈ।

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Indian delegation visits TECHNA in France: a deep dive into precision livestock nutrition

Early April, eight professionals from India's dairy and poultry sectors travelled to France to visit TECHNA, an international group recognized for its expertise in precision nutrition and natural health solutions for animal production. The delegation included nutritionists, consultants, and company owners.

Indian stakeholders were invited to discover how the company combines technical expertise, scientific research, and long-term partnerships to improve performance across livestock value chains.

A comprehensive approach to support Indian livestock challenges

During the visit, TECHNA showcased its ability to support local industries with tailor-made solutions adapted to evolving needs—such as phasing out antibiotic growth promoters, supporting animal health, increasing raw material knowledge for a more precise nutrition, and improving feed efficiency.

By addressing these challenges, TECHNA aims to support India in its journey toward optimizing its livestock production systems.

A multi-faceted programme: from R&D to on-farm applications

At the heart of the programme was a visit to EuroNutrition, TECHNA's experimental research centre. This was an opportunity for the delegation to discover how Techna evaluates the effectiveness of its nutritional solutions, and develops precise nutritional characterisations of raw materials through almost 200 digestibility and zootechnical trials each year.

During the trip, the delegation also explored several areas of TECHNA's expertise in product development:

- its phytogenic expertise, thanks to a dedicated team that formulates additives based on active compounds of plant origin that have been proven to improve animal health and performance
- its mastery of microencapsulation technology to improve the stability of feed additives and ensure optimal performance

In addition to R&D, the delegation experienced how TECHNA's solutions are applied in the field. **The program included visits to commercial and pilot farms, feed mills, and integrators across the dairy, poultry, and swine sectors.** These on-site experiences allowed the delegation to appreciate the practical applications of TECHNA's knowledge and tools, in precision feeding and performance monitoring.

Technical discussions and key learnings

The delegation's time at TECHNA was marked by insightful technical discussions on a variety of crucial topics, such as:

- Feed manufacturing technologies
- Ration balancing to optimize nutrient intake
- Data-driven herd management for improved performance monitoring
- The use of NIR (Near Infrared Reflectance) spectroscopy for raw material analysis
- Customized nutritional programs tailored to genetic evolution and market dynamics

The visit also provided a closer look at how digital solutions are integrated into livestock management systems, enabling better decision-making and more efficient production.

Strengthening bonds and looking ahead

More than just a technical visit, this initiative fostered mutual trust and set the stage for long-term collaboration. The fruitful exchanges opened the door to concrete projects. Backed by solid R&D and proven field expertise, TECHNA is well-positioned to support India's evolving livestock sector. This visit signals the start of promising partnerships, built on TECHNA's expertise and the drive of Indian stakeholders to advance toward more efficient production systems.

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Independent health and nutrition expert group

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MILK YIELD	FAT CONTENT	METHANE
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Mycotoxins in the food chain:
Understanding risks and exploring mitigation strategies

By Dr. Maloshrie Bora, Program Manager , Feed Safety, Trouw Nutrition South Asia

The safety of animal feed is increasingly compromised by a confluence of global challenges, notably mycotoxin contamination. These toxic metabolites, produced by molds such as Aspergillus and Fusarium, pose significant health risks to livestock and, by extension, to humans consuming animal products. Contributing factors include a shortage of quality raw materials, exacerbated by supply chain bottlenecks and geopolitical disruptions. Climate change further intensifies the issue by altering temperature and precipitation patterns, creating favorable conditions for mold growth and mycotoxin production. Additionally, inadequate storage and transportation facilities, often lacking proper ventilation and climate control, facilitate the proliferation of these harmful fungi. Together, these elements underscore the urgent need for comprehensive strategies to mitigate mycotoxin risks and ensure feed safety.

Even the smallest lapse in post-harvest handling can swiftly trigger the formation of harmful secondary metabolites like mycotoxins. Factors such as delayed drying, inadequate moisture control, and poor storage conditions can create an environment conducive to fungal growth, leading to rapid mycotoxin accumulation. For instance, aflatoxin contamination in maize has been linked to improper drying and storage practices, highlighting the critical importance of stringent post-harvest management to ensure food safety.

Mycotoxin contamination poses a significant threat to various stakeholders in the agricultural and food sectors, including farmers, feed producers, food processors, public authorities, and end consumers. These toxic compounds adversely affect animal health by impairing the gastrointestinal tract, suppressing the immune system, and disrupting nutrient absorption, leading to decreased productivity and increased susceptibility to diseases. Implementing a comprehensive 360-degree mitigation strategy—encompassing prevention, detection, regulation, and education—can effectively address this multifaceted issue and safeguard public health and economic interests.

The "Big 6" mycotoxins—aflatoxins, ochratoxins, fumonisins, zearalenone, deoxynivalenol (DON), and T2 toxin—are among the most prevalent and toxic secondary metabolites produced by molds affecting agricultural commodities. These toxins impact various species differently; for instance, aflatoxins primarily affect liver function in mammals, while zearalenone exhibits estrogenic effects leading to reproductive issues in ruminants and pigs. The incidence and severity of mycotoxin contamination are influenced by environmental factors such as temperature, humidity, and rainfall, which can create conducive conditions for mold growth and toxin production. Not all mycotoxins are equally toxic across species; for example, DON is highly toxic to swine, whereas poultry are less affected. Climate change exacerbates the problem by altering weather patterns, potentially increasing the prevalence and distribution of mycotoxins in crops.

Aflatoxins occur worldwide in feed and feed stuffs which results in severe economic loss to poultry and livestock industries. The extent of Aflatoxin contamination varies with geographic location, farming methods and the susceptibility of commodities to fungal invasion during pre-harvest, storage, and processing periods. Numerous studies showed negative effects of Aflatoxin in broiler chickens including a decrease in the efficiency of feed utilization and body weight gain, liver damage, poor immune response, and increased mortality. Aflatoxin is shown to induce pathological alterations in important organs such as the liver, kidneys, and lymphoid organs. Furthermore, thetransmission of aflatoxin B1(AFB1) and its metabolites from feed to animal edible tissues and products, such as the liver and eggs, becomes particularly important as a potential hazard for human health. Given the global economic importance of Aflatoxin, many strategies have been tried to minimize their negative impact. A successful prevention strategy must be economical and capable of eliminating all traces of toxin without leaving harmful residues and should not impair the nutritional quality of the commodities. Extensive research has been carried out using adsorbent (binder) materials that adsorbs to Aflatoxin molecule by means of ion exchange and thereby preventing their absorption into blood circulation. Among various binding agents, clays and yeast cell wall materials are the most tested. Silicates are the main group of clays that are studied extensively in terms of Aflatoxin binding. These include tectosilicates (zeolites), 1:1 phyllosilicates (kaolinite), 2:1 phyllosilicates (smectites, vermiculites, chlorites, micas) and sepiolite. All silicates, however, are not the same in terms of their ability to bind Aflatoxin and among the above, smectites have shown greater binding efficacy against Aflatoxin. The ability of smectite clays to bind mycotoxins depends on pH in the gut, molecular arrangements, and its geographic region of origin. Smectite clays possess high Aflatoxin adsorption capacity due to its high surface area, ion exchange capacity, and ability to swell in the presence of water, and the efficacy has been proven in vivo in broiler chickens. The leading hypothesis on the bonding mechanism between adsorbed aflatoxins and smectites is the electron donor–acceptor (EDA) model. Other models such as selective chemisorption, H-bonding, and bonding through furan rings were proposed. The supplementation of smectite clay in feed to aflatoxin challenged broilers considerably reduced the magnitude of toxic effects of aflatoxin and improved growth and immune response. Hence, smectite clay could be successively used in feed to ameliorate the toxic effects of aflatoxins in broiler chickens.

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Aflatoxin B1 (AFB1), deoxynivalenol (DON) and ochratoxin A (OTA) are ones of the most common and dangerous mycotoxins. AFB1, produced mainly by Aspergillus, is one of the most poisonous toxins, which is classified as Group I carcinogen by the World Health Organization due to its hepatoxicity, immunotoxicity, mutagenicity, genotoxicity, and carcinogenicity on variety of animals. DON, produced by many Fusarium molds, contamination in feeds induces anorexia, emesis, and damage to intestinal barrier and immune function in animals through suppressing the synthesis of nucleic and proteins . OTA, a toxic metabolite from Aspergillus and Penicillium molds, possesses hepatoxic, nephrotoxic, neurotoxic, immunotoxic, and teratogenic effects on liver and kidney. Long-term epidemiological investigations have shown that most of the global feed is exposed to more than one mycotoxin, and mycotoxin contamination of food and animal feed is a worldwide problem. Meanwhile, when three mycotoxins co-existed in the poultry feeds, their interaction have been further associated with significant alterations in the productivity and profitability of animals. Therefore, development of remediation strategies to prevent or mitigate the mycotoxicosis is imperative.

Trouw Nutrition's TOXO® range offers a suite of mycotoxin binders designed to mitigate the negative effects of mycotoxin contamination in animal feed. These products are formulated to support animal health and performance by reducing the bioavailability of harmful mycotoxins. These products are part of Trouw Nutrition's comprehensive approach to mycotoxin risk management, aiming to ensure feed safety and optimize animal health and performance.

TOXO®-MX: Precision for Aflatoxins

TOXO®-MX is a specialized binder formulated to combat aflatoxins, particularly Aflatoxin B1, which can adversely affect dairy cows and other livestock. By incorporating purified smectite clays, TOXO®-MX effectively reduces the bioavailability of aflatoxins in the gastrointestinal tract. This reduction leads to a significant decrease in the excretion of Aflatoxin M1 in milk, ensuring compliance with regulatory standards and safeguarding consumer health. Additionally, TOXO®-MX enhances feed efficiency, as evidenced by improved milk production per kilogram of dry matter ingested in dairy cows.

TOXO®-XL: Comprehensive Protection Against Fusarium Mycotoxins

TOXO®-XL is an advanced binder designed to address the challenges posed by Fusarium-related mycotoxins, such as trichothecenes and fumonisins. This product combines smectite clays with specifically selected glucose biopolymers and purified β-glucans, which work synergistically to reinforce intestinal barrier function and modulate the immune response. The result is a comprehensive solution that not only binds and eliminates mycotoxins but also mitigates performance impairments caused by their exposure.

TOXO®: Broad-Spectrum Mycotoxin Binder

TOXO® serves as a versatile, broad-spectrum mycotoxin binder suitable for various animal species. It utilizes smectite clays to effectively reduce the bioavailability of a wide range of mycotoxins, including aflatoxins, ochratoxins, and zearalenone. By preventing the absorption of these toxins, TOXO® helps maintain animal health and performance, making it an essential component of comprehensive mycotoxin risk management strategies.

Collectively, the TOXO® product range represents a holistic approach to mycotoxin risk management, integrating advanced scientific formulations to protect animal health and ensure the safety of the food chain.

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Leading the Future of Sustainable Dairy Farming with Postbiotic Technology

Nurture Organics Pvt Ltd successfully hosted the Monthly Farmers' Meeting of PDFA at PAU Ludhiana, bringing together dairy farmers, industry experts, and innovators in animal nutrition. In collaboration with nu.ance biotechnology , the seminar focused on "Postbiotic – Let's Ride Together to the Future of Animal Production," led by distinguished experts **Dr. David Harrington, PhD (Director, Product Management) and Mr. Joginder Singh (Business Director, ISC)**.

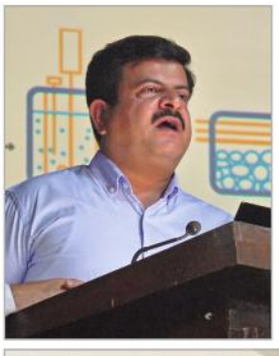
The event was a milestone in advancing sustainable dairy farming, equipping farmers with cutting-edge knowledge on **postbiotic nutrition, productivity enhancement, and eco-friendly solutions.** With a strong focus on scientific advancements, the seminar provided a valuable platform for interactive discussions, technology showcases, and practical strategies for boosting farm profitability.

Key Highlights from the Seminar

- **Expert-Led Sessions** – Insightful discussions on postbiotic nutrition and dairy sustainability.
- **Interactive Farmer Exchange** – Knowledge-sharing sessions addressing real-world dairy challenges.
- **Technology Showcase** – Demonstrations of innovative solutions for herd health and productivity.

The meeting was successfully coordinated by the passionate dairy team of Nurture Organics Pvt Ltd, led by **Mr. Parvinder Singh (Dairy Head), Mr. Swaran Singh (Business Head, Punjab), Mr. Yash Sharma (Sr. Manager), and Mr. Anurag Wadhwa (Country Head).** Their dedication to farmer welfare and innovation played a pivotal role in the event's success.

"Empowering dairy farmers with the right knowledge and tools is at the core of Nurture Organics' mission," stated **Ms. Geeta Handa, Director of Nurture Organics Pvt Ltd.** "This seminar has reinforced our commitment to innovation, sustainability, and farmer welfare—ensuring a brighter future for dairy farming in India."



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Empowering Communities
The SEC India Journey

FROM THE SEC CENTER LEAD'S DESK
DR. P. E. VIJAY ANAND (SEC/USSEC)

On April 3, 2025, the Soy Excellence Center's (SEC) Global Advisory Panel (GAP)—featuring experts from the U.S. soy industry—and the Regional Advisory Council (RAC), representing India's animal husbandry and soy food sectors, launched the final instalment of the "Feed Formulation Lab" series in Bengaluru. The event marked a successful demonstration of SEC India's "Community Assurance" initiative, focused on providing ongoing professional development across animal feed and human food sectors. This initiative is paving the way for the next generation of industry leaders.

The session, titled **"Feed Formulation Lab – Part 3"**, was inaugurated by SEC Chairman Mark Read, Vice-Chair Anne Meis, and GAP member David Williams (Michigan Soybean Committee), alongside USSEC representatives Kevin Roepke, Brent Babb, and Kellie Gypin. Also present were members of the Regional Advisory Council and emerging women leaders from India's poultry industry, who contributed to the dynamic learning environment.

Designed to prioritize practical learning, the event minimized presentations and maximized hands-on experience with Best Mix software. Over two intensive days, 46 participants engaged in exercises that merged animal nutrition expertise with modern software tools. Each participant completed the program with a certificate and a free trial of Best Mix software to reinforce their learning.

Expert guidance was provided by Sirri Kayhan (USSEC Country Representative for Turkey) and Kemal Burak Kayhan (Director, Feedback Yazilim), who delivered structured modules on best practices and common pitfalls in software-based feed formulation. The training emphasized decision-making, formulation accuracy, and the unique attributes of U.S. Soy. Additional insights were shared by Dr. Susil Silva and Dr. N.C. Manju, who covered critical aspects of soy differentiation and raw material quality's impact on feed outcomes.

The lab not only delivered valuable technical skills but also provided participants access to SEC's digital community—a gateway to ongoing learning, rewards, and career development. This successful event underscored SEC's mission to empower professionals and build trust through impactful, hands-on education

What SEC Members have to Say

Syam Sundar Dasari,
Business Manager, Optima Life Sciences

It is important to gain certificates and merits, but what **matters for me the most is the knowledge**. Nutrition plays an important role in Aquaculture, and I wanted to broaden my horizons in the field. So, I decided to apply for a spot in SEC India course, and I was confident the knowledge gained here will help me a lot in my future career.

I really enjoyed the online course it was well planned and easy for me to follow.

I could finish everything with enough time, learn about the topics and not feel over loaded and rushed. Moreover, I really like this course because of its literature and Quizzes which are straight forward.

The course has equipped me with updated skills, making me more competent and adaptable in my professional role. Engaging in learning aligned with my interests has led me to greater job satisfaction and a sense of accomplishment Completing the course positions me as a more attractive candidate for promotions or new job opportunities, demonstrating my commitment to continuous learning. Employers value professionals who invest in their development, enhancing their competitiveness in the job market The course likely provided opportunities to connect with peers and industry experts, fostering valuable relationships that can lead to collaborations and career opportunities.

The course has been a valuable investment in my personal and professional development, equipping me with the basic knowledge and mind set to thrive in my career.

Dr. Mahesh Yepuri
Category Head – AHN (Animal Health & Nutrition)
Coromandel international Limited

I have 17 years of industry experience across Dairy, Poultry, Pet Food, and Animal Nutrition segments— specializing in feed, feed additives, and supplements across both domestic and international markets. My objective in enrolling in the India SEC Aquaculture Production & Management – Basic Level course was to build foundational knowledge in aqua culture, particularly in the context of fish and shrimp nutrition and feed strategies.

At Coromandel, we are committed to entering and expanding our footprint in the Aqua segment. This course aligns with our vision to launch: Fish & Shrimp Feed, Aqua Supplements, Exclusive Formulated Organic/Inorganic Fertilizers for Pond Care, Pond Health & Nutrification Solutions

Participation in this program has given me a strong baseline to support these initiatives. I look forward to continued engagement with the US Soy Excellence Centre (SEC), including participation in advanced programs and leveraging the SEC online learning platform to enhance business decisions in the aquaculture domain.

A standout feature of the course was the insights shared by esteemed international faculty. I am grateful for their structured approach and practical knowledge Their expertise, delivered through a concise and well-organized curriculum, made complex topics approachable and actionable. This program marks my first formal step into aquaculture learning and has significantly enhanced my domain understanding. It was a truly enriching online program with valuable learning.

CLFMA of India and Gokul Milk

Host Seminar on Sustainable Dairy Farming and Innovations in Kolhapur

The Compound Livestock Feed Manufacturers Association (CLFMA) of India, in collaboration with Gokul Milk, successfully hosted an impactful seminar on "Sustainable Dairy Farming and Innovations" at Regal Hall, Residency Club, Tarabai Park, Kolhapur. The event brought together top leaders, veterinary experts, and researchers from the dairy and livestock sectors to highlight the advancements and prerequisites in India's dairy ecosystem through science, innovation, and sustainable practices. Sustainable dairy farming prioritizes environmental, social, and economic health, ensuring the well-being of the dairy farm, the animals, and the broader community.

The seminar was convened and ably guided by Mr. S. V. Bhave, Past Chairman, CLFMA of India. In his welcome address, Mr. Bhave extended warm greetings to the participants and introduced the distinguished dignitaries present from Gokul Dairy, including Mr. Navid Mushrif, Director, Gokul, Mr. Ajit Narake, Director, Gokul, Mr. Yogesh Godbole, Managing Director, Gokul.

He also acknowledged the presence of other prominent members of the **Board of Directors** of Gokul:

- Mr. Yuvraj Patil
- Mr. Nandkumar Dhenge
- Mr. Prakash Patil
- Mr. S. R. Patil
- Mr. Bayaji Shelake

Following the introductions, **Mr. Divya Kumar Gulati, Chairman, CLFMA of India, addressed the gathering and provided a comprehensive overview of CLFMA's vision, key initiatives, and its pivotal role in strengthening the livestock sector in India**.

Mr. Divya Kumar Gulati, Chairman, CLFMA of India, shared, "This seminar in collaboration with Gokul is a testament to CLFMA's unwavering commitment toward strengthening India's sustainable dairy farming and innovation through science-backed revolution, knowledge sharing, and stakeholder collaboration. In this seminar, we emphasised how a progressive dairy farming approach can be a stress-relief for farmers and also contribute significantly to public health through better-quality milk and livestock management. From promoting Total Mixed Ration (TMR) and effective veterinary practices to encouraging nutrition-focused feeding strategies, our aim is to empower farmers and professionals with tools that ensure both animal welfare and economic viability Through our consistent efforts and awareness-driven initiatives like this, we aim to nurture a more informed, robust, and forward-thinking approach toward India's livestock and cattle feed industry."

The Seminar was further anchored by engaging sessions led by leading voices from the Indian sustainable dairy farming and innovations.

- Dr. Vijay Magre of Gokul presented on Etho Veterinarian Practices, shedding light on animal welfare and ethical livestock management.
- Dr. Pritpal Singh, National Manager – Progressive Dairy Solution, addressed modern approaches to stress management and Total Mixed Ration (TMR) in dairy farming.
- Mr. Munish Sharma shared insights from the Punjab dairy sector, highlighting scalable innovations.
- Dr. Niteen Manmohan Markande, Retd. Dean, Veterinary College, Parbhani, emphasized the untapped potential of buffalo-based dairy.
- Dr. Prashant Shinde of Cargill and Dr. Chandrashekhar Pandey of Lallemand India elaborated on cattle nutrition and silage solutions for small-scale dairy farmers.
- An engaging panel featuring Dr. Pradeep P. Mahajan (Viziva Services), Dr. V. D. Patil (Gokul), Dr. Niteen Manmohan Markande (Retd. Dean, Veterinary College, Parbhani) and Dr. Prakash Jyoti Salunke (Gokul Milk Union) addressed future-ready practices in dairy nutrition and feed management moderated by Mr. S. V. Bhave (Past Chairman, CLFMA of India).

The Seminar concluded with a memento presentation to sponsors, speakers and address by **Mr. Arun Ganpatrao Dongale, Chairman, Gokul.**

Vote of thanks by Dr. Saikat Saha was extended to all the dignitaries who attended the event and shared their extensive knowledge and experience on sustainable dairy practices. More than 350 participants attended the seminar.

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- बेहतर दूध उत्पादन, वसा (फैट) और एस.एन.एफ के लिए।

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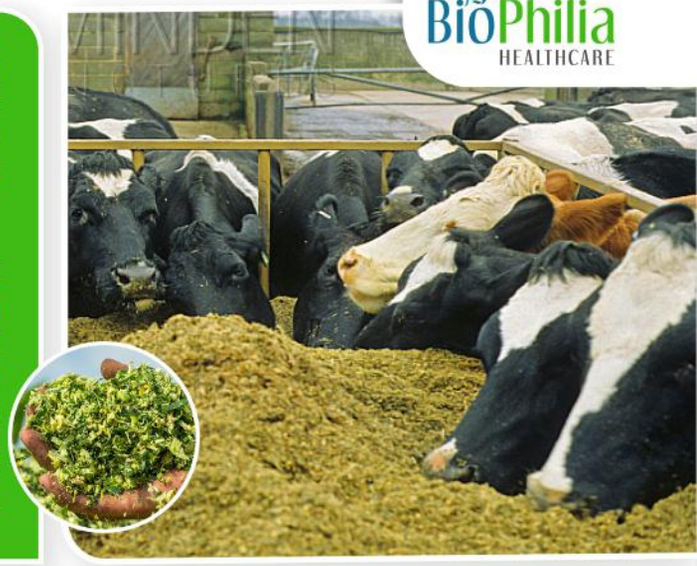
Corn silage making is a widely practiced method of preserving green fodder in India, particularly for dairy and livestock farming. Corn (Zea mays) is a staple crop grown extensively in the country due to its high yield and nutritional value, making it an ideal choice for silage production. Corn silage is the fermented product of whole corn plants, including the stalks, leaves, and ears, and is an important source of concentrated feed during the lean seasons when fresh forage is scarce.

In India, corn silage making is crucial for enhancing milk production, growth, and reproductive performance in dairy cattle and other livestock. The country's vast agricultural landscape, particularly in regions with water-intensive crops, provides an abundant source of corn for silage. With the increasing demand for high-quality feed and the growing trend toward mechanized farming, corn silage making is becoming a key practice in improving livestock productivity and supporting sustainable farming systems in India. Furthermore, the growing awareness of the economic benefits of silage has led to its adoption in various regions, making it a vital part of modern livestock management.



Ideal Harvest Timing for Silage Corn

Best Stage

Milk to Early Dough Stage
(when grains are soft but forming)

Dry Matter Target

~30-35% DM for ideal ensiling

Visual Indicator

Grain dents and exudes milky fluid when pressed

Too early = watery silage, poor fermentation

Too late = hard grains, poor digestibility

Recommended Irrigation Pattern (General Guide)

Total irrigations:

5–7 (depending on soil, season, and rainfall)

1. At sowing / pre-sowing
2. 2-3 leaf stage (15-20 DAS)
3. Knee-high stage (30-35 DAS)
4. Tasseling / silking stage (50-60 DAS) → most critical
5. Milking stage (70-80 DAS)
6. (Optional) Grain filling (90 DAS) if needed

There are various tests that needs to be performed in green fodder before making silage.

FIELD-LEVEL TESTS (On-Farm – Rapid Assessments)

These tests help decide **when to harvest green maize** and check for visual and structural suitability for ensiling.

Test	What It Checks	How to Do It	Ideal Result for Silage
Kernel Milk Line Test	Maturity stage	Break maize cob and observe grain – the milk line should be halfway down the kernel.	**Milk line at 50–70%**
Dry Matter Estimation (Microwave or Hand Squeeze)	Moisture content	Weigh 100g of chopped forage, microwave until dry, or squeeze chopped material in your hand (too wet = water drips).	**30–35% Dry Matter (DM)**
Snap Test (Stalk Firmness)	Water content in stalk	Bend or snap the stalk; excessive juice = too wet.	Slight snap, not mushy
Brix Test (using refractometer)	Soluble sugar content (fermentation potential)	Squeeze stalk juice and measure Brix.	**>10% Brix**
Visual Inspection (Plant Health)	Disease, pest, or mold presence	Check leaves and cobs for black spots, insect damage, or wilting.	Healthy green, no visible fungal damage
Height & Biomass Check	Yield potential	Walk the plot, estimate uniformity, plant density, and height.	Tall (7–10 ft), uniform stand
Leaf-to-Stem Ratio	Digestibility	Visually compare foliage vs stalk.	More leaves = better silage digestibility
Smell Test	Rot or spoilage	Smell chopped material.	Should smell fresh, grassy, not sour or moldy

LABORATORY TESTS (For Nutritional & Ensiling Suitability)

Send samples to a certified forage analysis lab before ensiling for precise **nutritional values and fermentation feasibility.**

Test	What It Measures	Ideal Range (for Green Maize)
Dry Matter (DM)	Moisture content	30–35% (moisture ~65–70%)
Crude Protein (CP)	Protein content for animals	7–10% (on DM basis)
Neutral Detergent Fiber (NDF)	Fiber affecting feed intake	45–55%
Acid Detergent Fiber (ADF)	Fiber affecting digestibility	25–35%
Total Digestible Nutrients (TDN)	Overall energy value	>65%

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Starch Content	Fermentable carbohydrates	25–35%
Ash Content	Mineral content or contamination	<8%
Lactic Acid Bacteria (LAB) Count *(optional)*	Natural fermentation microbes	>10^5 CFU/g
Mycotoxin Screening	Aflatoxins, DON, ZEA, etc.	Should be **Not Detectable (ND)**
pH After Ensiling *(if tested post-ensiling)*	Fermentation quality	Target **<4.2**

RECOMMENDED TOOLS FOR FIELD TESTING

- **Handheld refractometer** (Brix)
- **Microwave & kitchen scale** (DM estimation)
- **Corn kernel maturity guide** (visual)
- **Silage moisture testers** (optional)

Once silage is made, the following tests can help to understand the quality of silage.

FIELD-LEVEL TESTS (Quick, On-Farm Assessments)

These help you make an initial judgment about silage quality using your senses and simple tools.

Test	What It Checks	How to Do It	Ideal Result
Smell Test	Fermentation quality	Open the pit and smell the silage	Pleasant sour, vinegar-like smell (no foul/rotten odor)
Color Observation	Nutrient preservation	Check silage color	Light green to yellowish-brown (not dark brown or black)
Texture & Moisture Check	Dry matter and compaction	Grab and squeeze a handful	Moist but not dripping wet; no slimy texture
Mold or Fungal Presence	Safety & palatability	Inspect visually	No white, black, or green mold patches
pH Strip Test (Quick pH test)	Fermentation quality	Mix silage with water (1:2), test with pH paper	pH < 4.2 (3.8–4.2 is ideal)
Heating Test (Stability)	Aerobic spoilage	Open pit and feel silage	Should be cool; heating indicates spoilage (bad fermentation or exposure to air)
Brix Test (Optional)	Sugar content retention	Squeeze silage juice, test with refractometer	Moderate Brix (>4%) post-ensiling

LABORATORY TESTS (Accurate Quality Assessment)

Send silage samples to a certified feed analysis lab for **precise nutrient and fermentation profile.**

Test	Parameter Measured	Ideal Result / Range
Dry Matter (DM)	Moisture level	30–40% DM
Crude Protein (CP)	Protein content	7–10% (DM basis)
Neutral Detergent Fiber (NDF)	Feed intake potential	45–55%
Acid Detergent Fiber (ADF)	Digestibility	25–35%
Total Digestible Nutrients (TDN)	Energy value	>60–65%
Lactic Acid	Main fermentative acid	>6–8% (DM basis)
Acetic Acid	Secondary fermentation acid	<3% is good
Butyric Acid	Spoilage indicator	Should be **<0.5%** or not detected
Ammonia-N (% of total N)	Protein degradation	Should be **<10% of total N**
pH Value	Silage acidity	**3.8–4.2**
Yeast & Mold Count	Shelf life / safety	<10^4 CFU/g
Mycotoxin Analysis	Aflatoxins, Zearalenone, DON, etc.	Should be **ND (Not Detected)**

Tips for Sampling Silage for Lab Testing

- Take samples from multiple points in the silo (top, middle, and deep inside).
- Mix well and seal in airtight plastic bags.
- Ship it in a cool box if possible to prevent spoilage during transit.

Pit Preparation for making silage

Dimensions

The pit's size should be tailored to the number of livestock and the duration of feed storage. A common dimension is 10–15 meters in length, 3–4 meters in width, and 1.5–2 meters in depth.

Shape

Rectangular pits are commonly used due to ease of construction and filling.

Lining

Line the pit with thick plastic sheets to prevent nutrient loss and seepage. Ensure the sheet covers the base and sides completely.

Drainage

Construct a slight slope or side drainage channel to allow rainwater to flow away from the pit.

Compaction

Use heavy machinery like tractors for compaction during filling to eliminate air pockets and promote anaerobic fermentation.

Covering

After filling, cover the silage with a heavy-duty plastic sheet and weigh it down with tires or sandbags to ensure an airtight seal.

Proper pit preparation and management are crucial to producing high-quality corn silage, ensuring optimal nutrition for livestock throughout the year.

During corn silage fermentation, a series of microbiological and biochemical processes occur under anaerobic (oxygen-free) conditions to preserve the forage and enhance its digestibility. Here's a categorized list of key processes:

Microbiological Processes

1 Initial Aerobic Phase (0–24 hrs)

- **Growth of aerobic bacteria, yeasts, and molds:** Use oxygen and sugars, leading to heat and dry matter loss.
- **Oxygen depletion:** Rapid consumption of oxygen by aerobic microbes.

2 Anaerobic Fermentation Phase (1–21 days)

- **Lactic acid bacteria (LAB) proliferation:**
  - *Lactobacillus, Pediococcus, Enterococcus, Streptococcus spp.*
  - Convert sugars to lactic acid, lowering pH.
- **Acetic acid production** (heterofermentative LAB):
  - Inhibits yeasts and molds.
- **Limited propionic and butyric acid production:**
  - **Clostridia** (undesirable): Produce butyric acid, ammonia – causes spoilage.
  - Controlled by low moisture and rapid acidification.

3 Stabilization Phase (after 3 weeks)

- Microbial activity declines due to low pH (~3.8–4.2).
- Silage becomes stable and preserved.

Biochemical Processes

1 Carbohydrate Breakdown

- **Water-soluble carbohydrates (WSC)** → Lactic acid (main fermentation product).
- *Enzymatic hydrolysis of starches* also occurs to some extent.

2 Protein Degradation (Proteolysis)

- Plant proteases and microbes degrade proteins into:
  - **Amino acids**
  - **Ammonia (NH_3)** – excessive amounts indicate poor fermentation.

3 pH Reduction

- Lactic acid accumulation lowers silage pH quickly, preventing spoilage.

4 Heat Production

- From aerobic respiration in early phase; excessive heat leads to nutrient losses.

CORN SILAGE HOUSEKEE-TIPS-TROPICAL CLIMATE

BEFORE HARVESTING

- Clean all equipment (harvesters, choppers, tractors, wagons)
- Inspect silage pit or silo structure
- Ensure pit floor is raised or lined
- Keep a covered dry area for silage additives (molasses, inoculants)

DURING HARVESTING & CHOPPING

- Chop at correct size (1-2 cm)
- Avoid delay after chopping
- Harvest at correct maturity (milk to early dough stage)
- Don't let chopped material sit in the sun

DURING FILLING THE PIT

- Layer and compact silage every 1-2 feet
- Use tractors/rollers to tightly compress
- Fill continuously and quickly (same day)
- Keep all tools (shovels, rakes, boots) clean

SEALING & POST-FILLING

- Use high-quality plastic sheeting (500-1000 microns)
- Double-layer with UV-resistant top sheet
- Seal all edges tightly with sandbags or soil

चारे का प्रसंस्करण एवं डेयरी पशुओं के लिए इसका महत्व

पशुओं से अधिकतम उत्पादन प्राप्त करने के लिए उन्हें पर्याप्त मात्रा में पौष्टिक चारे की आवश्यकता होती है। इन चारों को पशुपालक या तो स्वयं उगाता है या फिर कहीं और से खरीद कर मांगता है।चारे की फसल उगने का एक खास समय होता है जोकि अलग अलग चारे के लिए अलग अलग है। चारे को अधिकांशतः हरी अवस्था में पशुओं को खिलाया जाता है तथा इसकी अतिरिक्त मात्रा को सुखाकर भविष्य में प्रयोग करने के लिए भंडार कर लिया जाता है ताकि चारे की कमी के समय उसका प्रयोग पशुओं को खिलाने के लिए किया जा सके। चारे का इस तरह से भंडारण करने से उसमें पोषक तत्व बहुत कम रह जाते है। इसी चारे का प्रसंस्करण यदि वैज्ञानिक तरीके से किया जाय तो उसकी पौष्टिकता में कोई कमी नहीं आती तथा कुछ खास तरीकों से इस चारे को उपचारित करके रखने से उसकी पौष्टिकता को काफी हद तक बढाया भी जा सकता है। विभिन्न चारों को प्रसंस्करण करने की कुछ विधियां नीचे दी जा रहीं है।

कौशल कुमार[1], राज किशोर शर्मा[2] एवं योगेंद्र सिंह जादौन[3]

भारत सरकार वर्तमान समय में पशुपालक भाईयों की आमदनी दोगुनी अथवा आर्थिक लाभ में बढ़ोतरी हेतु वचनवद्ध है। इस लक्ष्य को पुर्ण करने हेतु पशुओं में आहार प्रबंधन की प्रमुख भुमिका है। आपात स्थिति में पशु आहार प्रबंधन इस लक्ष्य की एक महत्वपूर्ण घटक है। पशुपालकों को संकट के समय पशुओं को उचित आहार उपलब्ध करना अति आवश्यक है, तभी वो पशुपालन के दिशा में समृद्ध हो पायेंगे। आपात काल में समुचित आहार प्रबंधन नहीं होने के कारण पशुओं की उत्पादन क्षमता एवं स्वास्थ्य पर प्रतिकुल प्रभाव पड़ता हैं। अतः पशुओं की उत्पादन क्षमता में नियमितता सुनिश्चित करने हेतु करना अति आवश्यक हैं ताकि उनकी स्वास्थ्य एवं रोग प्रतिरोधक क्षमता बनी रहे।

सूचक शब्द : प्रसंस्करण, पौष्टिकता, डेयरी पशु।

चारे के प्रसंस्करण की प्रमुख विधियॉ

1. घास को सुखाकर रखना (हे बनाना):

हे बनाने के लिए हरे कचरे या घास को इतना सुखाया जाता है जिससे कि उसके नमी कि मात्रा 15–20 प्रतिशत तक ही रह जाये। इससे पादप कोशिकाओं तथा जीवाणुओं की एन्जाइम क्रिया रूक जाती है लेकिन इससे चारे की पौष्टिकता में कमी नहीं आती। हे बनाने के लिए लोबिया, बरसीम, लूसर्न, सोयाबीन, मटर आदि लेग्यूम्स तथा ज्वार, नेपियर, जौ, ज्वी, बाजरा, ज्वार, मक्की, गिन्नी, अंजन आदि घासों का प्रयोग किया जा सकता है। लेग्यूम्स घासों में सुपाच्य तत्व अधिक होते हैं तथा इसमें प्रोटिन व विटामिन ए. डी. व ई. भी पर्याप्त मात्रा में पाए जाते है। दुग्ध उत्पादन के लिए ये फसलें बहुत उपयुक्त होती है। हे बनाने के लिए चारा सुखाना हेतु निम्नलिखित तीन विधियों में से कोई भी विधि अपनायी जा सकती है।

(क) चारे को परतों में सुखानाः – जब चारे की फसल फूल आने वाली अवस्था में होती है तो उसे काटकर 9–9 की परतों में पूरे खेत में फैला देते है तथा बीच–बीच में उसे पलटते रहते हैं जब तक कि उसमें पानी की मात्रा लगभग 15 प्रतिशत तक न रह जाये। इसके बाद इसे इकट्ठा कर लिया जाता है तथा ऐसे स्थान पर जहां वर्षा का पानी न आ सके इसका भंडारण कर लिया जाता है।

(ख) चारे को गट्ठर सुखानाः– इसमें चारे को काटकर 24 घंटों तक खेत में पडा रहने देते है। इसके बाद इसे छोटी–छोटी ढेरियों अथवा गट्ठरों में बांध कर पूरे खेत में फैला देते है। इन गट्ठरों को बीच– बीच में पलटते रहते है जिससे नमी की मात्रा घट कर 18 प्रतिशत तक हो जाए।

(ग) चारे को तिपाई विधि द्वारा सुखानाः– जहां भूमि अधिक गीली रहती हो अथवा जहां वर्षा अधिक होती हो ऐसे स्थानों पर खेतों में तिपाइयां गाढकर चारे की फसलों को उन पर फैला देते हैं। इस प्रकार वे भूमि के बिना संपर्क में आए हवा व धुप से सुख जाती है। कई स्थानों पर घरों की छत पर भी घासों को सुखा कर हे बनाया जाता है। प्रदेश में मध्यम व उंचे क्षेत्रों में हे (सुखे घास) को कूप अथवा गुम्बद की शक्ल के ढेर कर जिन्हे स्थानीय भाषा में घोड कहते है में ठीक ढंग से व्यवस्थित करके रखा जाता है। इनका आकार कोन की तरह होने के कारण इन पर वर्षा का पानी खडा नहीं हो पाता जिससे चारे की पौष्टिकता में कमी नहीं आती।

फायदे:

- यह सूखे मौसम में चारे की समस्या को हल करता है।
- पोषक तत्वों की हानि कम होती है।
- पशुओं के लिए सुपाच्य और लाभदायक होता है।

2. सूखे चारे की पौष्टिकता बढानाः

(चारे का यूरिया द्वारा उपचार) सूखे चारे जैसे भूसा तूडी पुआल आदि में पौष्टिक तत्व लिगनिन के अंदर जकडे रहते हैं जोकि पशु के पाचन तन्त्र द्वारा नहीं किये जा सकते। इन चारों का कुछ रासायनिक पदार्थों द्वारा उपचार करने इनके पोषक तत्वों को लिगनिन से अलग कर लिया जाता है। इसके लिए यूरिया उपचार की विधि सबसे सस्ती तथा उत्तम है।

उपचार की विधिः– एक क्विंटल सूखे चारे जैसे पुआल या तूडी के लिए चार किलों यूरिया का 50 किलो साफ पानी में घोल बनाते है। चारे को समतल तथा कम उचांई वाले स्थान पर 3–4 मीटर की गोलाई में 6 इंच उंचाई की तह में फैला कर उस पर यूरिया के घोल का छिडकाव करते है। चारे को पैरों से अच्छी तरह दवा कर उस पर पुनः सूखे चारे की एक और पर्त बिछा दी जाती है और उस पर यूरिया के घोल का समान रूप से छिडकाव किया जाता है।

इस ट्रक के उपर बिछाकर 25 क्विंटल की ढेरी बनाकर उसे एक पोलीथीन की शीट से अच्छी तरह से ढक दिया जाता है। यदि पोलीथीन की शीट उपलब्ध न हो तो उपचारित चारे की ढेरी को गुम्बदनुमा बनाते है जिसे उपर से पुआल आदि से ढक दिया जाता है। उपचारित चारे को 3 सप्ताह तक ऐसे ही रखा जाता है जिससे उसमें अमोनिया गैस बनती है जो घटिया चारे को पोष्टिक तथा पाच्य बना देती है। इसके बाद चारे को पशु को खालिस या फिर हरे चारे के साथ मिलाकर खिलाया जा सकता है।

(यूरिया उपचार से लाभ)

1. उपचारित चारा नरम व स्वादिष्ट होने के कारण पशु उसे खूब चाव से खाते है तथा चारा बर्बाद नहीं होता।

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2. पांच या 6 किलों उपचारित पुआल खिलाने से दुधारू पशुओं में लगभग 1 किलो दूध की वृद्धि हो सकती है।
3. यूरिया उपचारित चारे को पशु आहार में सम्मिलित करने से दाने में कमी की जा सकती है जिससे दूध के उत्पादन की लागत कम हो सकती है।
4. बछडे/बच्छियों को यूरिया उपचारित चारा खिलाने से उनका बजन तेजी से बढता है तथा वे स्वस्थ दिखाई देते है।

सावधानियॉं: –

1. यूरिया का घोल साफ पानी में तथा यूरिया की सही मात्रा के साथ बनाना चाहिए।
2. घोल में यूरिया पूरी तरह से घुल जानी चाहिए।
3. उपचारित चारे को 3 सप्ताह से पहले पशु को कदापि नहीं खिलाना चाहिए।
4. यूरिया के घोल को चारे के उपर समान रूप से छिडकाव करना चाहिए।

साइलेज बनाना:–

साइलेज लगभग सभी घासों से अकेले अथवा उनके मिश्रण से बनाया जा सकता है। जीन फसलों में घुलन शील कार्बोहाईड्रेट्स अधिक मात्रा में होते है जैसे कि ज्वार मक्की, जवी, गिन्नी घास, नेपियर, सिटीयर तथा घास्नियों की घास आदि, साइलेज बनाने के लिए उपयुक्त होती है। फली दार जिनमें कार्बोहाईड्रेट्स कम तथा नमी की मात्रा अधिक होती है, को अधिक कार्बोहाईड्रेट्स वाली फसलों के साथ मिलाकर अथवा शीरा मिला कर साइलेज के लिए प्रयोग किया जा सकता है। साइलेज बनाने के लिए चारे की फसलो को फूलने से लेकर दानों के दूधिया होने तक की अवस्था में काट लेना चाहिए। साइलेज बनाते समय चारे में नमी की मात्रा 65 प्रतिशत होनी चाहिए।

साइलेज के गढ्डे/साइलोपिट्स:–

साइलेज जिन गढ्डों में बनाया जाता है उन्हें साइलोपिट्स कहते है। साइलोपिट्स कई प्रकार के हो सकते हैं जैसे ट्रेन्च साइलो बनाना सस्ते व आसान होते है। आठ फुट व्यास तथा 12 फुट गहराई वाले गढ्डे में 4 पशुओं के लिए तीन माह तक का साइलेज बनाया जा सकता है। गढ्डा साइलो उंचा होना चाहिए तथा इसे भली प्रकार से कुटकर सख्त बना लेना चाहिए। साइलो के फर्श व दीवारें पक्की बनानी चाहिए और यदि ये संभंव न हो तो दीवारों की लिपाई भी की जा सकती है।

साइलेज बनाने की विधि:–

साइलेज बनाने के लिए जिस भी हरे चारे का इस्तेमाल करना हो, उसे उपयुक्त अवस्था में खेत से काट कर 2 से 5 सेन्टीमीटर के टुकडों में कुट्टी बना लेना चाहिए ताकि ज्यादा से ज्यादा चार साइलो पिट में दबा कर भरा जा सके। कुट्टी किया हुआ चारा खूब दबा–दबा कर कर ले जाते हैं ताकि बरसात का पानी न टिक सके। फिर इसके उपर पोलीथीन की शीट बिछाकर उपर से 18–20 से. मी. मोटी मिट्टी की परत बिछा दी जाती है। इस परत को गोबर व चिकनी मिट्टी से लीप दिया जाता है। दरारे पड जाने पर उन्हे मिट्टी से बन्द करते रहना चाहिए ताकि हवा व पानी गढ्डे में प्रवेश न कर सकें। लगभग 45 से 60 दिनों में साइलेज बन कर तैयार हो जाता है जिसे गढ्डे को एक तरफ से खोलकर मिट्टी व पोलीथीन शीट हटाकर आवश्कतानुसार पशु को खिलाया सकता है। साइलेज निकाल कर गढ्डे को पुनः पोलीथीन शीट व मिट्टी से ढक देना चाहिए। प्रारम्भ में साइलेज को थोडी मात्रा में अन्य चारों के साथ मिला कर पशु को खिलाना चाहिए तथा धीरे–धीरे पशुओं को इसका स्वाद लग जाने पर इसकी मात्रा 20–30 किलो ग्राम प्रति पशु तक बढायी जा सकती है।

साइलेज बनाने में पोलीथीन की शीट का इस्तेमाल

चारे का भंडारण

साइलेज के फायदे:

- यह लंबे समय तक सुरक्षित रहता है।
- इससे पशुओं को ऊर्जा और पोषण मिलता है।
- सूखे मौसम में भी हरे चारे की उपलब्धता बनी रहती है।

निष्कर्ष:

हरे चारे का प्रसंस्करण एक महत्वपूर्ण प्रक्रिया है, जिससे पशुपालकों को वर्षभर पौष्टिक चारा मिल सकता है। साइलेज और हे जैसी विधियाँ पशुओं के पोषण और दूध उत्पादन को बढ़ाने में सहायक होती हैं। यदि पशुपालक सही तरीके से हरे चारे का प्रबंधन करें, तो वे कम लागत में बेहतर दुग्ध उत्पादन प्राप्त कर सकते हैं।

स्वस्थ पशु, समृद्ध किसान!

कौशल कुमार[1], राज किशोर शर्मा[2] एवं योगेंद्र सिंह जादौन[3]

सहायक प्राध्यापक

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बिहार पशु चिकित्सा महाविधालय एवं संजय गाँधी गव्य प्रौद्योगिकी संस्थान

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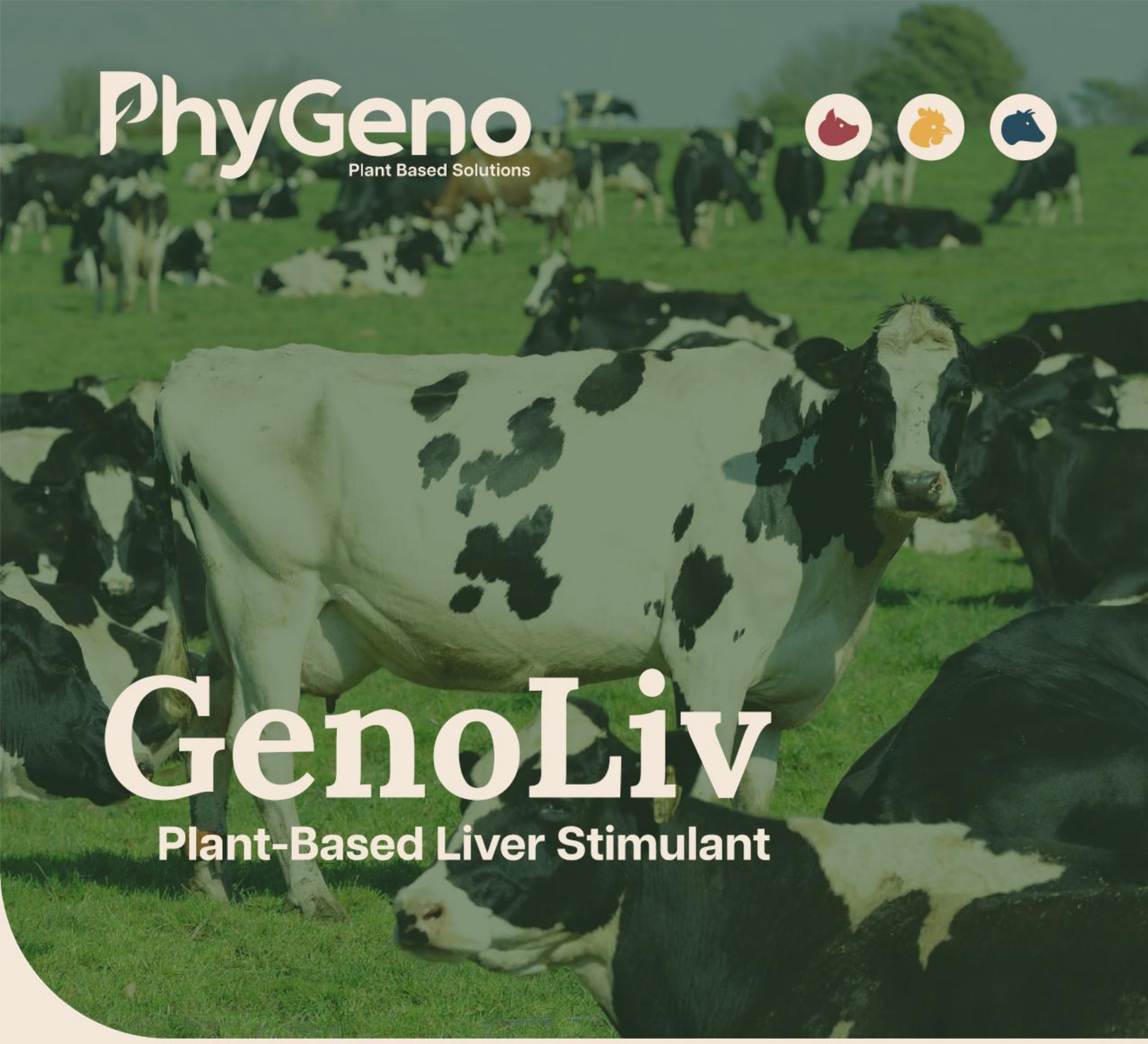

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Contagious Ecthyma/Orf A debilitating Disease of Small Ruminants

Orf is a highly contagious and debilitating disease affecting domesticated small ruminants such as sheep and goats and devastating the economy of many developing countries, including all the geographic regions of India. The disease is also known as sore mouth, contagious pustular dermatitis or scabby mouth (and it is usually more severe in goats than in sheep. Orf virus (ORFV) also infects a wide range of wild animals such as the Japanese serow, musk ox, camels, reindeer, seals, and sea lions. The disease is manifested by proliferative lesions on the mouth and muzzle that usually resolved in 1–2 months. Humans contract the infection through direct contact with affected sheep and goats, or fomite contaminated with ORFV and it is considered an occupational zoonosis. Generally, ORFV infection in humans is termed "farmyard pox". Orf is an English word which means 'rough' and the disease was termed so, because of the appearance of the skin after infection with the orf virus.

Gnanavel V[1], Sabarinath T[1], Monu Karki, Poulinlu G, Aditya Sahoo, Ajayta Rialch and V. Bhanuprakash[1]

Virus Characteristics:

The etiological agent, the orf virus (ORFV) is a prototypic member of the genus *Parapoxvirus*, subfamily *Chordopoxvirinae*, family *Poxviridae*. Other important members of the genus are pseudo-cowpox virus (PCPV), bovine papular stomatitis virus (BPSV) of cattle and the parapoxvirus of red deer in New Zealand. The ORFV virion with a size of 260×160 nm shows a well-characterized ovoid structure. Negative staining electron microscopy reveals its unique criss-cross pattern, which is basically due to the superimposed images of spiral tubules surrounding the virion surface. Regarding the physiochemical properties of ORFV, the virus is resistant to heat, ether and other lipid solvents. ORFV can survive for years in dry and extremely cold environmental conditions as the virus is trapped in an infected skin scab. ORFV is a large enveloped dsDNA virus that replicates in the cytoplasm of the infected host cell. The genome size is 135 kbp which encodes approximately 132 proteins. The high GC content (62-65%) of ORFV presents more similarity with the *Molluscum Contagiosum* virus. The central conserved region of ORFV encodes the proteins essential for viral replication, virion assembly, and morphogenesis. Terminal portions represent 20% of the genome and comprise inverted terminal regions (ITRs) at both ends, which encode virulent factors responsible for immunomodulatory effects of ORFV resulting in short term immunity and re-infection of the target hosts.

Epidemiology:

Contagious ecthyma is more common in late summer, fall and winter on pasture and in feedlots. Lambs and kids are more susceptible to disease than adults. Orf virus enters via broken, scarified or damaged skin and replicates in epidermal cells. The disease is usually transmitted through contact from infected to susceptible animals. Iatrogenic transmission of orf virus may also occur during minor or major surgical intervention, hand contact, drenching and ear tagging. Natural cross infection of orf between sheep and goats can occur. Animal with immune defects and persistently infected animals play an important role in the maintenance of the orf virus in the nature. There is only partial protection following clinical disease or vaccination. Recurrent infections can occur in 1–3 months but are less severe and heal rapidly. Lambs without maternal antibodies vaccinated at the age of 1–4 days of age develop protective immunity against contagious ecthyma.

Pathogenesis:

At the time of grazing, the dried stemmy and spiny feed may abrade the tissues of lips, nostrils, mouth as well as fore stomach. Through such abrasions virus penetrates the skin of mucosa and leads to formation of acanthosis, ballooning degeneration of spinose cells, hyperplasia of basal cells and oedematous and granulomatous inflammation of dermal cells. The virus produces the characteristic lesions in a sequence of papules, vesicles, pustules, scabs and resolution. The pustules develop within a few days. The rupture of pustules results into ulcer formation followed by thick overlaying crust or scab (**Fig. 1**), which is shed within 3–4 weeks leaving no scar. Though the pathogenesis of orf is simple, it becomes complex from secondary bacterial infection. The most frequent invaders are Staphylococci, alpha hemolytic Streptococci and *Corynebacteria* spp.

Severe orf lesions of proliferative type around mouth region of a lamb in a field case

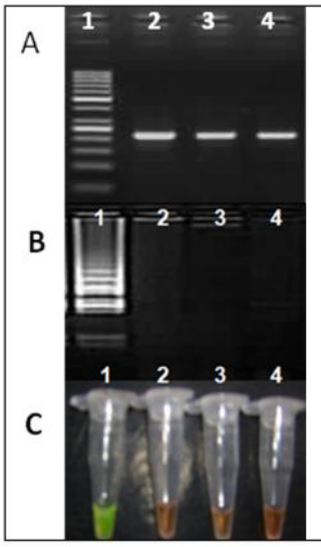
Zoonotic Importance:

Most cases of orf are reported in farmers, veterinarians, and zoo personnel, while shearing, slaughtering, drenching affected animals, as an occupational disease. Lesions in humans usually develop on the fingers, hands or forearms, and are benign in nature. The systemic forms of infection, such as erytema multiformis and generalized lymphadenopathy are very rarely seen.

A rare report of a patient with an orf lesion on the nose was documented recently in a Muslim country after a ritual feast. Also, a case of orf infection in a burns patient in Iran was reported, and its phylogenetic relatedness with an Indian isolate was unexpectedly confirmed.cases of human to human transmission are very rare and have not been reported so far. Infection is generally self-limiting, but may create more serious effects in immuno-compromised persons. MNB029/98 is a well-defined human biopsy-derived strain, collected from the owner of a contagious pustular dermatitis infected flock, which can be used for comparative analysis in the case of human infections.

Diagnosis:

The contagious ecthyma can be diagnosed on the basis of characteristic lesions on the anatomic areas of predilection. It should be differentially diagnosed from sheep pox, foot and mouth disease (FMD), staphylococcal dermatitis, dermatophilosis and ulcerative dermatosis. Commonly employed laboratory tests include: electron microscopy (EM), serological tests such as agar gel precipitation test (AGPT), agglutination test, complement fixation test (CFT), enzyme linked immunosorbent assays (ELISAs), serum neutralization test (SNT), and histopathology of affected tissues. Serum neutralization test (SNT) and CFT are usually used for serosurveillance study. A titre of ≥8 and ≥20 are considered positive in SNT and CFT, respectively. Primary lamb testis, lamb kidney, fetal lamb dermis cells, fetal lamb muscle cells, ovine fetal turbinate cells, fetal bovine muscle cells and fetal bovine lung cells as well as cell line MDBK, MDOK, and Vero cells are generally used for isolation of orf virus. After 2–3 blind passages, CPE mainly ballooning, rounding and degeneration of cells are pronounced. Orf virus affected skin tissues on histopathology reveal epidermal hyperplasia with hyperkeratosis, ballooning and degeneration of keratinocytes. EM study of orf lesions in skin from musk ox, Sichuan takin and Shetland sheep reveals the presence of characteristic parapoxvirus virions which appear as crisscross pattern against an electro dense background core. The above-mentioned conventional approaches could be of laborious and time consuming leading to subjective of variations. On other hand, PCR and real-time PCR methods have proven to be useful in ORFV rapid diagnosis. Nucleic acid based assays including polymerase chain reaction (PCR) based on B2L or VIR gene and restricted fragment length polymorphism (RFLP) analysis. A semi-nested PCR based on the major enveloped protein B2L gene has been reported to detect low copy number of virus particles from clinical samples. Earlier, several ORFV isolates from sheep, goats, musk ox and ruminant species were characterised by phylogenetic analysis using *B2L*, an envelope protein gene, to determine the genetic similarities with different countries. Later, highly sensitive, simple and specific isothermal DNA amplification technique called as LAMP have been developed to detect ORFV DNA in clinical samples and this robust assay is found 10-100 times more sensitive than conventional PCR (**Fig. 2**). Such field oriented nucleic acid detection techniques have been reported by several researchers targeting B2L, F1L and DNA polymerase genes for rapid diagnosis of ORFV in sheep and goats.



Rapid diagnosis of ORFV infection by DNA polymerase gene based PCR (Panel A) showing 214 bp amplicon (Lane 1:50 bp DNA ladder; Lane 2-4: positive control and clinical samples) in agarose gel analysis (AGE), LAMP reaction in AGE (Panel B) showing ladder like pattern (Lane 1: positive sample; Lane 2-4: negative samples) and LAMP reaction identified by SYBR green I dye (Panel C) showing apple green fluorescence in positive sample (Lane 1) and orange brown in negative samples (Lane 2-4).

Therapeutic management:

Although orf is a self-limited disease, symptomatic treatment with dressings and local antiseptics are very helpful. As secondary bacterial contamination in orf virus infection is not uncommon, therefore topical and systemic antibiotics must be used in treatment schedule. Occasionally levamisole as an immunostimulant is indicated in orf virus infection. Debilitated sheep need to be treated with 10% glucose saline intravenously. Lesions should be washed with 1:100–1:10,000 KMnO4 lotion and application of 1:10 boric acid, mild antiseptic or antibiotic ointment topically with parenteral antibiotic injection is recommended to prevent secondary bacterial complications. Recently several antiviral drugs have been evaluated in therapy of orf infection and found to be highly effective in animal and humans. Antinucleoside phosphonates (ANPs) particularly cidofovir is highly effective in complicated orf virus infection in sheep, goat and human beings. The application of 1% (w/v) cidofovir cream results in milder lesions that resolved more quickly than untreated lesions. Besides the synthetic compounds, few traditional herbal therapies have been attempted in orf virus infections. Among these, plant oils obtained from seasame, castor, juice of *Calotropisprocera* and *Euphorbia* spp. have been found effective in the treatment of orf infection in India and African subcontinent whereas in France and Netherlands, *Ilex aquifolium* is used for curing and preventing contagious ecthyma.

Prevention and Control:

The ORFV is difficult to eradicate once it has entered a flock or herd. Although vaccination is the efficient and cost effective method of preventing the orf virus infections, sanitary measures and disinfection practices should also be implemented along with it. The isolation of infected animals can help prevent the spread of the disease. The new animals should be quarantined before mixing with other animals of a farm to prevent the entry of the orf virus. Necessary measures should be taken to prevent the virus introduction in the farm through equipment and other fomites. Animals should not be allowed to feed on rough straw or vegetation to reduce the risk of cuts in the mouth or on the muzzle as the virus can enter through the cuts. Moreover, the migration of animals from one place to another place particularly the infected animals should be prohibited.

Vaccines:

Vaccination is the only option for the efficient control of orf virus infection, as being a viral disease of sheep and goats, there is no suitable antiviral therapeutic schedule. If a herd is immunized, no new cases may be seen for a few years but when new born unvaccinated animals become dominant, the disease will recur.

Autologous vaccine:

An autologous orf vaccine can be prepared after triturating the scab material in saline followed by addition of penicillin/streptomycin. A drop of the vaccine can be used by scarification in the inner thigh region but not face or legs. Within a few days, there will be a little inflammation, swelling and scabbing and the animal will be immune for life.

Live attenuated tissue culture vaccine:

Live attenuated tissue culture orf vaccine has been found to be effective in reducing the severity of the disease. Vaccines should be used in the farm where infections have occurred in the past and recently vaccinated animals should be isolated from unvaccinated animals. India, primary lamb testes cell (PLT) adapted ORFV strain (Mukteswar) has been attenuated and evaluated for safety, efficacy and potency in goats. The cell culture adapted vaccine is found safe and efficacious by laboratory and limited field trials. However, the duration of immunity after vaccination is limited and recommended for annual vaccination of susceptible sheep and goats above 4 months of age. Outbreaks have occurred in the vaccinated animals due to break down of immunity by the virulent strain of orf virus. However, main disadvantage of this vaccine is that it can disseminate the vaccine virus strain capable of causing the disease and unable to confer solid immunity to reinfection.

Recombinant Vaccinia virus vectored vaccine:

A recombinant vaccine constructed by randomly cloning the orf virus genomic DNA into vaccinia virus vector afforded significant protection against infection with a field isolate of orf virus as compared to control lambs which received only the vaccinia virus as the vector.

Conclusions

The persistency and endemic nature of contagious ecthyma in many parts of the world, its wide host range with zoonotic potential, short-term immunity, and most importantly the unique immune evasion strategy makes it an important virus entity to be studied in detail. Detailed characterization of these virulence genes may unravel the mechanism of immune evasion strategy of ORFV and may provide co-evolutionary process of virus with host in the process of developing the resistance to immunity in same infected hosts in future. Genome wide sequencing and analysis of ORFV genome will provide insight in to genetic evolutionary relationship of circulating ORFV isolates in India and development of novel diagnostics, vaccines and antivirals for ORFV and other emerging parapoxviruses.

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Avitech Nutrition Appoints

Dr Ashish Sachdeva

as Assistant General Manager – International Sales

Avitech
Knowledge | Nutrition | Innovation

Avitech Nutrition has announced the appointment of Dr. Ashish Sachdeva as Assistant General Manager – International Sales. Dr. Sachdeva will be based at the company's corporate headquarters in Gurugram.

Holding a Master of Veterinary Science (MVSc) degree in Veterinary Bacteriology from the Indian Veterinary Research Institute, Bareilly, Uttar Pradesh, Dr. Sachdeva brings to this role extensive expertise in the animal nutrition industry.

Dr. Sachdeva possesses fifteen years of experience in international business development, sales, and product management within the animal nutrition industry. His professional career includes tenures with organizations such as Jubilant Ingrevia, EW Nutrition, and Ayurvet. Prior to joining Avitech Nutrition, Dr. Sachdeva was associated with Natural Remedies Pvt. Ltd.

In his capacity as Assistant General Manager – International Sales, Dr. Sachdeva will be driving Avitech Nutrition's international sales operations and contributing strategically to the company's market expansion initiatives.

Avitech Nutrition announces launch

of a new Trading Division for the Feed additive market

Avitech Nutrition, an established name in the animal feed and nutrition sector, has announced the establishment of its new Trading Division. This strategic expansion will focus on leveraging opportunities in trading of essential ingredients for the animal feed additive sector commencing with Vitamin blends and Straight Vitamins, which finds usage in animal feed formulations. Subsequently, several other products will be added to the Trading Division.

The Trading Division will cater to the needs of distributors and end-users by providing them with reliable access to high-quality inputs.

Spearheading this new venture is **Mr. Amal Kumar Datta**, who is leading the Trading Division. Mr. Datta brings with him extensive experience of over three decades in the Indian feed additive sector. His deep understanding of the market dynamics and established network will be invaluable in driving the growth and success of this new division.

The strategic move underscores Avitech Nutrition's commitment to strengthen its presence in the animal nutrition space. The establishment of the Trading Division will enable the company to further streamline the supply chain and offer enhanced value to its customer base.

For trade inquiries and further information,
please write Mr. Amal Kumar Datta:

Email: dattaamal@avitechnutrition.com | **Mobile:** 91-7044074420

Climate Change and Its Impact on Vector-Borne Diseases in Animals

Climate change refers to long-term changes in the Earth's climate caused by natural factors and human activities. Key impacts include rising global temperatures, altered rainfall patterns, and intensified weather events. Human activities, such as burning fossil fuels, have increased greenhouse gases like carbon dioxide and methane, amplifying the greenhouse effect and contributing to global warming. These changes lead to effects such as prolonged droughts, severe monsoons, rising sea levels, reduced freshwater availability, and disruptions to agriculture(Nimma *et al*., 2025).

Climate change has emerged as one of the most pressing global issues, significantly affecting ecosystems, human health, and animal welfare. According to the World Health Organization (WHO), an additional 250,000 deaths per year will occur in the next decades as a result of malnutrition, heat stress, and vector-borne diseases (WHO, 2023). Among its many consequences, the impact of vector-borne diseases on animals has become a critical area of concern. Vector-borne diseases, transmitted by blood-feeding arthropods like mosquitoes, ticks, and sandflies, impact both humans and domestic or wild animals, with the greatest burden on public health observed in tropical and subtropical regions. Since these vectors are ectothermic, changes in climate and weather—such as shifts in temperature, rainfall, and humidity—can influence their survival, reproduction, geographic distribution, and capacity to spread pathogens. These environmental changes directly affect the distribution, abundance, and activity of vectors, thereby altering disease dynamics in animals (De Souza & Weaver, 2024).

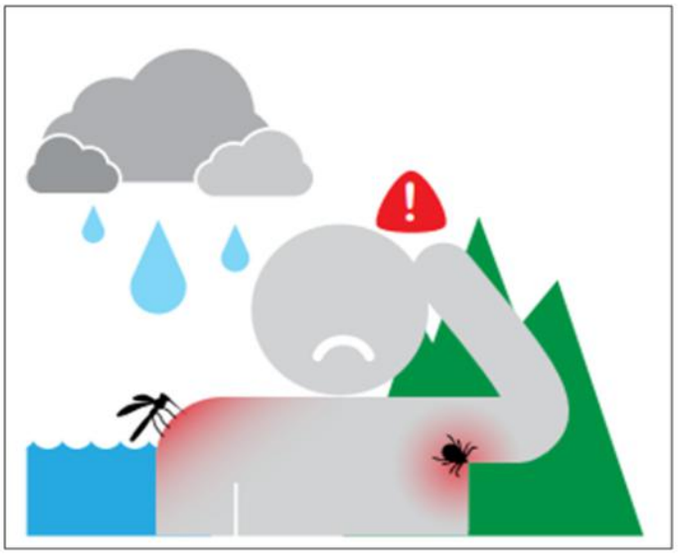
Dr. Dharmesh R. Patel[1] and Dr. Binal Prajapati[2]

Climate Change and Vector Ecology

1. Temperature Rise:

Increased global temperatures enable vectors to thrive in previously inhospitable regions. For instance:

- Mosquitoes carrying diseases like Rift Valley fever or heartworm are now observed in temperate zones.
- Ticks transmitting Lyme disease have expanded their range into northern regions due to milder winters.

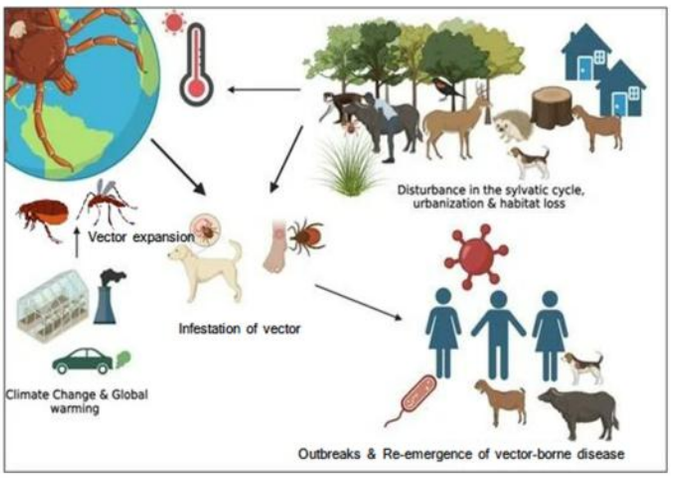


2. Rainfall Patterns:

- Increased rainfall creates breeding grounds for mosquitoes, leading to a rise in diseases like West Nile virus and Bluetongue.
- Conversely, drought conditions may drive vectors to seek water sources near livestock and wildlife, increasing disease transmission.

3. Humidity and Vector Survival:

- High humidity enhances vector survival and activity, sustaining transmission cycles for diseases such as anaplasmosis and babesiosis in cattle(Baril *et al*.,2023).



Impacts on Animals (CDC, 2025)

1. Livestock:

- Diseases like Rift Valley fever, African horse sickness, and Bluetongue are on the rise, affecting livestock productivity, fertility, and mortality rates.
- Economic losses due to treatment costs and reduced meat, milk, and wool production are significant.

2. Companion Animals:

- Pets are increasingly exposed to diseases like heartworm and tick-borne illnesses, such as Ehrlichiosis, in regions where they were previously uncommon.

3. **Wildlife:**

- Wildlife populations face heightened vulnerability to vector-borne diseases, disrupting ecosystems and increasing the risk of spillover to domestic animals and humans.

One Health Perspective

Climate change's impact on vector-borne diseases demonstrates the interconnectedness of human, animal, and environmental health. A One Health approach is essential to address these challenges, emphasizing collaboration among veterinarians, public health professionals, and environmental scientists.

Mitigation and Adaptation Strategies

1. **Surveillance and Monitoring:**

- Establishing robust disease monitoring systems to detect outbreaks early and predict vector population changes.

2. **Vector Control:**

- Implementing integrated pest management strategies, including the use of insecticides, biological control agents, and habitat modification.

3. **Vaccination and Treatment:**

- Developing vaccines and therapeutic measures for vector-borne diseases to protect animals effectively (Kitsouand Pal,2022)

4. **Policy and Awareness:**

- Promoting policies that reduce greenhouse gas emissions to mitigate climate change.
- Educating farmers and animal owners about preventive measures (Sami *et al.*, 2016).

Conclusion

Climate change is significantly altering the dynamics of vector-borne diseases in animals, posing threats to animal health, livelihoods, and ecosystems. Addressing these challenges requires a proactive approach that integrates climate science, veterinary epidemiology, and public health. Strengthening surveillance, improving vector control measures, and fostering global collaboration are critical to mitigating the impacts of climate change on animal health and ensuring sustainable livestock and wildlife management.

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BULLETIN

Carus Laboratories Honoured

with the Sardar Patel Unity Award 2025 for Emerging Leader in Animal Healthcare

Carus Laboratories has proudly received the prestigious **Sardar Patel Unity Award 2025** under the category of Emerging Leader in Animal Healthcare, presented by the Topnotch Foundation.

The award ceremony was held in Goa in the esteemed presence of Padma Shri Hema Malini ji and Hon'ble Union Minister Mr. Shripad Yesso Naik. Representing Carus at the event were Mr. Jitender Pilani (Director) and Mr. Lalit Kapoor (Vice President), who accepted the honour on behalf of the entire Carus team.

This recognition affirms Carus Laboratories' steadfast commitment to research-led innovation, advanced manufacturing practices, and veterinarian-driven excellence. With a strong team of over 500 professionals and a FAMI-QS, ISO 22000:2018, and HACCP-certified manufacturing facility, Carus continues to raise the bar in the Indian animal health industry.

"This award is a tribute to the passion, dedication, and relentless pursuit of quality by our team. We extend our heartfelt thanks to the veterinary community, our partners, and the farmers who trust and support us," said Mr. Jitender Pilani, Director.

"It's a moment of pride for our field force and technical teams whose efforts at the grassroots make this recognition possible," added Mr. Lalit Kapoor, Vice President.

Carus remains focused on its mission—Building India's Animal Health Legacy through innovation, integrity, and inclusive growth.

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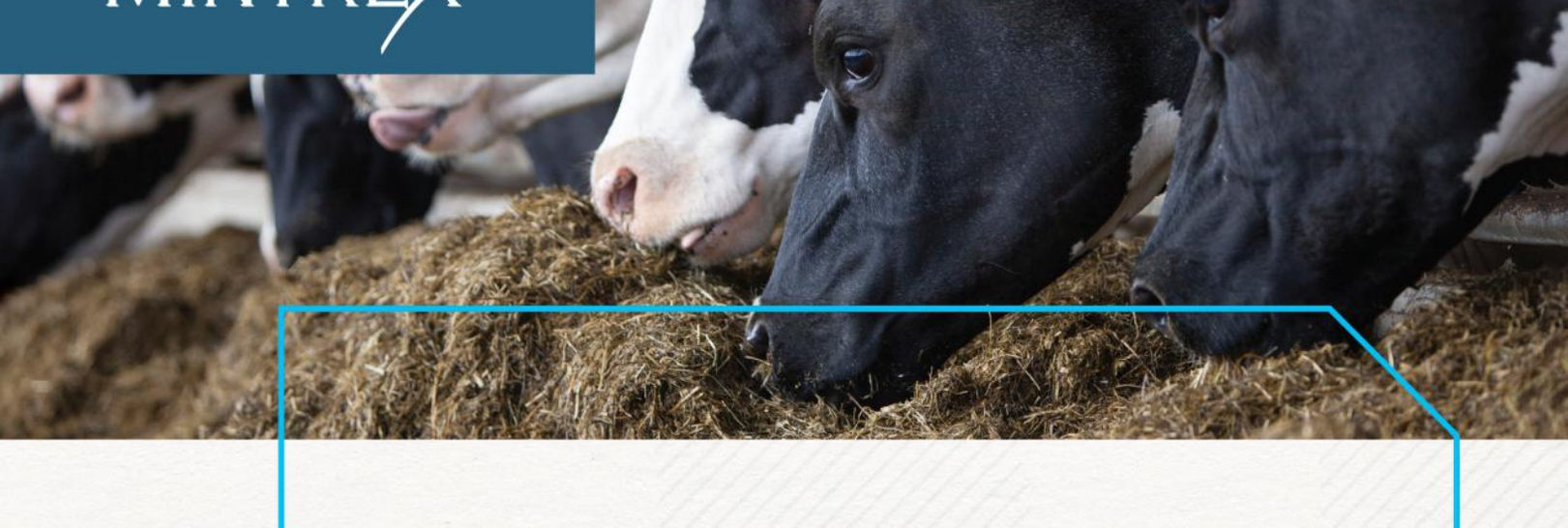

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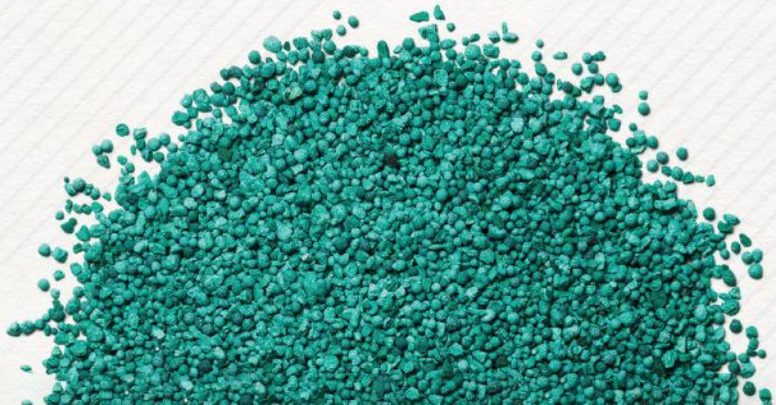

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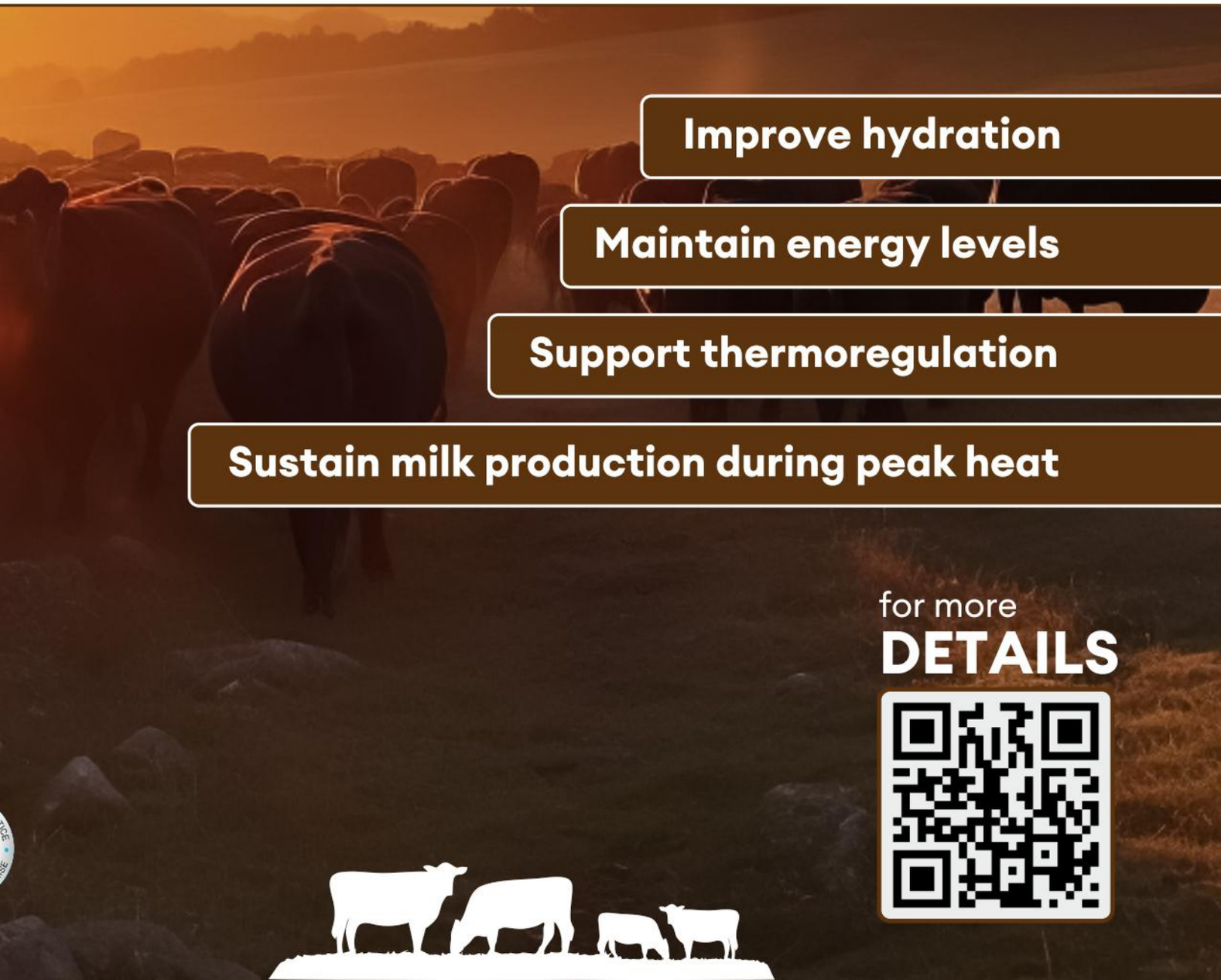

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