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LT

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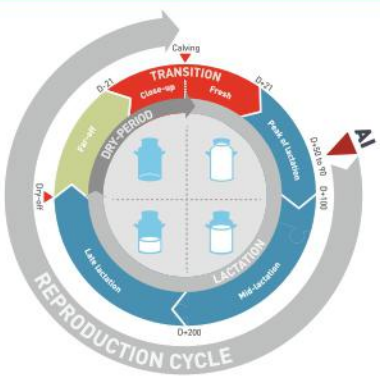

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- Effective starch gelatinization
- Effective heat transfer due to surfactant effect
- Improves the feed mill efficiency and pellet quality
- Feed manufacturers: 250 – 300 gms + 6 to 8 lit of water / ton of feed

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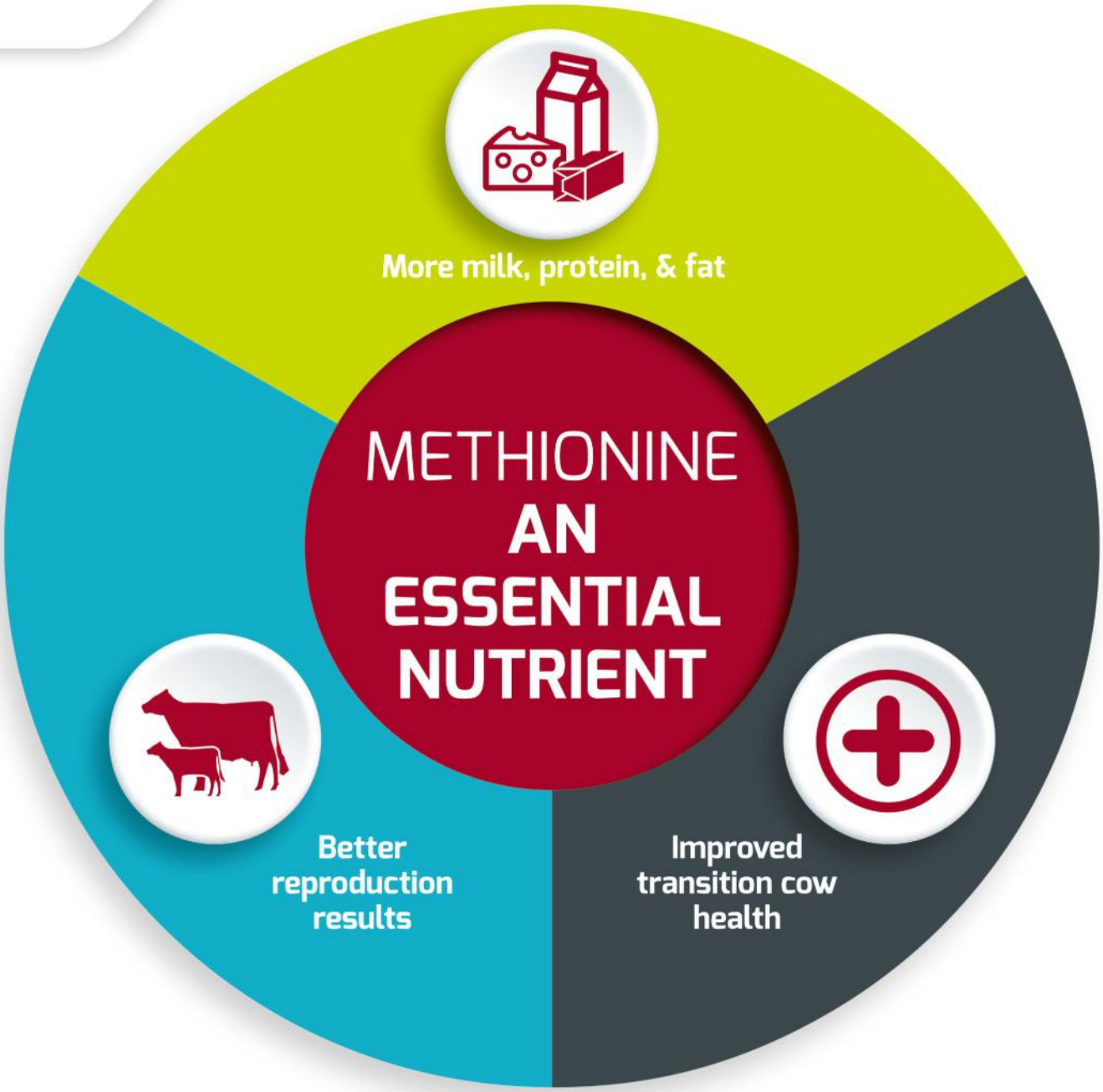

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From the Editor's Desk

The Smart and Sustainable Dairy Sector is Need of Hour

The smart word is not only required in the dairy sector but in the entire food sector. To make the food industry sustainable means that it has to be commercially viable for the farmer and the consumer needs to get good food products at affordable prices. During the next 25 years, the rural-urban population ratio will become 50:50. Major challenge is fighting adulteration, which leads to low consumption due to the loss of trust of consumers. Energy consumption needs to be reduced in the entire value chain. Digital integration is also important since efficiency, transparency, and trust are brought into the system. We blame animals for not being productive, but we forget that the animals also need love and care which gets ignored in the day-to-day race. The challenges of small herd vs large herd and unavailability of records in our system can be managed by utilization of our traditional knowledge and earlier systems of cattle management through modern mechanisms of implementation. The quality of milk and milk products has to be maintained at the highest level. Gaushalas should be supported/ started in each city and village. Fodder seeds and water for grazing lands should be provided by the Gram panchayat in each village.

Smart Dairy farming is the utilization of new technological advancements to bring about an innovation to make traditional dairy farms modern. Digital cow monitoring system, call center for animal health, rapid diagnostic kits, sex-sorted semen, embryo transfer technology,TMR station, fan, and fogger, agri machineries, animal health management through ethnoveterinary care all the dairy farming makes Amul an example of smart and sustainable dairy farming. Sustainability is given utmost importance through clean energy production at Dairy farms, carbon credit trading through biogas, refractive roof coating system, use of solar power, rainwater harvesting, regenerative agriculture, tree plantation drive, automatic milk sampling, route optimization, use of biofertilizers, use of drones in application of biofertilizers.

Daily collection of milk by the Kolhapur Zilla Dudh Utpadak Sangh, popularly known as Gokul dairy in Maharashtra, has crossed the 17.5 lakh liter mark, in the past three years. Gokul has now aimed to increase the daily collection of milk to 20 lakh liters by 2025. Around 12 lakh liters of milk is supplied to Mumbai. The dairy has started training farmers to increase the production and availability of good cow and buffalo breeds at subsidized rates.

The dairy also has its plant to prepare cattle fodder. The capacity of the fodder has also been increased to cater to the growing needs of the farmers.

Kerala Government launched 'Dairy Next', an interactive program that will provide authentic information on cow rearing to dairy farmers. Through new schemes of the Dairy Development department up to 20 cows were given to each farmer in 2023. The scheme to provide cows to 64,000 farmers below the poverty line will be launched soon. Schemes for farmers living in high-range and coastal areas are also on the anvil. In the next two years, Kerala will have the provision to ensure insurance for all cows. Fodder grass cultivation in the state will also be extended since it is an essential part of the diet Precision animal management and feed practices startup, eFeed, has secured a grant of Rs 25 Lakhs from the Indian Council of Agriculture Research. eFeed addresses the intersection of animal nutrition, health, environmental sustainability, and economic development in the cattle industry. The start-up is dedicated to sustainable livestock practices, actively addressing methane emissions through the promotion of balanced ration (TMR), localized feed formulations, and initiatives contributing to the reduction of greenhouse gas emissions in the livestock sector. The funds will be utilized to further expand operations. eFeed aims to demonstrate a substantial impact on the increase in milk output, thereby contributing to the overall productivity and sustainability of the livestock and dairy sector. The start-up has already collaborated with over 1.2 lakh farmers, emphasizing sustainable animal culture and integration with the food security value chain.

Banas Dairy will provide a zero-interest credit card to cattle breeders. The credit card will have a limit of Rs. 50,000 and no interest will be charged on the withdrawal of oney.

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

लाभप्रदता
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- प्रति दिन 25 किलो तक दूध देने वाली गायों के लिए उत्कृष्ट तैयार पोषण।
- बेहतर दूध उत्पादन, वसा (फैट) और एस.एन.एफ के लिए।
- बेहतर स्वास्थ्य और बीसीएस में सुधार के लिए।
- खनिजों और विटामिनों से युक्त, बेहतर उत्पादकता रोग प्रतिरोधक क्षमता के लिए।
- बेहतर एवं सम्पूर्ण उत्पादक काल (लैक्टेशन पीरियड) हेतु पशुओं के लिए सर्वोत्तम आहार।
- दूधारु पशुओं के शीघ्र गर्भधारण में सहायक।

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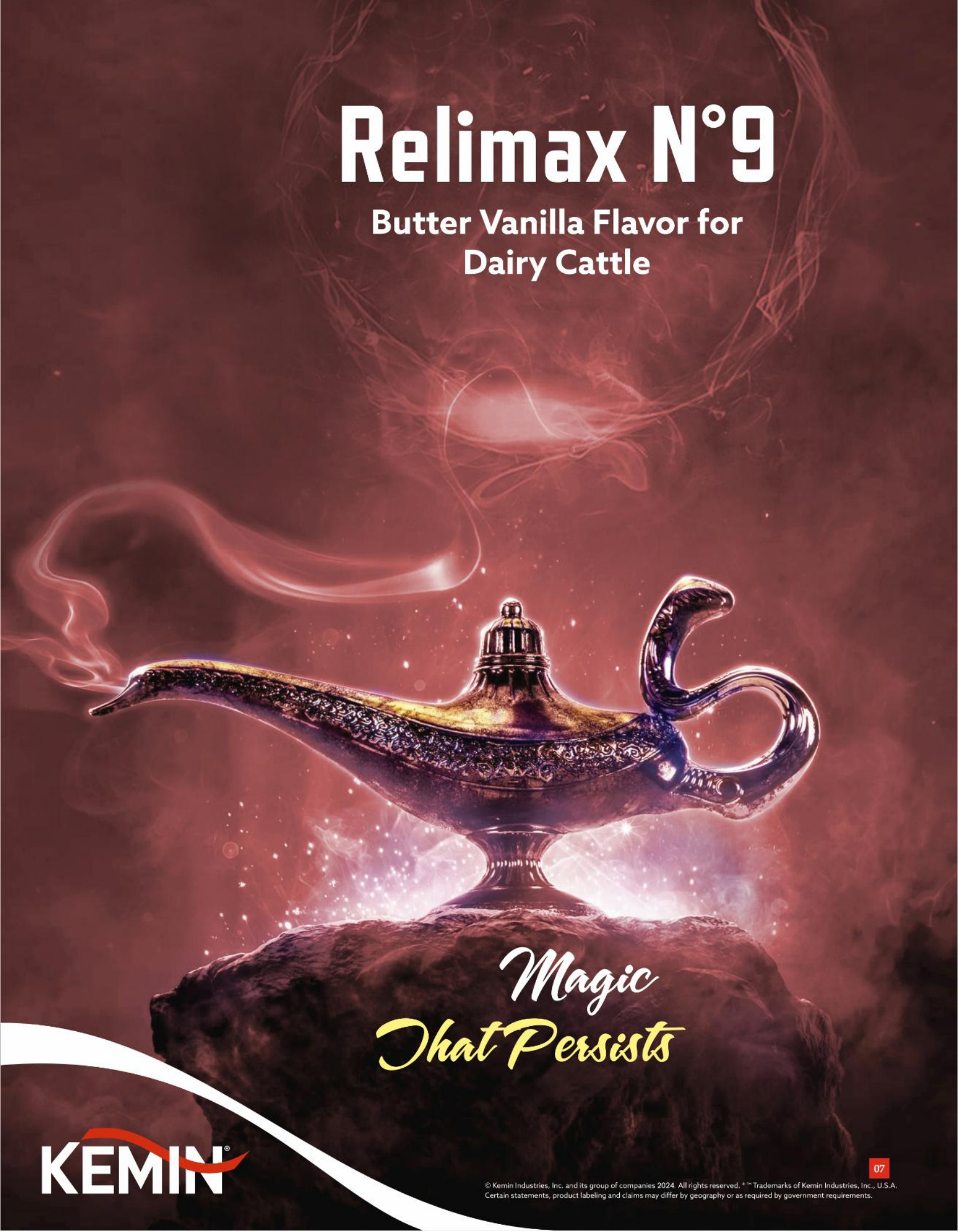

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ARTICLE

दुग्ध के कार्यात्मक गुणों की वृद्धि हेतु पोषण सम्बन्धी तकनीकियाँ

'डॉ. मोक्षता गुप्ता,''डॉ. साधना ओझा,डॉ. विनोद कुमार,डॉ. मुनीन्द्र कुमार,
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दुग्ध के कार्यात्मक गुणों से यह अभिप्राय है, जो दुग्ध की विशेषताओं और गुणों का उपयोग कर के दुग्ध से बनें पदार्थों को प्रभावित करती है। यह कारक विभिन्न प्रकार के खाद्य पदार्थों को बनाने के लिए दुग्ध की उपयुक्तता को निर्धारित करने में महत्वपूर्ण है। दुग्ध की गुणवत्ता पशु के आहार, पशु की प्रजाति, उम्र और उत्पादन चरण सहित विभिन्न कारकों से प्रभावित होती है। दुग्ध के कार्यात्मक गुणों, जैसे इसके पोषण तत्त्व तथा स्वास्थ्यवर्धक लाभों को बढ़ाने के लिए, कई प्रकार की तकनीकियों को अपनाया जा सकता है। ये तकनीकियां दुग्ध देने वाले पशुओं के आहार और प्रबंधन पर केंद्रित होनी चाहिए । दुग्ध के कार्यात्मक गुणों को बढ़ाने के लिए कुछ तकनीकियों का उल्लेख निम्नलिखित है।

1 **संतुलित आहारः** यह सुनिश्चित करने के लिए कि जानवर स्वस्थ रहें और पौष्टिक दुग्ध का उत्पादन करें, उन्हें चारा, अनाज और पूरक आहार के मिश्रण के रूप में एक संतुलित आहार प्रदान करना महत्वपूर्ण है। इससे यह सुनिश्चित होता है कि जानवरों को उनकी आवश्यकता अनुसार पोषक तत्व मिलते हैं, जिनकी उन्हें आवश्यकता होती है, जैसे प्रोटीन, कार्बोहाइड्रेट, वसा, विटामिन और खनिज। यह संतुलित आहार सीधे उनके द्वारा उत्पादित दुग्ध की पोषक तत्वों को प्रभावित करता है।

2 **पशुओं के आहार में संशोधनः** जानवरों को विशेष प्रकार के पोषक तत्व खिलाने से कुछ बायोएक्टिव कंपाउंड में वृद्धि हो सकती है। जिनका निम्नलिखित उदाहरणों में उल्लेख है ।

ओमेगा–3 फैटी एसिडः ये आवश्यक पॉलीअनसेचुरेटेड फैटी एसिड हैं जो मस्तिष्क के विकास, प्रतिरोधक क्षमता, हृदय स्वास्थ्य तथा अन्य प्रकार की विभिन्न शारीरिक कार्यों में महत्वपूर्ण भूमिका निभाते हैं। जबकि ओमेगा–3 फैटी एसिड के प्रमुख स्रोत मछली का तेल तथा कई प्रकार के बीज हैं ।

ओमेगा 3 फैटी एसिड सम्बंधित दुग्ध के कार्यात्मक गुड़ों के सुधार के लिए विशेष तकनीकियां निम्नलिखित हैं।

- **फैटी एसिड संरचनाः** ओमेगा–3 फैटी एसिड, जैसे ईकोसापेंटेनोइक एसिड और डोकोसाहेक्सैनोइक एसिड, दुग्ध की फैटी एसिड संरचना को बदल सकते हैं। इस परिवर्तन से उपभोक्ताओं के लिए स्वास्थ्य लाभ के साथ अधिक वांछनीय फैटी एसिड प्रोफाइल बन सकती है।
- **दुग्ध के वसा की गुणवत्ताः** ओमेगा–3 फैटी एसिड (अनसैचुरेटेड फैटी एसिड) को बढ़ाकर दुग्ध वसा की गुणवत्ता को प्रभावित कर सकता है। इसके परिणामस्वरूप दुग्ध की वसा में परिवर्तन हो जाता है, जो मक्खन जैसे कुछ डेयरी उत्पादों के लिए फायदेमंद हो सकती है।
- **प्रतिरक्षा प्रणालीः** ओमेगा–3 फैटी एसिड प्रतिरक्षा प्रणाली को नियंत्रित कर सकता है। यह संक्रमण को कम करके डेयरी पशुओं के स्वास्थ्य में सुधार ला सकता है और इस प्रकार, उच्च गुणवत्ता वाले दुग्ध का उत्पादन हो सकता है।
- **एंटीऑक्सीडेंट गुणः** ओमेगा–3 फैटी एसिड में एंटीऑक्सीडेंट गुण होते हैं जो कोशिकाओं को ऑक्सीडेटिव तनाव से बचा सकते हैं। इस प्रकार ये एंटीऑक्सीडेंट दुग्ध की गुणवत्ता के संरक्षण में योगदान दे सकती है और डेयरी उत्पादों के खराब होने से बचाया जा सकता है।
- **पोषक तत्त्वः** पशु आहार में ओमेगा –3 फैटी एसिड का समावेश दूध के पोषक तत्वों में से विशेषकर डी.एच.ए को बढ़ा सकता है, जो मस्तिष्क के विकास और कार्य के लिए महत्वपूर्ण है।
- **प्रजनन क्षमताः** ओमेगा–3 फैटी एसिड प्रजनन क्षमता में वृद्धि, बच्चे के जन्म के अंतराल में कमी करने में योगदान प्रदान करता है।

ओमेगा–3 फैटी एसिड का प्रभाव पशु प्रजातियों, आहार संरचना तथा अन्य प्रबंधन प्रथाओं के आधार पर निर्भर करता है । इस प्रकार पशु आहार में ओमेगा –3 फैटी एसिड की खुराक के उपयोग को सावधानीपूर्वक सम्मिलित किया जाना चाहिए।

एंटीऑक्सीडेंटः एंटीऑक्सीडेंट पशु के दुग्ध के कार्यात्मक गुणों को बेहतर बनाने में महत्वपूर्ण भूमिका निभाते हैं, और पशु आहार में उन्हें शामिल करने से कई सकारात्मक प्रभाव पड़ सकते हैं। जानवरों के लिए एंटीऑक्सिडेंट के सामान्य आहार स्रोतों में विटामिन ई, सेलेनियम, जस्ता, तांबाए चारे और अनाज में मौजूद विभिन्न फाइटोकेमिकल्स शामिल हैं। हालाँकि, इस प्रकार पशु आहार में एंटीऑक्सिडेंट मात्रा को सावधानीपूर्वक सम्मिलित किया जाना चाहिए, क्योंकि अत्यधिक मात्रा से प्रतिकूल प्रभाव पड़ सकता है।

एंटीऑक्सिडेंट, ऑक्सीकरण को रोककर दुग्ध में वसा की स्थिरता बनाए रखने में मदद करते हैं क्योंकि ऑक्सीकृत वसा से दुग्ध का स्वाद खराब हो सकता है और दुग्ध की पोषण गुणवत्ता में कमी आ सकती है। वे प्रोटीन और लिपिड के ऑक्सीकरण को रोककर दुग्ध के प्राकृतिक रंग और स्वाद को भी संरक्षित करते हैं। इस प्रकार, वे आवश्यक पोषक तत्वों को ऑक्सीडेटिव क्षति से बचाकर दुग्ध की सम्पूर्ण पोषण गुणवत्ता को संरक्षित करने में योगदान प्रदान करते हैं।

Stay cool when it's hot

Boost your milk yield with K-pron®, the most effective potassium source for dairy cows.

It's almost like air-conditioning for cows: At the onset of lactation, a cow's need for potassium increases, and various stress factors can drive up the potassium requirement even further. For example, heat leads to potassium loss through sweating. If these needs are not met, both milk yield and animal health can melt like ice in the sunshine. With K-pron®, you can simply and cost-effectively adjust the potassium content of your ration and increase milk yield, profits, and animal welfare.

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K-pron®

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कंजुगेटेडलिनोलेइक एसिड (सीएलए): सीएलए, या कंजुगेटेड लिनोलेइक एसिड, मांस और डेयरी उत्पादों में पाए जाने वाले पॉलीअनसेचुरेटेड फैटी एसिड का एक समूह है, खासकर गायों जैसे जुगाली करने वालों के दुग्ध और मांस में पाया जाता है । सीएलए अपने प्रतिरोधक क्षमता वृद्धि प्रभाव से पशु दुग्ध के कार्यात्मक गुणों को बेहतर बनाने, दुग्ध को ऑक्सीडेटिव क्षति से बचाने तथा दुग्ध वसा की फैटी एसिड संरचना को प्रभावित करने में योगदान प्रदान करता है। इस प्रकार डेयरी पशुओं में दुग्ध उत्पादन पर सकारात्मक प्रभाव पड़ता है।

लिनोलिक एसिड (सोयाबीन, अलसी, सूरजमुखी, बिनौला तेल) से भरपूर तेल, 2: सरसों तेल आधारित आहार खिलाने से भी दुग्ध में सीएलए की मात्रा बढ़ जाती है।

3 **बायोएक्टिव कंपाउंड्स:** विटामिन और खनिजों सहित बायोएक्टिव कंपाउंड्स, पशु दुग्ध के कार्यात्मक गुणों को बेहतर बनाने में महत्वपूर्ण भूमिका निभाते हैं। ये कंपाउंड्स जानवरों को स्वस्थरखने में योगदान करते हैं, जिससे उनके दुग्ध की गुणवत्ता और पोषक तत्त्व भी प्रभावित होते हैं ।

विटामिन ए, प्रतिरक्षा कार्य के लिए आवश्यक है और इसकी कमी से दुग्ध का उत्पादन कम हो सकता है और गुणवत्ता में में कमी हो सकता है। विटामिन डी कैल्शियम अवशोषण और हड्डियों के स्वास्थ्य के लिए महत्वपूर्ण है। खनिजों में, कैल्शियम हड्डियों के विकास और दुग्ध के जमाने के लिए महत्वपूर्ण है। इसी तरह, फास्फोरस हड्डी और ऊर्जा चयापचय के लिए आवश्यक है। यह न्यूक्लिक एसिड के निर्माण में भूमिका निभाता है, जो दुग्ध की संरचना को प्रभावित कर सकता है। इसके अलावा, मैग्नीशियम एंजाइम सक्रियण और ऊर्जा चयापचय में शामिल है, इस प्रकार विभिन्न प्रकार के विटामिन पशुओं के संपूर्ण स्वास्थमें अपना योगदान प्रदान करते हैं, परिणामस्वरूप, उत्पादित दुग्ध की गुणवत्ता में बढ़ोत्तरी होती है। सूक्ष्म तत्वों में, तांबा कनेक्टिव टिश्यू और लौह चयापचय के लिए महत्वपूर्ण है। यह दुग्ध के रंग और स्वाद स्थिरता को प्रभावित करता है। इसके अलावा, सेलेनियम की कमी प्रतिरक्षा प्रणाली और दुग्ध की गुणवत्ता को प्रभावित कर सकती है।

4 **पशुओं के आहार में वसा का सम्मिश्रण:** लिपिड, दुग्ध की संरचना में महत्वपूर्ण भूमिका निभाते हैं और इसके पोषण प्रोफाइल, संरचना और अन्य कार्यात्मक विशेषताओं को प्रभावित कर सकते हैं। ये ऊर्जा का एक प्रमुख स्रोत हैं, जो दुग्ध उत्पादन पर सकारात्मक प्रभाव डाल सकता ळें

कुछ फैटी एसिड, जैसे कि ओमेगा –3 और ओमेगा –6 फैटी एसिड, फायदेमंद माने जाते हैं, इस प्रकार दुग्ध में उनकी उपस्थिति बढ़ाने के लिए आहार में परिवर्तन करने से दुग्ध को अधिक पोषण युक्त बनाया जा सकता है। कुछ विटामिन, जैसे वसा में घुलनशील विटामिन (ए, डी, ई और के) के अवशोषण के लिए लिपिड की आवश्यकता होती है। पर्याप्त लिपिड सेवन दुग्ध में इन आवश्यक विटामिनों के अवशोषण और जैवउपलब्धता में योगदान कर सकता है।

चारागाह में चरने वाली गायों को लॉन्ग चेन फैटी एसिड और अनाज के दानों के साथ देने से दुग्ध की वसा में कमी नहीं आती है, दुग्ध उत्पादन और उसकी वसा की मात्रा वृद्धि हो जाती है, लेकिन केवल अनाज के दानों पशुओं के आहार में सम्मिलित करने से दुग्ध की उत्पादन और प्रोटीन की मात्रा में वृद्धि होती है, लेकिन दुग्ध में वसा की कमी हो जाती है।

5 **फ्री रेंज हाउसिंग और इंटेंसिव हाउसिंग सिस्टम का दुग्ध की गुड़वत्ता में प्रभाव:** इंटेंसिव हाउसिंग सिस्टम की अपेक्षा में फ्री रेंज हाउसिंग (चरागाह–पालन) सिस्टम पशु के दूध के कार्यात्मक गुणों में सुधार कर सकती हैं। फ्री रेंज हाउसिंग (चरागाह–पालन) सिस्टम में ओमेगा –3 फैटी एसिड, संयुग्मित लिनोलिक एसिड, एंटीऑक्सिडेंट आदि का स्तर बढ़ जाता है। ये पोषक तत्त्व उपभोक्ताओं के लिए स्वस्थ्य वर्धक होते हैं।

6 **प्रोबायोटिक्स और प्रीबायोटिक्स:** जानवरों के आहार में प्रोबायोटिक्स (लाभकारी बैक्टीरिया) और प्रीबायोटिक्स (न पचने योग्य फाइबर जो फायदेमंद आंतमेंपाये जाने वाले बैक्टीरिया के विकास को बढ़ावा देते हैं) को शामिल करने से जानवरों के आँतों के स्वास्थ्य में सुधार करता है। आँतों के स्वस्थ्य होने से पोषक तत्वों का अवशोषण अच्छे से होता है, जिसके परिणामस्वरूप दुग्ध के उत्पादन में भी वृद्धि होती है।

प्रीबायोटिक्स, कैल्शियम और मैग्नीशियम जैसे खनिजों के अवशोषण को बढ़ा सकते हैं, जो डेयरी पशुओं में उच्च गुणवत्ता वाले दुग्ध के संश्लेषण के लिए आवश्यक हैं। वे स्तन ग्रंथि के कार्य में भी वृद्धि करने में योगदान दे सकते हैं, जिससे दुग्ध उत्पादन में भी वृद्धि होती है और दुग्ध की संरचना में सुधार होता है।

7 **जैविक चारा:** जैविक खेती पद्धतियाएं सिंथेटिक कीटनाशकों, शाकनाशी और आनुवंशिक रूप से संशोधित जीवों के उपयोग पर रोक लगाती हैं। इसके परिणामस्वरूप फीड में रासायनिक अवशेषों का स्तर कम हो सकता है, जो स्वच्छ एवम स्वास्थ्यवर्धक दुग्ध के उत्पादन में कमी कर सकता है। सिंथेटिक कीटनाशकों और उर्वरकों की अनुपस्थिति के कारण जैविक रूप से उगाए गए इन खाद्य पदार्थों में उच्च स्तर के एंटीऑक्सीडेंट हो सकते हैं। ये एंटीऑक्सीडेंट दुग्ध को खराब होने से बचने में योगदान करते हैं। यह मिट्टी को के पोषक तत्वों को सुरक्षित तथा उनकी उपलब्धतता में भी योगदान प्रदान करतें हैं । जिसका प्रभाव मिट्टी में संभवतः देखने में मिलता है।

8 **हर्बल सप्लीमेंट:** डेयरी पशुओं में दुग्ध उत्पादन, गुणवत्ता और अन्य कार्यात्मक गुणों को बढ़ाने में उनके संभावित लाभों के लिए विभिन्न जड़ी–बूटियों और पौधों के अर्क का अध्ययन किया गया है। उनका प्रभाव जड़ी–बूटियों के प्रकार, खुराक, पशु प्रजातियों आदि जैसे कारकों पर निर्भर करता है।

माना जाता है कि मेथी, सौंफ, अल्फाल्फा जैसी कुछ जड़ी–बूटियों में ऐसे गुण होते हैं जो दुग्ध उत्पादन और गुणवत्ता पर सकारात्मक प्रभाव डाल सकते हैं।

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EXCENTIAL RUMENPASS CH

MOST EFFECTIVE **RUMEN PROTECTED CHOLINE CHLORIDE**

Percentage of cows with elevated fat % (fat-protein > 1.25)			
	Control	Excential Rumenpass CH	Difference
Day 0-30	50%	35%	-30%
Day 31-60	35%	19%	-46%

Visual comparison of the products
(left = Excential Rumenpass CH; middle = Product A; right = Product B)

Non sticky, spherical particles

Non hygroscopic

Free flowing

Helps in reducing metabolic diseases

MORE INFORMATION

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लहसुन में रोगाणुरोधी गुण होते हैं और यह डेयरी गायों में थन के स्वास्थ्य को बेहतर बनाने में योगदान दे सकता है, संभावित रूप से थनैला रोगके खतरे को कम कर सकता है और दुग्ध की गुणवत्ता में सुधार कर सकता है। इसी तरह, अदरक में एंटीऑक्सीडेंट गुण होते हैं और यह डेयरी पशुओं कोस्वस्थ्य रखने में योगदान दे सकतें है । इस प्रकार दुग्ध की गुड़वत्ता में बढ़ोत्तरी हो सकती है। इसके अलावा, अल्फाल्फाए विटामिन और खनिजों सहित पोषक तत्वों से समृद्ध है, जो की दुग्ध की संरचना पर सकारात्मक प्रभाव डाल सकता है।

हर्बल सप्लीमेंट से सम्बंधित जो भी दिशानिर्देश बनाये गए है, उन्ही दिशानिर्देशों का अनुपालन कर के, पशुओं क आहार में सम्मिलित करना होगा जिससे इनकी उपयुक्तता में बढ़ोत्तरी की जा सके।

9 **तनाव को कम करना:** तनाव दूध की गुणवत्ता पर नकारात्मक प्रभाव डाल सकता है। जानवर के लिए तनाव मुक्त वातावरण सुनिश्चित करने से दुग्ध की गुणवत्ता में सुधार हो सकता है।

पशुओं के स्वास्थय को समयानुसार जांचना चाहिए, पशुओं का समयानुसार पशु चिकित्सीय परामर्श लेना चाहिए जिससे जानवरों से से सम्बंधित बिमारियों का पता लगाया जा सके तथा बिमारियों के अनुसार उपचार किया जा सके, जिससे जानवर तनाव मुक्त रहेंगे तथा दुग्ध उत्पादन एवम गुड़वत्ता में बढ़ोत्तरी होगी। दुग्ध की गुणवत्ता को प्रभावित करने वाली बीमारियों को रोकने के लिए टीकाकरण कार्यक्रम भी होने चाहिए।

10 **सेलेक्टिव ब्रीडिंग:** सेलेक्टिव ब्रीडिंग एक ऐसी विधि है जिसका उपयोग पीढ़ी दर पीढ़ी जानवरों में विशिष्ट लक्षणों को बढ़ाने के लिए किया जाता है। जब जानवरों के दुग्ध के कार्यात्मक गुणों, जैसे दुग्ध की उत्पादन, संरचना और गुणवत्ता में सुधार की बात आती है, तो सेलेक्टिव ब्रीडिंग एक महत्वपूर्ण भूमिका निभाता है। प्रजनन के लिए उच्च गुड़वत्ता वाले पशुओं को उपयोग में लाना चाहिए जिससे दुग्ध में उच्च गुड़वत्ता वाले प्रोटीन, वसा एवम अन्य पोषक तत्वों में बढ़ोत्तरी हो।

प्रजनन के लिए उन्ही पशुओं को चयनित करना चाहिए जिनका सोमेटिक सेल काउंट कम हो, थनैला रोग के लिए प्रतिरोधक क्षमता हो तथा जिनमें ब्यात में अंतराल कमहो, जिससे अच्छी गुड़वत्ता तथा अधिक दुग्ध का उत्पादन होगा ।

यह विचार करना आवश्यक है कि पशु के दुग्ध के कार्यात्मक गुण, पशु की नस्ल, दुग्धदेने की अवधीऔर पशुओं के स्वास्थ्य जैसे कारकों से भी प्रभावित हो सकते हैं। इसके अतिरिक्त, विभिन्न जानवरों (जैसे, गाय, बकरी, भेड़) में दुग्ध की संरचना और पोषक तत्व अलग–अलग होते हैं, गुणों को बढ़ाने के लिए उपर्युक्त दी गयी तकनीकियों का सही दिशनिर्देशों के अनुसार पालन करना होगा जिससे हमअच्छी गुड़वत्ता वाले दुग्ध का उत्पादन कर सके।

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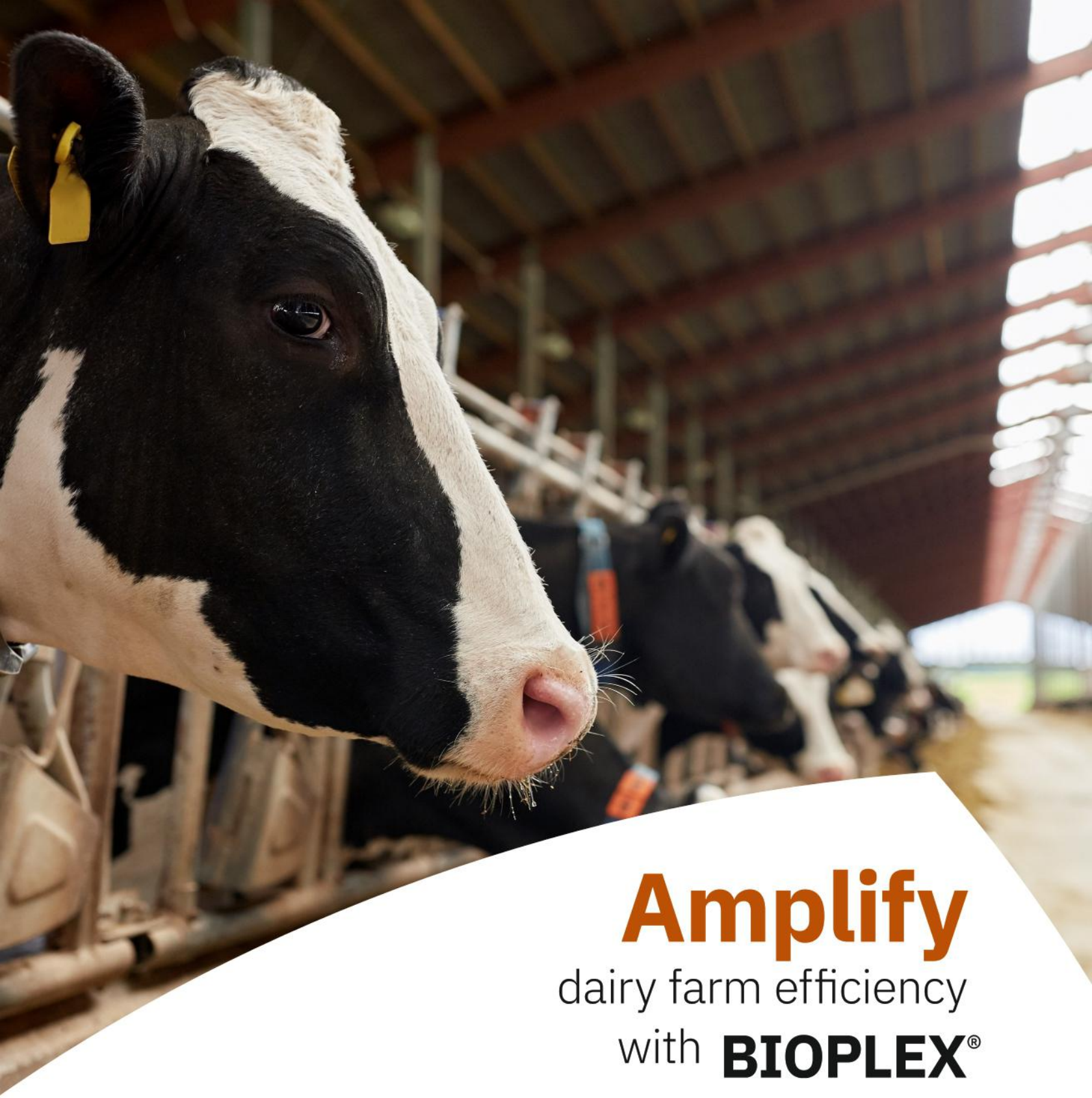

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ARTICLE

Role of Omega-3 and Omega-6 Fatty Acid Rich Oil in Plasma Metabolites Homesostatis and Reproduction of Heifer Cows

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Role of polyunsaturated fatty acids (Ω-3 &Ω-6 PUFA) in various biological process regulations is well studied and documented by many nutritionist in recent past. Different types of PUFA has been reported to perform essential role in regulating biological metabolism, endocrine functioning and disease control in various tissues. In the dairy animals, adequate nutrition is paramount requirement for growth, successful productive as well as reproductive functions such as early onset of puberty and ovarian cycle. Prolonged depletion of body reserves in the lactating animals, especially during early lactation and fast growing heifers can have significant detrimental effects on growth, production and recommencement of estrous as well as conception rate. Traditionally, supplemental lipid in the ration of dairy animals is included to increase dietary energy density, but the PUFA in the supplemental fat have encouraging impact on the metabolism of carbohydrate, protein and fat, as well as growth and differentiation of cells by regulating gene expression of reproductive tissues resulting in a noticeable improvement in production and fertility. In recent years, animal nutritionists are more focused on decreasing the ratio of dietary Ω-6 to Ω-3 fatty acids in the diet of bovines because of higher health benefits and improved reproduction efficiency of lower ratios. There are different oil-feed ingredients (Table 1)that are rich in polyunsaturated fatty acids and can be used in the dietary regimen of dairy animals.

Table 1. Major sources of unsaturated fatty acids for dairy animals

No.	Oil	C18:1(%)	C18:2 (Ω-6, %)	C18:3 (Ω-3, %)
1.	Canola	64	19	8
2.	Palm	39	10	1
3.	Safflower	12	77	0
4.	Cottonseed	21	50	0
5.	Corn	25	60	1
6.	Sesame	42	45	0
7.	Soybean	24	53	7
8.	Sunflower	20	69	0
9.	Linseed/Flaxseed	19	14	58
10.	Fish oil	25	4	45

In ruminants, a major hurdle for delivery of PUFA is ruminal bio-hydrogenation. In fact, greater than 80% of PUFA from the diet are modified/ hydrogenated by the ruminal microflora. However, notwithstanding extensive bio-hydrogenation of unsaturated FA, feeding increased amounts of PUFA has been reported to alter tissue composition thereby influencing production and reproduction. Therefore, despite limitations in delivery of specific amounts of PUFA for absorption, altering the fatty acid composition of the diet is capable of influencing animal performance.

Changing the content of individual dietary fatty acids in ruminants are reflected as the change in the concentration of various plasma metabolites and hormones. Blood concentrations of NEFA are an indicator of fat mobilization from the adipose tissues and they are related to the mechanism of energy balance of cows. Increased plasma cholesterol and NEFA concentrations in the heifers fed whole raw soybean diet as source of Ω-6 fatty acids was reported by Gonthier *et al.* (2005). Further, the change in the plasma metabolites may also be affected by the form of PUFA presented in the rumen i.e. either in rumen protected or unprotected form. Heifers' diet supplemented with Ω-3 PUFA in a partially protected form did not affect NEFA and glucose. There was a linear increase in blood cholesterol with no effect on the concentrations of triglycerides and glucose level in cows supplemented with graded levels of PUFA. NEFA can be used as an energy source by different tissues like skeletal muscle and hepatocytes, re-packaged into triglycerides and exported as very LDL-cholesterol or stored within the liver, or can also be converted to ketones. Grummer and Carroll (1991) proposed that increased plasma NEFA resulted from one or more of the following: 1) incomplete removal of fatty acids by tissues after lipoprotein lipase hydrolysis of triglyceride contained within circulating lipoproteins; 2) increased net fatty acid release from adipose; 3) decreased NEFA clearance by tissues. Improvement in the reproductive efficiency of the animals fed PUFA rich feeds has been testified by various studies. Supplemental fatty acids have often been used to increase the dietary energy density to minimize NEB in animals, which is related to low fertility in cows. However, Lucy *et al.* (1991) stated that improved reproductive performance of animals fed PUFA is independent of the increased energy as the different diets were kept iso-energetic in nature and it was supported by the unchanged plasma NEFA concentrations between the groups fed different diets. Additionally, PUFAs have benefits that are independent of changes on the energy status of animals. For example, Ω-3 and Ω-6 FA are reported to be associated with prostag landins' metabolism in dairy cows.

Gulliver *et al.* (2012) postulated that Ω-3 and Ω-6 PUFA might influence the synthesis and metabolism of important reproductive hormones. Thomas *et al.* (1997) reported that dietary supplemental soybean oil increased the serum concentrations of insulin and GH as well as follicular IGF-I concentrations, which might positively affect reproduction by stimulating ovarian granulosa cell proliferation. Feeding cow supplemental dietary fat with varying saturation increase serum progesterone and cholesterol concentrations. The circulating cholesterol acts as precursor for luteal progesterone synthesis. Various studies have confirmed increased diameter of the dominant ovarian follicle of lactating dairy cows fed with unsaturated fat supplements.

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In addition to these benefits, PUFAs, or their bio-hydrogenated metabolites, are also supposed to be absorbed by the uterus and inhibit the production and release of $PGF_{2\alpha}$ in the endometrium at the beginning of pregnancy. This prevents the regression of the corpus luteum in the ovary and thus, continuous production of progesterone encouraging favorable condition for survival of embryo. Inhibition of $PGF_{2\alpha}$ by Ω-3 preventing regression of the CL resulting in sustained progesterone release has been reported by other researchers also. Wathes *et al.* (2007) found that diets rich in Ω-6 are coupled with elevated cholesterol, steroidogenic acute regulatory (StAR) protein and PGE2, which might stimulated progesterone production. Mattos *et al.* (2000) also proposed that Ω-3 PUFA may reduce uterine $PGF_{2\alpha}$ secretion and decrease the sensitivity of the CL to $PGF_{2\alpha}$ thereby improving the fertility by reducing the degree of embryonic loss in early pregnancy. Post-breeding PUFA supplementation modulates $PGF_{2\alpha}$ synthesis, luteolysis, and enhances maternal recognition of pregnancy.

On contrary to this, Dirandeh *et al.* (2014) reported that the overall plasma progesterone concentrations did not differ between groups fed soybean and linseed oil but were greater than control treatments fed saturated fat. Thomas *et al.* (1997) showed that dietary polyunsaturated fat stimulated a significant increase in serum insulin with increased growth rate of ovarian follicles in cattle compared to animals fed saturated fats. Gandra *et al.* (2017) supplemented lactating cows' diet with Ω-3 and Ω-6 rich oil and found greater blood cholesterol concentration and increased number of small and total ovarian follicles in early lactating cows. Westwood *et al.* (2002) observed a positive correlation between blood cholesterol concentration and reproductive performance including the expression of estrus and conception rate in dairy cows. Similar to this, Ghasemzadeh-Nava *et al.* (2011) reported that the size of dominantovarian follicle was significantly greater in cows that consumed fish oil or soybean oil in diet. The size of dominant follicle was significantly greater in soybean oil supplemented group compared with the control cows, and intermediate values were noted in diet supplemented with fish oil. While, mean diameter of ovulatory follicle and CL was found significantly higher in cows were fed higher dietary Ω-3. Garcia *et al.* (2003) reported moderate increase in circulating concentrations of IGF-1 during pubertal development in cattle by feeding PUFA. Increased number of medium-size follicles in cycling heifers fed soybean oil was also seen by Thomas and Williams (1996). Whitney et al. (2000) concluded that inclusion of soybean oil at 3% of a forage-based diet in heifers increased plasma cholesterol and growth hormone and; decreased the time to conception. Increasing the Ω-6/ Ω-3 PUFA ratio also increases plasma insulin and progesterone. Regarding the economic analysis of reproductive efficiency, the higher AI/conception rate observed in PUFA supplemented heifers may account for a reduction of one insemination, compared to the SFA supplemented group.

Despite the fact that bio-hydrogenation is a major impediment for delivery of unsaturated fats in ruminants, feeding Ω-6 and Ω-3 rich oils alters hormone metabolism that further influences cellular functions, production and reproduction. Based on the available literature, it can be concluded that altering the fatty acid composition of the diet with unsaturated fats is capable of influencing animal performance.

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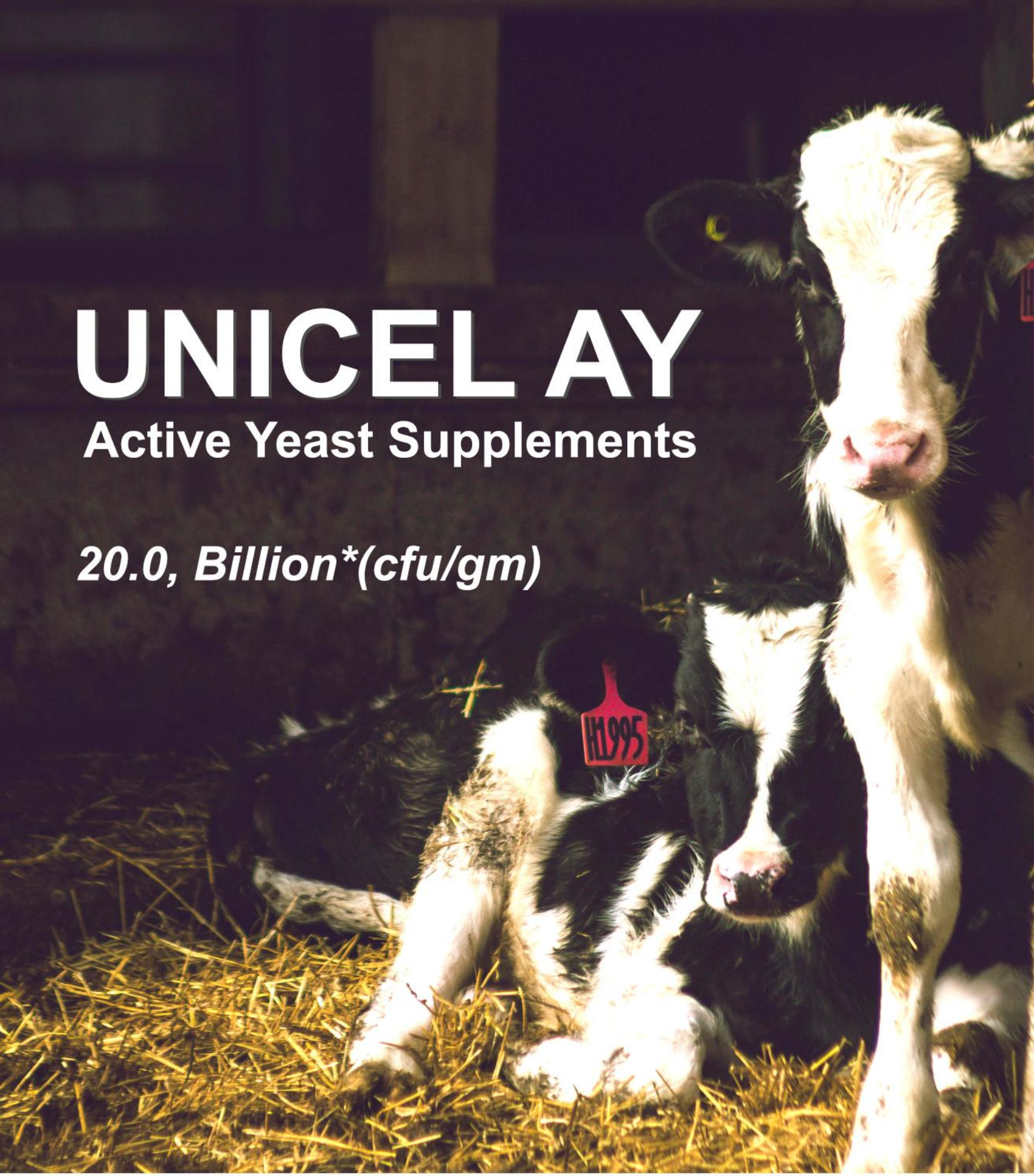

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FUTURE OF LIVESTOCK:
Exploring Advanced Genome Editing Techniques

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[1]Assistant Professor, [2]Associate Professor, Department of Veterinary Physiology and Biochemistry, College of Veterinary Science, Rampura Phul
Guru Angad Dev Veterinary and Animal Sciences University

Over 10 thousand years have passed since humans started farming different animals. Back then, people selected animals with certain traits to breed, a process that took many generations. Nowadays, farming is evolving quickly, and new challenges arise, like ensuring the safety of breeding methods and reducing harm to the environment. Traditionally, farmers would choose animals based on specific characteristics over generations. This process was time-consuming. In contrast, recent technologies like genome editing allow scientists to create animals with specific traits in just one step, using our knowledge of genes. This field, known as creating transgenic animals, is growing rapidly and offers many benefits in a short time. However, genome editing raises safety concerns compared to traditional breeding. Despite this, genetically modified farm animals, including cattle, sheep, goats, pigs, rabbits, chickens, and fish, have been successfully produced. Research in gene engineering of farm animals focuses on improving food production efficiency, animal health, and welfare. It also aims to reduce the impact of livestock on human health and the environment.

Gene-Edited Farm Animals in Medical Research

In medical research, gene editing of farm animals can be used for various applications, from producing proteins on a large scale to creating organs for transplantation. Some large animals serve as models for testing drugs, implants, or surgical procedures. The main strategy for genetically modified farm animals is to maintain breeding stocks, ensuring healthy herds with desired traits. These animals are then used for conventional breeding, and their offspring are used in production. Pioneering experiments include creating transgenic farm animals like knock-out pig and ferret models for CFTR, a gene related to Cystic Fibrosis. These larger animal models mimic human diseases more closely than smaller animals like mice, making them valuable in medical research.

Industrial Use of Transgenic Livestock

Boosting weight gain in beef cattle and pigs stands as a primary goal for the industry. An illustration of the enhanced efficiency of transgenic animals is seen in genetically modified (GM) gilts, which produce a remarkable 70% more milk than their non-transgenic counterparts. The offspring of these gilts experience a significant growth spurt, growing 500 grams larger in just 21 days of lactation. An alternative method to enhance productivity involves manipulating the reproductive performance of livestock. In one study, a point mutation was introduced into the GDF9 gene in goats, impacting ovulation rate and litter size.

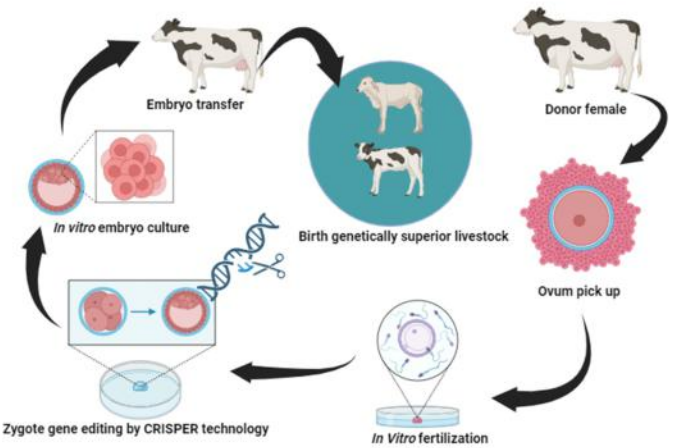

Figure 1. Methods of gene delivery applied in livestock.

Similarly, a mutation in the BMPR-1B (FecB) gene in sheep increased ovulation rates and subsequently enlarged litter sizes. Recently, researchers introduced a mouse gene regulating body temperature into pigs, enabling them to maintain an optimal temperature in cold weather by burning fat. This resulted in pigs with 24% less adipose tissue, offering the potential for low-fat pork production. Genome engineering addresses various needs in livestock maintenance. Transgenic goats with knock-out mutations in genes inhibiting hair and muscle growth enable increased production of cashmere and meat. Targeted mutagenesis using the CRISPR method has been applied to chicken genes encoding common egg allergens, with hopes of producing hypoallergenic eggs. Sheep and pigs are actively used for genome editing to mimic key features of human diseases, and large animals with specific mutations serve as models in physiology research.

Conclusions: Despite these promising advancements, the widespread adoption of transgenic animals in agriculture faces obstacles. Concerns about the biosafety of products from genetically modified (GM) animals and the high costs associated with obtaining and certifying transgenes hinder the integration of livestock biotechnologies into mainstream agricultural practices. While the potential is evident, the application of these technologies on a large scale remains a challenge in the near future.

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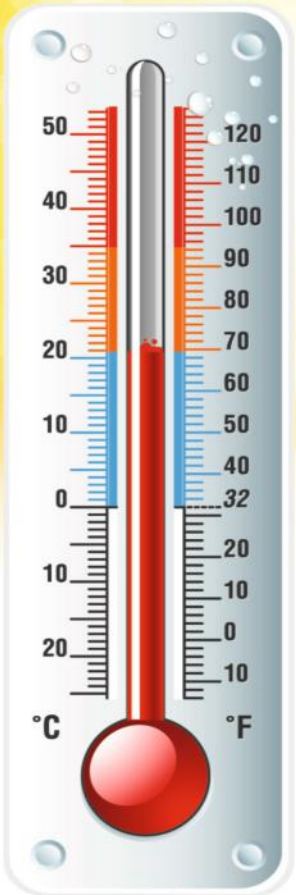

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1 Saint Pierre et al., 2003 - 2 Burgos & Collier, 2011.

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**Marfola, et al, ADSA 2010.*

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Functional foods are foods that, by virtue of their physiologically active components, provide health benefits beyond basic nutrition. The concept of Functional food is not new in India and it is more closely associated with Indian System of Medicine (ISM) popularly referred as Ayurveda in which many plant and milk based products are used for curing the various diseases since ages. Functional foods was first introduced in Japan, in the 1980s, and to date, Japan is the only country that has formulated a specific regulatory approval process for functional foods. Examples of functional foods include foods that contain specific minerals, vitamins, fatty acids or dietary fibre, foods with added biologically active substances such as photochemical or other antioxidant and probiotics that have live beneficial cultures.

Functional enhancement of foods improves nutritional value, promote health and mitigate the disease. The strategies for functional products development are basically related to increasing the presence of beneficial compounds and limiting those with negative health implications in food products. Among the functional components, probiotics and prebiotics, soluble fiber, omega-3-polyunsaturated fatty acids, conjugated linoleic acid, plant antioxidants, vitamins and minerals, some proteins, peptides and amino acids, as well as phospholipids are frequently mentioned.

Functionality enhancement of foods can be start right from animal production to ultimate consumption of food. Approaches toward functional enhancement during animal production are genetical, nutritional etc. however at foods level it includes fortification, enrichment, manipulation etc, which have a potentially beneficial effect on health when consumed as part of a varied diet on a regular basis, at effective levels. Food products can be modified by adding ingredients considered beneficial for health or by eliminating or reducing components that are considered harmful. Functional enhancement can be done in two stages

1. Livestock production level

At this level genetic and nutritional Approaches can be applicable to produce functional livestock products. Thus it can be done by improvements in livestock nutrition and feed resources. There has been the development and adoption of biotechnological applications such as the feeding of genetically modified plants and the use of in-feed additives such as antibiotics. In the past decades, the livestock feed industry had been centered on the use of antibiotics as livestock growth promoters. In genetic approach, genetic engineering or genetic modification can be done. Genetic modification of an animal involves altering its genetic material by adding, changing or removing certain DNA sequences in a way that does not occur naturally. It aims to modify specific characteristics of an animal or introduce a new trait, such as disease resistance or enhanced growth. Particular undesirable genes can be screen out. Functional foods produced with the help of genetic engineering methods are regarded as a way to obtain public acceptance for this technology. Functional foods are supposed to have an added value for consumers. The added value may be given ether due to health improvement and or minimized risk to develop certain diseases.

2. Food formulation level

There are diverse possible strategies for developing functional livestock products. Basic approaches at food formulation level for development of functional livestock products are incorporation of functional ingredients and/or Modification of food product composition.

A. Incorporation of functional ingredients

- Addition of Omega-3 fatty acids, conjugated linoleic acid (CLA), bioactive peptides, probiotics, sphingolipids, L-carnitine etc can be Incorporate in livestock products for their respective health benefits.
- **Addition of antioxidant:** Antioxidants are natural or synthetic that preserves food against oxidative deterioration on storage and processing. With similar purposes, some plant derivatives rich in natural antioxidants (flavonoids and phenolic compounds) have been used like extracts of fruits (grape, liquorice root, horsetail, arbutus berries, tomato etc.), herbs and spices (Melissa, clove, rosemary, nutmeg, cardamom, oregano, green tea etc.) and other sources. Typical examples of vitamins as antioxidants are α-tocopherol (vitamin E) and ascorbic acid (vitamin C). Butylated hydroxyl anisol (BHA) and butylated hydroxyl toluene (BHT) are much stronger chemical antioxidants than most currently known natural extracts.
- **Addition of fiber:** Fiber can be used for improvement of some functional properties of foods such as texture, organoleptic qualities, water holding capacity, oil holding capacity, emulsification and/or gel formation, bulking agent in reduced-sugar applications, and shelf-life. Some types of soluble fibres, such as pectins, inulin, guar gum and carboxy-methyl-cellulose are utilized as functional ingredients in meat products
- **Addition of enzyme:** For the purposes of food application, β-galactosidase is sourced from yeast species such as Kluyveromyces lactis is used in milk products especially for lactose intolerance people.

B. Modification of food product composition

- **Change in fat:** Reduction of fat content and modification of the fatty acid profile is needed to promote better cardiovascular health. Diets should provide extremely low intakes of trans-fatty acids. Technological strategies for improving the fatty acid profile generally entail replacement of fat normally present in the product with another fat more in line with health recommendations i.e. with smaller proportions of SFAs and larger proportions of MUFAs, n—3 PUFAs (especially long-chain) or CLA, better n—6/n—3 PUFA and PUFA/SFA ratios etc. The procedures used to incorporate natural or processed plant lipids (olive, cottonseed, corn, soybean, peanut etc.) and marine lipids (fish and algae) into food products.
- **Reduction of cholesterol:** Recommendations for daily allowances generally state that cholesterol intake should be limited to less than 300 mg per day (WHO, 2003). Approaches for cholesterol removal from meat raw materials by the use of cholesterol-reducing bacteria (Eubacterium coprostanoligenes) in fermented meat products (Madden et al., 1999) or by diluting fat and lean meat raw materials with vegetable oils and plant-based proteins.
- **Reduction of calories:** Reduction of energy source in livestock products are necessary to avoid weight gain that is closely related to chronic diseases.
- **Enrichment with minerals and vitamins:** livestock products can be enriched with minerals and vitamins which are generally lacking in that product or as per the requirement.
- **Reduction of sodium content:** There is a direct relationship between an excessive intake of sodium and an increased incidence of hypertension. Hypertension is one of the main risk factors for cardiovascular diseases.
- **Reduction of nitrites:** Regardless of the technological benefits of nitrites in curing of meat, a reduction in the use of nitrites has become a key issue for the industry because of its carcinogenic potential. Ingredients that have been used to manufacture "nitrite-free" cured meat products include unrefined sea salt, spices, celery, carrot, beet and spinach juice etc.

The use of functional products offers processors the opportunity to improve the nutritional and health qualities of their products and/or help prevent certain diseases when taken as part of a balanced diet and healthy lifestyle. Increasing evidence supports the observation that functional livestock foods products containing physiologically active components may enhance human health. The functional foods can significantly contribute to the prevention of several diseases like hypertension, coronary vascular diseases, obesity, osteoporosis, cancer, diabetes and some other diseases. Thus Livestock products offer exciting opportunities in the area of functional foods and the functional food components in food further serve to illustrate the value of Livestock products in the human diet. However, the field of functional foods is in its infancy. Furthermore, a number of factors complicate the establishment of a strong scientific foundation. Additional research is necessary to substantiate the potential health benefits of those foods for which the diet-health relationships are not sufficiently scientifically validated.

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- ਬਿਹਤਰ ਦੁੱਧ ਉਤਪਾਦਨ, ਫੈਟ ਅਤੇ ਐਸ.ਐਨ.ਐਫ.।
- ਵਧੀਆ ਸਿਹਤ ਅਤੇ ਬੀ.ਸੀ.ਐੱਸ. ਵਿੱਚ ਸੁਧਾਰ।
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The 8th Edition of Asia Agri-Tech Expo is Moving to Tainan, The Thriving Cluster of Agriculture, Livestock, and Aquaculture Industries in Southern Taiwan

After having been successfully organized in Taipei for the past seven years, the organizer, Informa Markets Taiwan, considers that now is the time to inject new energy to Asia Agri-Tech Expo & Forum.

The 8thedition of Asia Agri-Tech Expo & Forum (AAT) will be held on 19-21 June 2024 at ICC Tainan, concurrently held with Livestock Taiwan& Aquaculture Taiwan.

In recognition of the vibrant agricultural landscape, the exhibition will now be held in Tainan, located in the prosperous South Taiwan region known for its cluster of agriculture, livestock, and aquaculture production bases.

This strategic decision reflects the AAT's commitment to provide a platform that highlights the dynamic growth and innovation within these industries. Central and Southern Taiwan serve as important production areas for agriculture, aquaculture, and livestock industries, contributing approximately two-thirds of Taiwan's total agricultural, aquaculture, and livestock output value.

With its convenient transportation, Tainan provides easy access for professionals in related industries to participate in from all over the world. Furthermore, in 2024, Tainan will celebrate its 400th anniversary since its founding, adding more highlights to the exhibition.

Ms. Sabine Liu, the General Manager of Informa Markets Taiwan, stated that the 8th exhibition will be a larger-scale and more content-rich event. The event will provide new momentum not only for the development of Taiwan's agriculture, aquaculture, and livestock industries, but also contribute to the transformation and upgrading of the industry in the Asia Pacific Regions.

About the show

The 8th exhibition will be themed "Feeding the Future" through "Sustainable, Innovative, Eco-friendly" agricultural technologies. It will showcase the latest agricultural technologies and achievements, including electric agri-machinery, environmental control greenhouses, bio-fertilizer, feed additives, animal health, poultry and pig farming equipment, seafood processing equipment, cold chain technologies, preserve technology, and more.

Besides the extensive exhibits, industry elites will share their professionalism about hot topics, such as ESG sustainable agriculture, smart agriculture, new technologies, preventive medicine for poultry and pig, fish or shrimp disease countermeasures, case study of fish and electricity symbiosis, etc.

Furthermore, the organizer will host buyer-seller matchmaking and cooperation networking meetings for international associations.

Show Outlook

The relocation of the 8th edition of AAT to Tainan holds significant importance. Tainan, situated at the heart of Taiwan's abundant agricultural, aquaculture, and livestock resources, boasts a strong industry foundation. As a pivotal platform for Asian agriculture, aquaculture, and livestock industries, the AAT will continue to fulfill its role by facilitating the international development. By doing so, it will bring new opportunities to the agriculture, aquaculture, and livestock industries in Asia and contribute to the transformation and upgrading of Taiwan's overall agricultural sector.

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Trouw's 3-D Approach for Holistic Mycotoxin Risk Management in Dairy Animal

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

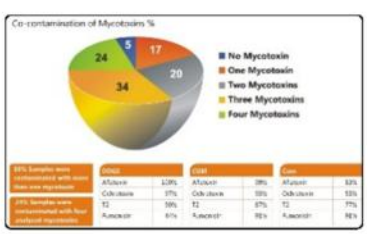
Mycotoxins are the secondary metabolites produced during fungal growth and mycotoxicosis is the condition which occurs when these mycotoxins are consumed by the animals and produce adverse effects. As it is well known that dairy animals are fed the most diversified diet including concentrates, forages and silages which makes dairy animals more vulnerable to mycotoxicosis. Also, the diagnosis of mycotoxicosis in ruminant animals is more difficult due to non-specific symptoms.

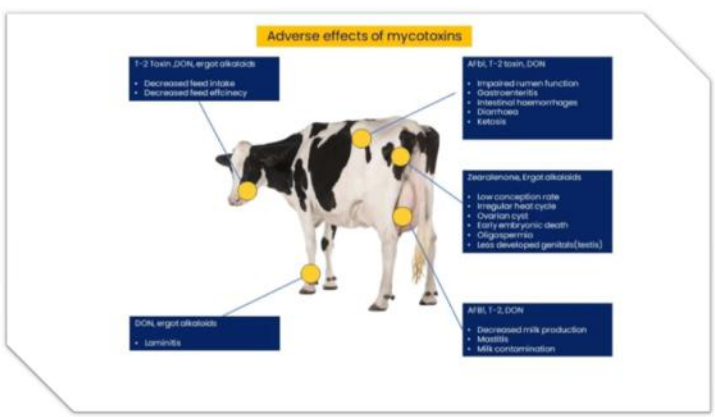
Production of mycotoxin starts from infield fungal growth on the plant, then subsequently added on by improper handling and management of feed raw material like cereal grains and seed cakes during transportation&storage.Various steps of feed production in feed milling operation are the critical points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

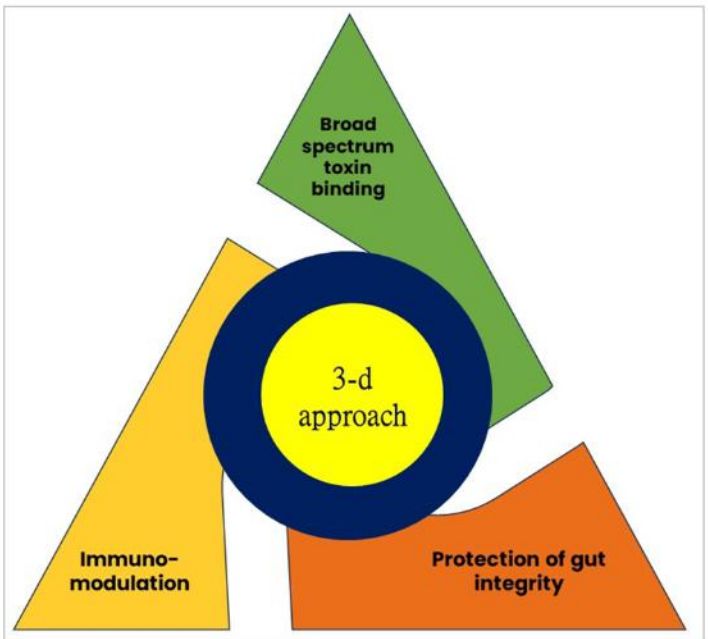
Non-availability of conventional raw material and the rising cost of raw materials increases the demand for unconventional feed ingredients, which are relatively more contaminated with mycotoxins than their parent grains and oil seeds.

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

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







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

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

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

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

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Trouw's 3-D approach includes:

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

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

Conclusion:

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

It is important to adapt multiple mode of actions to effectively manage mycotoxins. We believe that combining an effective smectite bentonite with gut health and immunity modulators, called as 3-D approach, will provide a complete and sustainable protection against multiple mycotoxins.3-D approach gives a more rational,scientific approach to negate the detrimental effects of multiple mycotoxin challenges in dairy operations.

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NEWS

Dairy Behemoth Amul Leaps Into Clean Power, Sets Sight On Evolution Into an Energy Company

After being deeply involved in the dairy sector for many years, Amul has now forayed into India's green energy transition journey and has already experimented with several projects.

The dairy behemoth is now working through its cooperatives to produce biogas and biofertilisers.

This was said by Jayen Mehta, Managing Director of Amul marketer Gujarat Cooperative Milk Marketing Federation (GCMMF) while receiving the he annual business line 2023 Iconic Changemaker award last week.

"With a substantial number of cattle in our possession, Amul has taken proactive steps, collaborating with its cooperatives to collect cow dung. The dung gets transformed into biogas which can used for household cooking and even powering vehicles. Furthermore, the residue serves as biofertiliser for agriculture, allowing consumers to enjoy food produced without chemical fertilisers," he said.

"This approach addresses multiple challenges simultaneously. Farmers gain additional income from cow dung, the import bill on fuel and fertilisers comes down, and most importantly, consumers benefit from food without chemical fertiliser. It's a win-win situation".

He also said that Amul is working to extract hydrogen from the methane generated by cow dung.

"Once you produce hydrogen, that is the cleanest form of energy. This is what is the direction we are moving on to. We have already experimented several of the projects, both the small scale and the large scale. This will transform Amul from a food company or a dairy company into an energy company."

230 Crore Bio-CBG Project

Earlier in September 2023, Banas Dairy which is one of the biggest among the 18 dairies under the Amul, signed a tripartite agreement worth Rs 230 crore to setup four dung-based biogas plants for generating Compressed Biomethane Gas (CBG) in Banaskantha district of Gujarat.

The other partners include the National Dairy Development Board (NDDB) and Suzuki R&D Center India Pvt Ltd (SRDI), a wholly-owned subsidiary of Suzuki Motor Corporation (SMC) in India.

This unique initiative is the first of its kind wherein the automobile and dairy sectors are collaborating to achieve multiple benefits such as enhance farmers' income through dung sale, use of dung-based biogas to power vehicles, production of organic fertilizers and in the process reducing carbon footprint of dairy and automobile sector.

SRDI will provide financial assistance for establishing these plants to be setup by NDDB. Banas Dairy will arrange land for the project and also operate these plants. The biogas produced will be purified and compressed to generate CBG.

Exclusive CBG stations will come up for vehicles. The slurry produced in the biogas plants will be utilised to produce organic fertilizers, which would significantly contribute towards reducing the usage of chemical fertilisers and improve soil health.

ENVIRONMENTAL MASTITIS AND ITS PREVENTION

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College of Veterinary Science and Animal Husbandry, Anand

In many countries, the most common bacteria recovered from instances of clinical mastitis are those that are routinely found in the environment, namely E. coli and Streptococcus uberis. One of the main risk factors for the onset of environmental mastitis is teat end contamination. Housing circumstances can affect the rates of teat contamination because environmental pathogens can grow and thrive in organic bedding materials.The use of straw in cow bedding is specifically linked to S. uberis-caused mastitis. E. coli and Klebsiella species are frequently recovered from diseased cows when sawdust and wood shavings are utilised as bedding. Cattle kept inside typically have a greater infection rate than cattle on pasture, yet S. uberis has been isolated from heavily grazed pasture in quantities comparable to those seen in bedding material.

Contamination of the intramammary tubes by the environment can spread infection. This route of transmission is especially linked to outbreaks of mastitis caused by organisms resistant to antibiotics, viz., fungus or Pseudomonas aeruginosa. Throughout the drying-off phase and the weeks leading up to calving, many diseases brought on by environmental pathogens happen. The bulk of E. coli infections happen seven to ten days prior to calving, which could be partially explained by the organism's ability to use the enterobactin iron-acquisition pathway to absorb iron from the dry mammary gland. Environmental mastitis usually resolves more quickly than infectious mastitis. Furthermore, coliform bacterial infections are likely to show clinical symptoms, some of which may be severe.

Prevention:

Reducing the quantity of pathogens in the surroundings necessitates maintaining adequate circumstances for cows either in housing or on pasture. Housing facilities for both dry and nursing cows need to be properly planned and maintained. Because infection often occurs shortly before calving, facilities for dry cows and cows in the calving process are particularly crucial for the prevention of E. coli mastitis.

The following are some crucial actions to take in order to lower the pathogen reservoir in the cow's surroundings:

1. Proper Housing Design:

Housing facilities that are made to guarantee proper laying posture and proper cubicle utilisation in order to prevent teat injuries.

2. Maintaining Clean and Dry Bedding:

Pathogen proliferation is reduced when bedding is dry and clean. Compared to organic bedding like sawdust or straw, the number of bacteria in dry inorganic bedding like sand or mats is smaller.

3. Well-Ventilated Buildings:

Preventing damp conditions in buildings through proper ventilation stops potential pathogens from building up.

To reduce new infections, consider implementing the following measures:

1. Optimal Milking Equipment:

Properly operating milking machinery to stop environmental infections from entering the udder and teat canal.

2. Internal Teat Seals at Drying Off:

Internal teat seals during the drying off process lower the incidence of new infections at calving as well as during the dry phase. Antibiotic medication for dry cows can also be beneficial in preventing new infections, but it has little effect on the ambient reservoir of bacteria that cause mastitis.

3. Post-Milking Practices:

One way to reduce the threat of infection in milking animals is to keep them upright until the teat sphincter has closed fully. Feeding animals following milking is one way to accomplish this.

4. Teat Dipping:

According to some research, dipping the teat before milking can lower the rate of new infections with environmental pathogens by up to 50%.

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4. ਗੈਸ ਧਾਰਕ
5. ਸਲਰੀ ਲਈ ਨਿਕਾਸ ਦਵਾਰ
6. ਗੈਸ ਵਾਲਵ

ਗੋਬਰ ਗੈਸ ਪਲਾਂਟ ਦੀ ਸਮਰੱਥਾ ਇੱਕ ਕਿਊਬਿਕ ਮੀਟਰ ਤੋਂ ਲੈ ਕੇ 100 ਕਿਊਬਿਕ ਮੀਟਰ ਤੋਂ ਵੱਧ ਤੱਕ ਦੀ ਹੋ ਸਕਦੀ ਹੈ। ਬਾਇਓਗੈਸ ਪਲਾਂਟ ਦਾ ਅਕਾਰ, ਗੋਬਰ ਤੋਂ 24 ਘੰਟੇ ਵਿੱਚ ਪੈਦਾ ਹੋਣ ਵਾਲੀ ਗੈਸ ਮੁਤਾਬਿਕ ਮਿੱਥਿਆ ਜਾਂਦਾ ਹੈ। 25 ਕਿੱਲੋ ਗੋਬਰ ਤੋਂ ਇੱਕ ਘਣ ਮੀਟਰ ਗੈਸ ਤਿਆਰ ਹੁੰਦੀ ਹੈ। ਇੱਕ ਪਸ਼ੂ ਤੋਂ ਇੱਕ ਦਿਨ ਵਿੱਚ ਔਸਤਨ 15-20 ਕਿੱਲੋ ਗੋਬਰ ਮਿਲਦਾ ਹੈ। ਇਸ ਤਰ੍ਹਾਂ 1 ਘਣ ਮੀਟਰ ਗੈਸ ਤਿਆਰ ਕਰਨ ਲਈ 2 ਪਸ਼ੂਆਂ ਦੀ ਲੋੜ ਪੈਂਦੀ ਹੈ। ਪ੍ਰਤੀ ਦਿਨ ਇੱਕ ਵਿਅਕਤੀ ਦਾ ਖਾਣਾ ਤਿਆਰ ਕਰਨ ਲਈ 0.3-0.4 ਘਣ ਮੀਟਰ ਪ੍ਰਤੀ ਘੰਟਾ ਗੈਸ ਦੀ ਲੋੜ ਪੈਂਦੀ ਹੈ। 2 ਘਣ ਮੀਟਰ ਦੇ ਗੈਸ ਪਲਾਂਟ ਤੋਂ 4-5 ਵਿਅਕਤੀਆਂ ਦੇ ਪਰਿਵਾਰ ਦਾ ਖਾਣਾ ਪਕਾਉਣ ਲਈ ਲੋੜੀਂਦੀ ਗੈਸ ਪੈਦਾ ਕੀਤੀ ਜਾ ਸਕਦੀ ਹੈ।

ਗੋਬਰ ਗੈਸ ਤਿਆਰ ਹੋਣ ਦੀ ਵਿਧੀ

ਗੋਬਰ ਤੋਂ ਗੈਸ ਤਿਆਰ ਕਰਨ ਲਈ ਤਿੰਨ ਕਿਰਿਆਵਾਂ ਦਾ ਇੱਕ ਤੋਂ ਬਾਦ ਇੱਕ ਹੋਣਾ ਅਹਿਮ ਹੁੰਦਾ ਹੈ। ਇਹ ਤਿੰਨ ਕਿਰਿਆਵਾਂ ਨੂੰ ਵਿਗਿਆਨਿਕ ਬੋਲੀ ਵਿੱਚ ਹਾਈਡਰੋਲਾਈਸਿਸ, ਐਸੀਟੋਜੈਨੇਸਿਸ ਅਤੇ ਮਿਥੇਨੋਜੈਨੇਸਿਸ ਕਿਹਾ ਜਾਂਦਾ ਹੈ ।

ਹਾਈਡਰੋਲਾਈਸਿਸ ਦੌਰਾਨ ਗੋਬਰ ਵਿੱਚ ਮੌਜੂਦ ਜੈਵਿਕ ਮਿਸ਼ਰਣ ਗਲ ਕੇ ਮਹੀਨ ਅਤੇ ਬਰੀਕ ਤੱਤਾਂ ਵਿੱਚ ਤਬਦੀਲ ਹੋ ਜਾਂਦੇ ਹਨ। ਇਨ੍ਹਾਂ ਵਿੱਚੋਂ ਗੁਲੂਕੋਜ਼ ਇੱਕ ਮੁੱਖ ਤੱਤ ਹੁੰਦਾ ਹੈ ਜੋ ਦੂਸਰੀ ਕਿਰਿਆ ਲਈ ਕੱਚੇ ਮਾਲ ਦਾ ਕੰਮ ਕਰਦਾ ਹੈ। ਇਸ ਪੜਾਅ 'ਤੇ ਗੁਲੂਕੋਜ਼ ਅਤੇ ਦੂਸਰੇ ਤੱਤ ਟੁੱਟ ਕੇ ਕੁਝ ਤੇਜ਼ਾਬੀ ਤੱਤਾਂ ਵਿੱਚ ਤਬਦੀਲ ਹੋ ਜਾਂਦੇ ਹਨ ਜੋ ਮਿਥੇਨੋਜੈਨੇਸਿਸ ਦੀ ਕਿਰਿਆ ਦੌਰਾਨ ਜਲਨਸ਼ੀਲ ਗੈਸਾਂ ਦੇ ਮਿਸ਼ਰਣ ਵਿੱਚ ਤਬਦੀਲ ਹੋ ਜਾਂਦੇ ਹਨ। ਇਹ ਗੈਸਾਂ ਆਪਣੇ ਹਲਕੇਪਣ ਅਤੇ ਘਣਤਾ ਦੇ ਅਧਾਰ 'ਤੇ ਗੁੰਬਦੀ ਗੈਸ ਧਾਰਕ ਵਿੱਚ ਇਕੱਠੀਆਂ ਹੋ ਜਾਂਦੀਆਂ ਹਨ।

ਵਰਤੋਂ

ਬਾਇਓਗੈਸ ਊਰਜਾ ਦਾ ਇੱਕ ਬਹੁਤ ਹੀ ਲਾਹੇਵੰਦ ਸਰੋਤ ਹੈ। ਬਾਇਓਗੈਸ ਨੂੰ ਕਈ ਤਰੀਕਿਆਂ ਨਾਲ ਵਰਤੋਂ ਵਿੱਚ ਲਿਆਇਆ ਜਾ ਸਕਦਾ ਹੈ। ਨਵੀਆਂ ਖੋਜਾਂ ਅਤੇ ਤਕਨੀਕੀ ਸੁਧਾਰਾਂ ਦੇ ਅਧਾਰ 'ਤੇ ਗੋਬਰ ਗੈਸ ਦੀ ਵਰਤੋਂ ਨੂੰ ਦਿਨੋ ਦਿਨ ਹੋਰ ਵੀ ਕੁਸ਼ਲ ਬਣਾਇਆ ਜਾ ਰਿਹਾ ਹੈ। ਗੋਬਰ ਗੈਸ ਦੀ ਮੁੱਖ ਵਰਤੋਂ ਘਰੇਲੂ ਰੋਸ਼ਨੀ ਅਤੇ ਰਸੋਈ ਗੈਸ/ਗੈਸ ਚੁਲ੍ਹਿਆਂ ਲਈ ਕੀਤੀ ਜਾਂਦੀ ਹੈ। ਇਸ ਤੋਂ ਇਲਾਵਾ ਗੋਬਰ ਗੈਸ ਦੀ ਵਰਤੋਂ ਜੈਨਰੇਟਰ ਜਾਂ ਵਾਹਨਾਂ ਵਿੱਚ ਵੀ ਕੀਤੀ ਜਾ ਸਕਦੀ ਹੈ। ਰਸੋਈ ਗੈਸ ਵਜੋਂ ਵਰਤੋਂ ਦੌਰਾਨ, ਬਾਇਓਗੈਸ ਸਾਫ਼ ਲਾਟ ਨਾਲ ਮੱਚਦੀ ਹੈ ਅਤੇ ਲੱਕੜ ਅਤੇ ਪਾਥੀਆਂ ਦੇ ਮੁਕਾਬਲੇ ਇਸ ਨਾਲ ਬਹੁਤ ਘੱਟ ਪਰਦੂਸ਼ਨ ਹੁੰਦਾ ਹੈ। ਇਸ ਨਾਲ ਖਾਣਾ ਪਕਾਉਣ ਦੌਰਾਨ ਸਮੇਂ ਦੀ ਕਾਫ਼ੀ ਬੱਚਤ ਵੀ ਹੁੰਦੀ ਹੈ। ਇੱਕ ਘਣ ਮੀਟਰ ਗੋਬਰ ਗੈਸ ਦੀ ਵਰਤੋਂ ਕਰਕੇ ਤਕਰੀਬਨ 3.50 ਕਿੱਲੋ ਬਾਲਣ (ਲੱਕੜ), 12 ਕਿੱਲੋ ਪਾਥੀਆਂ ਅਤੇ ਤਕਰੀਬਨ ਅੱਧਾ ਕਿੱਲੋ ਐੱਲ. ਪੀ. ਜੀ. ਗੈਸ ਦੀ ਬੱਚਤ ਕੀਤੀ ਜਾ ਸਕਦੀ ਹੈ।

ਲੱਕੜ ਅਤੇ ਪਾਥੀਆਂ ਦੇ ਮੁਕਾਬਲੇ ਗੈਸ ਦੀ ਵਰਤੋਂ ਵੀ ਬਹੁਤ ਸੌਖੀ ਹੁੰਦੀ ਹੈ। ਇਸ ਤਰ੍ਹਾਂ ਘਰ ਦੀਆਂ ਔਰਤਾਂ ਲਈ ਘਰ ਦੇ ਕਮਮ ਕਾਜ ਦਾ ਬੋਝ ਹਲਕਾ ਹੋ ਜਾਂਦਾ ਹੈ। ਮਹਿਲਾ ਸਸ਼ਕਤੀਕਰਣ ਵਿੱਚ ਬਾਇਓਗੈਸ ਤਕਨੀਕ ਇੱਕ ਅਹਿਮ ਯੋਗਦਾਨ ਪਾ ਸਕਦੀ ਹੈ। ਇਸ ਤੋਂ ਇਲਾਵਾ ਬਾਇਓਗੈਸ ਦੀ ਵਰਤੋਂ ਜੈਨਰੇਟਰ ਰਾਹੀਂ ਘਰੇਲੂ ਬਿਜਲੀਕਰਨ ਲਈ ਵੀ ਕੀਤੀ ਜਾ ਸਕਦੀ ਹੈ। 1 ਮੀਟਰ ਕਿਊਬ (1000 ਲੀਟਰ) ਗੈਸ ਤੋਂ ਡੇਢ ਕਿਲੋਵਾਟ ਊਰਜਾ ਪੈਦਾ ਕੀਤੀ ਜਾ ਸਕਦੀ ਹੈ। ਬਜ਼ਾਰ ਵਿੱਚ ਬਿਜਲੀ ਉਤਪਾਦਨ ਲਈ ਦੋ ਤਰ੍ਹਾਂ ਦੇ ਜੈਨੇਰੇਟਰ ਉਪਲਬਧ ਹਨ; ਇੱਕ ਜੋ ਡੀਜ਼ਲ ਅਤੇ ਗੈਸ 'ਤੇ ਦੋਹਰੇ ਤਰੀਕੇ ਨਾਲ ਚੱਲਦੇ ਹਨ ਅਤੇ ਦੂਸਰੇ ਜੋ ਸੌ ਫ਼ੀਸਦੀ ਬਾਇਓਗੈਸ ਨਾਲ ਚੱਲਦੇ ਹਨ। ਹਾਲਾਂਕਿ ਅਜਿਹੇ ਜੈਨਰੇਟਰ ਵਿੱਚ ਵਰਤੋਂ ਲਈ ਗੈਸ ਨੂੰ ਸਾਫ਼ ਕਰਨ ਲਈ ਸਕ੍ਰਬਰ ਨੂੰ ਜੈਨਰੇਟਰ ਨਾਲ ਜੋੜਨਾ ਪੈਂਦਾ ਹੈ ।

ਵਾਹਨਾਂ ਲਈ ਬਾਇਓਗੈਸ ਦੀ ਵਰਤੋਂ ਵਿੱਚ ਪਿਛਲੇ ਕੁਝ ਸਾਲਾਂ ਦੌਰਾਨ ਕਾਫ਼ੀ ਵਾਧਾ ਵੇਖਣ ਨੂੰ ਮਿਲਿਆ ਹੈ। ਪੈਟਰੋਲ ਇੰਜਨ ਵਿੱਚ ਤਕਨੀਕੀ ਬਦਲਾਅ ਕਰਕੇ ਇਹਨਾਂ ਨੂੰ ਬਾਇਓਗੈਸ ਨਾਲ ਚਲਾਉਣ ਵਿੱਚ ਇੰਜੀਨੀਅਰਾਂ ਨੂੰ ਸਫ਼ਲਤਾ ਮਿਲੀ ਹੈ। ਆਈ.ਆਈ.ਟੀ. ਵਿੱਚ ਬਾਇਓਗੈਸ ਅਧਾਰਿਤ ਯਾਤਰੀ ਵਾਹਨਾਂ ਉੱਤੇ ਸਫ਼ਲ ਤਜਰਬੇ ਕੀਤੇ ਜਾ ਚੁੱਕੇ ਹਨ ਅਤੇ ਨੇੜਲੇ ਭਵਿੱਖ ਵਿੱਚ ਅਜਿਹੇ ਵਾਹਨ ਤਿਆਰ ਕੀਤੇ ਜਾ ਸਕਦੇ ਹਨ।

ਗੋਬਰ ਗੈਸ ਪਲਾਂਟ ਵਿੱਚ ਸਲਰੀ ਇੱਕ ਸਹਿ ਉਤਪਾਦ ਦੇ ਤੌਰ 'ਤੇ ਤਿਆਰ ਹੁੰਦੀ ਹੈ। ਤਰਲ ਸਲਰੀ ਨੂੰ ਸੁਕਾ ਕੇ ਇਸ ਨੂੰ ਖੇਤੀਬਾੜੀ ਵਿੱਚ ਖਾਦ ਦੇ ਤੌਰ 'ਤੇ ਵਰਤਿਆ ਜਾਂਦਾ ਹੈ। ਰੂੜੀ ਦੇ ਮੁਕਾਬਲੇ ਸੁੱਕੀ ਸਲਰੀ ਮਿੱਟੀ ਨੂੰ ਵਧੇਰੇ ਪੋਸ਼ਣ ਦਿੰਦੀ ਹੈ। ਸਲਰੀ ਇੱਕ ਬਹੁਤ ਹੀ ਕਿਫ਼ਾਇਤੀ ਜੈਵਿਕ ਖਾਦ ਦਾ ਰੂਪ ਲੈਣ ਵਿੱਚ ਸਮਰੱਥਾ ਰੱਖਦੀ ਹੈ ਜੋ ਮਿੱਟੀ ਨੂੰ ਨਾਈਟ੍ਰੋਜਨ, ਫ਼ੌਸਫ਼ੋਰਸ ਅਤੇ ਪੋਟਾਸ਼ੀਅਮ ਜਿਹੇ ਅਹਿਮ ਤੱਤ ਮੁਹੱਈਆ ਕਰਵਾਉਂਦੀ ਹੈ। ਬਾਇਓਗੈਸ ਤਿਆਰ ਹੋਣ ਦੀ ਕਿਰਿਆ ਦੌਰਾਨ ਵਾਧੂ ਪਰਜੀਵੀ ਨਦੀਨ ਅਤੇ ਜੀਵਾਣੂ ਨਸ਼ਟ ਹੋ ਜਾਂਦੇ ਹਨ ਜੋ ਕਿ ਰੂੜੀ ਵਿੱਚ ਨਸ਼ਟ ਨਹੀਂ ਹੁੰਦੇ – ਇਹ ਸਲਰੀ ਦਾ ਰੂੜੀ ਮੁਕਾਬਲੇ ਇੱਕ ਵਾਧੂ ਫ਼ਾਇਦਾ ਹੈ। ਸਲਰੀ ਨੂੰ ਖੇਤਾਂ ਵਿੱਚ । ਖੜੀ ਫ਼ਸਲ 'ਤੇ ਵੀ ਖਲਾਰ ਕੇ ਵਰਤਿਆ ਜਾ ਸਕਦਾ ਹੈ। ਸਲਰੀ ਵਰਤੋਂ ਕੰਪੋਸਟ ਤਿਆਰ ਕਰਨ, ਖੁੰਭਾਂ ਦੀ ਖੇਤੀ ਅਤੇ ਮੱਛੀ ਪਲਾਣ ਵਿੱਚ ਵੀ ਹੁੰਦੀ ਹੈ ।ਭਾਰਤ ਸਰਕਾਰ ਦੇ ਨਵੀਨ ਅਤੇ ਨਵਿਆਉਣਯੋਗ ਊਰਜਾ ਮੰਤਰਾਲੇ (ਮਿਨਿਸਟਰੀ ਔਫ਼ ਨਿਊ ਐਂਡ ਰਿਨਿਊਏਬਲ ਐਨਰਜੀ) ਵੱਲੋਂ ਪੰਜਾਬ ਐਨਰਜੀ ਡਿਵੈਲਪਮੈਂਟ ਏਜੰਸੀ ਰਾਹੀਂ ਗੋਬਰ ਗੈਸ ਪਲਾਂਟ ਬਣਾਉਣ ਲਈ ਵਿੱਤੀ ਸਹਾਇਤਾ ਦਿੱਤੀ ਜਾਂਦੀ ਹੈ। ਬਾਇਓਗੈਸ ਪਲਾਂਟ ਤਿਆਰ ਕਰਨ ਬਾਰੇ ਹੋਰ ਤਕਨੀਕੀ ਜਾਣਕਾਰੀ ਲਈ ਪੀ.ਏ.ਯੂ. ਲੁਧਿਆਣਾ (ਸਕੂਲ ਔਫ਼ ਰਿਨਿਊਏਬਲ ਐਨਰਜੀ ਇੰਜਨੀਅਰਿੰਗ) ਵਿੱਚ ਸੰਪਰਕ ਕੀਤਾ ਜਾ ਸਕਦਾ ਹੈ ।

Enhanced Milk Production from Amla Fruit Fed to Dairy Cows

NEWS

A recent study showed that the fresh Indian gooseberry fruit, otherwise known as amla, improved nutrient digestibility and rumen fermentation in dairy cows, resulting in enhanced milk performance.

There is growing interest in natural alternative feeds sources for livestock. Phyllanthus Emblica, commonly known as amla or the Indian gooseberry fruit, is a deciduous tree that typically grows in the tropical and subtropical parts of India, China, Indonesia, and Malaysia.

Availability of amla fruit for dairy cows due to waste

The amla fruit is consumed or used as medicine in India and China for its antioxidant and chemopreventive agents. However, due to its sour taste, the fruit does not appeal to everyone's palate and so there is a significant amount of waste. This prompted researchers to explore the potential of Indian gooseberries as a feed source for dairy cows.

Nutritious

Amla contains a high concentration of bioactive plant components such as polyphenols, tannins, flavonoids, and vitamin C, while hydrolysable tannins are the dominating phenolic compounds. The researchers noted that the fruit is rich in secondary metabolites such as total phenolics and flavonoids.

Combatting heat stress and mastitis

The fruit has been shown in vivo to ease the adverse effect of heat stress in buffaloes and treat bovine mastitis, and in vitro to improve the digestion of dry matter and organic matter digestibility and rumen fermentation. The objective of this study, therefore, was to examine the effect of various amounts of fresh amla fruit on the digestibility, ruminal fermentation, and lactation performance of dairy cows.

The study of amla fruit for dairy cows

Eight ruminally cannulated Chinese Holstein mid-lactation dairy cows were randomly assigned to 2 treatment groups based on the cow's milk yield, parity, and body weight. Experimental treatments were:

- Control group: total mixed ration without amla fruit.
- Total mixed ration supplemented with fresh amla fruit at 200 g/d, 400 g/d, or 600 g/d.

A potential feedstuff for lactating cows

The researchers* concluded that amla fruit is a potential feedstuff for lactating dairy cows and is characterised by a high level of phytochemicals that can impact the microbial ecosystem and the end-products of ruminal fermentation.

When cows were supplemented with a 400 g/d of amla fruit, both ruminal protozoa counts and milk urea nitrogen were reduced, but milk protein and nitrogen efficiency were increased with no reduction in milk production. Meanwhile, feeding 600 g/d of amla fruit increased NH3-N (ammonia nitrogen) and milk urea nitrogen concentrations, and decreased milk yield compared to 200g/d or 400 g/d of amla fruit supplementation.

According to the research team, these results suggest that amla fruit can be used as an alternative natural feed source up to 400 g/d on an as-fed basis. But, beyond that, there may have anti-nutritional factors that limit the levels of amla supplementation.

DONKEY FARMING IN INDIA

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The donkey is a wild ass tamed for domestication. The domestic donkey's progenitor was the African wild ass, according to genetic fingerprinting. About 5000 years ago, the donkey was domesticated for use in trade and transportation in Egypt and Iran. Given their reputation for strength and stamina, donkeys are ideal for employment in both transportation and agriculture. Our "beasts of burden," donkeys, can travel across terrain that is unreachable by other forms of transportation and can carry burdens far more than their own body weight. Because of their intellect, beauty, and hardiness, donkeys make economical and useful livestock. They can survive in a range of temperatures and conditions because they are resistant to illnesses and parasites and need less food and water than other animals. Given that they can eat low-quality forages, donkeys are undoubtedly less picky (Valle et al., 2017). Donkeys may be trained to do tricks, march in parades, and compete in donkey shows. They have a lengthy lifespan some can live up to 40 years.

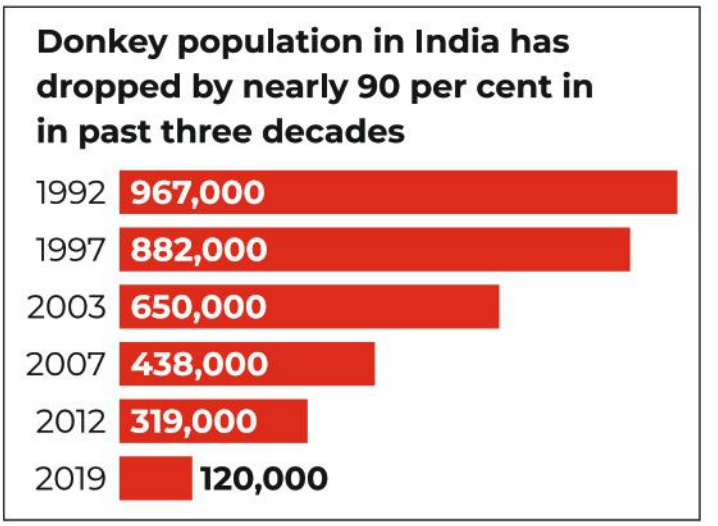
Introduction

Native to the arid and semi-arid regions of India, Indian donkeys, also called Onager donkeys, can be found in the Thar Desert, Kutch, and other areas of Rajasthan. They are renowned for their tenacity and capacity to endure in harsh settings. The donkeys are incredibly resilient and agile. There were dorsal stripes on the back and zebra markings on the legs. Although donkeys can have a variety of coat colors, the most common ones are light and dark gray. They also frequently have shoulder crosses, dark ear markings, white muzzles, eye rings, white bellies, and inner legs. In India, donkeys are divided into three breeds: the Spiti, Halari, and Kachchhi.

The International Livestock Research Institute (ILRI) and its partners have been mapping the population of donkeys in India since January 2020 in order to determine the patterns of their use in both rural and urban groups. Donkeys in India not only carry out draft work for agriculture, but they also provide their owners milk. However, the 2019 Indian livestock census revealed a dramatic fall in the population of donkeys and mules in recent years. There are currently 112,000 donkeys in the nation, down from a peak of 320,000 in 2012.In 1992, there were 9,677,000 donkeys in India. By 2019, that number has dropped by 90% (20th livestock census). Donkey populations have declined by 61% during the 2012 livestock census. In 2019, Rajasthan has over 23,000 donkeys, the most of any state in India. Mostly utilized by nomadic pastoralists in brick kilns to move bricks and in pneumatic wheel carts for rural and urban transportation, donkeys are an essential draught animal in Rajasthan. The purpose of the study was to determine the socioeconomic role that donkey keepers in the area play in their daily lives, as well as the housing, feed, and fodder requirements, health care, and phenotypic characteristics of the local donkeys that are accessible in Rajasthan's various areas. Rajasthan's little, light- and dark-gray donkeys are vital to the draught force used in other draught activities and pastoral migration.

Importance of donkey's farming

Donkeys perform a wide range of working (De Aluja, A. S. 1998) and non-working (Colombo et al., 2020) roles, the latter of which include producing meat and milk as well as being used in the increasingly popular fields of nutraceuticals, cosmetics, tourism, silviculture, and onotherapy. Washer men used to utilize the horse



to transport dirty clothes to rivers or ponds and then return the cleaned clothing to their houses. Their milk is said to have therapeutic properties. Agriculture-related draft work and transportation. Donkey milk is a popular and pricey component in beauty products all around the world. Donkey milk has a high lysozyme level, which is thought to be beneficial for gut health. Another application for donkey dung is keeping septic tanks from overflowing by adding the high-microbial content of the dung to the tank. They are good decoy guards against wolves and coyotes and act as the animals' natural defenders. Demand for donkey milk and skin, as well as the usage of donkeys for amusement and treatment, has increased recently.

They are still used by the Indian Election Commission to transport vote boxes to isolated locations that are inaccessible to cars or other animals. They might also be of great assistance in farms that use drip irrigation to move goods like manure. Other vehicles, such as tractors, may cause damage. Pharmaceutical applications include the use of donkey's milk in immuno-modulators. Antioxidants, calcium, vitamins C, B, and E, lysozyme, and lactoferrin are all abundant in donkey milk. In comparison to cow's milk, it also has a greater concentration of omega-fatty acids that reduce inflammation.

Reasons for the continued decrease in the population of donkeys in India

1. **Decline in traditional uses:** Throughout history, donkeys have been employed for labor-intensive jobs like farming and transportation. But as these tasks become more automated, there is less of a need for donkeys, which has resulted in a drop in their number.
2. **Mechanization:** Donkeys are becoming less common in rural areas as a result of the growing usage of automated trolleys for short-distance cargo transportation.
3. **Lack of protection:** In India, donkeys frequently do not receive the same degree of protection as other livestock animals. Their number is declining as a result of the neglect, abuse, and exploitation they frequently endure.
4. **Loss of habitat:** Donkeys' native habitat is being invaded by India's growing urbanization and industrialization, which is depriving the animals of adequate places to live.
5. **Lack of awareness and education:** The value of donkeys and the necessity of conserving their number are not widely known in India. Their population decline has been attributed in part to this lack of knowledge and instruction.
6. **Illegal trade:** Which are used to make traditional medicines and beauty products.This illegal trade has further contributed to the decrease in their population.
7. **Smuggling donkey meat:** There is rampant smuggling both in India and abroad. Donkey meat is believed to ease back pain and asthma and increase virility in men.
8. **Donkey skin trade:** Every year, hundreds of thousands of donkeys are killed for their skins. The majority of the donkey skin exports go to China in order to meet the country's expanding need for "ejiao," a kind of gelatin used in traditional Chinese medicine. Boiling the skins yields ejiao, which is said to help with anemia and blood circulation issues.

Donkey-saving strategies

1. The ILRI-led project on donkeys and mules in India, which though delayed due to COVID-19-related restrictions had already started work in the six aforementioned states with support from the state animal husbandry and veterinary departments, universities, and other stakeholders.
2. The Indian Council of Agricultural Research (ICAR) said a national policy on equine welfare would help address issues such as the donkey population decline by exploring, among other challenges, how to balance the rapid adoption of mechanization, and maintaining a sufficient number of donkeys.
3. National Academy of Agricultural Sciences (NAAS) and director general of ICAR, said the welfare of farmers who depend on donkeys for their livelihood should be protected by promoting non-bovine milk and creating awareness of the health benefits of donkey milk. He urged researchers to explore whether donkey milk that can be used for pharmaceutical purposes such as in immuno-modulators. Donkey milk is nutritious and a litter can range anywhere between Indian Rs7,000 to 10,000 . It has fewer calories and less fat and contains more vitamin D than other milk.
4. The International Livestock Research Institute (ILRI) and partners have been mapping the India's donkey and mule population to identify their usage patterns in rural and urban communities. 'Mapping the issues of Indian donkey and mule population and identify the potential intervention strategies and partnership' project, which is supported by the Donkey Sanctuary (TDS), UK, has organized stakeholder meetings and household surveys in six Indian states (Rajasthan, Uttar Pradesh, Uttarakhand, Gujarat, Maharashtra and Bihar) that have a sizable donkey and mule population.
5. Institutions and Livelihoods program, said that equines, next to cattle and buffalo, play a key role in supporting the livelihoods of many poor, small-scale farmers in India. She called for more research to understand the role that women play in equines production and management. She also called for the engagement of the donkey sector's stakeholders including farmers in coming up with policies to improve the sector's performance.
6. Special emphasis be given to donkey milk and the development of a cooperative model for the promotion of donkey milk producers.
7. A National Donkey Production Program (NDPP) be established for the welfare of donkeys.
8. The Food Safety and Standards Authority of India (FSSAI) certification be applied to donkey milk.
9. An artificial insemination program be started for donkeys with relevant subsidies.
10. Indigenous donkeys are given attention to improve breeds, expand the population herd and develop donkey and donkey-products export markets.
11. Medicinal and cosmetic properties of donkey milk be fully utilized through economic analysis and appropriate extension.
12. Data generated from this project will be used by ILRI and partners to create guidelines for donkey production, management and breeding in India. The research will also strengthen market linkages and value addition in the donkey sector.

Constraints in donkey farming

1. Donkey farms are little and not yet very well structured in India.
2. Insufficient milk production.
3. Because there is no law pertaining to food products, donkey milk is not becoming more and more popular among consumers.
4. Social taboo
5. The landless farmer is now unaware of the advantages and financial worth of donkey milk.
6. Donkeys are mostly employed as pack animals to haul only heavy objects.

Conclusion

Overall, the population of donkeys in India has continued to decline due to a number of issues, including shifting agricultural methods, a lack of protection, habitat degradation, a lack of knowledge, and the illegal trade. To reverse this trend, actions to address these problems and increase public understanding of the value of donkey protection are imperative.

नवजात बछड़ों की देखभाल

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किसी भी पशु फार्म और पशुपालक का अस्तित्व अच्छे तथा स्वच्छ परिसर एवं स्वस्थ बछड़ों पर निर्भर करता है। पशुपालन व्यवसाय से अधिक आय तभी प्राप्त की जा सकती है जब जन्मोपरांत मृत्यु दर घटे और बछड़ा–बछिया स्वस्थ्य रहें। आज की बछड़ी कल की होने वाली गाय–भैंस है। जन्म से ही इसकी उचित देखभाल करने से यह भविष्य में एक बेहतर गाय–भैंस बन सकती है। बचपन से ही यदि बछड़ों का वजन आयु अनुसार लगातार बढ़ता रहे तो वे सही समय पर परिपक्व एवं प्रजनन योग्य हो जाती है। एक ही गाय या भैंस के द्वारा ज्यादा ब्यात एवं दूध देने पर पशुपालक को अधिक लाभ होता है । ब्यांहने के पहले आखरी दो महीनो में गर्भ बहुत तेजी से बढता है, इन्ही दो महीनो में गाय भैंस की पाचन शक्ति कम हो जाती है ऐसी स्थिति में पशु को संतुलित आहार खिलाना अति आवश्यक होता है। बच्चादानी में बढ़ रहे बच्चे की सम्पूर्ण बढोतरी के लिए गाय या भैंस को आखरी के दो महीनो में उच्च गुणवक्ता का संतुलित आहार रोजाना 1.5 से 2.0 किलोग्राम खिलाना चाहिए। ऐसा करने से ब्यांहने के समय तथा ब्यांहने के बाद की कई कठिनाईयां जैसे कमजोरी, जेर अटकना, पिच्छा बहार आना (फूल दिखाना), मिल्क फीवर इत्यादि से भी छुटकारा मिल सकता है

नवजात बछड़ों की देखभाल में निम्नलिखित बातें महत्वपूर्ण हैं

जन्म के तुरंत बाद

पशु के बच्चे की आंख, नाक तथा शरीर के किसी अन्य भाग पर लगी हुई झिल्ली की परतों तथा गंदगी को ध्यान से सावधानी पूर्वक साफ करना चाहिए। बछड़े के शरीर को साफ कपड़े से पोंछना चाहिए। बछड़े को माँ के सामने रखें, माँ के लगातार चाटने के कारण बछड़े के शारीर में खून दौड़ने लगता है।

नाभि : सूँड के शरीर से तीन सेंटीमीटर की दूरी पर काटने के लिए कीटाणु रहित कैंची आदि का प्रयोग करें, अन्यथा सूँड में सूजन आ जाती है। तथा सूँड की नली से कीटाणु शरीर में प्रवेश कर सकते हैं। सूँड को 3 से 4 दिन तक टिंचर आयोडीन लगाएं एवं जब तक नाभि का घाव पूरी तरह ठीक न हो जाए, इस बात का पूरा ध्यान रखें कि पशु उसे न चाटे।

खीस पिलाना

जन्म के बाद जितनी जल्दी हो सके 20–30 मिनट से 2–3 घंटे के भीतर कोलोस्ट्रम / खीस पिलाना चाहिए। इसे पिलाने के लिए जेर के गिरने का इंतजार न करें। खीस की सबसे महत्वपूर्ण भूमिका नवजात बछड़ों एवं बछड़ियों की रोग प्रतिरोधक क्षमता को बनाये रखने में होती है। यदि बछड़ा सीधा ही थन से दूध पी लेता है, तो उसके शरीर को अच्छी तरह से पोषण मिलता है, लेकिन यदि बछड़ा कमजोर हो अथवा बीमार हो, तो उसे वैसे ही खीस पीला देनी चाहिए। प्रत्येक बछड़े एवं बछड़ीयों को उनके वजन के 10 प्रतिशत खीस रोज पिलाना चाहिए, उदाहरण के लिए, 25 किलोग्राम वजन वाले बछड़े को 2.5 किलोग्राम खीस पिलायें।

सींग रहित करना

पशुओं में सींग होने से व्यक्ति को चोट लगने का डर रहता है तथा पशुओं को आपस में लड़ते समय भी सींगों से चोट लग सकती है।

कृमि रहित करना

छोटे बछड़ों में छह महीने की आयु तक जूणो की बीमारी हो सकती हैं। इस रोग के परजीवी गर्भावस्था के दौरान ही मां से बच्चे के पेट में रक्त संचार के माध्यम से पहुँच जाते हैं। जन्म के कुछ समय बाद दुर्गंधयुक्त मटमैले रंग के दस्त आते है एवं खांसी होती है। यदि ये जूँणे अधिक संख्या में मौजूद हों तो आंत में एक प्रकार का बंध सा पड़ जाता है। पशु जमीन पर गिर जाता है, पैर पटकता है तथा ठीक समय पर देखभाल न की जाए तो मर जाता है। किसान भाइ अपने नजदीकी पशुचिकित्सक से परामर्श कर अपने पशुओं को कृमि रहित करने की दवा अवश्य पिलायें ताकि बछड़े स्वस्थ्य रहें तथा पशुधन को बढ़ावा मिल सके।

बछड़ों को दूध पिलाने की विभिन्न विधियाँः

- माँ के थन सेः गाय या भैंस के थन साफ–सुथरे होने चाहिए।
- ध्यान रखें कि बछड़ा साफ बाल्टी से गर्म और ठंडा किया हुआ दूध बहुत जल्दी न पिए, अन्यथा अपच हो सकता है।
- अगर दूध की बोतल उल्टी लटकी हुई है तो बोतल को हर बार गर्म पानी से साफ करें। दूध पीना खत्म
- ऐसा करने के बाद बछड़े का मुंह गीले कपड़े से साफ कर लें।

डेढ़ से दो महीने के बाद दिन में केवल एक बार ही दूध पिलाएं बच्चे को धीरे–धीरे गेहूं की चोकर, दलिया, पिसा हुआ मक्का आदि खाने की आदत डालें। छोटे बछड़े बछड़ीयों के लिए विशेष रूप से बनाया गया संतुलित आहार। 'काफ स्टार्टर' भी दे सकते हैं। दो महीने की उम्र के बाद, प्रत्येक बछड़े बछड़ी को प्रतिदिन 10 ग्राम मिनरल मिक्सचर अवश्य खिलाएं। 6 माह से कम उम्र के बछड़ों को यूरिया मिश्रित पशु आहार न खिलाएं। वयस्क गाय–भैंसों के लिए बनाया गया ऐसा आहार बछड़ों को नुकसान पहुंचाता है।

डेढ से दो माह के बछड़ों को कृमि नाशक अथवा पेट के कीड़े मरने की दवा देना बहुत जरूरी है। यह दवा साल में दो बार अवश्य दें। तीन महीने के बाद "खुरपका – मुहपका" नामक बीमारी से बचाव के लिए टीका जरुर लगवाएं। जरुरत होने पर 10 दिन के बाद "गलघोंटू" नामक रोग का टीका भी लगवाना चाहिए। समय–समय पर "चिचड़" का प्रतिबंध करने से बछड़ों का वजन बढ़ने में मदद होती है एवं चिचड़ो या किलनी से फैलने वाली बीमारियों की रोकथाम होती है।

चिचड़ो अथवा टिक्स की घरेलू दवा बनाने की विधिः

दो लीटर खट्टी छाछ (तीन दिन पुरानी) लें। इसमें दो चम्मच पिसी हुई हल्दी और दो मुट्ठी कपड़े धोने का डिटर्जेंट पाउडर मिलाएं। इस घोल को साफ कपड़े से पशु के शरीर पर लगाएं। साथ ही इस घोल का छिड़काव बाड़े के चारों ओर करें।

नवजात बछड़ों में ई. कोलाई संक्रमण

यह नवजात पशुओं में पाया जाने वाला एक प्रमुख संक्रामक रोग है। यह गाय, भैंस, घोड़ी तथा सूअरों के नवजात पशुओं में प्रारंभिक अवस्था में अधिक पाया जाता है। यह अधिकतर 1 से 15 दिन के बछड़ों में पाया जाता है। लेकिन गाय के बछड़ों में यह जन्म के कुछ हफ्तों के भीतर हो सकता है। इस रोग में सफेद रंग का दस्त होता है इसलिए इस रोग का नाम सफेद दस्त भी है, लेकिन कभी–कभी दस्त का रंग पीला या खूनी भी हो सकता है, इस प्रकार का दस्त कुछ वायरस के कारण हो सकता है जो सामान्यतः पांच दिनों में खीस से बंद हो जाता है। यह ई. कोलाई नामक एक जीवाणु के कारण होता है, इस बीमारी में बछड़ा कमजोर हो जाता है और तेज पतले दस्त के साथ–साथ सेप्टीसीमिया भी हो जाता है। यह एक ग्राम नेगेटिव अवायवीयध्एनएरोबिक जीवाणु है।

इसके अलावा जन्म के बाद नवजात पशु को कोलोस्ट्रमध्खीस न पिलाना, विटामिन की कमी, शारीरिक कमजोरी, गंदगी, अधिक ठंड भी इस रोग को बढ़ाने में महत्वपूर्ण भूमिका निभाते हैं।

रोगग्रस्त पशु के गोबर से दूषित भोजन और पानी का स्वस्थ पशु द्वारा उपयोग, गर्भपात भ्रूण, योनि स्राव, गर्भनाल संक्रमण के माध्यम से नवजात पशु का संक्रमण होता है। कुछ मामलों में, यह बीमारी बछड़ों के जन्म से पहले ही उपस्थित होती है। दूषित वातावरण बीमारी फैलने के लिए बहुत अनुकूल है। इस रोग में नवजात पशु अपना शरीर झुका लेता है तथा अत्यधिक दस्त लगने के कारण शरीर में पानी तथा आवश्यक लवणों की कमी हो जाती है, वह दूध पीना बंद कर देता है, सुस्त हो जाता है, कांपने लगता है तथा आंखें घूमाना शुरू कर देता है। इस रोग के लक्षण तेज बुखार, आंख की श्लेष्मा का पीला पड़ना, बार–बार दस्त और पेट में दर्द होना तथा 2–3 दिन के अंदर बछड़े की मृत्यु हो जाना है। अधिकांश पशुओं के जोड़ों में सूजन आ जाती है और निमोनिया के लक्षण प्रकट होने लगते हैं।

शरीर में पानी की कमी को रोकने के लिए खनिज मिश्रण युक्त आद्रीकरण चिकित्सा देनी चाहिए। एक दिन तक पशु को किसी भी प्रकार का आहार न दें। पशु को खीस पिलाने का प्रयास करें।

प्रतिजैविक / एंटीबायोटिक्स देने से पहले पशु के गोबर की जांच करनी चाहिए और उचित प्रतिजैविक देनी चाहिए। पशु को तरल चड़ाना चाहिए। सर्वप्रथम नवजात बछड़ों के रहने का स्थान साफ–सुथरा होना चाहिए। जन्म के कुछ समय बाद बछड़े को पर्याप्त मात्रा में फेनुस पिलाना चाहिए तथा बछड़े को प्रतिदिन उसके वजन का 10 प्रतिशत तक दूध देना चाहिए। बछड़ों के समूह से दस से बारह बछड़ों को एक ही स्थान पर रखना चाहिए। यदि कोई बछड़ा इस रोग से ग्रसित है तो उसे अन्य बछड़ों से अलग रखना चाहिए। बचाव के लिए घरेलू उपचार के तौर पर शीशम की पत्तियों को पीसकर लगभग 100 ग्राम की मात्रा में बछड़ों को पिलाना चाहिए। इससे इस बीमारी से निजात पाने में मदद मिल सकती है.

कुरक्षेत्र में हुए पाँचवें DFA मेले में असीस फीड के पशुओं ने फिर से तोड़ा रिकार्ड

तीन दिन चलने वाले इस मेले में असीस फीड ने स्टाल लगाया। जहाँ असीस फीड की टीम के द्वारा किसानों को फीड और पशुओं की सेहत के बारे में जागरूक किया गया। मुकाबले में असीस फीड किसानों ने भाग लिया, जिसमें अडल्ट मिल्किंग कम्पीटिशन के मुकाबले में किसान श्री सुनील मैहला की गाय ने 80.756 Kg दूध देकर पहला स्थान प्राप्त किया।

NON-CODING RNAs (ncRNAs)

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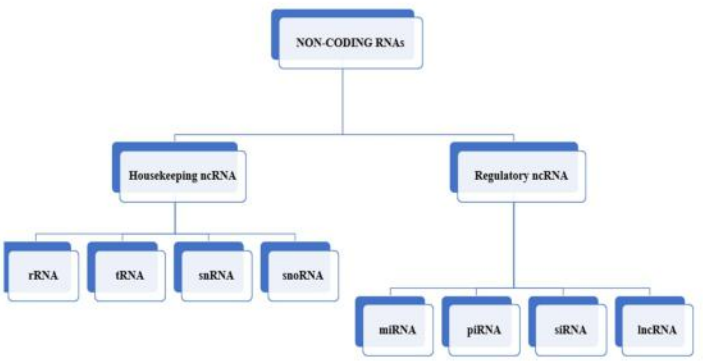
For a considerable period, the prevailing belief was that RNA primarily served as a messenger, conveying instructions from the genes in DNA to the proteins responsible for cellular functions. In addition to this role, specific types of RNA, such as tRNA and rRNA, played roles in cell maintenance. However, the landscape shifted significantly with the discovery of the first short non-coding RNA, known as microRNA, approximately 30 years ago. This discovery opened the field of non-coding RNAs with no or little protein-coding potential. Since then, many new classes of non-coding RNAs, including endogenous small interfering RNAs (endo-siRNAs), PIWI-associated RNAs (piRNAs), and long non-coding RNAs, have been identified. Non-coding RNA (ncRNA) refers to a class of RNA molecules that do not encode proteins but instead play essential roles in regulating gene expression and various cellular processes. These molecules contribute to the complexity of genetic control by influencing transcription, translation, and other key aspects of cellular function.

Types of ncRNAs



There are two main types of non-coding RNAs viz., Housekeeping ncRNAs and Regulatory ncRNAs.

1) **HousekeepingncRNAs:** These RNAs are referred to as "housekeeping" because they are constitutively expressed in all cells and are involved in essential cellular processes necessary for the maintenance of cell structure and function. Housekeeping RNAs are typically stable and have relatively constant expression levels across different cell types and under various physiological conditions.

The most common types of housekeeping RNAs include:

a) **rRNA (ribosomal RNA):** The majority of the RNA in the cell is ribosomal RNA, making up over 80 percent of the total cellular RNA. It is synthesized in the nucleolus, which lies within the nucleus of the cell, from rDNA by RNA polymerase type I. In association with ribosomal proteins, it forms the ribosomal structure. It also interacts with transfer RNA and assists in protein synthesis, thus having structural and functional roles. Prokaryotic 70S ribosomes are made up of 5S, 23S, and 16S rRNA subunits, while eukaryotic 80S ribosomal subunits include 5S, 28S, 5.8S, and 18S rRNA subunits.

b) **tRNA (transfer RNA):** tRNA synthesis is directed by RNA polymerase III and occurs in the nucleus of the cell. Pre-tRNA undergoes splicing to form mature tRNA. Two major things must be remembered about tRNA: it has an anticodon arm that bind to the complementary triplet codon on the messenger RNA and decodes the message, and it has an amino acid binding arm on which a specific amino acid is bound and carried to ribosomes for protein chain elongation. Another interesting feature about tRNA is that the third anticodon base, called the wobble base, allows the same tRNA to read multiple codons on mRNA.

c) **snRNA (small nuclear RNA):** They are about 150 base pairs long and are transcribed by RNA polymerase type II or type III. Their major role is to process the pre-mRNA in the nucleus. However, they are also involved in transcription factor regulation and telomere maintenance. RNA complexes with other proteins to form snRNP (small nuclear ribonucleoprotein) spliceosomal complexes that help in splicing the transcripts.

d) **snoRNA (small nucleolar RNA):** They are involved in the chemical modification of other RNA molecules. These are involved in the covalent modification of rRNA, tRNA, and snRNA, mainly through methylation or pseudo-uridilation. To carry out such modifications, these RNAs guide the RNP (ribonuclear protein) complex forming snoRNP complex, which leads to covalent modifications of the transcripts.

2) **Regulatory ncRNAs:** Regulatory RNAs are a class of non-coding RNAs (ncRNAs) that play crucial roles in the regulation of gene expression and other cellular processes. Unlike housekeeping RNAs, which are involved in basic cellular functions and are constitutively expressed in all cells, regulatory RNAs are more context-dependent and often show dynamic expression patterns in response to specific conditions. These RNAs participate in the control of gene expression at various levels, contributing to the complexity and precision of cellular regulation.

Several types of regulatory RNAs include:

a) **miRNA (microRNA):** It is one of the first and most extensively studied regulatory non-coding RNAs. microRNA is endogenously produced as a single-stranded RNA that folds to form a stem-loop structure. miRNA originates from intronic or exonic regions in the nucleus as primary miRNA. The primary miRNA is cleaved by Drosha to form pre-miRNA, which is exported from the nucleus to the cytosol. Pre-miRNA is further cleaved by Dicer proteins, giving rise to the final single-stranded miRNA. miRNA binds to the target mRNA by complementary base pairing, and with the aid of other endonucleases or by forming the RISC (RNA-induced silencing complex), it leads to mRNA cleavage or inhibits translation.

b) **siRNA (short interfering RNA):** They are usually exogenous in origin or synthesized as short double-stranded RNA, similar to miRNA. They are about 20 to 25 base pairs in length, and their major role is in RNA interference technology, which leads to gene silencing through mRNA cleavage. siRNA is generally used to validate gene function by post-transcriptional cleavage or degradation of target mRNA.

c) **piRNA (piwi-interacting RNA):** They are also short, about 24 to 31 nucleotides long, and generally expressed from transposon regions. Their major role is in transcriptional regulation and silencing. piRNA interacts with Piwi or the piwi proteins and guides them to transposon transcripts.

d) **lncRNA (long non-coding RNA):** They are generally over 200 nucleotides long andsimilar to protein-coding mRNA in many forms, such as they show splicing, polyadenylation, and other modifications. But the unique feature includes that they do not code for proteins, primarily because they lack the open reading frame (ORF), which is essential for translation. Secondly, they show several-fold lower expression compared to mRNA transcripts. One of the major challenges in the identification and prediction of such long non-coding RNAs is that they share little conservation across species. They may be involved in transcriptional or translational regulation. They may bind to other RNA molecules, such as miRNA or mRNA. They interact with other splicing factors and alter the splicing of transcripts. They may also lead to epigenetic changes by recruiting chromatin remodelling complexes, such as histone methyltransferases. They may block transcription factor binding to promoters and regulate gene expression.

Role of ncRNAs

Non-coding RNAs (ncRNAs) play diverse and crucial roles in various cellular processes, contributing significantly to the complexity of gene regulation and the maintenance of cellular homeostasis. Some key roles of non-coding RNAs include:

1) **Gene Regulation:** MicroRNAs (miRNAs) and Small Interfering RNAs (siRNAs): These small RNAs regulate gene expression by binding to target messenger RNAs (mRNAs), leading to their degradation or translational repression.

2) **Epigenetic Regulation:** Long Non-Coding RNAs (lncRNAs): Involved in chromatin remodelling and modification, influencing gene expression patterns epigenetically.

3) **Chromatin Structure and Organization:** lncRNAs: Contribute to the three-dimensional organization of chromatin, affecting the accessibility of genes to transcriptional machinery.

4) **Post-Transcriptional Modifications:** Small Nuclear RNAs (snRNAs) and Small Nucleolar RNAs (snoRNAs): Involved in pre-mRNA splicing and post-transcriptional modifications of other RNAs, such as rRNAs and tRNAs.

5) **Ribosome Biogenesis:** snoRNAs: Guide chemical modifications in ribosomal RNA during ribosome biogenesis.

6) **Transposon Silencing:** Piwi-Interacting RNAs (piRNAs): Protect the genome by silencing transposable elements, particularly in germ cells.

7) **Cellular Stress Response:** Various ncRNAs: Respond to environmental stressors and cellular insults, influencing cellular survival and adaptation.

8) **Cell Cycle Regulation:** Various ncRNAs: Contribute to the regulation of the cell cycle by influencing the expression of genes involved in cell division and growth.

9) **Immune Response:** Various ncRNAs: Modulate immune responses by regulating the expression of genes involved in immune system functions.

10) **Developmental Processes:** Various ncRNAs: Play roles in embryonic development, tissue differentiation, and organogenesis.

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Significance of Selenium in Animal Reproduction:

Exploring its Crucial Role in Fertility and Reproductive Health

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In the dynamic world of dairy farming, a silent revolution is underway, transforming the well-being of livestock and the quality of dairy products. At the heart of this revolution is selenium, a trace element that plays a pivotal role in enhancing antioxidant levels, boosting productivity, and ensuring reproductive health in dairy cattle. It is found in the environment in the soil. Its content in the forage largely depends on the location, soil conditions, species of plant, use of fertilizers, etc. Its presence in inorganic forms like selenites and selenates, as well as in organic forms like selenoamino acids (e.g., selenomethionine and selenocysteine), seleno-peptides, and seleno-proteins, underscores its versatile nature.

The mineral's significance extends to the realm of immune response, where selenium deficiency is linked to a weakened immune system. Selenium administration has been observed to reduce inflammatory activity within the body. The repercussions of selenium deficiency are reflected in diminished GPx activity, compromised neutrophil function, DNA damage and heightened susceptibility of cells to oxidative damage due to disruption of membrane integrity.

Importance of Selenium

- It is a component of gluthathione peroxidase, an enzyme, protecting cell membrances from oxidative damage by neutralizing lipid damaging peroxides. The measurement of gluthathione peroxidase levels in blood serves as a indicator of selenium status.
- It has a sparing effect on vitamin E by ensuring normal absorption of the vitamin.
- It reduces the amount of vitamin E required to maintain the integrity of lipid membranes & aids the retention of Vitamin E in plasma.
- It exhibits a spectrum of beneficial effects like anti-inflammatory, antimutagenic, anticancer, antiviral, antibacterial, antifungal, and antiparasitic properties.
- It regulates gene expression associated with lipid activity, controlling excessive fat mobilization and lowering the risk of ketosis and fatty liver.
- It is involved in the synthesis, metabolism, and function of thyroid hormones.

Role of Selenium in Oxidative Stress

Redox reactions in cellular processes give rise to highly reactive by-products, namely reactive oxygen species (ROS) and reactive nitrogen species (RNS). Exogenous sources of ROS, such as xenobiotics (drugs, contaminants, toxins), along with factors like UV radiation, contribute to redox processes within the body. Reduced dietary intake of selenium or other antioxidants leads to accumulation of free radicals and the initiation of oxidative stress.

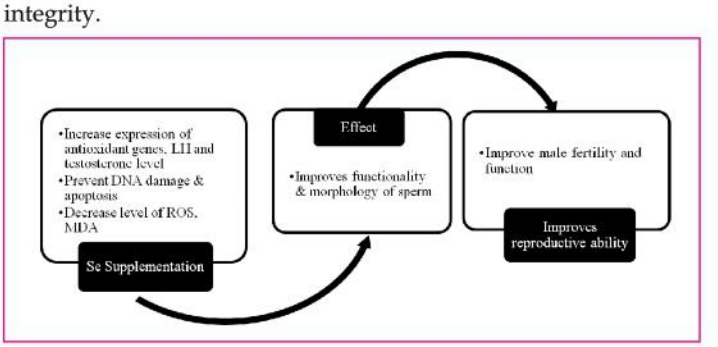
Selenium, as a crucial component of antioxidant enzymes, acts as a guardian against oxidative stress that causes cell damage and aging. Oxidative stress is the major contributor to various diseases in dairy cattle, including metabolic issues, inflammatory challenges like mastitis and metritis, ketosis, parasitic infections, and reproductive disorders. The provision of selenium is indispensable for cattle, as it transcends the placental barrier during pregnancy, playing a pivotal role in intrauterine and calf development. An ample Se supply enhances the antioxidative status, thereby contributing to an overall improvement in the health of dairy cattle.

Selenium orchestrates the regulation of pivotal antioxidant genes, including GPX, CAT, SOD, and GSH, mitigating oxidative stress in the process. The SOD gene, by quenching the superoxide radical and facilitating its transformation into less harmful hydrogen peroxide, actively curtails oxidative stress. This cascade is further complemented by the enzyme catalase (CAT), which dismantles hydrogen peroxide into water and oxygen, preventing DNA damage.

Oxidative stress within the mammary gland due to accumulation of free radicals causes decline in the number of mammary epithelial cells. Conversely, maintaining a balanced Se supplementation regimen mitigates hydrogen peroxide concentration in these cells, thereby alleviating oxidative stress and subsequently reducing apoptotic cell count.

Role of Selenium in Reproduction

From improving fertility to ensuring healthy pregnancies, selenium's plays a vital role. Oxidative stress, a crucial factor in sperm fertility, induces lipid peroxidation that adversely affects the sperm plasma membrane. The high concentration of polyunsaturated fatty acids in the membrane makes it particularly susceptible, leading to compromised membrane fluidity and integrity.



This, in turn, impacts sperm count, motility, and ultimately, their ability to fuse with oocytes. This leads to a cascade of reproductive challenges such as infertility, anestrus, retained placenta, occurrences of abortions and stillbirths. Additionally, oxidative stress-induced damage extends to sperm DNA, a pivotal factor in transmitting defective paternal DNA to offspring. The safeguarding of sperm membrane integrity and fertilizing capacity hinges on effective antioxidant protection.

Abortion occurs primarily due to insufficient concentration of progesterone, necessary for sustaining pregnancy. This can be overcome by selenium supplementation. In addition, its supplementation is also linked to improvement in gross and histological morphology of the testis, a reduction in metritis and ovarian cysts, as well as a decreased incidence of retained placenta.

Diseases Associated With Selenium Deficiency/Toxicity

Selenium & vitamin E has joint role in antioxidant system, immune function & imparting resistance to infections. Symptoms related to its deficiency & toxicity is as follows:

Selenium Deficiency

- Se deficiency in calves, lambs and dairy goat kids leads to a serious disease known as white muscle disease (WMD) or nutritional muscular dystrophy (NMD). This disease is manifested clinically by stiffness, weakness and recumbency. In pigs, mulberry heart disease is a frequent outcome.
- In young animals, WMD can also cause cardiac injury which results in sudden death within the first weeks after birth.
- The myopathy primarily affects the skeletal muscles and the affected animals have difficulty in standing and after standing, a trembling and staggering gait. The animals are unable to rise and weakness of the neck muscles prevents them from raising their heads.

Selenium Toxicity

- Animals grazing on plants that grow in seleniferous areas contain very high levels of selenium- causes Alkali disease (chronic poisonong) and blind staggers (acute poisonong).
- Symptoms include lethargy, stiffness of the joints, loss of hair from mane or tail, lameness, heart atrophy, anorexia, hoof deformities, etc.
- Acute poisoning, which results in death from respiratory failure, can arise from sudden exposure to high selenium intakes.

Selenium Supplementation

Assessing the selenium status in cattle is essential to formulate an appropriate supplementation regimen. It is crucial to regulate selenium inclusion in feed, as excess selenium from certain sources can be toxic. The supplementation of selenium in organic form is more efficient in enhancing growth parameters and antioxidant status in animals. The substantial sources of bioavailable organic selenium are selenium yeast, Brazil nuts, lentils, enriched wheat, Garlic and onion. Other sources includes organ meat, seafood, muscle meat.

Conclusions

Selenium's role in bolstering antioxidant levels, boosting productivity, and ensuring reproductive health is reshaping the future of dairy farming. This quiet revolution holds the promise of not only healthier cows but also a more sustainable and prosperous future for the entire dairy industry.

"Elevate Life's Essence: Empowering Wellness Through Selenium Supplementation."

Irish Govt. Suggests Culling 65,000 Cows Yearly due to Emissions

NEWS

The Irish dairy pot has been well and truly stirred after government figures suggested 65,000 cows per year need to be culled over a 3-year period to meet emissions targets.

Released under Freedom of Information, the numbers, deemed to be compulsory, came with an alarming cost of €200 million per year to the taxpayers in the Republic of Ireland. However, some farming bodies have hit back hard saying any such a dramatic cull must be on a voluntary basis as farmers had taken out business loans based on their cow numbers.

Rising dairy cow numbers

Dairy cow numbers in Ireland have risen since the abolishment of milk quotas in April 2015 with numbers currently totalling 1.5 million head. Also incorporated in the country's total cattle tally of 7 million head are just over 900,000 beef cows.

Dairy cow numbers rose by 1.4% (22,800 head) to 1.6 million in 2022, but over the past decade have increased by around 40%. Latest January 2023 numbers suggest a fall to 1.5 million. Beef cows numbers, however, have fallen about 17% over the same period and saw another 2.9% (27,100 head) drop from 2021 to 913,000.

Pat McCormack from the Irish Creamery Milk Suppliers Association said: "If there is to be a scheme, it needs to be a voluntary scheme. That's absolutely critical because there's no point in culling numbers from an individual who has borrowed on the back of a huge financial commitment on the back of achieving a certain target that's taken from under him."

McCormack added: "We should be investing in an infrastructure that can deliver from a scientific perspective. And we know low emissions are better and we should be continuing to invest in further science and research because that's absolutely critical as we move forward. This isn't a start; this isn't the end. This is an environmental journey and agriculture can play a significant role there."

GHG reduction targets

The Irish government is focused on cutting GHG in the country with agriculture, which accounted for 37.5% of emissions in 2021. With the sector's emissions rising each year, the government is aiming for a 25% emissions reduction target for agriculture by 2030. This means agriculture has been tasked to reduce its emissions by a total 5.75 million tonnes of carbon dioxide equivalent by the end of 2030.

Responding to the disclosed figures, Ireland's Department for Agriculture said the report was merely a "modelling document" and not a "final policy decision". A Department of Agriculture, Food and the Marine spokesperson said: "The paper referred to was part of a deliberative process. It is one of a number of modelling documents considered by the Department of Agriculture, Food and the Marine and is not a final policy decision. As part of the normal work of government departments, various options for policy implementation are regularly considered."

Figures suggest 0.45 million tonnes of carbon dioxide equivalent emissions could be saved for every 100,000 dairy cows cut, but it is yet unclear how farmers will be paid for reducing their stock numbers.

The spokesperson added: "The government is fully committed to the long-term viability of the Irish sector including our farm families who are the bedrock of the industry. It is a sector that is the jewel in the crown of our overall agri-food sector. We will ensure that the sector is put on a firm footing for this and subsequent generations. The dairy sector already displays huge sustainability credentials, and we are now stepping this ambition forward. Government is focused on providing voluntary, financially attractive options for farmers which includes diversification."

ਯੂਰਿਆ ਉਪਚਾਰ ਨਾਲ ਤੂੜੀ ਦੀ ਪੋਸ਼ਣ ਖਿਮਤਾ ਵਧਾਓ

ਡਾ. ਅਸ਼ਵਿਨੀ ਕੁਮਾਰ ਰਾੱਏ, ਸੇਵਾਮੁਕਤ ਪ੍ਰਮੁੱਖ ਵਿਗਿਆਨੀ
ਨੈਸ਼ਨਲ ਡੇਰੀ ਰਿਸੱਰਚ ਇੰਸਟੀਚੱਯੂਟ ਕਰਨਾਲ (ਹਰਿਆਣਾ)

ਪਸ਼ੂਆਂ ਦੇ ਅੱਹਾਰ ਵਿਚ ਤੂੜੀ ਦਾ ਵਿਸ਼ੇਸ਼ ਮਹਤੱਵ ਹੁੰਦਾ ਹੈ ਲੇਕਿਨ ਇਸ ਦੇ ਵਿਚ ਰੱਖਰਖਾਅ ਲਈ ਸਾਰੇ ਜਰੂਰੀ ਤੱਤ ਨਹੀ ਹੁੰਦੇ ਹਨ. ਯੂਰਿਆ ਉਪਚਾਰ ਕਰਨ ਨਾਲ ਤੂੜੀ ਦੀ ਊਰਜਾ ਅਤੇ ਪ੍ਰੋਟੀਨ ਵੱਧ ਹੋ ਜਾਂਦੇ ਹਨ. ਉਪਚਾਰ ਕੀਤੀ ਗਈ ਤੂੜੀ ਖਾਣ ਨਾਲ ਪਸ਼ੂਆਂ ਦੀ 'ਗ੍ਰੋਥ ਰੇਟ' ਬੇਹਤਰ ਹੁੰਦੀ ਹੈ ਅਤੇ ਦੁੱਧ ਦੀ ਪੈਦਾਵਾਰ ਵਿਚ ਇਜ਼ਾਫ਼ਾ ਵੀ ਹੋ ਜਾਂਦਾ ਹੈ.

ਯੂਰਿਯਾ ਉਪਚਾਰ ਕੀਵੇਂ ਹੁੰਦਾ ਹੈ?

ਰਿਸੱਰਚ ਦੇ ਮੁਤਾਬਿਕ 4% ਯੂਰਿਆ ਦਾ ਛਿੜਕਾਅ ਕਰਕੇ ਤੂੜੀ ਵਿਚ 40% ਨਮੀ ਨੂੰ ਜਾਇਜ਼ ਕਰਾਰ ਦਿਤਾ ਗਿਆ ਹੈ. ਇਸ ਵਾਸਤੇ ਯੂਰਿਆ ਨੂੰ ਸਾਫ਼ ਪਾਣੀ ਵਿਚ ਘੋਲਿਆ ਜਾਂਦਾ ਹੈ. ਲੱਗਭੱਗ 25 ਕਵਿੰਟਲ ਤੂੜੀ ਵਿਚ ਇਕ ਕਵਿੰਟਲ ਯੂਰਿਆ ਅਤੇ 1000 ਲੀਟਰ ਪਾਣੀ ਦੀ ਲੋੜ ਹੁੰਦੀ ਹੈ. ਤੂੜੀ ਨੂੰ ਯੂਰਿਆ ਵਿਚ ਸੋਖਣ ਲਈ ਆਮਤੌਰ ਤੇ 2-3 ਹਫਤੇ ਦਾ ਸਮਾਂ ਲਗਦਾ ਹੈ ਲੇਕਿਨ ਠੰਡੇ ਅਸਥਾਨਾਂ ਤੇ ਕੁੱਝ ਜਿਆਦਾ ਸਮਾਂ ਵੀ ਲੱਗ ਸਕਦਾ ਹੈ. ਉਪਚਾਰ ਕੀਤੀ ਗਈ ਤੂੜੀ ਨੂੰ ਇਕ ਖੱਡੇ ਵਿਚ ਦੱਬ ਦਿੱਤਾ ਜਾਂਦਾ ਹੈ. ਖੱਡੇ ਦੀ ਲੰਬਾਈ ਦੋ ਮੀਟਰ ਹੁੰਦੀ ਹੈ. ਇਸ ਦੀ ਚੌੜਾਈ ਅਤੇ ਗਹਰਾਈ ਵੀ ਇਕ ਮੀਟਰ ਹੋਣੀ ਚਾਹਿਦੀ ਹੈ. ਇਸ ਖੱਡੇ ਨੂੰ ਊਪਰ ਤੋਂ ਪੋਲੀਥੀਨ ਨਾਲ ਕਵਰ ਕਰ ਦਿੱਤਾ ਜਾਂਦਾ ਹੈ ਤਾ ਕਿ ਇਸ ਦੇ ਵਿਚ ਅੰਦਰ, ਬਾਹਰ ਦੀ ਨਮੀ ਨਾ ਆ ਸਕੇ. ਜੇਕਰ ਇਸ ਖੱਡੇ ਨੂੰ ਚੰਗੀ ਤਰਾਂ ਢੱਕ ਕੇ ਨਾ ਰਖਿਆ ਜਾਏ ਤਾਂ ਇਹ ਤੂੜੀ ਖਰਾਬ ਵੀ ਹੋ ਸਕਦੀ ਹੈ. ਜਿਆਦਾ ਨਮੀ ਨਾਲ ਫਫੂੰਦ ਉਗ ਸਕਦੀ ਹੈ ਜੋ ਤੂੜੀ ਨੂੰ ਖਰਾਬ ਕਰ ਦਿੰਦੀ ਹੈ. ਖੱਡੇ ਦਾ ਅਸਥਾਨ ਧੁੱਪ ਤੋਂ ਦੂਰ ਹੋਣਾ ਚਾਹਿਦਾ ਹੈ. ਸੁੱਕੇ ਅਤੇ ਅਕਾਲ ਤੋਂ ਜੂਝ ਰਹੇ ਅਸਥਾਨਾਂ ਤੇ ਸਾਫ਼ ਪਾਣੀ ਦਾ ਇੰਤਜ਼ਾਮ ਬੋਹਤ ਜਰੂਰੀ ਹੈ. ਯੂਰਿਆ ਉਪਚਾਰ ਵਿਚ ਤੱਲਾਬ ਦਾ ਗੰਦਾ ਪਾਣੀ ਨਹੀ ਵਾਪਰਨਾ ਚਾਹਿਦਾ ਕਿਓਂਕਿ ਇਸ ਵਿਚ ਫਫੂੰਦ ਉੱਗ ਸਕਦੀ ਹੈ.

ਇਹ ਤਕਨੀਕ ਕੀਂਵੇ ਕੱਮ ਕਰਦੀ ਹੈ?

ਸੂਕ੍ਸ਼ਮ੍ਜੀਵਿਆਂ ਦ੍ਵਾਰਾ ਯੂਰਿਆ ਦੇ ਅੱਪ੍ਘਟਨ ਨਾਲ ਅਮੋਨਿਆ ਗੈਸ ਬਣਦੀ ਹੈ. ਇਹ ਸੂਕ੍ਸ਼ਜੀਵੀ ਆਮਤੌਰ ਤੇ ਗੀਲੀ ਤੂੜੀ ਵਿਚ ਮਿਲਦੇ ਹਨ ਜੋ ਬਾਅਦ ਵਿਚ 'ਯੂਰਿਏਜ ਏਨ੍ਜ਼ਾਇਮ' ਪੈਦਾ ਕਰਦੇ ਹਨ. ਅਮੋਨਿਆ ਤੂੜੀ ਦ੍ਵਾਰਾ ਸੋਖ ਲਿੱਤੀ ਜਾਂਦੀ ਹੈ ਅਤੇ ਇਸ ਵਿਚ 'ਨਾਈਟ੍ਰੋਜਨ' ਦਾ ਲੇਵਲ ਵੱਧ ਹੋ ਜਾਂਦਾ ਹੈ. ਇਸ ਤਰਾਂ ਉਪਚਾਰ ਕਰਨ ਨਾਲ ਤੂੜੀ ਦੇ ਵਿਚ ਮਿਲਣ ਵਾਲੇ ਰੇਸ਼ਿਆਂ ਦੀ ਪਾਚਕਤਾ ਵੱਧ ਜਾਂਦੀ ਹੈ ਜਿਸ ਕਰਕੇ ਇਹ ਛੇਤੀ ਹਜਮ ਹੋ ਜਾਂਦੇ ਹਨ. ਸ਼ੁਰੂ-ਸ਼ੁਰੂ ਵਿਚ ਪਸ਼ੁ ਇਸ ਤੂੜੀ ਨੂੰ ਘੱਟ ਖਾਂਦੇ ਨੇ ਪਰ ਬਾਅਦ ਵਿਚ ਇਨਾਂ ਨੂੰ ਇਸ ਦੀ ਆਦਤ ਹੋ ਜਾਂਦੀ ਹੈ. ਪਹਿਲੀ ਵਾਰ ਇਹ ਤੂੜੀ ਅੱਹਾਰ ਵਿਚ ਮਿਲਾ ਕੇ ਹੀ ਪਸ਼ੂਆਂ ਨੂੰ ਦੇਣੀ ਚਾਹਿਦੀ ਹੈ ਤਾਕਿ ਇਸ ਦਾ ਸਵਾਦ ਅਲਗ ਨਾ ਮੱਹਸੂਸ ਹੋਵੇ. ਅਮੋਨਿਆ ਦੀ ਤਿੱਖੀ ਮਹਕ ਨੂੰ ਖੱਤਮ ਕਰਨ ਲਈ ਇਸ ਤੂੜੀ ਨੂੰ ਕੁੱਝ ਸਮਾਂ ਖੁਲੀ ਹੱਵਾ ਵਿਚ ਫੈਲਾ ਦੇਣਾ ਚਾਹਿਦਾ ਹੈ. ਅਮੋਨਿਆ ਦੀ ਮੱਹਕ ਜਾਣ ਤੋਂ ਬਾਅਦ ਪਸ਼ੁ ਇਸ ਤੂੜੀ ਨੂੰ ਜਿਆਦਾ ਚਾਅ ਨਾਲ ਖਾਂਦੇ ਹਨ.

ਇਸ ਤਕਨੀਕ ਦਾ ਕੀ ਮਹਤੱਵ ਹੈ?

ਰਿਸੱਰਚ ਤੋਂ ਪਤਾ ਚਲਿਆ ਹੈ ਕਿ ਉਪਚਾਰ ਕੀਤੀ ਗਈ ਤੂੜੀ ਖਿਲਾਣ ਨਾਲ ਵੱਛਿਆਂ ਦੀ ਅੱਹਾਰ ਗ੍ਰਹਣ ਖਿਮਤਾ 10-15% ਵੱਧ ਜਾਂਦੀ ਹੈ ਅਤੇ ਸ਼ਰੀਰ ਦਾ ਵਾਧਾ ਹਰ ਰੋਜ਼ 100 ਤੋਂ 150 ਗ੍ਰਾਮ ਤੱਕ ਹੁੰਦਾ ਹੈ. ਉਪਚਾਰ ਕੀਤੇ ਹੋਈ ਤੂੜੀ ਦੇਣ ਨਾਲ ਪਸ਼ੂਆਂ ਦੀ ਦੁੱਧ ਉਤਪਾਦਨ ਖਿਮਤਾ ਵੀ ਹਰ ਰੋਜ਼ 1 ਤੋਂ 1.5 ਲੀਟਰ ਵੱਧ ਹੋ ਜਾਂਦੀ ਹੈ. ਯੂਰਿਆ ਨਾਲ ਉਪਚਾਰ ਕਰਕੇ ਤੂੜੀ ਦੀ ਪਾਚਨ-ਸ਼ੀਲਤਾ ਵੱਧ ਹੋ ਜਾਂਦੀ ਹੈ ਅਤੇ ਇਸ ਨੂੰ ਪਸ਼ੁ ਬੜੇ ਚਾਅ ਨਾਲ ਖਾਂਦੇ ਹਨ. ਤੂੜੀ ਦੀ ਡੱਰਾਈ ਮੈਟਰ ਡਾਇਜੇਸਟੇਬਿਲਿਟੀ ਅਤੇ ਕੁਲ ਡਾਇਜੇਸਟੀਬਲ ਪੋਸ਼ਕ ਤੱਤ 10 % ਤੱਕ ਵੱਧ ਹੋ ਜਾਂਦੇ ਹਨ ਜਦੋਂਕਿ ਪ੍ਰੋਟੀਨ ਦੀ ਮਾਤਰਾ ਵੱਧ ਕੇ ਲੱਗਭੱਗ ਤਿਨ ਗੁਣਾ ਹੋ ਜਾਂਦੀ ਹੈ.

ਇਸ ਤਕਨੀਕੀ ਨੂੰ ਸਫਲ ਬਣਾਓਣ ਵਾਸਤੇ ਕਿਸੇ ਪਸ਼ੁ-ਪੋਸ਼ਣ ਏਕ੍ਸ੍ਪਰੱਟ ਦੀ ਮਦਦ ਲੈਣਾ ਜਰੂਰੀ ਹੈ. ਯੂਰਿਆ ਉਪਚਾਰ ਵੇਲੇ ਕੀਤੀ ਗਈ ਮਮੂਲੀ ਭੁੱਲ ਵੀ ਹਾਨੀਕਾਰਕ ਹੋ ਸਕਦੀ ਹੈ. ਯੂਰਿਆ ਨੂੰ ਸਾਫ਼ ਪਾਣੀ ਵਿਚ ਘੋਲਨਾ ਅਤੇ ਤੂੜੀ ਤੇ ਬਰਾਬਰ ਛਿੜਕਾਅ ਕਰਨਾ ਬੜਾ ਔਖਾ ਕੱਮ ਹੈ ਜੋ ਮਸ਼ੀਨ ਦੇ ਨਾਲ ਅੱਸਾਨ ਹੋ ਸਕਦਾ ਹੈ. ਕੁਝ ਕਿਸਾਨਾਂ ਦਾ ਮੱਤ ਹੈ ਕਿ ਇਸ ਕੱਮ ਵਿਚ ਮੇਹਨਤ ਬੋਹਤ ਜਿਆਦਾ ਅਤੇ ਫਾਇਦੇ ਘੱਟ ਹਨ. ਲੇਕਿਨ ਇਹ ਗੱਲ ਠੀਕ ਨਹੀ ਹੈ.

ਉਪਚਾਰ ਕੀਤੀ ਗਈ ਤੂੜੀ ਦਾ ਇਸਤੇਮਾਲ

ਜਿਥੇ ਚਾਰੇ ਦੀ ਕੋਈ ਘਾਟ ਨਹੀ ਔਥੇ ਦੇ ਕਿਸਾਨ ਇਸ ਤਕਨੀਕੀ ਵਿਚ ਕੋਈ ਦਿਲਚਸਪੀ ਨਹੀ ਲੈਂਦੇ ਹਨ. ਲੇਕਿਨ ਸੁੱਕੇ ਅਤੇ ਅਕਾਲ-ਗ੍ਰਸਤ ਅਸਥਾਨਾਂ ਤੇ ਇਹ ਤਕਨੀਕੀ ਬੜੀ ਉਪਯੋਗੀ ਸਾਬਿਤ ਹੋਈ ਹੈ. ਹਾਲਾਂਕਿ ਕਿਸਾਨ ਆਪਣੇ ਪਸ਼ੁਆਂ ਨੂੰ ਹਰੇ ਚਾਰੇ ਵਿਚ ਤੂੜੀ ਮਿਲਾ ਕੇ ਦਿੰਦੇ ਹਨ ਪਰੰਤੂ ਉਪਚਾਰ ਕੀਤੀ ਗਈ ਤੂੜੀ ਬਿਨਾ ਕਿਸੇ ਮਿਲਾਵਟ ਦੇ ਹੀ ਪਸ਼ੁਆਂ ਨੂੰ ਦਿੱਤੀ ਜਾ ਸਕਦੀ ਹੈ. ਉੱਤਰੀ ਭਾਰਤ ਵਿਚ ਜਿਆਦਾਤਰ ਕੱਣਕ ਅਤੇ ਝੋਨੇ ਦੀ ਖੇਤੀ ਕੀਤੀ ਜਾਂਦੀ ਹੈ. ਝੋਨੇ ਦੀ ਕਟਾਈ ਤੋਂ ਬਾਅਦ ਕੱਣਕ ਵਾਸਤੇ ਜਮੀਨ ਤਿਆਰ ਕਰਨੀ ਹੁੰਦੀ ਹੈ. ਇਨਾਂ ਹਾਲਾਤਾਂ ਵਿਚ ਪੱਰਾਲੀ ਨੂੰ ਯੂਰਿਆ ਛਿੜਕਾਅ ਵਾਸਤੇ ਫੈਲਾਨਾ ਹੁੰਦਾ ਹੈ ਜਿਸ ਵਾਸਤੇ ਕੋਈ ਖਾਲੀ ਜਗਾਹ ਨਹੀ ਮਿਲਦੀ. ਪਰਾਲੀ ਮਿਲਣ ਦੇ ਵੇਲੇ ਬਰਸੀਮ ਵੀ ਬੋਹਤ ਅੱਸਾਨੀ ਨਾਲ ਮਿਲ ਜਾਂਦਾ ਹੈ ਜਿਸ ਨੂੰ ਤੂੜੀ ਨਾਲ ਮਿਲਾ ਕੇ ਪਸ਼ੁਆਂ ਨੂੰ ਦਿੱਤਾ ਜਾ ਸਕਤਾ ਹੈ. ਇਸ ਵਾਸਤੇ ਕਿਸਾਨ ਪਰਾਲੀ ਨੂੰ ਯੂਰਿਆ ਦੇ ਨਾਲ ਉਪਚਾਰ ਕਰਨ ਦੀ ਖੇਚੱਲ ਤੋਂ ਬਚਨਾ ਚਾਹੁੰਦੇ ਹਨ. ਸਾਡੇ ਕਿਸਾਨ ਹਰ ਸਾਲ ਕੱਣਕ ਦੀ ਹਾਰਵੇਸਟਿੰਗ ਤੋਂ ਬਾਅਦ ਬਚੇ ਹੋਏ ਅਵਸ਼ੇਸ਼ ਅੱਗ ਵਿਚ ਸਾੜ ਦਿੰਦੇ ਹਨ ਜੋ ਨਾ ਸਿਰਫ ਪ੍ਰਦੂਸ਼ਣ ਕਰਦਾ ਹੈ ਬਲਕਿ ਫਾਇਦੇਮੰਦ ਕੀੜੇਆਂ ਨੂੰ ਵੀ ਸਾਰ ਕੇ ਖੱਤਮ ਕਰ ਦਿੰਦਾ ਹੈ. ਜੇ ਅਜਿਹੇ ਅਵਸ਼ੇਸ਼ਾਂ ਨੂੰ ਯੂਰਿਆ ਨਾਲ ਉਪਚਾਰ ਕਰਕੇ ਪਸ਼ੁਆਂ ਨੂੰ ਦਿੱਤਾ ਜਾਏ ਤਾਂ ਅਕਾਲ-ਗ੍ਰਸਤ ਪਸ਼ੁਆਂ ਨੂੰ ਬੜੀ ਰਾਹਤ ਮਿਲ ਸਕਦੀ ਹੈ. ਉਪਚਾਰ ਕੀਤਾ ਹੋਇਆ ਭੂਸਾ ਜਾਂ ਤੂੜੀ ਨਾਲ ਪਸ਼ੁਆਂ ਨੂੰ ਪੂਰਾ ਪੋਸ਼ਣ ਮਿਲ ਸਕਦਾ ਹੈ.

ਇਹ ਤਕਨੀਕੀ ਲੋਕਾਂ ਨੂੰ ਪਸੰਦ ਕਿਓਂ ਨਹੀ ਆਈ?

ਛੋਟੇ ਕਿਸਾਨ ਆਪਣੇ ਪਸ਼ੁਆਂ ਨੂੰ ਚਰਾਈ ਵਾਸਤੇ ਪਿੰਡ ਤੋਂ ਬਾਹਰ ਲੈ ਜਾਂਦੇ ਹਨ. ਓਹ ਤੂੜੀ ਦੇ ਯੂਰਿਆ ਉਪਚਾਰ ਵਾਸਤੇ ਕੋਈ ਪੈਸਾ ਖੱਰਚ ਨਹੀ ਕਰਨਾ ਚਾਹੁੰਦੇ ਹਨ. ਜਿਹੜੇ ਲੋੱਕੀ ਦੁੱਧ ਵਾਸਤੇ ਪਸ਼ੁਆਂ ਨੂੰ ਪਾਲਦੇ ਹਨ, ਓਹ ਜਿਆਦਾਤਾਰ ਦੁੱਧ ਆਪਨੇ ਘੱਰ ਵਿਚ ਹੀ ਵਰਤਾ ਲੈਂਦੇ ਹਨ. ਦੁੱਧ ਤੋਂ ਕੋਈ ਆਮਦਨੀ ਨਾਂ ਹੋਣ ਕਰਕੇ ਕਿਸਾਨ ਯੂਰਿਆ ਉਪਚਾਰ ਤੇ ਖੱਰਚ ਨਹੀ ਕਰਨਾ ਚਾਹੁੰਦੇ. ਜਿਆਦਾਤਰ ਕਿਸਾਨ ਯੂਰਿਆ ਨੂੰ ਖਾਦ ਦੇ ਤੌਰ ਤੇ ਹੀ ਇਸਤੇਮਾਲ ਕਰਦੇ ਹਨ ਅਤੇ ਓਹ ਯੂਰਿਆ ਦੇ ਇਸ ਤਰਾਂ ਇਸਤੇਮਾਲ ਨੂੰ ਗੈਰ-ਜਰੂਰੀ ਸਮਝਦੇ ਹਨ. ਫੇਰ ਵੀ ਇਸ ਤਕਨੀਕ ਨੂੰ ਅਜਿਹੇ ਅਸਥਾਨਾਂ ਤੇ ਵਾਪਰਿਆ ਜਾ ਸਕਦਾ ਹੈ ਜਿਥੇ ਹੱਰੇ ਚਾਰੇ ਦੀ ਘਾਟ ਹੈ ਲੇਕਿਨ ਤੂੜੀ ਅੱਸਾਨੀ ਨਾਲ ਮਿਲ ਜਾਂਦੀ ਹੈ. ਤੂੜੀ ਨੂੰ ਯੂਰਿਆ ਨਾਲ ਮਿਕ੍ਸ ਕਰਨ ਵਾਸਤੇ ਮਜਦੂਰਾਂ ਦੀ ਲੋੜ ਪੈਂਦੀ ਹੈ ਜਿਸ ਕਰਕੇ ਇਹ ਤਕਨੀਕੀ ਕੁੱਝ ਹੋਰ ਮਹੰਗੀ ਮਹਸੂਸ ਹੋ ਸਕਦੀ ਹੈ. ਜੇਕਰ ਇਹ ਤਕਨੀਕ ਸਾਰੇ ਕਿਸਾਨ ਮਿਲਕੇ ਇਸਤੇਮਾਲ ਵਿਚ ਲਿਆਵਣ ਤਾਂ ਇਸ ਦਾ ਖੱਰਚਾ ਬੋਹਤ ਘੱਟ ਹੋ ਸਕਦਾ ਹੈ. ਗਰਮੀਆਂ ਦੇ ਮੌਸਮ ਵਿਚ ਤੂੜੀ ਦੀ ਕੋਈ ਘਾਟ ਨਹੀ ਹੁੰਦੀ ਅਤੇ ਇਸਦੀ ਮੰਗ ਵੀ ਬੋਹਤ ਘੱਟ ਹੋ ਜਾਂਦੀ ਹੈ. ਇਸ ਤੂੜੀ ਨੂੰ ਯੂਰਿਆ ਨਾਲ ਉਪਚਾਰਿਤ ਕਰਕੇ ਪਸ਼ੁਆਂ ਦੀ ਰੱਖ-ਰਖਾਅ ਸੰਬੰਧੀ ਲੋੜਾਂ ਨੂੰ ਪੂਰਾ ਕੀਤਾ ਜਾ ਸਕਦਾ ਹੈ. ਜੇਕਰ ਸੁੱਕੇ ਦੀ ਮਾਰ ਝੇਲ ਰਹੇ ਕਿਸਾਨਾਂ ਨੂੰ ਇਸ ਕੱਮ ਦੀ ਟ੍ਰੇਨਿੰਗ ਦਿੱਤੀ ਜਾਏ ਤਾਂ ਇਹ ਤੂੜੀ ਦੀ ਪੋਸ਼ਣ ਖਿਮਤਾ ਵਧਾਵਨ ਵਾਲੀ ਇਕ ਬੋਹਤ ਸੱਸਤੀ ਤਕਨੀਕੀ ਸਾਬਿਤ ਹੋ ਸਕਦੀ ਹੈ.

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