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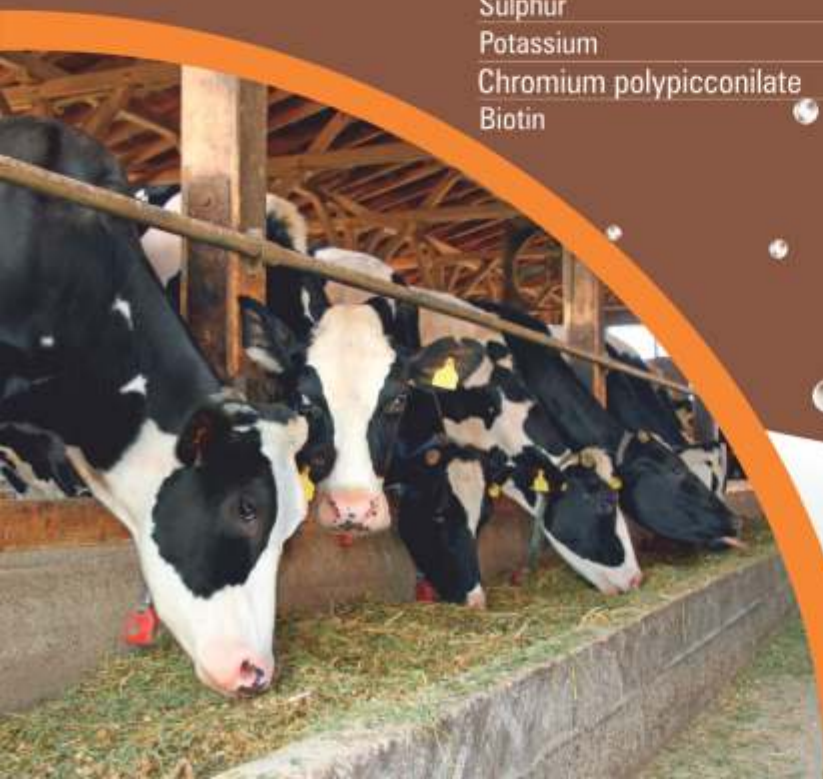
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From the Pen of Chief Editor



Ensuring Optimal Cattle Care and Management During the Monsoon Season

The monsoon season brings a respite from the scorching summer heat, but it also presents challenges for cattle farmers. One of the primary concerns during the monsoon is ensuring appropriate shelter for cattle. Wet and waterlogged conditions can lead to numerous health issues, particularly hoof infections and other ailments caused by prolonged exposure to damp environments. It is essential that floors should be well-drained, and roofs must be maintained to prevent leaks. Adequate ventilation within shelters is crucial to reduce humidity levels and prevent respiratory diseases, which are common in damp, enclosed spaces. Regularly replacing wet and soiled bedding with dry materials like straw or sawdust can also help maintain a clean and comfortable living environment for the cattle.

Nutritional management is another critical aspect of cattle care during the monsoon. While the rains lead to an abundance of green fodder, this can often have high moisture content, which may cause digestive issues. Ensure a balanced diet by providing good quality dry feed, along with silage and hay to supplement the green fodder. Preserved feeds are especially important when fresh fodder quality is compromised by excessive rain. Additionally, providing mineral supplements is essential for maintaining optimal cattle health. Ensuring a clean and safe water supply is equally important, as contaminated water can lead to severe health problems. Regular cleaning of water troughs and effective drainage systems around drinking areas can prevent water stagnation and contamination.

Health management during the monsoon season requires heightened vigilance. Staying current with vaccinations is crucial, as diseases like Foot and Mouth Disease (FMD) and Hemorrhagic Septicemia (HS) are more prevalent in this season. Regular deworming and controlling external parasites like ticks and flies, which thrive in humid conditions, are necessary preventive measures. Conducting regular health checks allows for early detection and treatment of any illnesses. Special attention should be paid to hoof care. Regular cleaning and inspection of hooves, along with providing dry standing areas, can mitigate these risks.

Breeding management also demands careful consideration during the monsoon. Planning breeding activities to avoid the peak of the rainy season can reduce stress on the cattle and improve fertility rates. Artificial insemination (AI) can provide better control over breeding conditions, reducing the risks associated with natural mating in wet environments. Ensuring that breeding cattle receive a nutrient-rich diet and undergoing pre-breeding health checks are essential steps to support reproductive health.

Emergency preparedness cannot be overlooked. Farmers should have a well-thought-out evacuation plan and maintain essential supplies, including feed, clean water, and medical kits, to sustain cattle during prolonged adverse conditions. Staying informed through weather forecasts and maintaining communication with local veterinary services and agricultural extension offices can provide timely advice and support.

In conclusion, while the monsoon season brings its share of challenges, a proactive and comprehensive approach to cattle care and management can help farmers navigate these difficulties effectively. Ensuring proper shelter, balanced nutrition, vigilant health monitoring, strategic breeding management, and robust emergency preparedness are key to maintaining the health and productivity of cattle during the rains. By adopting these practices, farmers can safeguard their herds and ensure a successful monsoon season, reaping the benefits of this crucial period while mitigating its risks.

Vishal

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ADVERTISEMENT

Biosint	03
Ecolex Animal Nutrition	01
Irides	47
Natural Remedies	08
Pixie Expomedia	02
The Dairy Expo	48

PRESS RELEASE

NOVUS new Global Headquarters is Focused on the Future	29
	
Training programme on Skill Development and Entrepreneurship...	31
Names of the Elected Members to the Veterinary Council of India ...	32
Department of Animal Husbandry and Dairying signed an agreement ...	33
Union Minister Shri Rajiv Ranjan Singh inaugurates a comprehensive ...	35
Tetra Pak Reveals 20% Greenhouse Gas Emissions Reduction Across ...	37
dsm-firmenich Presents "Digital Disruptor Award" to Recognize ...	38
Danone Opens the Next Chapter of its Renew Strategy Projecting ...	39

04 Editorial	46 Editorial Calendar
40 News	46 Subscription Form

ARTICLE

Page

06

Comprehensive Guide to Cattle Care and Management During the Monsoon Season

Siddhi Gupta, Parth Rai Gupta

Page

08

Are we Caring for the Liver in Healthy Cows?

Dr. A V Siva Reddy



Page

10

Anestrus in Dairy Cattle and its Management

Dr. Rachana Sharma, Dr. Gurpreet Singh and Dr. Pallavi Khajuria

Page

13

Optimizing Fatty Acid Composition in Bypass Fat for Dairy Cows: An Indian Perspective



Page

15

The Extraordinary Power of Starch

Dr. Karanti Kumar Chakarwari



Page

17

"Unique Animal Genetic Resources of the Himalayan Region: Biodiversity Treasure ...

Divyanshu Pandey, Saket Kumar Niranjana, Satpal Dixit

Page

20

Precision Feeding Concept for Ruminants

Neelam Kumari

Page

22

Care and Management of Buffaloes During Post Flood Situation

Bhavya Arora

Page

25

Feeding Management of Dairy Animals During Monsoon Season

Dr. Pobal Saikia, Dr. Deepandita Barman and Dr. Arunoday Das

Page

27

Optimizing Summer Management Practices for Dairy Animals: Ensuring Health and Productivity ...

Simran jeet Singh, Nidhi Arora, and Jagriti Upreti



Comprehensive Guide to Cattle Care and Management During the Monsoon Season

Siddhi Gupta, Parth Rai Gupta
Co-Editor

The monsoon season is a critical period for cattle management. While the rain can provide much-needed relief from the summer heat, it also brings challenges such as increased risk of disease, nutritional deficiencies, and environmental stress. Proper care and management during this time are essential to ensure the health and productivity of cattle.

1. Shelter Management

A. Housing

- **Dry and Elevated Shelter:** Ensure that cattle housing is dry and elevated to prevent waterlogging. A well-drained floor can help avoid the accumulation of water and mud.
- **Ventilation:** Proper ventilation is crucial to reduce humidity and maintain air quality. Increased humidity can lead to the accumulation of ammonia gas in the shed leading to the irritation of eyes. Good airflow can help prevent respiratory issues and mold growth.
- **Roof Maintenance:** Inspect and repair roofs to prevent leaks. A sturdy, leak-proof roof is essential to keep cattle dry and comfortable. Leaking shed causes discomfort to the animals.

B. Bedding

- **Dry Bedding:** Use dry bedding materials such as straw or sawdust. Replace wet and soiled

bedding regularly to maintain hygiene and prevent infections.

2. Nutritional Management

A. Feed and Fodder

- **Quality Feed:** Ensure the availability of good quality, dry feed as wet feed can develop molds lead to diseases. During the monsoon, green fodder may be abundant, but it often has high moisture content, which can lead to digestive issues.
- **Silage and Hay:** Store adequate quantities of silage and hay to supplement green fodder. These preserved feeds are crucial when fresh fodder quality is compromised by excessive rain.
- **Mineral Supplements:** Provide mineral supplements to compensate for any deficiencies that may arise due to the dilution of nutrients in waterlogged soils.

B. Water

- **Clean Water Supply:** Ensure a clean and safe water supply. Regularly check and clean water troughs to prevent contamination.
- **Drainage:** Implement proper drainage systems to prevent water stagnation around drinking areas.

3. Health Management

A. Disease Prevention

- **Vaccination:** Stay up-to-date with vaccinations. The damp

conditions of the monsoon can increase the risk of diseases such as Foot and Mouth Disease (FMD), Hemorrhagic Septicemia (HS), and Black Quarter (BQ).

- **Parasite Control:** Regularly deworm cattle and use appropriate measures to control external parasites like ticks and flies, which thrive in humid conditions.
- **Udder Infection:** Wet shed and bedding can lead to udder infections causing swelling of teats and udder. Left untreated it can cause fibrosis of the udder.

B. Monitoring and Early Detection

- **Regular Health Checks:** Conduct regular health checks to identify any early signs of illness. Monitor for symptoms such as lethargy, reduced appetite, or abnormal behavior.
- **Foot Care:** Pay special attention to hoof health. Muddy and wet conditions can lead to hoof infections. Clean and inspect hooves regularly and provide dry standing areas.

4. Environmental Management

A. Pasture Management

- **Rotational Grazing:** Practice rotational grazing to prevent overgrazing and soil compaction. This can help maintain pasture quality and reduce the risk of parasites.
- **Fencing:** Ensure that fencing is secure and intact to prevent cattle from straying into flooded or hazardous areas.

B. Waste Management

- **Manure Disposal:** Properly manage and dispose of manure to prevent contamination of water sources and reduce the breeding of flies and other pests.
- **Drainage Systems:** Implement effective drainage systems

around cattle housing and grazing areas to prevent waterlogging.

- **Carcass Disposal:** Ensure proper disposal of carcass by burning or deep burial to prevent the spread of infection.

5. Emergency Preparedness

A. Flood Preparedness

- **Evacuation Plans:** Have a well-thought-out evacuation plan in place for emergencies such as flooding. Identify safe locations to move cattle if necessary.
- **Emergency Supplies:** Maintain a stock of essential supplies, including feed, clean water, and medical kits, to sustain cattle during prolonged adverse conditions.

B. Communication

- **Stay Informed:** Keep abreast of weather forecasts and updates. Establish communication with local veterinary services and agricultural extension offices for timely advice and support.

6. Breeding Management

A. Breeding Season Considerations

- **Optimal Timing:** Plan breeding activities to avoid peak monsoon months if possible. The stress and health challenges during the rainy season can affect fertility rates.
- **Artificial Insemination (AI):** Consider using AI to better control the timing and conditions of breeding, reducing the risks associated with natural mating in wet and muddy environments.

B. Heat Detection

- **Regular Monitoring:** Closely monitor cattle for signs of estrus (heat). Wet and slippery conditions can make it difficult to observe natural mating behaviors.

- **Estrus Synchronization:** Use estrus synchronization protocols to manage and predict breeding times more accurately, ensuring successful conception rates.

C. Nutritional Support

- **Nutrient-Rich Diet:** Ensure breeding cattle receive a nutrient-rich diet to support reproductive health. Provide additional energy and protein supplements as needed.
- **Mineral Blocks:** Place mineral blocks that are specifically formulated to support reproductive health and fertility.

D. Health Management

- **Pre-Breeding Health Check:** Conduct thorough health checks before breeding to ensure cattle are free from infections and in good health.
- **Parasite Control:** Maintain strict parasite control measures, as internal and external parasites can impact fertility and overall health.

E. Calving Management

- **Safe Calving Environment:** Ensure calving areas are dry and clean to reduce the risk of infections in newborn calves.
- **Post-Calving Care:** Provide extra care to cows and calves post-calving, monitoring for any signs of complications or infections.

Conclusion

Effective management of cattle during the monsoon season requires a combination of good shelter, proper nutrition, vigilant health monitoring, breeding management, and preparedness for emergencies. By implementing these strategies, farmers can ensure the well-being of their cattle, maintain productivity, and mitigate the challenges posed by the rainy season.



Are We Caring for the Liver in Healthy Cows?

The liver is the largest gland, the largest solid organ, and one of the most vital organs that functions as a center for the metabolism of nutrients and excretion of waste metabolites. Its primary function is to control the flow and safety of substances absorbed from the digestive system before the distribution of these substances to the systemic circulatory system. A total loss of liver function could lead to death within minutes, demonstrating the liver's great importance. In herbivores, the liver weighs 1 to 1.5% of their body weight. The liver is much heavier in young animals than in older animals as it atrophies with age.

The basic functional unit of the liver is the liver lobule. A single lobule is about the size of a sesame seed and is

roughly hexagonal in shape. The primary structures found in a liver lobule include:

- Plates of hepatocytes which form the bulk of the lobule
- Portal triads at each corner of the hexagon
- Central vein
- Liver sinusoids that run from the central vein to the portal triads
- Hepatic macrophages (Kupffer cells)
- Bile canaliculi (little canals) - formed between walls of adjacent hepatocytes
- Space of Disse - a small space between the sinusoids and the hepatocytes

Functions of the Liver

The liver has more than 500 different functions. The major functions of the liver are

Bile Secretion: The liver secretes bile an alkaline, bitter-tasting, yellowish-green fluid that contains bile salts (conjugated bile acids), cholesterol, bilirubin (a pigment), electrolytes, and water. It is formed by hepatocytes and secreted into the canaliculi. Bile helps with digestion by breaking down fats into fatty acids,

Bilirubin Metabolism: Old or damaged RBCs are removed from the circulation by macrophages in the spleen and liver. Bilirubin is a byproduct of the destruction of aged red blood cells. It gives bile a greenish-black color and

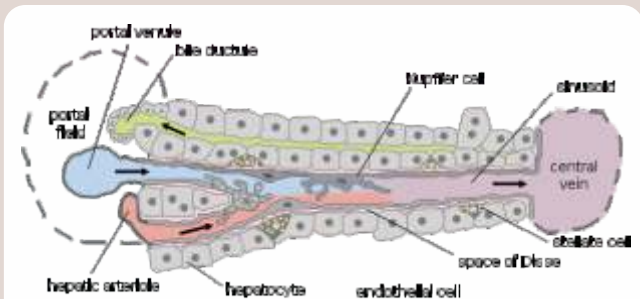


Diagram showing main cell types of Liver - hepatocytes, endothelial cells, Kupffer cells and Stellate cells. Source: Tissupath specialist pathway services, Retrieved 2017. www. Tissupath.com.au

produces the yellow tinge of jaundice. Bilirubin is metabolised in the liver and excreted in the urine, and a small amount is eliminated in faeces.

Vascular and Hematologic Functions: The liver is an important blood reservoir, due to an extensive vascular network, the liver can store a large volume of blood and can also release blood to maintain systemic circulatory volume in the event of hemorrhage. Kupffer cells in the sinusoids of the liver remove bacteria and foreign particles from the portal blood. It synthesizes prothrombin, fibrinogen, and clotting factors. Vitamin K, a fat-soluble vitamin, is essential for the synthesis of other clotting factors.

Nutrient Metabolism: Fats - The fatty acid oxidation, synthesis of cholesterol/lipoproteins, and production of ketoacids take place in liver. **Protein** - The plasma proteins, including albumins and globulins (excluding gammaglobulin), are synthesized by the liver. The liver also synthesizes several non essential amino acids and serum enzymes including aspartate aminotransferase, alanine aminotransferase, lactate dehydrogenase and alkaline phosphatase. **Carbohydrate** - The liver contributes to the stability of blood glucose levels by releasing glucose during states of hypoglycemia (low blood sugar) and taking up glucose during states of hyperglycemia (high blood sugar) and storing it as glycogen (glyconeogenesis) or converting it to fat. When all glycogen stores have been used, the liver can convert amino acids and glycerol to glucose.

Metabolic Detoxification: The liver alters exogenous and endogenous chemicals (e.g. drugs), foreign molecules, and hormones to make them less toxic or less biologically active and diminishes intestinal or renal tubular reabsorption of potentially toxic substances and facilitates their intestinal and renal excretion.

Storage of Minerals and Vitamins: The liver stores certain vitamins and minerals, including iron and copper, in durations of excessive intake and releases them in durations of need. The liver can store vitamins B12 and D for several months and vitamin A for several years. The liver also stores vitamins E and K. Iron is stored in the liver as ferritin, an iron protein complex and is released as needed for red blood cell production.

Endocrine Functions: liver helps in-

- Activation of vitamin D
- Conversion of thyroxine (T4) to T3
- Secretion of angiotensinogen
- Metabolising hormones

The Immunologic Function: The liver is particularly rich in cells of the innate immune system. The main cell types here are kupffer cells and NK T cells. NK T cells are not strictly part of innate immunity but functionally somewhere in between adaptive and innate. Adaptive immunity can be classified into humoral immunity and cell-mediated immunity, mediated principally by B and T lymphocytes.

Hence maintaining liver health in cattle is essential for optimizing production efficiency, ensuring animal welfare, and minimizing the risk of disease and economic losses in livestock operations. An every day use of **Natliv a 100% natural liver tonic** one of its kind helps to function liver optimally and ensures a healthy liver in animals.



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Anestrus in Dairy Cattle and its Management

Dr. Rachana Sharma, Dr. Gurpreet Singh and Dr. Pallavi Khajuria

Department of Veterinary Physiology and Biochemistry

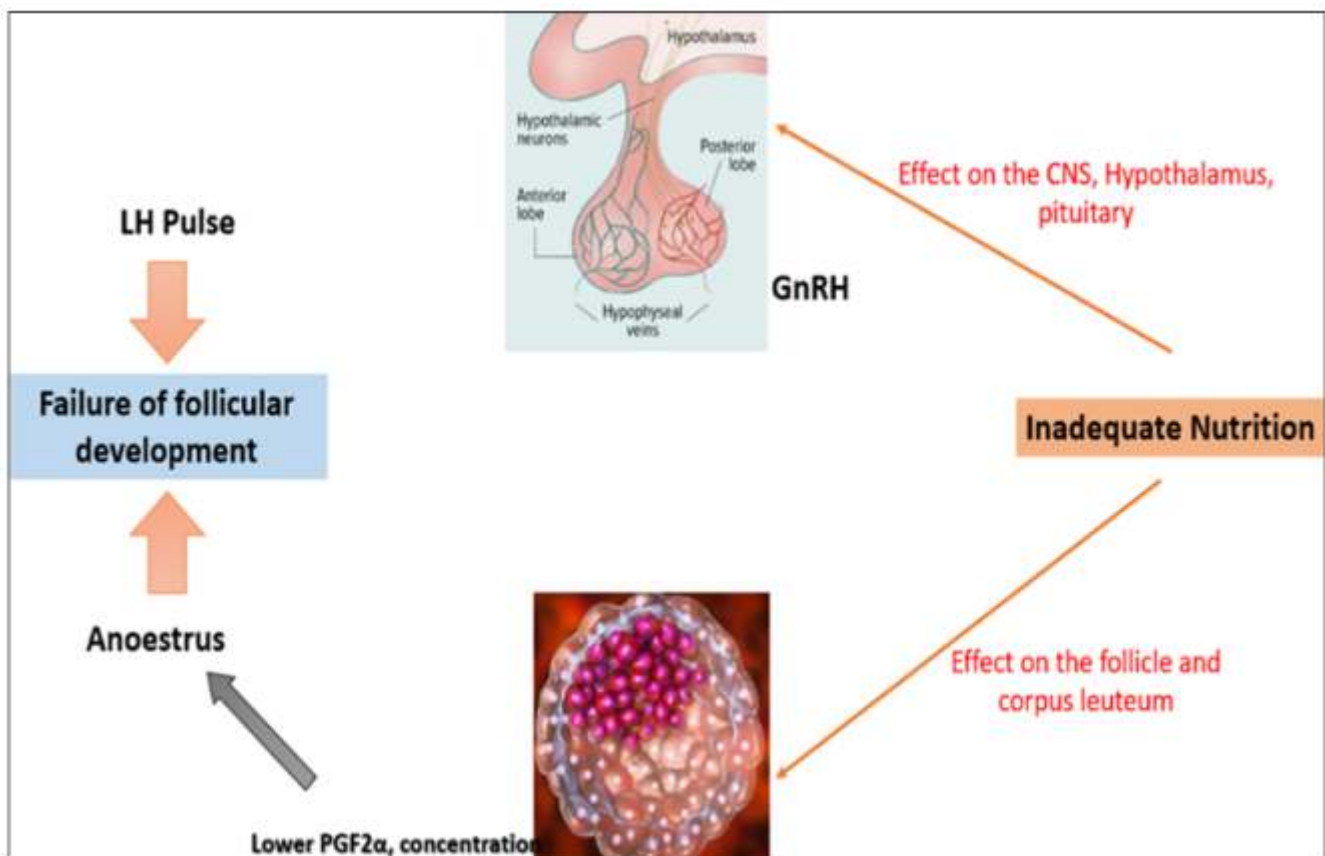
College of Veterinary Science, Rampura Phul, Guru Angad Dev Veterinary and Animal Sciences University

The ability of a herd or animal to reproduce is a crucial factor in determining the long-term viability of a dairy farming operation. Evaluating the productivity and reproductive capabilities of animals requires a combination of factors to assess their overall effectiveness.

Key factors that determine the reproductive and productive capabilities of cattle include the age at first service, age at first calving, weight of their offspring at birth, milk yield, calving interval and service period length. These factors are also significant in the economic aspects of dairy farming. The most important parameters to measure the farm economy are calving interval, age at puberty, service per

conception, gestation length and birth weight of fetus and among which calving interval is often seen as the most reliable measure of a herd's reproductive efficiency.

Reproduction is a crucial element in assessing the productivity of animals. However, there are specific issues that impact livestock farming, which in turn, affects the income of farmers. Anestrus is a prevalent reproductive issue among cattle and buffalo in India. It is a condition that disrupts the normal reproductive cycle, marked by the lack of visible signs of estrus, either because the signs are not expressed or not recognized. This condition is seen in animals after puberty, during pregnancy and



lactation, and in the early stages following parturition in adult animals. In heifers, it can become a significant issue within the herd, possibly due to inadequate nutrition, stress from seasonal changes, or harsh weather conditions. Studies have shown a wide range of anestrus occurrence rates, varying by species, breed, age, season, nutrition, management practices, and geographical location. Anestrus is more common in adult cattle and buffalo compared to heifers.

Anestrus results in financial setbacks through longer calving intervals, reduced numbers of calves born, decreased productivity, expenses for treatments, and the cost involved in replacing older animals with their first-time mothers. Prolonged anestrus, caused by the end of the reproductive cycle, due to the absence of visible follicles or palpable follicles, is referred to as true anestrus.

False anestrus can be either natural (related to lactation, gestation, or open periods) or due to diseases like pyometra and chronic metritis. Anestrus is the primary single factor leading to infertility in cattle and buffaloes. The presence of clear signs of estrus is significantly impacted by heat stress in buffaloes. In contrast to cows, buffaloes have fewer preantral and antral follicles, smaller pre-ovulatory follicles, and a higher likelihood of follicular atresia, which could explain the higher rate of anestrus in buffaloes. In general, anestrus is a complex issue that contributes to the failure of animals to show estrus, which can occur before or after giving birth. It can be caused by various factors: Congenital abnormalities, Retention of Corpus luteum, Physiological anestrus, Gestational anestrus,

Nutrition, Hormonal Imbalance.

Diagnosis

History (According to the data, animals failed to exhibit overt signs of estrus after reaching puberty or 60–90 days after parturition), Progesterone estimation (Anestrus is characterized by a less amount of ovarian progesterone.) Per Rectal examination (During a rectal examination, the ovaries of cattle and buffaloes in true anestrus are found to be smooth, small, and inactive, lacking any corpus luteum.), Ultrasonography (Ultrasonography is a useful tool for identifying anestrus type and different stages of follicular growth.), Silent heat (Sometimes, the signals are there, but they go unnoticed, or the heat symptoms are so faint that they barely register. This phenomenon is known as Silent heat. It's especially prevalent in buffaloes, particularly when the summer sun blazes down.), Heat Stress (Buffaloes often struggle to show clear signs of heat during the summer months due to heat stress. The scorching temperatures lead to an increase in ACTH secretion and a decrease in LH secretion.)

Treatment of anestrus

Lugol's iodine paint: Portray of Lugol's iodine on posterior or last portion of the cervix causes local irritation and brings around reflux incitement at hypothalamus for discharge of gonadotrophin releasing hormone and thus cyclicity. The absorbed iodine likely increase the metabolic rate of body through fortifying the thyroid hormone emission. increased metabolic rate trigger the ovarian capacities by upgrading the vitality utilization.

Non hormonal medications; Plants synthesize assortments of phyto-chemicals such as alkaloids,

glycosides, terpenes and tannins (auxiliary metabolites) as a portion of their typical metabolic action. Numerous plants are wealthy source of vitamins and minerals though a few have estrogenic property which is valuable in rebuilding of cyclicity in anestrus creatures. Numerous plants such as *Murraya koenigii* (curry takes off), *Nigella sativa* (kalonji), *Abroma augusta* (Ulatkambal), *Saraca asoca* (Ashoka), *Trigonella foenum-graecum* (Methi), *Bambusa aruninacea*, *Carica papaya*, *Asparagus recemosus*, *Leptadenia reticulata*, *Courupita guianensis*, *Pergulacia daemia*, *Semecarpus anacardium* cucumber, and jute plants either alone or in combinations have been bolstered to treat the anestrus creatures with variable reaction on acceptance of estrus.

- **Hormonal therapy:** After this induce the estrus by the hormonal treatment. For this we can give:

Estrogen: In presence of prevailing follicle, estrogen administration results in expression of estrus and ovulation since of its positive feedback impact over pituitary for LH surge. For this reason, it has been utilized to induce ovulation and to diminish postpartum anestrus period.

One or two doses of i/m inj estradiol (2–10mg) or estrone (5–15mg) at three days interval can be used to regresses the retained CL related with pyometra, mummification and mucometra.

Give estrogen 10 mg i/m. Animal will come into heat within 2–4 days after injection. It should never be given in lactating animals but can be utilized in heifers.

Side effects: A long-term estrogen concentration can lead to cystic ovaries, irregular movement and contractions of the oviduct, which

can result in infections of the ovaries. In animals that are nursing, this can cause a significant decrease in milk production.

FSH: Follogon 1000 I.U./m. The animal will typically come into heat within three days.

Progesterone: Progesterone therapy is commonly used today for inducing estrus. By administering exogenous progesterone, it mimics the luteal phase of the estrus cycle, which suppresses the release of luteinizing hormone (LH) from the hypothalamus and pituitary gland. When progesterone is discontinued, it stimulates the return to the normal follicular phase of the cycle. This treatment appears to be effective, but it requires a sudden drop in progesterone levels at the end of the treatment period. Progesterone can be derived from natural sources or synthetic compounds and is used in various treatment protocols.

Ovsynch protocol/G-P-G regime: On day 0, an injection of GnRH analogue (Buserelin acetate; Receptal) at a dose of 20µg i/m is administered. This is followed by an injection of PGF2α (Dianoprost tromethamine; Lutalyse) at a dose of 25 mg i/m, and again on day 9, the GnRH analogue is given at a dose of 20µg i/m. The animal will typically show signs of estrus within 24 to 48 hours after the final GnRH injection. Animals that are not in anestrus respond more favorably to the Ovsynch protocol compared to those that are not in heat.

Gonadotrophins: The use of pregnant mare serum gonadotrophin (PMSG) or equine chorionic gonadotrophin (eCG) is a potent activator of ovarian function due to its high FSH activity. This has led to its widespread application in

superovulation. PMSG can prevent and reverse the process of follicular atresia, making it a suitable option for managing anestrus in buffaloes at low doses, where follicular atresia is a common issue. Human chorionic gonadotrophin (hCG) has also shown some success in treating anestrus in buffaloes.

Prostaglandin: Prostaglandin (PGF2α) is the preferred for regress the persistent corpus luteum and subestrus conditions. It is most effective between days 6–16 of the cycle and when there is an active corpus luteum.

Insulin: The use of GnRH or eCG in combination with insulin has demonstrated promising outcomes for the management of anestrus in cattle and buffaloes. Insulin promotes follicular development in true anestrus buffalo, which is essential for the effectiveness of GnRH.

H. Anti-Prolactin Based Treatment: Hyper-prolactinaemia has been observed in buffaloes during the summer, which could be a contributing factor to summer anestrus in buffaloes. To address this, anti-prolactin drugs like bromocriptine have been explored. Additionally, melatonin has been found to stimulate both GnRH and gonadotrophin secretion in buffaloes. Given that melatonin levels are lower during the summer, it has been effective in inducing estrus and ovulation in buffaloes treated with melatonin implants.

Treatment of Silent Estrus: In cases where the owner is not aware of the animal's estrus, it is recommended to ask about the day of vaginal discharge. If there is no clear history of estrus, PGF2α can be administered after a 10-12 day delay following the vaginal discharge. Alternatively, palpating the corpus luteum can also indicate

the need for PGF2α. Animals typically come into heat within 72 hours after PGF2α treatment.

Prevention

Maintaining the well-being of animals through the use of effective farm management strategies. Nutrition is likely the most critical factor, influencing ovarian function. It's essential to focus on avoiding a negative energy balance in high-producing animals. This can be achieved by ensuring proper nutrition during both the pre- and postpartum stages. Adding vitamins, minerals, and antioxidants to animal feed shows promise in restoring the menstrual cycle. As the act of suckling reduces the frequency of LH pulses and lengthens the period of postpartum anestrus, weaning can serve as a valuable tool to shorten the postpartum anestrus phase after LH pulsatile secretion resumes in postpartum animals. The introduction of males to a group of females (biostimulation) triggers LH secretion, leading to ovulation in females through olfactory and sensory signals. Implementing certain management strategies, such as early detection of estrus, routine pregnancy checks (40–60 days after breeding), preventing postpartum uterine infections and diseases (ketosis and mastitis), regular deworming, and synchronization of estrus, especially in buffaloes where detecting heat is more challenging, can be beneficial in preventing anestrus.

Conclusion

Anestrus is a complex issue with various causes that significantly impacts livestock operations. Early detection and treatment are crucial to prevent its onset for successful management. Therefore, there is no single solution to address anestrus.



Optimizing Fatty Acid Composition in Bypass Fat for Dairy Cows: An Indian Perspective

India's dairy industry, a cornerstone of the agricultural economy, faces the ongoing challenge of enhancing milk yield and overall cow health. To achieve these goals, Indian dairy farmers and feedmill managers must optimize the use of rumen bypass fat in their cows' diets. This approach not only increases feed energy concentration but also boosts milk fat and body fat content, essential for high-yield dairy operations.

The Role of Rumen Bypass Fat

Rumen bypass fat delivers high-energy content without disrupting normal rumen fermentation, a common risk associated with carbohydrates. Carbohydrates, although economical, can lead to rumen acidosis, negatively impacting rumen health and cow productivity. Hence, rumen bypass fat is preferred for providing necessary energy without adverse effects.

Ecolex Animal Nutrition, a global leader in rumen bypass technology, emphasizes the significance of a balanced approach. According to Ecolex, not only is the energy supply critical, but the type of fatty acids used also determines the effectiveness of the supplementation.

Key Fatty Acids in Rumen Bypass Fat

There are four primary fatty acids in

rumen bypass fat:

- 1. Palmitic Acid (C16:0):** Known for its ability to boost milk fat content, making it particularly beneficial for dairy operations focused on high butterfat yields.
- 2. Stearic Acid (C18:0):** Aids in increasing body fat accumulation, crucial for the reproductive health of dairy cows.
- 3. Oleic Acid (C18:1):** Supports body fat accumulation, providing a steady energy source.
- 4. Linoleic Acid (C18:2):** Enhances body fat, contributing to better overall energy balance and reproductive performance.

Research, including insights from Ecolex Animal Nutrition, indicates that the response to these fatty acids can vary based on milk yield levels. High-yielding cows might react differently compared to those with moderate yields, necessitating a tailored approach in fat supplementation.

Practical Applications for Indian Dairy Farmers

For Indian dairy farmers, the decision on which type of bypass fat to use depends on specific goals:

- 1. Increasing Energy Concentration:** If the primary



aim is to increase overall energy concentration, the type of fatty acid may be less critical, as all provide similar energy values. However, when focusing on enhancing milk fat content, palmitic acid is paramount.

2. Enhancing Milk Fat Content:

Palmitic acid is the key to increasing milk fat content. Farmers should consider the cost-effectiveness of the chosen bypass fat, evaluating it on a per-unit energy or per-unit palmitic acid basis to ensure the highest economic return.

Ecolex Animal Nutrition recommends a comprehensive approach, balancing cost and effectiveness to achieve optimal results. By leveraging their expertise, Indian farmers can better navigate these decisions.

Benefits of Palm Oil-Based Rumen Bypass Fat

Palm oil-based rumen bypass fat is currently the most popular choice among dairy farmers due to its efficiency and cost benefits. However, each type of rumen

bypass fat has unique advantages. The optimal strategy may involve combining different forms to leverage their individual strengths.

Advantages of Palm Oil-Based Rumen Bypass Fat:

- 1. Cost-Effectiveness:** Palm oil-based bypass fat is economically viable, providing high energy at a lower cost.
- 2. Efficiency:** It effectively increases milk fat content and overall energy levels without disrupting rumen fermentation.
- 3. Availability:** Palm oil-based products are readily available, making them a convenient choice for farmers.

Strategic Use of Rumen Bypass Fat

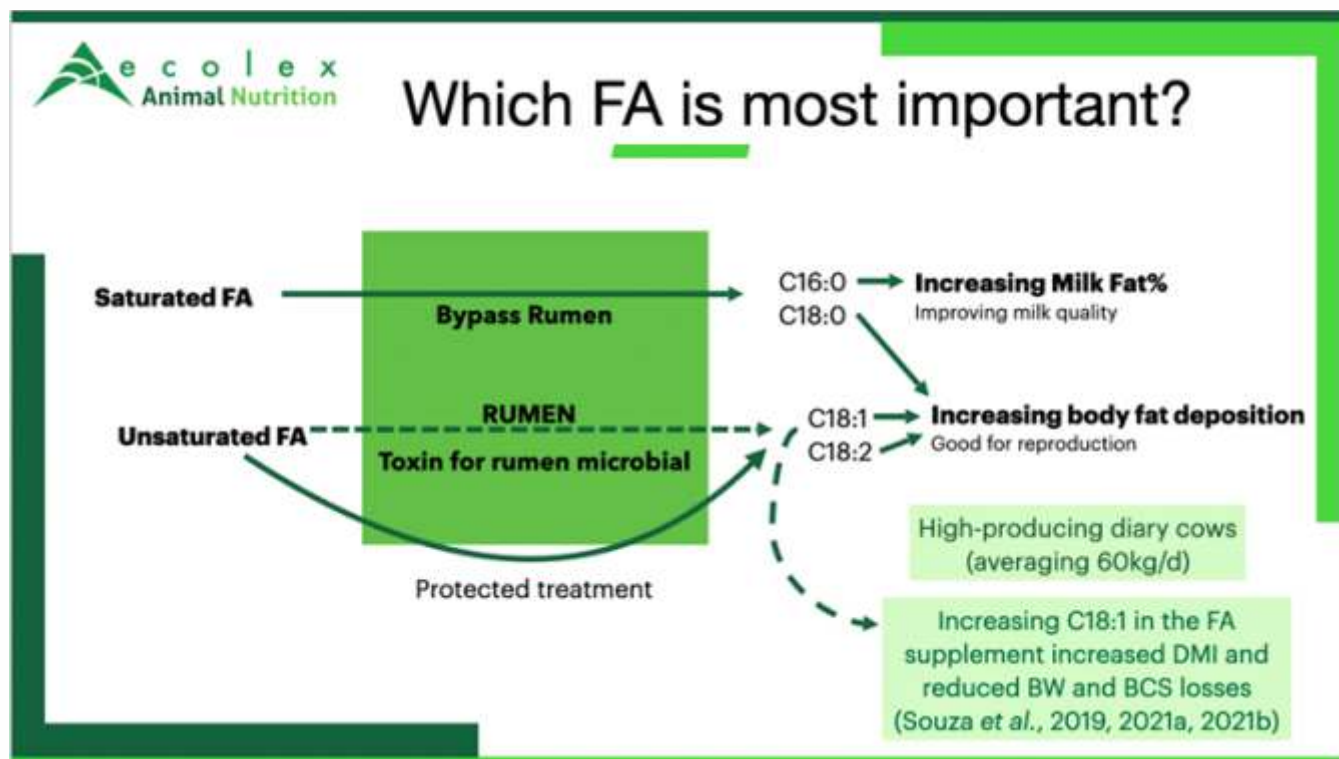
The best way to use rumen bypass fat is to align it with the specific needs of the dairy operation. This includes considering the unique dietary requirements of high-yielding cows and balancing the costs and benefits of different fatty acids. Ecolex Animal Nutrition advises farmers to adopt a strategic approach, potentially

mixing various types of bypass fats to optimize results.

Conclusion

In conclusion, the integration of rumen bypass fat into the diets of dairy cows is essential for enhancing milk yield and cow health. Indian dairy farmers must carefully select and balance the types of fatty acids in bypass fats to meet their specific operational goals. Ecolex Animal Nutrition, with its expertise in rumen bypass technology, provides invaluable insights and solutions to help farmers make informed decisions.

Palm oil-based rumen bypass fat remains the most popular choice due to its efficiency and cost benefits. However, understanding the unique advantages of each type of bypass fat and strategically combining them can lead to optimal results. By following these guidelines, Indian dairy farmers can enhance their herds' performance and profitability, ensuring the continued growth and success of the dairy industry.





The Extraordinary Power of Starch

Rethinking energy for lactating cows

When formulating rations for lactating dairy cows, many nutritionists currently focus solely on the total non-fiber carbohydrate (NFC) fraction. However, it is increasingly important to measure the individual components that make up the NFC, including starch, sugars, soluble fiber and β -glucans — and it is similarly important to formulate rations that optimize the concentration of each component.

Starch, which typically constitutes 50–100% of the nonstructural carbohydrates in most feedstuffs, must be given careful consideration when formulating rations for dairy cows. Generally, the recommendations for dietary starch commonly fall between 23–30% of the ration's dry matter (DM), depending on the forage content of the diet. It is also crucial to consider the ruminal degradability of the starch and other dietary carbohydrate fractions. This means optimizing the entire carbohydrate profile, including the pool sizes and digestion rates, to formulate the best possible ration.

Dietary starch enhances the diet's energy content

Starch constitutes a significant portion of dairy cattle diets, varying from less than 20% in dry-cow diets to over 35% in the diets of lactating cows. Cereal grains are the primary source of dietary starch, with their starch content ranging from 60% in corn grain to 79% in broken rice (on a DM basis). Corn silage can

vary in its starch content, from less than 1% to as much as 40% of the DM.

The quality of a grain is closely related to its starch content, with broken grains (such as rice and corn) typically having a lower starch value. To boost energy intakes in lactating dairy cattle, feeds that are high in starch are often used to replace fibrous forages and other feeds. Moreover, when diets that are high in starchy grains and, consequently, lower in NDF are provided to lactating cows, their dry matter intake (DMI) usually increases (Allen, 2000).

Starch digestion

Starch digestibility is also affected by other factors, such as the genetics of the grain particle size, grain processing and the moisture content. Furthermore, the harvest maturity, the duration of silo fermentation and the corn endosperm type can also influence starch digestibility.

Lab analysis for Starch

- 1. NIR spectroscopy:** This test relies on near-infrared light absorption by molecular vibrations of the sample. Accurate results can be achieved with the proper calibration of each feed ingredient, but results may vary based on the sample matrix, mix feed, TMR, silages, etc.
- 2. Microplate reader/spectrophotometer:**



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This process involves the physical and chemical manipulation of a sample to extract or identify specific components. When performed correctly, this assessment is highly accurate and precise and is suitable for every type of feed, including both individual ingredients and mixed feed.

The starch content of feed stuffs in India

Agronomic practices across India vary according to geography, and as a result, the quality and nutritional parameters of various ag commodities can vary as well.

Feedstuffs	Lowest (%)	Highest (%)	Mean (%)	**Range (%)
Corn grain (n=27)*	45.85	71.87	60.67	>65 – 75%
Cattle Feed (n=94)*	12.24	40.56	24.34	Min. >20%
Corn Silage (n=53)*	1.51	39.56	16.48	>25% - 45%
TMR / dairy rations (n=27)*	14.03	25.37	18.98	22% - 30%

*Source- Alltech's IFM Lab

Feed millers across India choose the region from which they will purchase corn grains based mainly on price parity. As a result, the quality of the corn is generally uniform across all regions, resulting in a similar starch quality. The starch content, however, is generally around 60%, which falls short of the ideal book value of 65%.

The starch content of corn silage affects its energy content, with the lowest starch levels reported in samples from East India and the highest in samples from Punjab in North India. Consequently, the net energy for lactation (NeL) of corn silage from North India is higher than that from other regions of India. To address this deficiency, farmers and feed millers must supplement with additional corn grain.

Fecal/dung starch content

Fecal starch analysis can be a valuable indicator of starch digestion efficiency in cows, offering insights into dietary management and digestive health.

The fecal starch concentration (FS) has been proven to be an accurate indicator of total-tract starch digestion (TTSD) by dairy cattle. FS has also been used to assess how effectively grain is processed. Monitoring fecal starch levels is a practical way to assess how effectively dietary starch is utilized within the rumen. High fecal starch concentrations suggest incomplete

ruminal fermentation and poor starch digestibility, which can lead to suboptimal nutrient utilization and metabolic disturbances. Conversely, low fecal starch levels indicate efficient starch breakdown and absorption in the rumen, contributing to improved feed efficiency and overall animal performance.

Fecal starch concentrations below 1% may suggest highly efficient starch utilization, but they can also indicate potential issues with underfeeding starch or excessive rumen fermentation of other substrates. Conversely, fecal starch concentrations exceeding 3% may indicate suboptimal starch digestion, which could potentially lead to nutrient wastage, metabolic disturbances or digestive disorders.

Summary

- When balancing rations for starch, 20–30% is an acceptable range in lactating cow diets on a DM basis (Grant, 2019).
- High starch in feed can lead to acidosis and hamper milk production.
- Low starch in feed can result in a low availability of energy, and microbial growth in the rumen may also be affected.
- Samples of grain, silage and/or TMR should be analyzed periodically. Alltech's IFM lab offers accurate starch analyses via a microplate reader/spectrophotometer.
- Amaize® is an enzymatic supplement from Alltech that is designed to increase the use of grain starch and provide slow glucose release from starch, promoting butyrate, which is an important energy source for cows.

Redefining dairy nutrition through Alltech IFM®

Alltech IFM® is an in-vitro fermentation model for dairy cows made possible in India through a strategic alliance with Bangalore Veterinary College at Karnataka Veterinary Animal & Fisheries Sciences University (KVAFSU). This diagnostic tool simulates rumen fermentation and evaluates the nutritive value of a total mixed ration (TMR), compound feed and/or fodder in terms of its digestibility and end-product formation. IFM helps nutritionists evaluate and troubleshoot their dairy rations to maximize their feed efficiency and combat ever-rising feed costs. Evaluating complete feeds gives producers an advantage, as it allows them to closely simulate animal feedings to evaluate the associative effects of various ingredients within a ration.



"Unique Animal Genetic Resources of the Himalayan Region: Biodiversity Treasure of Uttarakhand"

Introduction

The Himalayan region of India is home to a diverse range of livestock species. Despite their large numbers, these animals generally have low productivity. Nevertheless, they are economically significant, supporting the livelihoods of nearly 80% of rural households, either partially or entirely, particularly among tribal and nomadic communities who rely exclusively on livestock.

Livestock production in the Himalayas is primarily undertaken by smallholders, including marginal, small, and landless farmers. These activities occur in millions of small and scattered holdings throughout the region. The predominant farming system is mixed crop-livestock farming, which is irrigated in the plains and rain-fed in the hills. Livestock farming provides year-round employment to a large portion of the population. The region's livestock includes cattle (30-47%), buffaloes (8-12%), goats (16-36%), and sheep (10-22%). In the Western and Central Himalayas, cattle, goats, and sheep are significant, while in the Eastern Himalayas, pigs and poultry are more common. Alpine zones feature ovine species and yaks. Equines are essential for transportation, especially for resource-poor farmers with limited access to other transportation means.

Individual livestock holdings are typically small, consisting of two or three animals of mixed species, commonly including cattle or buffalo and goats. Cattle are primarily raised for milk production in the plains and as work animals and milk providers in the hills. Sheep are kept in larger flocks of 10-15 animals, occasionally alongside goats, except among tribal and nomadic groups, where flocks can range from 100 to 1,000 animals. These larger flocks are often migratory, grazing in alpine pastures during the summer. Goats are valued for additional income, as a safety net against disasters, and for ceremonial purposes and social obligations.

Despite livestock's substantial contribution to the rural economy, many isolated livestock populations remain under-documented in terms of genetic diversity and production potential within their breeding areas. Animal husbandry holds significant potential in this region due to the large proportion of indigenous animals and birds, which, although often non-descript, are maintained in pure form. Meat-producing animals and birds are integral to the average family diet, as meat is an important food component, and small meaty animals and birds can be sold to meet emergency needs.

Over the past four decades, considerable efforts have been

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made in livestock research and development in the Himalayan regions of India. Policies have focused on issues related to animal breeding, feed, and health. However, innovations have primarily addressed technical and scientific problems, neglecting many interconnected socioeconomic and biophysical factors, particularly those unique to mountainous areas. Development efforts have aimed to improve animal breeds to boost incomes and living standards for mountain farmers.

Animal Genetic Resources in Uttarakhand

Uttarakhand boasts a rich genetic diversity in livestock, encompassing numerous domesticated species and various breeds, including non-descript populations. The following outlines the primary breeds by species of livestock in Uttarakhand:

Cattle

Breeds such as Sahiwal, Red Sindhi, and Hariana are maintained by a few institutional herds and private owners, predominantly found in the Haridwar, U.S. Nagar, Dehradun, and Nainital districts. A potential population, Jwalapuri, is mainly seen in Haridwar. Additionally, crossbreeds like Jersey, Holstein

Friesian, and Red Dane are widespread across the state, especially in U.S. Nagar, Dehradun, Haridwar, and Nainital. The hill cattle, non-descript and reared for milk, bullock power, and manure, are common in hilly areas and are distinguished by their black, red, or white colors. The red-colored small footed cattle are particularly known as the Badri breed in the Garhwal region, yielding 1.0-3.0 kg of milk per day.

Buffalo

Murrah and Murrah-grade buffaloes are prominent in the state, especially in the plains of U.S. Nagar, Haridwar, and Dehradun. The Tarai buffalo, native to Uttarakhand, is found in the Tarai and Bhabar areas of Nainital, U.S. Nagar, and Champawat districts. In the hilly regions, non-descript buffaloes are prevalent, with many being Murrah and Tarai graded.

Sheep

Most sheep in Uttarakhand are non-descript, but breeds like Gaddi and Rampur Bushair, originating from Himachal Pradesh, are found in high-altitude areas of Nainital, Tehri Garhwal, Chamoli, and Uttarkashi districts. Muzzafarnagari sheep are present in Haridwar, U.S. Nagar, and the plains of Dehradun.

The black sheep of Garhwal are well-regarded, producing medium-quality dense fleece, while their legs, belly, and face remain wool-free.

Goats

Goats in Uttarakhand villages are mostly non-descript, with limited data on their specific breeds, breeding tracts, and distribution. However, some potential populations are:

- **Chalagarkha:** Found in Almora and neighboring areas, this small breed is reared for meat. They have a lean body and come in black, fawn, and white colors. They typically kid once a year, producing one or two kids, and their meat is coarse and low in fat.
- **Udaipuri:** Located in Pauri and surrounding areas, this tan-colored breed is small and reared for meat, also kidding once a year with one or two kids.
- **Tarai:** These goats are a mix of Black Bengal, Barbari, and Jamunapari types, adapted to the high rainfall and hot, humid climate of the Tarai region. They are small to medium in size and valued for both meat and milk, producing 1-1.5 kg of milk.



- **Gaddi (White Himalaya):** This medium-sized breed, found in Dehradun, Nainital, Tehri Garhwal, and Chamoli, primarily has a white coat, with some black and brown variations. Both sexes have large, sometimes twisted horns. They kid mostly single, with twinning in 15-20% of births, and produce 300-500 gm of milk and 300 gm of fleece per clip.
- **Chegu (Pashmina):** Found in Uttarkashi, Chamoli, and Pithoragarh, these medium-sized goats usually have a white coat mixed with grayish red. Similar in conformation to Changthangi goats, they kid mostly single, with an annual pashmina production of 120 gm.

Despite the significant contribution of livestock to the rural economy, many livestock populations in isolated locations remain under-documented in terms of genetic diversity and production potential. There are good prospects for animal husbandry in this region, given the high proportion of indigenous animals and birds, which, though non-descript, play a crucial role in meat production and can be sold to meet emergency needs. Over the past four decades, substantial efforts in livestock research and development have

focused on animal breeding, feeding, and health, but these efforts have often overlooked the unique socioeconomic and biophysical characteristics of the mountainous regions.

Horses/Ponies

The genetic variation in horses and ponies is not well-documented despite noticeable differences in their phenotypic traits. Most of these populations are non-descript and require comprehensive surveys for proper description and evaluation.

Pigs

Pigs in Uttarakhand exhibit considerable variation in size, color, and performance. Predominantly non-descript populations are found in the U.S. Nagar and Haridwar districts, though some improved breeds are also present. These populations need to be evaluated for their unique traits, with steps taken for their conservation and improvement.

Yak

The yak, a unique bovine species, holds significant economic and cultural importance for the tribal populations in the Himalayan regions. In Uttarakhand, there are total 2.36 lakh yaks/dog/rabbit populations (20th livestock census, 2019) located in the Pithoragarh

(Kumaon) and Uttarkashi (Garhwal) districts. Yaks are utilized for milk, meat, and draft purposes.

Poultry

Various poultry species, including chickens, ducks, guinea fowl, and quail, contribute significantly to the human food chain and family income. These species exhibit large genetic variation, which needs to be identified for improvement and conservation. Differences in body size, conformation, and color patterns among these birds should be thoroughly described and evaluated using both phenotypic traits and DNA profiles.

Additionally, these populations should be studied for unique traits related to disease resistance and their ability to survive under harsh climatic conditions.

In conclusion, the genetic diversity among livestock and poultry in Uttarakhand holds significant potential for agricultural development and conservation efforts. Comprehensive surveys and evaluations are essential to document and enhance these traits. Improved breeding programs can ensure the preservation and improvement of these valuable genetic resources. Such efforts will not only support local livelihoods but also contribute to the region's overall economic sustainability.





Precision Feeding Concept for Ruminants

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Precision animal nutrition is defined as providing the animal with feed that precisely meets its nutritional requirements for optimum productivity efficiency to produce better quality animal products (milk, meat and eggs) and to contribute cleaner environment and thereby ensure profitability. A cleaner environment means reducing the enteric methane emission, excretion of nitrogen (ammonia), phosphorus and other compounds into the environment. It is aimed at supplying nutrients to the animals matching their requirement to improve not only the animal physiology and health but also the enrichment of their products for the well-being of the consumer (Reddy and Krishna, 2009). This approach aims to improve efficiency, reduce waste, enhance animal performance and minimize environmental impact. Precision feeding often involves the use of advanced technologies, data analytics and management practices.

Key aspects of precision feeding in animals

Nutrient Requirements

Determine the specific nutrient requirements of different groups of animals based on factors such as age, weight, growth stage, production purpose (e.g., milk production, meat production), and reproductive status.

Feed Formulation

Develop customized feed formulations that precisely match the nutrient requirements of the animals being fed.

Utilize software and modeling tools to optimize feed formulations.

Precision Feeding Technologies

Employ technologies such as automated feeding systems, precision feeding equipment, and sensors to measure and control feed intake.

Use electronic identification systems to monitor individual animals and adjust feeding programs accordingly.

Real-Time Monitoring

Implement real-time monitoring systems to track animal performance, health status and feed intake.

Use data analytics to make informed decisions about feed adjustments.

Precision Feeding for Special Groups

Tailor feeding programs for specific groups, such as high-producing dairy cows, growing animals, or animals with special dietary needs.

Consider the nutritional requirements of pregnant and lactating animals separately.

Precision Feeding for Environmental Impact

Develop feeding strategies that minimize the environmental impact of animal production,

such as reducing nutrient excretion and greenhouse gas emissions.

Optimize nutrient utilization to minimize waste and improve efficiency.

Feed Efficiency

Focus on improving feed efficiency by matching nutrient supply to the animal's physiological requirements.

Monitor and manage feed conversion ratios to ensure optimal utilization of feed resources.

Health Management

Consider the impact of nutrition on animal health and disease resistance.

Implement precision feeding as part of an overall health management program.

Economic Considerations

Evaluate the economic aspects of precision feeding, considering the cost-effectiveness of feed formulations and the potential for improved production efficiency.

Training and Record-Keeping

Train personnel on precision feeding practices and technologies.

Maintain accurate records of individual animal performance, feed consumption and health parameters.

Precision feeding is an evolving field that integrates technology and scientific knowledge to optimize animal nutrition and production. By implementing precision feeding practices, farmers and producers can enhance the overall efficiency, sustainability and profitability of their livestock operations.

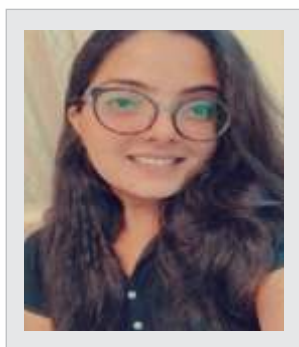
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Care and Management of Buffaloes During Post Flood Situation



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Introduction

Flood is the overflow of area that are not normally submerged with water or a stream that has broken its normal confines or has accumulated due to lack of drainage.

Flood is a type of disaster which means any type of calamities that occurs from natural or man made reasons which cannot be stopped or tracked immediately. Flood, in simple words mean a condition of over flowing of water. The common causes are overflowing of rivers, broken dams, urban drainage basins, tsunamis, deforestation, melting of

snows and ices etc. In India the flood prone areas are the indo gangatic plains in the north and north east india. Assam accounts for 9.40% of total flood prone area of the country.

During flood disaster human life as well as animal life can be saved by efficient planning and effective execution, well preparedness and controlled management during and after the flood.

Mitigation

It is the defined as a measures taken to prevent long term risk to life from disaster.

Building animal houses on



(credit: google)

high ground area , immunization of animals by vaccination , keeping the contact with nearby NGO's , contact numbers of veterinarians.

Preparedness

In this making plans ready as where to go and when to go , how to manage transport of animal because of their size and whom to call to help you out in moving to safer place before flood occurs.

Emigration

Emigration of animals from flood prone area is the best way to protect their lives.

For them especially designed motor boats on uplands or roads can be used. Animal should be left open when the prediction of flood is there to prevent them from drowning.

Feeding

Feeding of livestock during flood is most challenging and difficult part for farmers as their grazing lands are all submerged in the water. Lack of nutrition predispose animal to infectious diseases.

Alternative feeds can be used for animals includes Peepal, Bargad , Sheesham, Neem , Babool etc.

These feeds can be given along with bhusa/ paddy straw. During flood water hyacinth can be used to save the life of an animals.

Setting up of Fodder Banks at least one at Block and Panchayat level for storage of dry and green fodders in hay and silage forms respectively in order to make available for feeding of the farmers animals during flood.

Fodder can be preserved in the form of hay and silage. Maize and Jowar are suitable

molasses blocks, urea treated straw, complete feed blocks can be fed to animals to maintain their nutritional requirements . They can be stored in fodder banks.

Animal can survive without feed for many days but cannot survive without water for more that 2-3 days. Make ensure clean and chlorinated



(credit: google)

crops for silage making. Berseem Lucerne and Cowpea are suitable leguminous crops for hay making .

Growing certain trees on the river banks which provide shelter to man and animals also, they can get protection from soil erosions and barriers from flood water.

Main attention should be given during flood situation to sucking animals , working animals, old aged animals.

In flood situations urea

water is given to the animals

Diseases which can occur during or after flood

Flood causes wide range of health issues and diseases in animals like suffocate in water , injuries, poisoning , respiratory infections, gastroenteritis , many communicable diseases, many vector borne and water borne diseases.

Floods transport bacteria, parasites, and viruses into the clean drinking water system thus leading to an outbreak

of water borne diseases.

Leptospirosis is one the major water borne and zoonotic disease that is caused by *Leptospira* species which spreads through contaminated water. Logging of water during flood, forces rodents from their burrows into built environment and closer to human animal population, thus increasing the risk of infectious rodent-borne disease outbreak such as leptospirosis. Rodents shed these organisms in their urine.

Chances of vector borne diseases also increases during flood as these water provide bed for the proliferation of these arthropods vectors. These diseases include Rift Valley fever, West Nile fever, Malaria.

Apart from these there are many disease whose incidence increases during the flood like Clostridial diseases, Haemorrhagic septicaemia, Anthrax etc.

Therefore it is very important to follow proper vaccination schedule to fight against infectious diseases in animals.

Vaccination

Vaccination of prone animals to infectious diseases is the efficient method to fight

against these infectious disease.

Vaccination programs should be done before the monsoon season in order to prevent the infectious diseases that flood waters may spread.

Animal owners should be advised to get their animals vaccinated against the prevalent diseases before the onset of monsoon i.e. May-June.

Emergency drugs

Animal owners should keep some drugs with themselves to treat some infections during flood situation. Drugs include Antidiarrhoeal (Cefox-TZ, Neblon powder, etc.) Antiseptic lotion (Betadine, Himax cream, Topicure spray etc.), Anthelmintics (Fasinex, Distodin, Anthomaline, etc.), Antibiotics (Sulphadruugs, Penicillin, Oxyteracycline, etc.), Analgesic, Liver tonics, Avil, etc., for emergency situation during flood.

Carcass disposal

Disposal of carcass poses an acute problem in flood prone area. It causes serious diseases in healthy animals and humans. Therefore proper disposal of carcass should be attempted making sure without any contamination to avoid any

outbreak of epidemics.

Burial is preferred disposal method in flood affected area because it is a quicker, cheaper, environmentally cleaner, easiest to organize and most convenient for disposal of large numbers of livestock .

Conclusion

During flood disaster human life as well as animal life can be saved by efficient planning and cautions execution, well preparedness in advance and wiseful management during and after the flood.

The losses due to flood disaster can be minimised by awareness and proper training of farmers, establishment of fodder bank at least up to block level, periodical vaccination and deworming of animals, information of flood and how to safeguard their animals should be broadcasted regularly on televisions, radio and also through newspapers, leaflets etc. Proper planning as well as coordination among NGOs, trained veterinary personnel and others who can provide emergency Veterinary services so that Veterinary aid can be reached in flood affected areas within minimum period of time.



Feeding Management of Dairy Animals During Monsoon Season

Introduction

In India, the monsoon or rainy season starts from June to September and by the first week of July the entire country experiences monsoon rain, on average south India receives more rainfall than north India along with most precipitation in northeast India. However, this period also brings with it a number of difficulties for dairy production, such as problems with water, bacterial and viral infections, and general management concerns.

Dairy animals, just like humans need extra attention during the monsoon season to stay healthy and productive. During this season, the health and productivity of dairy animals may be negatively impacted by heavy rainfall, high humidity, and temperature fluctuations. Effective feeding management during the monsoon is crucial to maintaining the well-being of the animals and ensuring consistent milk production. During the monsoon season, different challenges arise for dairy animals, rainwater can mix with mud and contaminants and cause gastrointestinal disease. Ticks and flies increase in humid conditions, causing anaemia. Worm infestations,

such as liver fluke and roundworms, are common during monsoon.

Feeding habit during monsoon season

Farmers need to follow scientific feeding and management practices to maintain milk production. While giving green fodder in plenty during rainy season, in order to reduce the chances of diarrhoea, it can be mixed with straw or can be allowed to dry in sunlight for 2-3 hours. Chances of aflatoxicosis can be reduced by avoiding moist feeds or oil cakes, which are the potential sources of fungal toxins. Avoid letting animals graze on rain-soaked pastures as the grass may have high moisture and fibre content, leading to digestive issues and nutrient deficiencies. Add mineral mixtures to the feed to maintain nutrient balance. Store feed in dry, hygienic places to prevent mould formation and mouldy feed can be harmful if consumed by dairy animals. To prevent the scarcity of fodder, farmers can prepare unconventional feed like hay and silage. Along with these they can also use mineral blocks like urea molasses mineral blocks (UMMB) to fulfil the mineral requirement of animals. Livestock may refuse to



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(Source: www.google.com)



consume forages in areas that have been contaminated by rainy water because of palatability problem. The animals should also be frequently observed for signs of distress. Young, growing animals may be most susceptible to nutritional disturbances. Abruptly changing cattle diets can result in bloat or other nutritional disorders that threaten livestock health. Trees are often downed as a result of heavy rain. Sudden drop of the trees can damage the livestock directly or indirectly. Many trees like buckeye (horse

chestnut), wild cherry (black cherry) and oak, can also cause potential livestock disorders if their leaves or nuts are consumed. So, animals should be prevented from consumption of such things.



(Source: www.google.com)

Conclusion

During the monsoon season, dairy cattle face significant health challenges due to increased humidity and fluctuating temperatures. High moisture content contaminates water, which increases the proliferation of pathogenic microbes and causes gastrointestinal disorder. Ectoparasites and endoparasites thrive in these conditions, therefore regular deworming is necessary and the use of ectoparasiticides to prevent anaemia. Proper housing management is essential. Excessive moisture can cause feed quality to decline, therefore it's critical to store feed correctly and keep it dry. Maintaining cow productivity during the monsoon season and preventing infectious illnesses need timely vaccines and routine health monitoring.



Optimizing Summer Management Practices for Dairy Animals: Ensuring Health and Productivity in Hot Weather

Introduction

Summer poses unique challenges for dairy farmers, as high temperatures and humidity can significantly impact the health and productivity of dairy animals. Heat stress, reduced feed intake, and decreased milk production are common concerns during the warmer months. However, with proper management practices, farmers can mitigate these challenges and ensure the well-being of their dairy herd.

• Understanding Heat Stress:

Heat stress occurs when dairy animals are unable to regulate their body temperature effectively, leading to physiological and metabolic changes that can negatively impact their health and performance. Cows are particularly susceptible to heat stress due to their large body size, thick coats, and limited capacity for evaporative cooling.

As temperatures soar during the summer season, it becomes imperative for dairy farmers to implement optimal management practices to safeguard the health, comfort, and productivity of their animals. Heat stress poses significant challenges for dairy cows, resulting in decreased feed intake, lowered milk production, and heightened susceptibility to health issues. Implementing effective summer management strategies is pivotal in ensuring the overall well-being and performance of dairy animals.

Some managemental strategies include

1. Heat Abatement:

Effective heat abatement measures are indispensable for mitigating the adverse effects of high temperatures on dairy animals. Providing ample access to shade, whether through natural foliage or artificial structures like shades or barns, is essential. Adequate ventilation in barns or shelters facilitates air circulation, thus reducing heat buildup. Installing fans or misting systems further aids in cooling the animals and alleviating heat stress.

2. Water Management:

Maintaining proper hydration levels is paramount for dairy animals during hot weather. Ensuring a consistent supply of clean, cool water is available at all times is crucial. Regular monitoring of water sources prevents contamination or algae growth, which could deter animals from drinking. Installing additional water troughs or automatic waterers accommodates the increased water intake required during summer. Placing water sources near shaded areas and feed sources encourages water consumption.

3. Nutrition:

Adapting the nutritional management of dairy animals during summer is vital to support their heightened energy requirements and sustain productivity. Offering high-quality forages such as



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fresh pasture, alfalfa, or grass hay supplements the diet effectively. Feeding smaller, more frequent meals aids in reducing heat production during digestion. While supplemental feed may be necessary to meet energy demands, caution must be exercised to prevent digestive issues stemming from overfeeding.

4. **Fly Control:**

The presence of flies and other pests during summer can induce irritation and stress among dairy animals. Implementing robust fly control measures is imperative for maintaining animal comfort and curbing disease transmission. Employing fly traps, predators, or insecticides reduces fly populations around barns and pastures. Regular manure management, including proper storage and removal, helps diminish fly breeding sites.

5. **Grazing Management:**

For dairy operations employing pasture grazing, meticulous grazing management is essential during summer. Regular pasture rotation prevents overgrazing and allows for grass rest and regrowth. Avoiding grazing animals during the hottest times of the day and ensuring access to shaded areas or shelter is crucial. Supplementing pasture with stored forages or concentrates guarantees adequate nutrition during periods of diminished pasture quality.

6. **Hoof and Skin Care:**

The heightened exposure to moisture and muddy

conditions during summer can predispose dairy animals to hoof and skin issues.

Implementing routine hoof trimming and maintenance prevents ailments such as hoof rot or abscesses. Providing clean, dry bedding minimizes the risk of skin infections or dermatitis. Utilizing fly repellents or topical treatments safeguards against insect bites and skin irritation.

7. **Monitoring and Health Management:**

Regular monitoring of dairy animals' health and behaviour during summer is indispensable for early detection of heat stress or other health concerns. Scheduled veterinary check-ups and vaccinations prevent disease outbreaks and uphold herd health. Implementing a heat stress management plan, inclusive of monitoring body temperature and respiratory rate, facilitates the prompt identification and mitigation of heat stress in individual animals.

Conclusion:

Effective summer management practices are essential for maintaining the health, comfort, and productivity of dairy animals during the warmer months. By providing adequate shade, optimizing ventilation, ensuring access to fresh water, adjusting feeding practices, implementing cooling systems, monitoring health and behaviour, managing grazing and pasture, and controlling insect pests, farmers can mitigate the effects of heat stress and promote optimal performance in their dairy herd. Through proactive management and attention to detail, dairy farmers can ensure the

well-being of their animals and sustain a successful dairy operation year-round.

Successful summer management of dairy animals necessitates meticulous planning, attention to detail, and proactive measures to mitigate the challenges posed by hot weather. By implementing comprehensive measures encompassing heat abatement, water management, nutrition, and pest control, dairy farmers can ensure the health, welfare, and productivity of their animals while fostering long-term sustainability and success in their operations. Summer management practices are vital resources for dairy farmers striving to optimize their operations amidst challenging seasonal conditions.

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NOVUS new Global Headquarters is Focused on the Future

CHESTERFIELD, MO (June 11, 2024) – Novus International, Inc., is focusing on research, new product development, and innovation in a new place to call home in the United States. The intelligent nutrition company recently moved its global headquarters in Missouri.

"America's heartland has been home to our global headquarters since our founding in 1991. It was important for us to stay in Missouri and remain centrally located to our customers throughout the U.S.," says Dan Meagher, NOVUS president and CEO. "While the new building is perfect for today's NOVUS, the improvements we've made in the new lab at HQ are helping us plan for the animal agriculture industry of tomorrow."

Located at 17988 Edison

Ave., in a suburb of St. Louis, the already existing building was redesigned with the future in mind.

"The new space is more focused on R&D and efficiency to help further our commitment to innovation," says Paula Fisher, manager of analytical services and R&D at NOVUS. "It's a space that truly provides us the opportunity to develop and formulate intelligent, next-generation solutions to support the ever-changing landscape of our customers in the animal agriculture industry."

From the new lab, the NOVUS team performs organic chemistry and biochemistry, analyzes feed formulations and raw feed ingredients, as well as process and manufacturing chemistry and microbiology.

Deana Hancock, Ph.D., director of global applied research and technology scouting, says the science and analysis conducted at NOVUS headquarters supports both the customers and the wider animal agriculture industry.

"Our Open Innovation approach helps us address new customer challenges by looking beyond our own capabilities," she says. "We find and review developing ideas and products along with technologies already in development to identify collaborative opportunities. We also partner with industry leaders in the field and at research centers around the world to explore up-and-coming technologies even outside of the feed additive sector. Through this approach, we can develop products and services for multi-species

and different regions.”

Hancock says the in-house lab allows NOVUS to work in lockstep with external partners to achieve the company’s goal of creating products that address animal health, well-being, and performance through intelligent nutrition.

Along with innovation in the lab, the new office is also a reflection of today’s workspace environment.

“The former headquarters served us well, but today’s work environment requires flexibility to enhance the employee experience,” says Global Director of Human Resources Evelyn Mendes. “Since 2020 NOVUS has fostered greater collaboration among employees with hybrid offices that are more suitable for on-site, partially remote, and fully remote work.”

Along with the labs, the building houses members of the company’s Executive Leadership Team, legal and regulatory, finance, human resources, operations, supply chain, and logistics.

Hot desks throughout the building offer work spaces for employees to use as needed and there’s a variety of space to support internal collaboration and meetings with customers.

“NOVUS embraced the hybrid work model prior to 2020, empowering our employees with greater autonomy to do their best work wherever they are most productive. We also recognized the fiscal and environmental benefits of optimizing the usage of our office space,” Mendes says.

NOVUS has also filed for a one-time rebate from energy company Ameren for energy conscientious lighting, HVAC system, and

laboratory ventilation system.

The project was executed by Gray Design Group in partnership with HERA laboratory planners to design the lab space. Both companies are located in St. Louis, MO.

NOVUS is the intelligent nutrition company providing solutions for the global animal agriculture industry. The company’s portfolio includes bis-chelated organic trace minerals, enzymes, organic acids, essential oils, liquid and dry methionine, as well as a network of experts around the world to provide guidance on management best practices.



For more information on how NOVUS is using innovation to help poultry, pork and dairy producers do more, visit novusint.com.

Training programme on Skill Development and Entrepreneurship in Manufacturing of Value-Added Milk Products



The Division of Animal, Poultry, and Fisheries at ICAR-Indian Agricultural Research Institute, Assam, organized a training programme on Skill Development and Entrepreneurship in the Manufacturing of Value-Added Milk Products on 30th-31st 2024.

The Chief Guest, Dr. C. Viswanathan, Joint Director (Research), ICAR-IARI, emphasized entrepreneurship through manufacturing quality milk and milk products and he



also emphasised developing skills in manufacturing the products.

Dr. Amjad K. Balange, HoD, Division of APF, ICAR-IARI, Assam, emphasized the scope of entrepreneurship in the dairy sector.

Dr. Lohit K. Baishya, Scientist In-charge, and Head, NRM, ICAR-IARI, Assam briefed

about the main objectives and importance of the training programme to the participants. He also released a training manual for the participants during the programme.

About 20 farmers from Dhemaji and Lakimpur districts participated in the programme.



Names of the Elected Members to the Veterinary Council of India Declared Today



Justice (Ms) Asha Menon (Retd), Court Commissioner and Returning Officer has declared the names of the elected members to the Veterinary Council of India today. In exercise of the powers conferred by Section 3 (3) and Section 64 of the Indian Veterinary Council Act, 1984 (52 of 1984), read with sub-rule (3) of Rule 15 of the Indian Veterinary Council Rules, 1985, the election to the 11 members in the Veterinary

Council of India was held on 08.06.2024.

The election was held through e-voting portal (<https://evotevci.dahd.gov.in>) specially developed for the purpose by National Informatics Centre (NIC) of the Department. The voting for the members of the Veterinary Council of India was held on 08.06.2024.

Over 36,000 registered veterinary practitioners could exercise their voting rights using

the portal and have appreciated the initiative of the Department of Animal Husbandry and Dairying in developing a user friendly portal enabling maximum number of voters without any hassle.

The Department of Animal Husbandry and Dairying conducts elections once in three years to elect eleven members to the Council. The Council also constitutes nominated members.

Department of Animal Husbandry and Dairying signed an agreement with the National Dairy Development Board for execution of works of Upgradation of Biocontainment Facility and associated repair works

Department of Animal Husbandry and Dairying (DAHD), Ministry of Fisheries Animal Husbandry and Dairying has signed an agreement yesterday in the presence of the Secretary, Ms. Alka Upadhyaya with the National Dairy Development Board (NDDB) for execution of works of "Upgradation of Biocontainment Facility and associated repair works at Chaudhary Charan Singh National Institute of Animal

Health (CCSNAIH)", Baghpat. The estimated budgetary overlay for the said works is Rs. 160 Crores and is planned to be executed within 20 months. Senior officers of the Department, CCSNIAH, Baghpat and National Dairy Development Board were present on the occasion.

CCSNIAH, Baghpat, an apex laboratory under the aegis of the Department is a national facility for quality assessment

of veterinary vaccines and diagnostics to be used in India. The bio-containment facility of the Institute was commissioned in 2010 and the Institute has been recognized as Central Drugs Laboratory by Ministry of Health and Family Welfare, Govt of India for undertaking the Quality Control Testing of Veterinary Biologicals HS (Haemorrhagic Septicaemia) and RD (Ranikhet Disease). Besides its regulatory role,



the institute has been entrusted with responsibility for QC testing of FMD, Brucella, PPR and CSF vaccines under LH&DC program.

In view of the changing technology and safety standards, it is mandatory to comply with guidelines and obtain certification from the Department of Biotechnology, Ministry of Science and Technology, Govt. of India for operating such facilities. Thus, it is planned to upgrade the facility to meet the challenges of livestock health and fulfill the standards of bio-safety and bio-security set by various national and international organization.

With the proposed works of Upgradation of Bio-containment Facility at the premier institute, the Department has set a target for transformation of the facility to achieve multifaceted objectives viz., veterinary services at national and international level, quality control testing of veterinary biological, refinement of quality control protocols in terms of vaccine efficacy and safety, assistance in livestock health programs, Research and Development in the field of livestock health prophylaxis and diagnosis and serve as a platform for

national and international collaboration. Further, the Institute would have a state of the art Animal House Containment Facility, which would act as a platform for contract and collaborative research in field of therapeutics and vaccine research.

Through implementation of the proposed works, the Department foresees following advantage in terms of enhanced mandate and capability:

Compliance with the latest guidelines of the Department of Biotechnology for laboratory certification and validation and complete CDL status from the DCGI.

CCSNIAH, Baghpat as the only Institute in the country with capability for experimentation with large and small animal under containment.

State of preparedness for the emerging challenges in the field of Livestock Health (Eg. Lumpy Skin Disease; Avian Influenza, Glanders Disease, etc.)

Enhanced capability of the institute for self sustenance with revamped revenue generation model through vaccine testing, animal experimentation, training & capacity building and catering to the QC needs of

the governments and non-government agencies.

To serve as the premier institute for "Out-break Investigation and Pandemic Preparedness under the National One Health Mission".

Higher opportunities for national and international collaborations.

Upgradation of Bio-containment Facility and associated repair works at CCSNIAH, Baghpat is awarded to the National Dairy Development Board (NDDB). NDDB is a statutory body under administrative control of the Ministry of Fisheries, Animal Husbandry and Dairying setup by an Act of the Parliament and has a specialized division dedicated to construction and maintenance of bio-containment facilities. NDDB has executed projects of several bio-containment labs and associated infrastructure in livestock health sector across the country in recent years in ICAR-National Institute of Foot & Mouth Disease, Bhubaneswar, ICAR-National Institute of High Security Animal Disease Facility, Bhopal, Laboratory & Animal Testing Unit, TANUVAS, ICAR-National Institute of Veterinary Epidemiology & Disease Informatics, Bengaluru, vaccine-manufacturing units, etc.

Union Minister Shri Rajiv Ranjan Singh inaugurates a comprehensive workshop to strategize and empower the States and Union Territories for preparation of 21st Livestock Census

Union Minister of Fisheries, Animal Husbandry and Dairying, Shri Rajiv Ranjan Singh alias Lalan Singh inaugurated workshop today to strategize and empower the States and Union Territories (UTs) for preparation of 21st Livestock Census at Vigyan Bhawan, New Delhi. Ministers of State for Fisheries, Animal Husbandry and Dairying, Prof. S. P. Singh Baghel and Shri George Kurian were also present. The mobile application developed for 21st Livestock Data collection also launched by the Union Minister in the workshop.

workshop aimed at ensuring a coordinated and efficient approach to the upcoming census scheduled during September-December 2024.

engage in the training sessions to enhance their understanding and capabilities.

Shri George Kurian emphasized the integration of sustainable practices within the livestock sector. He pointed out that the census data would contribute to the National Indicator Framework of Sustainable Development Goals, thereby aligning with broader national and global sustainability



targets.

Ms. Alka Upadhyaya, Secretary, Department of Animal Husbandry & Dairying highlighted the importance of this workshop in her address, underscoring the department's commitment to leveraging technology for accurate and efficient data collection. She emphasized the collective responsibility of all stakeholders to ensure the success of the 21st Livestock Census, which will play a critical role in shaping the future

Union Minister Shri Rajiv Ranjan Singh underscored the importance of the livestock sector to India's economy and food security. He called for meticulous planning and execution of the census, stressing that the data gathered would play a crucial role in shaping future initiatives and addressing challenges in the sector. Union Minister informed that the

Prof. S.P. Singh Baghel addressed the workshop and highlighted the need for comprehensive training and capacity building at the grassroots level. He acknowledged the efforts of the department in organizing such a strategic workshop and encouraged the participants to actively





policies and programs of the Animal Husbandry sector and urged them to leverage the latest technologies to ensure the success of the census.

The workshop included detailed sessions on the methodologies and guidelines for the 21st Livestock Census, training on the mobile application and dashboard software, and an open house discussion for addressing queries and concerns.

The Department of Animal Husbandry & Dairying, Ministry of Fisheries, Animal Husbandry & Dairying conducted a comprehensive workshop to strategize and empower the States and Union Territories (UTs) for preparation of 21st Livestock Census. The workshop featured a series of sessions beginning with a brief description of the 21st Livestock Census by the Animal Husbandry Statistics Division,

followed by a detailed presentation from ICAR-National Bureau of Animal Genetic Resources (NBAGR) on the breed details of species to be covered in the census. The importance of accurate breed identification was emphasized, which is crucial for producing precise statistics used in various livestock sector programs and for the National Indicator Framework (NIF) of Sustainable Development Goals (SDG).



Tetra Pak Reveals 20% Greenhouse Gas Emissions Reduction Across Value Chain Since 2019

Lausanne, Switzerland, 5 June 2024 – Tetra Pak today launches its 25th Sustainability Report, which tracks the progress the company has made against its sustainability agenda. It focuses on five interdependent areas: food systems, circularity, climate, nature and social sustainability.

Launching on the United Nations' World Environment Day on 5 June, the company's Sustainability Report FY23 shows a 20% reduction in value chain⁴ GHG emissions and a 47% reduction in GHG emissions across its own operations since 2019. The latter puts Tetra Pak on track to meet its target of net zero GHG emissions in its own operations by 2030⁵ and supports the company's long-term ambition to work together with suppliers, customers and other stakeholders and achieve net-zero GHG emissions across the value chain by 2050.⁶

Another major milestone saw the launch of an aseptic beverage carton featuring a paper-based barrier, reducing its carbon footprint by a third (33%)⁷ and bringing the

company a step closer to developing the world's most sustainable food package.⁸ This world-first was a result of a €100 million investment in packaging research and development in 2023, with the same investment planned annually for the next five to ten years.

Adolfo Orive, President & CEO at Tetra Pak, comments:

"Collaboration across the food industry is ever more important to feed a growing population sustainably. Our global presence and end-to-end solutions give us opportunities every day to collaborate with stakeholders across the value chain, from farmers and food producers, to suppliers, policy makers, consumers and others. We understand the responsibility that comes with this role. We remain committed to playing our part to transform the world's food systems, to ensure they are more secure, resilient and sustainable."

Tetra Pak's Sustainability Report FY23 highlights further company achievements in the past year, and its ongoing initiatives to protect food, people and the

planet. These include:

- **Expanding School Feeding Programmes:** The company helped 64 million children in 49 countries to get access to milk and other nutritious beverages through School Feeding Programmes.
- **Accelerating Recycling:** Amount of carton packages collected and sent for recycling across the world rose by 7% compared to 2022. Additionally, there was a 14% increase in the volume of polyAl⁹ sent for recycling.¹⁰
- **Getting recognition, again, for Leadership in Corporate Transparency and Performance:** For the eighth consecutive year, Tetra Pak was included in the CDP Forests 'A List'. Additionally, the company received an 'A-' rating in Water Security, despite it being the first year of reporting in this area.
- **Actively implementing the UN Guiding Principles on Business and Human Rights.**

dsm-firmenich Presents “Digital Disruptor Award” to Recognize Industry-Leading Technology at 2024 Global Ruminant Days Event

dsm-firmenich, the leading innovator in nutrition, health and beauty, presented a new Digital Disruptor award for game-changing technologies within the beef and dairy sector at this year’s Global Ruminant Day event held on 4th to 6th of June in Vienna, Austria.

At the event, dsm-firmenich brought together over 200 global executives and experts from across the beef and dairy industry to address the most pressing issues ranging from health and reproductive challenges to feed cost optimization, sustainability and promising new precision livestock farming technologies.

Three companies have been nominated for the Digital Disruptor award:

- smaXtec, a revolutionary health system that facilitates preventative health, reproduction and feeding management for dairy cows
- Labby, an AI-enabled optical sensing for raw milk testing
- FarmTrace, a platform that connects on-farm systems,

robots and farm management solutions to provide actionable insights.

smaXtec won this year’s Digital Disruptor award, receiving the most votes from the Global Ruminant Days delegates.

Corinne Bonadei, Head of Precision Services at dsm-firmenich Animal Nutrition & Health said “At dsm-firmenich, we have a long-standing focus on innovation and leading-industry change. The Digital Disruptor Award recognizes those organizations who are spearheading innovation and revolutionizing how the industry improves animal health, welfare and sustainability through advanced digital solutions to improve feed and livestock farming across the globe.”

About smaXtec

smaXtec health management system is revolutionary in its ability to measure temperature and other vital health parameters from inside the reticulum of dairy cows, offering unprecedented insights into their health and well-being. This disruptive technology enables the earliest possible disease

detection (several days prior to clinical signs!) and therefore preventative health management. As a result, farmers achieve consistently high milk yields, reduce antibiotic usage, and significantly increase animal welfare.

About dsm-firmenich

As innovators in nutrition, health, and beauty, dsm-firmenich reinvents, manufactures, and combines vital nutrients, flavors, and fragrances for the world’s growing population to thrive. With our comprehensive range of solutions, with natural and renewable ingredients and renowned science and technology capabilities, we work to create what is essential for life, desirable for consumers, and more sustainable for the planet. dsm-firmenich is a Swiss-Dutch company, listed on the Euronext Amsterdam, with operations in almost 60 countries and revenues of more than €12 billion. With a diverse, worldwide team of nearly 30,000 employees, we bring progress to life™ every day, everywhere, for billions of people.

Danone Opens the Next Chapter of its Renew Strategy Projecting the Company into the Future of Health and Nutrition

Today, Danone is hosting a Capital Market Event where the company will share its mid-term strategy and value creation journey for the 2025-2028 period.

Danone's next chapter will build on the fundamentals the company reestablished over the last 2 years: science and innovation, operational and executional discipline, and proactive portfolio management.

Danone will project itself into the future of Health and Nutrition by:

Gradually pivoting the way it addresses its categories – notably Protein and Gut Health;

Broadening some of its business models, accelerating in Away-from-home and Medical Nutrition;

Further expanding its geographic footprint.

Antoine de Saint-Affrique, Chief Executive Officer, said: "The Danone of today is very different from the Danone of 2 years ago. We now have the right fundamentals in place to turn Danone into a truly science based, consumer and patient centric company, with an even stronger focus on our unique health focused mission. The food industry is at a tipping point: health, and the role food plays in health, will become more critical than ever. I believe this gives

us a head start in what will be a different world, one in which we can play a leading role."

Committed to a long-term value compounding model, Danone aims to consistently deliver attractive returns, and expects, for the 2025-2028 period, like-for-like net sales growth between +3% and +5%, and recurring operating income to grow faster than net sales.

This financial guidance should allow Danone to deliver a structurally double-digit ROIC and progress towards its long-term ambition of €3bn free-cash-flow.



DANONE
ONE PLANET. ONE HEALTH

Promoting Sustainability: IDF Regional Dairy Conference Asia Pacific-2024 Held in Kochi

The Union Ministry of Fisheries, Animal Husbandry and Dairying, National Dairy Development Board (NDDB), and the International Dairy Federation (IDF) organized the first IDF Regional Dairy Conference Asia Pacific-2024 in Kochi. The conference, themed 'Farmer-centric innovations in dairying', aimed to address key issues affecting the dairy sector in the Asia Pacific region and globally. The event featured leaders and experts from the global dairy sector and focused on enhancing productivity, ensuring transparency in milk aggregation, and promoting sustainable practices.

The conference was attended by more than 1,000 delegates and participants from over 20 countries. The Food and Agriculture Organization of the United Nations (FAO) participated in the conference and highlighted its commitment to promoting innovations and sustainable practices in dairy farming. The FAO representative discussed improving dairy value chains, promoting fair trade practices, and enhancing the livelihoods of dairy farmers and their communities. FAO also organized a joint side event with IDF and NDDB to address challenges in dairy production and facilitate collaboration for the sector's sustainable transformation.

India, as the largest producer of milk globally, plays a crucial role in pioneering sustainable dairy

practices. FAO's active participation in the conference demonstrates its dedication to driving innovation and sustainability in the dairy sector. By supporting and collaborating with industry stakeholders, FAO aims to enhance dairy farming practices and ensure a resilient and prosperous future for dairy farmers and their communities in the Asia Pacific region.

Public Health at Risk: Delhi High Court Calls for Dairy Farm Relocation Near Landfills

The Delhi High Court is scrutinizing the compliance of hundreds of dairy farms in Ghazipur and Bhalswa, where two of the city's three landfill sites are located. The court has remarked that there is a need to shift these dairies to an alternate location within the city or on the outskirts due to their proximity to sanitary landfills that cause "undeniable adverse effect on public health." The court also criticized the Delhi government's Animal Husbandry Unit for not taking action against the "rampant violation of laws" by dairy owners.

The Delhi government and Municipal Corporation of Delhi have sought an opportunity from the court until June 30 to take steps to regularize the dairies and ensure they are in compliance with the law. The court will hear the case again on July 12. Dairy farmer Vijay, who has been working to protect his cattle from the sweltering heat, argued that the idea of relocating dairy farms was unreasonable and that the relocation should apply to

every dairy farm, not just those in Ghazipur. He also pointed out that the biogas plant next to his farm, which helped maintain cleanliness and manage cattle waste effectively, has been repurposed as a waste-to-energy plant, leading to solid waste overflowing in open drains around the dairy colony.

The court has reiterated the need to relocate the dairy colonies in Ghazipur and Bhalswa since 2002. The petitioner criticized the lack of proper waste management practices and the lack of segregation and proper disposal of garbage.

The Delhi High Court is scrutinizing the compliance of hundreds of dairy farms in Ghazipur and Bhalswa, where two of the city's three landfill sites are located. The court has remarked that there is a need to shift Ghazipur and Bhalswa dairies to an alternate location within the city or on the outskirts due to their proximity to sanitary landfills that cause "undeniable adverse effect on public health." The court also came down heavily on the Delhi government's Animal Husbandry Unit, observing a "lack of will" in State functionaries to stop the "rampant violation of laws" by dairy owners.

The Delhi government and Municipal Corporation of Delhi have sought an opportunity from the court until June 30 to take steps to regularise the dairies and ensure they are in compliance with the law. The court will hear the case again on July 12. Sunayana Sibal, an animal welfare advocate, emphasized the poor state of affairs in Delhi's nine dairy colonies, including Ghazipur, Shahbad Dairy (Rohini), Jharoda, Bhalswa, Masoodpur, Goela, Madanpur Khadar, Nangli Sakrawati, and Kakrola. A Delhi High Court-appointed court commissioner found egregious

violations of norms, including poor hygienic conditions, overcrowding with very little space for the cattle to move, and poor health of the milch animals.

Vijay, a dairy farmer at Ghazipur, argued that the idea of relocating dairy farms was unreasonable and that the relocation should apply to every dairy farm, not just those established in 1976 when the Ghazipur landfill site did not exist. Mukesh, another dairy farmer, echoed this sentiment, suggesting that the Ghazipur landfill site should either be relocated or transformed into a green hill.

Sibal said the courts have reiterated the need to relocate the dairy colonies in Ghazipur and Bhalswa since 2002. She suggested that it is possible for the government to relocate cattle from the Ghazipur and Bhalswa dairy colonies to the city's outskirts area, such as the Ghogha dairy colony near Narela.

Sid's Farm Secures \$10M in Series A Round to Enhance Manufacturing and Talent Acquisition

D2C dairy brand Sid's Farm has raised \$10 million in Series A funding, co-led by Omnivore and Narotam Sekhsaria Family Office (NSFO). The company, founded in 2016, is a mass premium Hyderabad-based dairy brand serving over 25,000 customers across two cities. It controls the entire value chain of milk and milk products by sourcing directly from farmers and conducting quality testing throughout at every point of production. Sid's Farm started its operations with whole buffalo and cow milk and gradually diversified

into curd, paneer, ghee, butter, dairy beverages, and dairy-based desserts.

Competing with Country Delight and Akshayakalpa Organic, Sid's Farm raised \$12 million as part of a larger Series C round led by A91 Partners in January. The firm plans to use the funds to establish a strong presence in Hyderabad and Bengaluru by enhancing manufacturing capabilities and building a robust team to attract and retain top talent across various functions.

Sid's Farm started operations with whole buffalo and cow milk and gradually diversified into curd, paneer, ghee, butter, dairy beverages, and dairy-based desserts. According to IMARC Group reports, the dairy industry in India reached a size of Rs 16,792 billion in 2023 and is expected to reach Rs 49,953 billion by 2032. Premium dairy brands and products over D2C platforms are expected to lead this growth. Sid's Farm is seen as a key player in this space with its commitment to antibiotic-free, hormone-free, preservative-free milk and milk products.

Kannur Farmer Invests in Donkey Milk Farming for Lucrative Beauty and Health Markets

Yadu Krishnan, a young farmer from Chokli in Kannur, had a brainstorm while successfully maintaining a dairy with 30 cows. Yadu received Rs 50 for a litre of cow's milk, and after discovering that the same amount of donkey's milk would get him a staggering Rs 5,000, he decided to establish a donkey farm as an experiment.

Yadu found it easy to run a cow-based milch farm. Furthermore, he had completed a Livestock Dairy Farm course, which gave him the courage to try his hand at donkey-rearing while also managing the cows. Taking no chances, Yadu chose to get official instruction in donkey raising at farms in Andhra, Karnataka, and Tamil Nadu. After spending eight months studying about donkey farming on these farms, he decided to try his hand at it.

After training at his residence, 'Balakalam' in Olivilam, Chokli, Yadu built a one-acre enclosure with an iron wire fence close to his cow farm to keep the donkeys. He took out a Rs 20 lakh loan to buy 20 donkeys of the native Hillary and Kathewadi breeds from Andhra Pradesh, each costing between Rs 70,000 and Rs 1.2 lakh.

Because each donkey only produces 300-500 mL of milk per day, it is frozen until it reaches 300 litres, at which point it is collected by farms in Tirunelveli. Donkey milk is mostly used to make beauty goods, and several traditional healers in Wayanad and Kozhikode buy it from Yadu.

The gestation time for donkeys is 13 months. While the milk is supplied to the foal for the first two months after birth, farmers may milk the donkey for the following seven months. Both Yadu and his father, Bashin, can milk donkeys.

Donkeys' primary food comprises fresh grass, chaff, wheat, and oil cake. Yadu lets his donkeys graze outside during the day but keeps them in a cage at night. The biggest challenge in donkey-rearing is the lack of treatment facilities if these animals become sick.

Donkeys suffer from the same ailments as horses. They are also vulnerable to TB, which affects

goats. Donkeys are vulnerable to infections and may die suddenly. Yadu now treats his donkeys using self-acquired expertise.

From Boom to Bust: Agritech Startups Struggle with Farmer Trust and Funding

Agriculture startups, such as Indigo Ag Inc., Gro Intelligence, and Farmers Edge Inc., have substantial obstacles in displacing conventional industry giants such as Archer-Daniels-Midland Co. and Cargill Inc. Despite investing billions of dollars and seeking to adapt Silicon Valley's playbook to agriculture, many of these businesses are failing.

Indigo Ag Inc., once a grain trading and transportation platform, has downsized its workforce and activities. The corporation was valued at about \$4 billion in July 2022, but its worth dropped to under \$200 million a year later. Gro Intelligence, which used satellite data and AI to estimate agricultural yields, is closing down owing to financial concerns. Farmers Edge Inc., which was originally valued at C\$835 million after its IPO, was purchased private by Fairfax Financial Holdings Ltd. for a fraction of that amount. Vibhore Arora, the company's CEO, stressed the need to rethink the company's strategy and concentrate on execution.

Startups often struggle to engage with farmers, who are hesitant about giving crucial production data. Lance Lillibridge, an Iowa farmer, raised worry about data exploitation and lost trust. Farmers, as small company owners, are hesitant to accept new technologies because of the huge risks connected with crop failures.

Established corporations have

aggressively marketed high-tech services to farmers, making it harder for newcomers to gain traction. Farmers Business Network (FBN) encountered strong opposition from bigger competitors, which resulted in antitrust lawsuit. The conventional agriculture sector's opposition to outsiders has limited startups' capacity to successfully disrupt the industry.

The worldwide "agrifoodtech" industry generated \$15.6 billion in 2023, a 50% decrease from the previous year and the lowest total since 2017. Many firms, notably Indigo Ag and FBN, have seen their values fall dramatically, resulting in decreased investor trust and financing challenges. The agricultural sector's complexity and dependence on seasonal cycles make it challenging to implement the rapid-growth methods common to Silicon Valley businesses.

To successfully disrupt agriculture, you must have a thorough grasp of agricultural techniques as well as the capacity to create trust with farmers. Startups must personalise their ideas to meet the agricultural community's unique requirements and concerns. Companies like Indigo Ag are focussing on their primary capabilities, such as seed coatings and carbon sequestration, rather than attempting to provide a wide variety of services.

The agricultural technology startup field is in upheaval as startups deal with the challenges of the farming industry and decreased investor support. The sector's long-term success will most certainly be determined by entrepreneurs' ability to engage effectively with farmers, concentrate on core strengths, and negotiate the competitive environment established by conventional agricultural giants.

Avian Flu Hits U.S. Dairy Farms: Agencies Mobilize to Contain Outbreak

The current epidemic of highly pathogenic avian influenza (H5N1) in cattle herds in the United States has added a new level of complication to an already difficult situation. Once thought to be a danger limited to poultry, the virus's spread to dairy cattle—and its identification in a few humans—has raised concerns and highlighted the need for increased attention and concerted action.

The earliest reports of H5N1 impacting dairy cows may seem unexpected, but they underscore a vital point in our knowledge and reaction to avian influenza. H5N1 was previously known for its effect on poultry, but its ability to infect mammals, such as cattle and household cats, presents substantial hazards. The diagnosis of respiratory symptoms in three dairy farmworkers, albeit modest so far, serves as a warning of the virus's potential to create more serious problems if it spreads more freely among people.

The United States' reaction has been fast and varied, including a number of departments and organisations. The Department of Agriculture (USDA) is leading the way, spending cash and initiating a pilot program to improve dairy farm testing. The Centres for Disease Control and Prevention (CDC) and the Food and Drug Administration (FDA) monitor human health and food safety, respectively. This coordinated effort is critical for dealing with the outbreak's immediate and long-term effects.

The intricacies of this problem are exacerbated by the many players engaged, which range from federal agencies to state governments, agribusinesses to small farmers. Each has a part in stopping the spread of H5N1, but successful reaction requires seamless collaboration and open communication. The USDA's pilot program for testing milk samples from bulk tanks is a positive step towards reducing economic costs and allowing dairy cow movement across state boundaries. However, it emphasises the need of extensive testing and surveillance to acquire a complete picture of the virus's spread.

Some dairy producers are hesitant to test their herds, citing worries about possible limitations or economic consequences. This hesitancy may impede attempts to manage the infection and preserve human and animal health. Education and reassurance are critical for encouraging more widespread testing and adherence to biosecurity protocols. Farmers must recognise that early diagnosis and reporting are critical to slowing the spread of H5N1 and mitigating its effect on the sector.

Public health professionals are justifiably worried that H5N1 may mutate into a more transmissible form in humans. While the present instances are relatively minor, the possibility of a more catastrophic epidemic raises concerns. Providing farmworkers with access to personal protective equipment and developing confidence between public health authorities and agricultural workers are essential measures in minimising this danger. It is critical that all people, regardless of immigration status, feel comfortable and supported in reporting sickness and getting testing.

As we handle this changing issue, we

must be watchful and aggressive. Increased monitoring, systematic testing, and a better knowledge of the virus's behaviour in many animals will be critical to averting a greater public health problem. Collaboration among government agencies, farmers, public health professionals, and academics will be critical to controlling the epidemic and planning for future issues.

The current H5N1 epidemic among dairy cattle serves as a sharp reminder of the interconnectedness of human, animal, and environmental health. It advocates for a coordinated reaction and continued vigilance to safeguard public health, assure food safety, and assist the agricultural community. We can reduce the threats presented by this virus and protect our health and agricultural systems by collaborating and prioritising prevention and education.

AU-IBAR, FAO, and WOAHA Collaborate to Combat Animal Diseases in Africa

African animal resource sector executives recently convened to address animal health concerns that impede the prevention and management of critical transboundary and zoonotic diseases. The two-day meeting, held in Nairobi, Kenya, on May 14-16, 2024, brought together chief veterinary officers (CVOs), delegates from Regional Economic Communities (RECs), and representatives from various countries to discuss the major capacity development needs required to strengthen the continent's animal health systems, as well as strategies for meeting

standards and accessing markets while protecting public health.

Global trade patterns, emerging diseases, and changing climatic circumstances have all had an influence on the safety and health of animal value chains, as well as the integrity of animal commodities for domestic consumption, value chain development, and worldwide markets.

Within Africa, the Inter-African Bureau for Animal Resources (AU-IBAR) promotes and coordinates the use of livestock, fisheries, and wildlife as resources for human well-being and economic prosperity in African Union (AU) Member States. As a result, FAO provides policy development, capacity building, and technical assistance to member countries, while the World Organisation for Animal Health (WOAH) creates international standards to govern the safe trade of animals and animal products, while protecting public health and promoting market access.

The Global Framework for the Progressive Control of Transboundary Diseases (GF-TADs) encourages regional collaboration among AU-IBAR, FAO, and WOAHA to prevent and control priority TADs, which continue to pose issues inside African Union Member States.

The first part of the conversation focused on how African countries might improve their performance in adopting WOAHA standards while also considering their effectiveness in worldwide standard formation. The meeting also aimed to review and develop African positions for presentation at the WOAHA's 91st General Session, with the goal of meeting the continent's needs, improving livelihoods, fostering economic development, and ensuring food and nutrition security by promoting access to African

animal products in international markets through sustainable livestock transformation.

The second day of the event was dedicated to strategic discussions regarding sustainable livestock transformation in Africa via improved One Health system capability for high-impact disease management and antimicrobial resistance (AMR). The successes and challenges of managing important transboundary animal diseases such as highly pathogenic avian influenza (HPAI), foot-and-mouth disease (FMD), contagious bovine pleuropneumonia (CBPP), and peste des petits ruminants (PPR) were discussed. AU-IBAR presided over the discussion on the certification of the regional strategy for combating African swine flu (ASF), which was developed with assistance from the FAO.

Given the importance of the pig industry to many rural Africans' livelihoods as well as the continent's food and nutritional security, the CVOs reviewed and evaluated the draft regional strategy for ASF, with the objective of unanimously accepting the strategy and suggested action plan. Participants were also informed about the recent 33rd FAO Regional Meeting, which passed a resolution advocating for the abolition of PPR by 2030.

The meeting provided a good opportunity to inform participants on the proposed One Health framework for agrifood system transformation, as well as critical updates on the Quadripartite cooperation to assist nations in executing the One Health Joint Plan of Action (OHJPA). The FAO's InFARM Platform for Antimicrobial Resistance Surveillance in Food and Agriculture, as well as the recently launched Reduce the Need for Antimicrobials on Farms (RENOFARM) initiative, were noted as instances of FAO's response to the

worldwide AMR crisis.

Information sharing and relationship-building facilitated the exchange of case studies on FAO support to countries. This meeting contributed to stronger relationships among AU-IBAR, WOA, FAO, and other stakeholders. Participants may overcome hurdles and report success in priority disease control and eradication programs by improving inter-regional communication and plan building, hence enhancing animal health systems, One Health, capacity development, and investment leveraging.

FAO Introduces Comprehensive Biosecurity Training to Combat Animal Diseases

Biosecurity in animal value chains has become a worldwide health problem as a result of climate change, pandemic and zoonotic illnesses, antibiotic resistance, and a number of sociopolitical and economic health variables have all combined to make biosecurity in animal value chains a global health issue.

On May 18, 2024, the FAO held a training at the Global Health Security 2024 conference in Sydney, Australia, to show how the Progressive Management Pathway for Terrestrial Animal Biosecurity (PMP-TAB) assists countries, industries, and producers in assessing and managing biological risks at the enterprise, community, and national levels.

The FAO PMP-TAB framework, which was created in 2023, assists governments and livestock stakeholders in expediting the

deployment of biosecurity practices to prevent animal diseases and boost community resilience. It does this by stressing risk management via hazard identification and using a slow, progressive strategy. By involving local governments and commercial partners, it combines technical and business components to create behavioural changes, prioritises investments with existing resources, and advises starting with modest trial projects that may be scaled up depending on results.

The four-hour training was designed for policymakers and stakeholders involved in managing or supporting biosecurity activities. Its purpose was to improve ties and promote collaborative efforts. It emphasised the FAO's worldwide efforts to improve biosecurity in the cattle sector, as well as the utilisation of co-creation approaches to develop and test solutions within the FAO PMP-TAB framework.

The training stressed the importance of biosecurity in the livestock business by introducing participants to the FAO PMP-TAB via a simulated exercise. FAO projects contribute to a growing body of shared information, research, policy ideas, and solutions for making the world a safer and healthier place for everyone.

Garden of the Future: Nutreco's Answer to Modern Animal Feed Challenges

Nutreco has established the Garden of the Future, a new core for its Phytotechnology initiative in Thurgau, Switzerland. The facility, which includes access to a 500 square metre experimental

greenhouse for plant breeding and propagation, a 5,000 square metre vegetative mass propagation greenhouse, approximately 30 hectares of cultivation space, and a 'Future Garden', showcases the work done at the Garden of the Future for customers and journalists by members of the company's Exploration team.

Nutreco's approach is unlike anything ever seen in the sector. It is dedicated to developing phytotechnology solutions known as phyto-complexes, plants, or plant metabolites, which, when added to feed, have physiological effects that reliably improve the performance, health, and wellbeing of aquatic species, farm animals, and companion animals. The company's approach is unlike anything else in the industry, as it is focused on developing phytotechnology solutions known as Phyto-complexes, plants, or plant metabolites, which, when added to feed, have physiological effects that consistently support the performance, health, and welfare of aquatic species, farm and companion animals.

Phyto-complexes are created in direct response to current market concerns, which are discovered in close cooperation with worldwide Trouw Nutrition and Skretting customer-facing teams. Many of Nutreco's Phyto-complexes are derived from previously uncultivated plants, necessitating a high degree of plant production knowledge on the part of the Garden of the Future team in order to develop vertically integrated plant supply chains for these novel species.

The discovery procedure entails selecting a single plant with the appropriate genotype that answers a particular issue using a very precise, complicated mix of active chemicals. The team then specifies appropriate

molecular targets involved in the process they wish to influence, chooses biological models to evaluate the effectiveness of plant candidates on these targets, and selects plant candidates using a proprietary AI technique. Selection is based on viability in terms of growth conditions, processing, supply sustainability, regulatory framework and location, and costs, among other factors.

Once the exact genotype of a plant with the desired phenotype (fingerprint) has been found, the team uses current technologies to propagate it. The scientists created a true-to-type propagation mechanism for each plant using vegetative cells to reproduce it in vitro. The results of all of these studies are compiled into a handbook, or standard operating procedure, which is sent to contract growers so that they can produce precisely as designed. Nutreco has established its own network of farmers, which is continually inspected to maintain plant quality. Harvesting and processing occurs when the active chemical composition is appropriate.

Nutreco's strategy makes use of the whole plant, including the root and leaves, where these Phyto-complexes are found. Minimal processing is preferred, with the goal of using perennial plants and working with aerial sections to avoid destroying the plant wherever feasible. Plants are cultivated and processed all around the globe, using Nutreco's worldwide supply network. The unique AI technologies utilised in the discovery and manufacturing processes are based on data from the company's own biological models.

Skretting Aquaculture Innovation has created a novel method for

optimising prawn metabolic energy, which is being employed in high-protein diets. This adjustment has resulted in higher costs and nitrogen surplus in the ecosystem. Skretting's Discovery team was tasked with identifying a plant that enhances the animal's nutritional intake, with the goal of optimising the animal's physiology, welfare, health, and production. The team has been working on functional diets for over 30 years and is refining their approach to develop a more complete, functional, preventive diet.

The business has previously completed tests on fish and prawns, and the technique is effective. They've been working on functional diets for over 30 years and are combining it with other information and experience to produce a tool that can make a real impact. The company's mission is to be in control of the next generation of goods, capitalising on the unique potential that exists between the plant and animal kingdoms.

In terms of aquafeed application, the company's goods may undergo extrusion and be included into Skretting aquafeeds. These stable products have an advantage over volatile essential oils, which need customary additions after extrusion and throughout the coating step. Customer reaction has been favourable, and Skretting sees prospects globally, not only in animal feeds.

Skretting believes that after Nutreco has completely maximised the value for their internal companies, there is potential for firms outside of the sector to profit from these sorts of goods. The company's emphasis on client demands and pain spots enables them to identify win-win scenarios that boost production, animal care, and sustainability.

Editorial Calendar 2024

Publishing Month: January Article Deadline : 28th, Dec. 2023 Advertising Deadline : 30th, Dec. 2023 Focus : Opportunities and Challenges	Publishing Month: February Article Deadline : 28th, Jan. 2024 Advertising Deadline : 30th, Jan. 2024 Focus : Budget	Publishing Month: March Article Deadline : 26th, Feb. 2024 Advertising Deadline : 28th, Feb. 2024 Focus : Summer Stress Management	Publishing Month: April Article Deadline : 28th, March 2024 Advertising Deadline : 30th, March 2024 Focus : Cold Chain
Publishing Month: May Article Deadline : 28th, April 2024 Advertising Deadline : 30th, April 2024 Focus : Nutrition	Publishing Month: June Article Deadline : 28th, May 2024 Advertising Deadline : 30th, May 2024 Focus : Milk - Production & Preservation	Publishing Month: July Article Deadline : 28th, June 2024 Advertising Deadline : 30th, June 2024 Focus : Monsoon Management	Publishing Month: August Article Deadline : 28th, July 2024 Advertising Deadline : 30th, July 2024 Focus : Sustainability
Publishing Month: September Article Deadline : 28th, August 2024 Advertising Deadline : 30th, August 2024 Focus : Processing & Packaging	Publishing Month: October Article Deadline : 28th, September 2024 Advertising Deadline : 30th, September 2024 Focus : Disease Prevention	Publishing Month: November Article Deadline : 28th, October 2024 Advertising Deadline : 30th, October 2024 Focus : Biosecurity	Publishing Month: December Article Deadline : 28th, November 2024 Advertising Deadline : 30th, November 2024 Focus : Winter Stress

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