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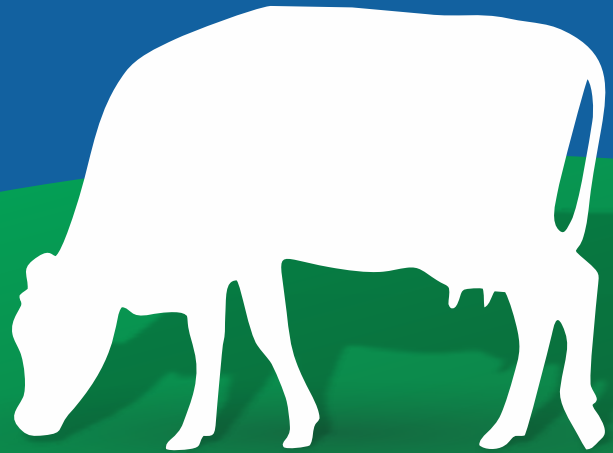
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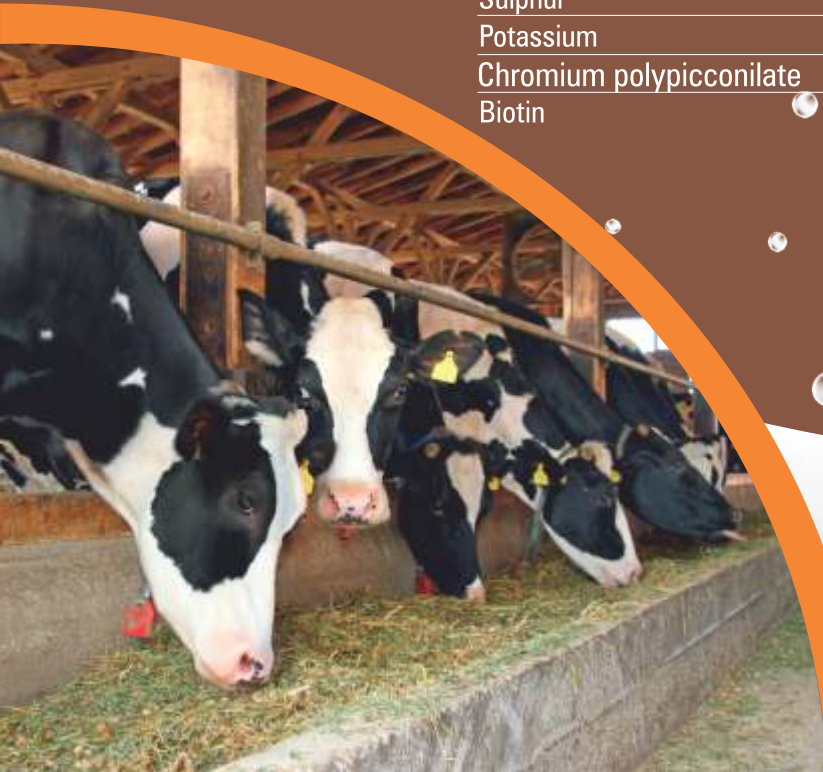
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From the Pen of Chief Editor



Winter Wellness: Essential Strategies for Calf Care Amidst Chilling Temperatures

As the winter season descends upon us, the care and management of calves become paramount for livestock farmers. Winter brings forth a set of challenges that, if not addressed properly, can significantly impact the health and growth of these young animals. Proper calf management during this season is essential to ensure their well-being and future productivity.

One of the foremost concerns during winters is maintaining adequate shelter for calves. The dropping temperatures can pose serious risks to their health, leading to illnesses such as hypothermia or frostbite. Providing a warm, dry, and draft-free shelter is crucial. This can range from insulated barns to simple windbreaks, offering them protection from harsh weather conditions.

Nutrition plays a pivotal role in the health and development of calves, especially during winters. Cold weather increases their energy requirements as they need more calories to maintain body temperature. Adjusting their diet to include higher energy feeds like good quality hay, grain, or specially formulated calf feeds is essential. Additionally, ensuring constant access to fresh, clean water is crucial as hydration aids in maintaining body temperature and overall health.

Healthcare should be a top priority. Cold weather can weaken the immune system of calves, making them more susceptible to diseases. Regular health checks, vaccinations, and deworming schedules must be maintained. Proper bedding and hygiene practices should be observed to minimize the risk of bacterial infections. Adequate ventilation in shelters is essential to prevent respiratory issues caused by poor air quality.

Exercise and movement are often overlooked but are crucial for calf health. Encouraging movement helps generate body heat and circulation, keeping them warm. Even in colder temperatures, providing a safe space for calves to move freely is beneficial. However, it's important to ensure that they don't get exposed to extreme cold for extended periods during exercise.

Moreover, paying attention to behavioral cues is essential. Observing the calves for signs of discomfort such as shivering, huddling together excessively, or reduced feed intake can indicate issues that need immediate attention. Addressing these signs promptly can prevent health problems from escalating.

Farmers should also consider additional measures to protect calves from extreme weather conditions. This could include using bedding materials like straw for insulation, installing heating systems in barns, or using calf jackets or blankets for extra warmth. Windbreaks and shelters in outdoor areas can shield calves from biting winds and precipitation.

Lastly, staying informed and seeking guidance from experienced professionals or veterinarians can provide valuable insights into specific winter calf management practices. Local climate variations might require customized approaches, and expert advice can greatly aid in making informed decisions.

In essence, calf management in winters demands a holistic approach that encompasses shelter, nutrition, healthcare, exercise, and proactive monitoring. Ensuring the well-being of these young animals not only safeguards their health but also sets the foundation for their future growth and productivity within the livestock operation. By implementing these measures diligently, farmers can navigate the challenges of winter and support the thriving development of their calves.

Vishal

OUR TEAM

Vishal Rai Gupta
Editor-In-Chief
vishal@pixie.co.in

Siddhi Gupta
Co-Editor
siddhi@pixie.co.in
editor.pcsl@gmail.com

Website: www.pixie.co.in

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Jinu Manoj¹, Indu Panchal² and Manoj Kumar Singh³

¹Disease Investigation Officer, College Central Laboratory, LUVAS, Hisar

²Assistant professor, CODST, LUVAS, Hisar

³Assistant professor, Dept. LPM, SVPUAT, Meerut

Neonatal Diarrhoea in Calves or Calf Scours

Calf scour is the most common cause of diarrhoea and death in calves during the pre-weaning period. It accounts for 75% of all deaths among calves under 3 weeks of age. The causes of scours in calves under 21 days of age are difficult to determine. There is usually not one single cause but an interaction between calf management, diet, the environment, poor immunity and pathogenic viruses and bacteria. Viruses and bacteria are the major causes of infectious calf scours.

Types of scours

Dietary scours

This mainly results from overfeeding (especially with cold milk) or incorrect milk replacer concentrations. Sudden changes in feed type especially changing from whole milk to milk replacer or use of poor quality milk replacers can also lead to dietary scours. The best control measure for dietary scours is changing from milk to electrolytes for at least 24 hr.

White scours

This generally occurs in the first few days and is usually caused by pathogenic strains of bacteria known as *Escherichia coli* (or *E. coli*), which invade the gut wall. Foul-smelling, grey to creamy-white, severe diarrhoea is seen. Calves quickly become dehydrated and lethargic, will not eat, are 'tucked up' in the abdomen and may die suddenly. Stress factors, such as cold or partial starvation can increase the occurrence and severity of white scours.

Viral and protozoal scours

These are generally caused by rotavirus, coronavirus or *Cryptosporidia* (protozoal) and constitute most of the scours in calves less than 3 weeks old. Antibiotics do not kill viruses or protozoa and so are not effective in treating these scours.

Salmonella scours

This occurs more commonly in older calves causing bloody, putrid diarrhoea containing mucus. They develop fever, are weak and rapidly become dehydrated and emaciated. They have a high death rate. Less severely affected calves can have rough coats, pot bellies and become stunted. They can also become carriers of *Salmonella* and continually infect other animals and the bacteria can be passed onto humans also.

Worm scours

These are caused by internal parasites eaten by grazing calves. These would not occur in housed systems unless purchased calves are older and have previously run at pasture.

Coccidiosis or blood scours

This is caused by protozoa infecting the calf from 3 weeks of age and onwards and can easily be confused with white scours. Affected calves show blood-stained scouring with a lot of mucus and may eventually develop anaemia. Coccidiosis is a stress-related disease and usually affects calves that are reared in wet, crowded and unhygienic conditions.

Management of scours

Prevention of scours emphasize on good hygiene and minimising stress. In addition, to ensure healthy and disease resistant calves colostrum provision and biosecurity practices are critical. Calves are most at risk from infectious scour in the first 3-4 weeks of life and need a continuous source of protection through the passive transfer of antibodies in the colostrum. Veterinary advice should be sought to obtain an accurate diagnosis and the most appropriate treatment. Sick calves should be isolated from healthy calves and tended to after feeding other calves

to minimise the spread of infection. Drinking water should be freely available. Calves with less than 8% dehydration and still drinking can be rehydrated orally by electrolyte solutions. These supply an energy supplement and replace lost vital minerals and fluids in scouring calves.

Very dehydrated calves will require intravenous therapy. The amount of fluid required for daily maintenance requirements and to replace lost fluids can be calculated, based on live weight and the degree of dehydration. After 24 hr, reintroduce milk (if it has been

withdrawn), but continue electrolytes for a further 48 hr. It is preferable to ask the veterinarian to give intravenous fluids to very sick and dehydrated calves because force feeding often results in pneumonia because such weak calves cannot swallow properly. Diarrhoea powders containing kaolin, pectin, chalk, cornflour or other methods of slowing down feed passage through the gut reduce the severity of the scouring. Antibiotics may be required, especially if the calf remains dull after rehydration, and if blood appears in the faeces.





Winter Management of Calf



Dr. Anil Kumar
M.V. Sc Scholar, Department of
Livestock Production Management
Rajasthan University of Veterinary and
Animal Sciences, Bikaner (Rajasthan)

*Corresponding author:
anilbakolia33@gmail.com

Introduction

Calves are the backbone of dairy industry. Healthy calves form the basis of any successful cattle production system. An adverse interaction of infectious agents, environmental conditions and mismanagement of calves causes calf morbidity and mortality. Scientific management of calves reduces the mortality, thereby, optimizes the production potential of dairy farm. Feeding strategies of 3 Q's principle of colostrum to the newborn, calf starter and milk replacer suffices the nutritional need and improves the body reserves and immunity against diseases. Proper managemental practices of less intensification, hygienic housing, prompt veterinary care and deworming reduces the morbidity of diseases and mortality of calves, thereby, improves the production and security of the dairy enterprise. The use of deep straw bedding and calf jackets, as well as providing extra calories during cold temperatures, will result in healthier calves and improved gains. It is time to change to winter bedding, bring out the calf jackets, and consider an extra feeding to provide calves extra protection from low temperatures.

A calf is born with only two to four percent of body weight as fat, which will not last long if she is forced to burn fat for heat production. Burning body fat for heat can lead to lower growth rates, compromised immune status, and even death. The need for straw bedding at this time of the year to provide warmth for young calves is true both in barns and in hutches. Unless the calf barn has supplemental heat, it should be well-

ventilated but without drafts on the calf. It should also be within five degrees of outside temperatures, necessitating the use of straw bedding and calf jackets. Straw is the best choice of bedding to provide thermal insulation for the young calf. Straw should be bedded deep enough for the calf to nestle in. This traps warm air around the calf, which will help maintain body heat. For winter months, the straw should be deep enough that when the calf is lying down its legs are generally not visible. A drawback to straw is that it tends to hold moisture, so it is important to add fresh bedding regularly and consider a layer of shavings underneath the straw to draw the moisture away from the calf. Moisture exceeding 20 percent is too high. Calf jackets are another way to protect calves from losing excess body heat. The more heat a calf loses to the environment, the more calories need to be consumed in order for the calf to stay warm. The use of deep straw bedding and calf jackets during low temperatures will help young calves stay warm, resulting in improved average daily gains and immune status.

Thumb rule

For every 10 degrees Fahrenheit below freezing (32 F), the calf should get 10 percent more milk to meet its needs. This means that if it is 0 F outside, the calf should consume 32 percent more milk. If you normally feed 3 quarts





twice a day, then adding a third feeding of at least 1.9 quarts would best meet the calves' needs. You can add more volume to the two current feedings (feed 4 quarts at each feeding), however the calf would benefit most from a separate feeding even if the feedings are spread equally throughout the day. Be careful in adding extra powder to the same volume of feeding, as too high of solids (18 percent and above) will cause diarrhea. Also, avoid adding extra fat to the milk which can depress starter intake, potentially decreasing overall caloric intake. When caring for calves in cold climates, the use of deep straw bedding, calf jackets, and providing extra calories during cold temperatures is necessary and will result in healthier calves and improved gains.

Caring of calves during harsh period

For better health and improved immunity, 0 to 3month old calf should be treated with special care. Extra attention has to be given as this age is very critical for animals for suspecting diseases.

- Calf shelter should be covered with guinea bag or polythene for preventing passing of cold air.
- 0 to 3 months old calves should be treated with special care like providing heat in the shelter. For this purpose, 200W bulb can be used.
- Room heater should be placed for preventing extreme cold stress.
- Luke warm feed and water should be provided.
- Calf should be with the dam for a quality time or getting warmth.
- Providing adequate amount of colostrum and milk to young animals.
- Floor of the shelter should be clean twice a day for preventing spreading of disease.
- Bedding of the animals should be clean and dry by using saw dust, straws, rice husk etc.
- Proper management of drainage system for urine and other secretions, as wet floor may lead to many health problems like diarrhea, fever, coccidiosis, chronic cough etc. which may lead to death.
- Dewormed of the young animals.
- Provide one to two hours of exercise in the bright sunlight for boost immunity.

Special Care Of Calves In Winters

Blankets are most useful for calves less than 3 weeks of age that are not yet eating grain. Warm blankets should not be so hot that they cause skin burns or sweating during the day. Prevention of the radiant heat loss. Thick, dry straw or sawdust at resting area should be provided for better insulation. Wind drafts must be avoided because they encourage heat loss. Young dairy calves have very little stored fat they can use for warmth. To cope with cold stress by feed with extra energy should be provided. Additional amount of feed (starter, milk replacer, or milk) that a calf would need to eat to compensate for extra energy used to keep warm during cold weather. Calves less than 3 weeks of age increases the amount of milk or milk replacer to provided extra energy. Repeated changes in the calf's diet should not be done. Calves that are eating starter, especially those over 3 weeks of age have a lower LCT and can more easily cover their increased energy needs by voluntarily eating more grain is beneficial in terms of generating heat. In cold weather, provision of warm water three times per day for a minimum of 30 minutes each time in order to ensure calves have ample opportunity to drink.

| Deworming schedule | |
|--------------------|---|
| Type of worms | Deworming schedule |
| Roundworm | 1st dose at 10 days of age and thereafter at monthly intervals upto 6 months. After 6 months of age, deworming to be done at an interval of 2 months. |
| Liver flukes | Twice a year in endemic areas (before and after monsoon). |
| Tape worms | Twice a year in (January and June). |

| Vaccination Schedule | | | |
|-------------------------------|-------------------|--------|---|
| For cattle | Age at first dose | Dose | Subsequent dose |
| FMD | 4 months or above | 3ml SC | Booster after 1 month of first dose, revaccination annually |
| Haemorrhagic septicaemia (HS) | 6 months or above | 2ml SC | Revaccination annually |
| Black quarter (BQ) | 6 months or above | 2ml SC | Revaccination annually |



Importance of Photoperiod in Livestock Production Performance



Rimee Dhakad
PhD. Scholar, ICAR-NDRI, Karnal-
132001, Haryana

Introduction

Researchers have found that increasing light from less than 12 hours/day to 16-18 hours/day, increases milk production by 7-10%. It is critical for the response that cows have an uninterrupted dark period. Bovine somatotropin (bST) and long-day lighting increase IGF-I independently so using bST and long-day lighting together will still pay. Photoperiod has also been found to impact dry cows. In the growing heifer, long-day lighting has been found to increase gain, feed efficiency and growth of mammary parenchyma. The experts claim that long-day lighting is very economical and increases income by \$0.24 to 0.35/day/cow. Daylight varies with season. In many milk-producing regions of the world, there are a number of months when daylight is less than 12 hours/day. Researchers have shown that controlling and supplementing the amount of light a cow receives each day can increase milk production.

Long-day lighting (or long-day photoperiod) means that cows have 16 hours of light and 8 hours of darkness each day. Researchers have found that increasing light from less than 12 hours/day to 16-18 hours/day, increases milk production by 7-10%. Milk composition is usually not affected, although some have reported small reductions in milk-fat percentage. Long-day lighting usually increases dry matter intake (up to 6%) to supply the extra nutrients needed for milk production. The initial response takes about 2-4 weeks to be seen.

It is critical for the response that cows have an uninterrupted dark period. Cows under continuous light have production levels similar to cows that don't have enough light. Dim red bulbs (7.5 watt bulbs at 20-30 foot intervals) can be used during the dark period if cows must be moved or observed during that time.

Hormonal effect of photoperiod on production performance

Melatonin is a hormone produced in the cow's pineal gland. When light hits a cow's eye, it signals the cow's body to produce less melatonin. When it is dark, melatonin is produced. Cows have an internal clock that is set by melatonin production. This internal clock affects the production of other hormones that impact milk production. Long-day lighting increases the production of IGF-I (insulin-like growth factor - I). IGF-I is the same hormone that is increased by bovine somatotropin (bST). More IGF-I production in the cow boosts milk production.

Researchers at the University of Maryland used 40 lactating cows for an 84-day trial. Twenty cows received no supplemental light (<13 hours of light per day) and 20 cows received 18 hours of light and 6 hours of darkness. Fat-corrected milk production was 4 pounds/day (1.8 kg) higher with supplemental light (83.2 vs. 79.2 pounds/day (37.8 vs. 36 kg)). IGF-I levels were increased from 60.1 ng/ml to 52.6 ng/ml. There was no change in milkfat concentration and no change in dry matter intake.

Bovine somatotropin (bST) and long-day lighting increase IGF-I independently so using bST and



long-day lighting together will still pay. They have an additive effect. University of Maryland researchers tested the effect of bST and long-day lighting on 40 lactating cows for 140 days. Normal hours of daylight during the study ranged from 9.5 to 14 hours/day. Treating cows with bST alone raised 3.5% fat-corrected milk production (FCM) by 12.54 pounds/day (5.7 kg) from 60.9 to 73.48 pounds/day (27.7 to 33.4 kg). Using long-day lighting increased FCM production by 4.2 pounds/day (1.9 kg), from 60.9 to 65.1 pounds/day (27.7 to 29.6 kg). Using both bST and long-day lighting increased milk production by 16.9 pounds/day (7.7 kg) from 60.9 to 77.88 pounds/day (27.7 to 35.4 kg). The researchers also found that the cows on long-day lighting met their extra nutrient needs by increasing dry matter intake. Cows on bST increased intake more quickly following their initial injection if they were also treated with long-day lighting.

Daily light has also been found to impact dry cows. In one study, cows that received only 8 hours of light per day during the dry period produced 6.8 pounds (3.1 kg) more milk per day during their first 120 DIM than cows that received 16 hours of light per day during the dry period. At freshening, all cows just had ambient lighting (9.5-10.5 hours of light per

day). The reason for this response is not fully understood but some have suggested that the short-day lighting during the dry period may make cows more responsive to the positive influence of longer day lighting once they calve. It is also interesting to note that during the dry period, those cows which only had 8 hours of light per day ate 12% more dry matter. The reason for this is unknown but it did result in more energy reserves available for these cows after calving. More research needs to be done on light regulation in dry cows.

In the growing heifer, long-day lighting has been found to increase gain, feed efficiency and growth of mammary parenchyma. One study with long-day lighting (16 hours) increased heifer growth rate by 10%. It is interesting that this extra growth is not just a function of extra dry matter intake. Long-day lighting also results in earlier onset of puberty.

Effect of intensity of light on production performance

The intensity of the light which cows are exposed to is as important as the length of the lighting period. A minimum of 20-30 foot-candles is recommended. Twenty to 30 foot-candles would be enough to read by. Good office lighting is generally about 35-50 foot-candles. Sunny

days may be greater than 1000 foot-candles.

A Wisconsin study showed that average light intensity in the feeding area of freestall barns was 14.23 foot-candles and ranged from 2 to 38. In the freestall area, light intensity ranged from 0.1-100 foot-candles and averaged 7.3 foot-candles. Average feeding area lighting in tie-stall barns was 20.35 foot-candles and ranged from 14.7-26. We know from research studies that cows spend about 10-15 hours/day resting and 4-5 hours/day eating. So, for long-day lighting to work, both the resting and eating areas must be provided with adequate light.

Light meters can be purchased from electric supply stores to check to see if your light is right. Remember that dust and age of light bulbs can reduce the actual amount of light received by cows. Check light distribution. Barns with rafters are difficult to light and may need more fixtures to get good light distribution. One recommendation is to have the distance between fixtures at 1.2-1.8 times the mounting height. Use a timer to insure proper timing and save on labor.

Total Lumens Needed

= [Area (sq. ft of barn) x (20 foot candles needed) x Barn Constant* (2 or 3)]

References: Rodenburg, J. (2002) Light. Milk Production.com



Popandeer Kour

Ph.D. Scholar, Department of Veterinary Gynaecology and Obstetrics

Dr. Bilawal Singh

Assistant Professor, Department of Veterinary Gynaecology and Obstetrics
Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana, Punjab, India

Retention of Fetal Membranes in Bovine-a Major Impediment After Parturition

Introduction

Parturition is the natural biological process of delivering a fully developed fetus at the end of the gestation period. It is primarily triggered by the secretion of fetal cortisol, which acts on the placental trophoblast to increase the activity of COX-2 (Cyclooxygenase-2), resulting in the production of PGE2 (Prostaglandin E2). This, in turn, leads to the conversion of progesterone to estrogen by enhancing the activity of 17 α -hydroxylase. The increased levels of estrogen further stimulate the activity of endometrial COX-2, which causes the release of PGF2 α (Prostaglandin F2 α). PGF2 α plays a pivotal role in inducing endometrial contractions by synthesizing contraction-associated proteins (CAPs), such as connexins. These contractions are essential for the initiation of parturition. The prostaglandins also play a crucial role in luteolysis, causing the regression of the corpus luteum. Additionally, they induce uterine contractions, which progressively increase in both frequency and amplitude, ultimately leading to the expulsion of the fetus from the uterus. During parturition, abdominal contractions triggered by a pelvic reflex also contribute to the expulsion of the fetus. This entire biological process of parturition can be divided into three stages:

1. The first stage is characterized

by active contractions of the uterine wall muscles and the dilation of the cervix.

2. The second stage involves the entry of the fetus into the dilated birth canal, the rupture of the first amniotic sac, the occurrence of abdominal contractions, the appearance of the amniotic sac, and finally, the expulsion of the fetus.
3. The third stage is the period during which the fetal membranes are expelled.

These stages collectively ensure the successful delivery of the fetus and are regulated by complex hormonal and physiological mechanisms to prepare the mother and fetus for the birthing process.

In bovines, the normal expulsion of placental membranes typically occurs within a timeframe of two to eight hours after the birth of the calf. When the fetal membranes are not expelled within this 24-hour period, they are considered as retained. Retained fetal membranes can be a concern in cattle and may require veterinary attention and intervention to ensure the health and well-being of the cow.

Incidence

The incidence of retention of placenta in cattle is influenced by several factors, and it tends to vary based on specific conditions and characteristics. Here are some key points regarding the incidence of retained placenta in cattle:

1. **Parity:** The incidence of retained placenta tends to increase with parity, which refers to the number of times a cow has calved. Cows with higher parity are more likely to experience retained placenta compared to first-calf heifers.
2. **Twin Births:** Cattle that give birth to twins are at a higher risk of retained placenta. The presence of multiple fetuses can complicate the birthing process and increase the likelihood of placental retention.
3. **Late Abortions:** Late abortions can also increase the risk of retained placenta. These are pregnancies that terminate closer to full term.
4. **High-Yielding Dairy Animals:** High-yielding dairy cows, which produce large quantities of milk, are more prone to retained placenta. The increased metabolic demands of high milk production can affect the cow's ability to expel the placenta after calving.
5. **Nutritive Plane:** Cattle kept at high nutritive planes, meaning they receive ample nutrition, are more susceptible to retained placenta. This may be due to the impact of diet and nutritional factors on the birthing process.
6. **Incidence Rates:** The incidence rate of retained fetal membranes can vary by region and management practices. As mentioned, it is approximately 20-25% in buffaloes and 18-20% in dairy cows, although these rates may fluctuate based on specific conditions and herd management.

Managing the risk factors associated with retained placenta, such as proper nutrition, monitoring twin pregnancies, and providing appropriate care during late abortions, is important for reducing the incidence and ensuring the

health of the cow and calf. Additionally, timely veterinary intervention may be necessary in cases of retained placenta to prevent complications and infections.

Normal physiology of separation and expulsion of placenta

Three major events are responsible for normal expulsion of fetal membranes. Foremost important is maturation of placenta and this has to be accompanied by second major event i.e. exsanguination of fetal side of placenta due to rupture of umbilicus. This causes collapse and shrinkage of the trophoectodermal villi and their separation from maternal crypts. Various hormonal changes taking place during parturition are responsible for maturation and detachment of fetal and maternal part of placenta. The increased activity of collagenase enzyme is mainly responsible for breakdown of fetal cotyledon and maternal caruncle interface. The third major event is myometrial contractions which aid in exsanguinations of fetal side of placenta and cause unbuttoning of the cotyledon from the caruncle and finally its expulsion.

Causes of retention of placenta

The causes of RFM are multiple like selenium or vitamin A deficiency, heat stress, pre-mature calving, uterine atony, stillbirths, abortions, dystocia and excessive weight gain which influence the degree of hypertrophication and interdigitation of the microvilli of cotyledons with the crypts of caruncles due to changes in energy balance.

On the basis of process of separation and expulsion of fetal membranes it is divided into two major classes of causes; Group 1 includes the causes that interfere with normal loosening process between the fetal and maternal part of placenta i.e. immature placentomes, prolonged gestation, necrosis, inflammation and edema of

chorionic villi and hyperaemia of placentomes. Group 2 includes the causes that mainly interfere with expulsion of fetal membranes i.e. uterine distension, secondary uterine inertia and metabolic disorders like postpartum hypocalcemia. So, in nutshell any of the above causes may result in retention of the fetal membranes and may pose a threat to uterine health and this rational treatment has to be done in time to avoid the production of adhesions and septicemia.

Treatment

Manual removal:

An ideal practice would be to carry out careful aseptic exploration of the uterus of the affected cow within 1 day of parturition & to remove the membranes if the fetal cotyledons can be completely detached without injury to maternal caruncles. If it is found impractical to remove then on first examination, the examination may be repeated at daily intervals until the membranes could be removed. However, it is frequently found that attempts at removal during the first 48 hours are unsuccessful for the placenta is than too firmly attached & vigorous manipulation to free the afterbirth is likely to cause hemorrhage & even detachment of maternal caruncles. Moreover, the apical part of the gravid horn is at this time usually beyond the reach of obstetrician hand. For these reasons it has become a common practice to delay interference until day 3 or 4.

Therapeutic treatment without manual removal:

Oxytocin: Can be used within 24 hours of the birth of the calf & is may be beneficial in some cases of retention which are due to primary inertia. It is given 100 I.U. after parturition. Estrogenic substances increase the sensitivity of the myometrium to oxytocin & enhance the natural uterine defence mechanism. For this reason the

synthetic estrogenic stilbestrol dipropionate, oestradiol monobenzoate are widely used as parenteral injections or uterine infusions & pessary & their use has sometimes been followed by injections of oxytocin. As retention of placenta is also due to uterine inertia & which is sometimes due to hypocalcaemia. So calcium thereby is beneficial either by I/V or oral route. In cases where systemic illness appears parenteral antibiotics are used. A great variety of antiseptics & antimicrobials agents have in the past been introduced into uterus in retention cases to check bacterial multiplications. Oxytetracyclines administered at therapeutic dose rates are frequently used. They may exert a beneficial effect on the associated metritis & reduce putrefaction & by retarding lysis may prolong retention. It is also noted that I/U use of the oxytetracycline leads to worse conception rates. Neomycin & Metronidazole (in vitro) is more effective than oxytetracycline. Supplementation with liver toxins because if at all there are any toxic substance, the first organ effected is liver & to treat the anorexia in animals. Some workers prefer the use of PGF2 alpha immediately after parturition or few days later @ 25 mg I/M because it also leads to uterine contractions. Treatment of retained placenta with umbilical cord injection of collagenase in cow: Injection of 200,000 I.U. of bacterial collagenase in 1000 ml of physiological saline solution via umbilical arteries (1 or 2) between 24 to 72 hours of retention causes release of retained fetal membranes within 36 hours after injection. Also the use of collagenase via a jugular vein in 1000 ml of physiologic saline solution, administered over a 30 minutes period, cause release of retained fetal membranes within 36 hours. Umbilical injection of bacterial collagenase is highly effective in treatment of retained placenta in

cows. Procedure is simple, safe, and affordable & can be completed in 25 minutes.

Traditional treatment under field condition:

- Wait for expulsion of placenta for 12 hours.
- Milking of animal as early as possible because it will produce the endogenous production of oxytocin which helps in placental expulsion by inducing contractions.
- Administer oxytocin parenterally 50 -100 I.U at 2-3 hours interval. But single shot is enough.
- When case is presented as a delayed case then: Traditionally placenta was tied with some object like shoe & other objects, but it should not be done.
- Ergot preparation can be given immediately after parturition. It is a supportive treatment. It acts as ecboic & digestive tonic.

Immunosuppression and retained placenta

The transition from pregnancy to lactation is also characterized by a sharp but transient depression in the immune system, which may play a role in the occurrence of retained placentas & susceptibility to other disease. Indeed, Plasma Vitamin E (alpha- tocopherol) levels have been shown to lower as much as 47% at calving. Feeding high levels of Vitamin E (1000 IU / hd/ d) reduce the incidence of retained placenta when fed for 21 days immediately prior to calving. Vitamin E seem to enhance the immune system's response to the placenta after circulating levels of progesterone & glucocorticoids have dropped following calving.

Prevention

Prevention of retained placenta of course is the key. It may be rather difficult to pinpoint the exact cause with so many direct or indirect factors than can be incriminated. The

optimum is to maintain a healthy, contended & active cow prior to, during & after parturition. A balanced, limited ration during the 6-8 weeks dry period; sufficient daily exercise, sufficient large, clean & comfortable calving area & proper sanitary procedures during the calving period minimize the chances of retention & infection of reproductive tract.

There are several specific preventive measures to follow:

- In selenium deficient or borderline areas, the administration of dietary level of selenium (0.1 ppm) tended to minimize the incidence of retained placentas.
- Vitamin A & D deficient cows have high retention rates. I/ M injection of vitamin A & D may be given 4-8 weeks prior to calving if deficiency is suspected.
- The calcium: phosphorus ratio for the dry cow is extremely important in the prevention of milk fever & in turn, retained placenta. Maintenance of Ca: P ratio of 1.5: 1.0 & 2.5: 1.0 is absolutely necessary. Above 2.5: 1.0 the incidence of milk fever & retained placenta increases. Supplementary Phosphorus may have to be fed to dry cows to maintain the proper ratio as recommended by veterinarian.

Conclusion

Retention of fetal membranes (RFM) is a common abnormality found in 5-10% of normal calvings and its prevention includes a stress-free environment for animal and careful and nutritional management during pregnancy and around parturition. Lack of exercise, low vitamin-A in feed may contribute to higher incidence. Use of appropriate antibiotics and ecboic agents along with supplementation of vitamin- E and selenium may be an effective measure to treat this condition.



"Unlocking the Mysteries of Anestrus in Buffaloes: A Vital Aspect of Reproductive Management"

Introduction: Buffaloes are important in the agricultural environment because they provide milk, meat, and labor. The reproductive health of the herd is one of the most important elements impacting their output. Buffaloes naturally go through anestrus in their reproductive cycle, and knowing and maximizing this period of the cycle is crucial. This article explores the complexities of buffalo anestrus, providing insight into its causes, effects, and approaches to control.

Understanding Anestrus: Anestrus is the non-cycling phase of the estrous cycle in which female buffaloes do not show indications of heat or estrus. This period is essential for the recovery and preparation of the reproductive system for the upcoming estrous cycles, this time is critical. Although anestrus is a normal occurrence, an extended or irregular anestrus might negatively impact the animal ability to reproduce.

Causes of Anestrus in Buffaloes:

Nutritional Factors: One typical cause of anestrus in buffaloes is inadequate nutrition. A deficient consumption of vital nutrients, including energy and certain minerals, can cause hormonal imbalances and postpone the return of regular estrous cycles.

Environmental Stressors: Buffaloes are very sensitive to environmental changes such as extreme temperatures, inadequate shelter, and social disturbances. Stress can interfere with the release of

reproductive hormones that govern the estrus cycle, resulting in prolonged period of anestrus.

Genetic Factors: Genetic factors may predispose certain buffalo breeds to extended anestrus durations. Understanding the genetic makeup of the herd can assist in the development of focused management techniques.

Implications of Prolonged Anestrus:

Extended anestrus can cause a reduction in reproductive effectiveness, which can result in longer calving intervals and decreased productivity all around. Maintaining a buffalo farming enterprise that is both commercially and sustainably viable requires addressing anestrus.

Management Strategies:

Optimized Nutrition: Preventing nutritional-induced anestrus requires a well-balanced and nutrient-rich diet. Enhancing reproductive performance can be achieved via routinely assessing and modifying feeding procedures.

Environmental Management: It's critical to create a relaxing and stress-free atmosphere. Reducing stress and promoting normal reproductive behavior can be achieved by providing adequate shelter, adequate ventilation, and limiting social disruptions.

Genetic Selection: Long-term anestrus can be reduced in buffaloes by breeding initiatives that prioritize choosing animals with the best reproductive characteristics.



**Rajvinder Grover and
Prabhleen Singh**

Regular Monitoring and Veterinary

Care: Proactively monitoring reproductive health through the use of hormone tests and routine veterinarian examinations can aid in the early detection and treatment of anestrus.

Conclusion: A healthy and prolific herd of buffaloes depends on the management of anestrus, a complex element of their reproductive cycle. Buffalo farmers may increase the viability and sustainability of their businesses by improving reproductive efficiency and by knowing the causes and consequences of anestrus and putting appropriate management techniques into place.

Anestrus and its treatment:

Progestogens

They have been widely used for induction of estrus and ovulation in acyclic animals. Various progesterone compounds have been administered to mimic the luteal function by blocking the release of gonadotrophins from pituitary, so that the subsequent withdrawal of these compounds may result in release of gonadotrophins to initiate follicular activity in ovaries with establishment of estrous cycles. Various progesterone preparations including melengesterol acetate, progesterone releasing intravaginal device, Crestar, Syncromate-B; progesterone and PMSG alone or in combination have been employed in the treatment of postpartum anestrus buffaloes but with wide variation in induction of cyclicity and subsequent conception rates.

Melengesterol acetate (MGA)

Feeding MGA @ 0.5-1.0 mg/animal/day for 14-17 days has also been used as a source of progesterone to induce estrus in buffaloes. Although cost of treatment is low and means of administration is easy but lower fertility was observed, which may

be due to increased number of atretic follicles, failure of follicles to ovulate, reduced size of CL, reduced sperm transport and cleavage rate. However, some trials reported better results when prostaglandin was administered 16-18 days after MGA.

Progesterone releasing intravaginal devices

Progesterone is administered via the intravaginal route by means of intravaginal devices. Initially, sponges were used which posed problem of retention. This led to development of silastic coils and silicon rubber implants impregnated with progesterone and finally to PRID and CIDR. These have not only better retention property but also release progesterone at a controlled rate. Also, CIDR-B had better retention property than any other intravaginal device and since then it is the most commonly used intravaginal device. These are used alone or in combination with other hormonal drugs. Incorporation of estradiol benzoate (EB) as a luteolytic agent has enabled short-term PRID/CIDR treatments to synchronize estrus effectively. Using PRID alone for synchronizing estrus in buffaloes gave poor results attributed to relatively high incidence of anovulatory estrus. It has been observed better estrus and conception rates when prostaglandin was administered on the day of CIDR removal than those treated with CIDR alone. Studies suggest the effect of fixed-time artificial insemination in Murrah buffaloes after synchronizing them with CIDR/EB or CIDR/GnRH and got the conception rate of 22.8 percent and 26.7 percent respectively. Murugavel et al (2009) recorded ovulation rate (81%, 47.4%) and pregnancy rates (38.1%, 21.1%) in eCG+CIDR and CIDR treated non-cyclic buffaloes, respectively.

GnRH and PGF_{2α} combinations

GnRH has been used to induce LH release and ovulatory cycle in postpartum anestrus buffaloes (Nasr et al., 1983). The GnRH PGF_{2α} protocol involves treating animals with GnRH (day 0) followed by an injection of PGF_{2α} on day six for luteolysis. This technique eliminates the need for estrus detection for the six- or seven-days period preceding the PGF_{2α} treatment and enables the synchronized estrus in approximately 80% females, during a period of less than four days following PGF_{2α}. Fertility rates in GnRH- PGF_{2α} treated cows inseminated at detected estrus varied between 65 and 85% and were identical to those of cows treated with PGF_{2α} only. It has also been observed that pregnancy rate of 45 % in buffalo cows synchronized with PGF_{2α} alone and 48.8 % when PGF_{2α} was combined with GnRH injection at AI.

GnRH-PGF_{2α}-GnRH (“Ovsynch”)

A novel protocol for ovulation developed for cattle, which makes use of GnRH-PG-GnRH injections. This protocol controls follicular development and lifespan of the CL. precision of estrus and high fertility rates are due to the GnRH luteinizing or ovulating the mature follicle and initiating recruitment and selection of a new dominant follicle. An advantage of this regimen is that it can be used data any stage of the estrous cycle and eliminates the use of progestogen besides promoting the resumption of ovarian activity in acyclic postpartum animals. The use of ovulation synchronization with FTAI in buffaloes provides advantages, similar to those found in cattle and additionally by foregoing the need for estrus detection, which is rather difficult laborious and time consuming.



FOR IMMEDIATE RELEASE

Contact: **Elizabeth A. Davis**
Elizabeth.Davis@novusint.com

NOVUS to Deliver Milk Production Advice to India Market in Webinar Series



Ajay Singh



Dr. Chetan



Gnanasekar

BENGALURU, INDIA (6 December 2023) – Achieving the maximum output of milk yield and components is the goal of any dairy farm. In an upcoming webinar series, the dairy experts from NOVUS will share their insights on how dairy farmers and feed mills in India can optimize their cows' and feed performance.

The first sessions of the webinar series called *Balancing Act: Optimizing Milk Fat and Protein through Intelligent Nutrition* will take place in two parts: Part One at 4:00 p.m. (IST) on December 20 and Part Two at 4:00 p.m. (IST) on January 24, 2024.

"The dairy team in India is very excited to host its first-ever webinar, which explores the crucial role nutrition plays in milk and component production," says Gnanasekar Ranganathan (Dr. GS), M.V.Sc, species solutions manager - dairy for the Asia region. "Over the course of the two webinars, the team

will share the factors that impact fat and solids-not-fat (SNF), innovative feeding practices, the importance of data when planning nutritional strategies, and how milk quality impacts the financial outcomes for dairy farmers."

Part One will feature Chetan Shembekar, M.V.Sc., NOVUS technical services specialist, as he shares how different types of feed material impact both milk production and incidents of milk fat depression.

"It's not just the quantity of feed but the quality and type of feed that can impact milk production," Shembekar says. "It's important that dairy farmers understand their options and know the effect feed can have on milk, fat and SNF production."

During Part Two, Dr. GS will discuss the influence of genetics, providing a comprehensive overview of how different breeds perform, which breeds

are more susceptible to milk fat production challenges, and how to identify unprofitable cows that need nutrition or management intervention.

Ajay Singh, M.V.Sc., senior technical services specialist, will provide an overview of sub-clinical mastitis and what can be done to reduce the risk of this common and costly disease.

"Udder health is necessary for good milk production," Singh says.

"Understanding mastitis allows farmers to determine the steps they can take to ensure cow health and comfort."

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.

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Novus International, Inc. is the intelligent nutrition company. We combine global scientific research with local insights to develop innovative, advanced technology to help protein producers around the world achieve better results. Novus is privately owned by Mitsui & Co., Ltd. and Nippon Soda Co., Ltd. Headquartered in Chesterfield, Missouri, U.S.A. novusint.com.

Novus Animal Nutrition (India) Pvt. Ltd.

Corporate office: 2 Floor, 1 Main Road, Industrial Site No.46, KHB Industrial Area, Yelahanka New Town, Bengaluru - 560064, Karnataka | +91 80 676 82323

Register office: Ground Floor, No. 20, 2 Chithrai Street, Noorbal, Velloppanchavadi, Chennai - 600 077, Tamil Nadu | +91 44 26880782

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India's WOAH Conference Echoes 'Vasudhaiva Kutumbakam' for Animal Welfare and Health



From November 13 to 16, 2023, India will host the 33rd Conference of the WOAH (World Organisation for Animal Health) Regional Commission for Asia and the Pacific. The Department of Animal Husbandry & Dairying, MOFAHD in New Delhi, organised this four-day event.

Shri Parshottam Rupala, Union Minister of Fisheries, Animal Husbandry, and Dairying, spoke at the event's valedictory function today. In his speech, the Minister emphasised the deep significance of animal welfare in the rich tapestry of Indian tradition and culture, exemplifying the interconnectedness of all living beings. He echoes the concept of "Vasudhaiva Kutumbakam," which means "the world is one family," emphasising the importance of harmonious coexistence and interconnectedness among humans, animals, and the environment. He went on to say that animal welfare is integral to the ethos of Indian culture and sanskriti, which aligns perfectly with the modern concept of the global One Health movement, which emphasises the interdependence of human, animal, and

environmental health, as well as the importance of collective efforts for the welfare of all living beings.

The decision to host this event was made during the 90th General Session of the World Assembly of Delegates of the WOAH in Paris in May 2023. The inaugural session, held on November 13, 2023, was presided over by Minister of State for Fisheries, Animal Husbandry, and Dairying, Dr. Sanjeev Kumar Balyan, in the presence of MoS(FAHD), Dr. L. Murugan, and other dignitaries. Smt. Alka Upadhyaya, Secretary, Department of Animal Husbandry and Dairying, and the Indian delegate in WOAH, was elected as the session's chairperson. She emphasised recent initiatives on One Health, the G20 Pandemic Fund, disease surveillance and early warning systems, and the National Digital Livestock Mission, as well as their impact on India's overall livestock health scenario.

Delegates, chief veterinary officers and experts from 24 member countries, senior officers from regional and international organisations, and representatives from the private sector and private veterinary organisations in the region took part in person, with others participating virtually. Dr. Monique Eloit, WOAH Director General; Dr. Baoxu Huang, Delegate China & President, WOAH Regional Commission of Asia and the Pacific; Dr. Abhijit Mitra, Animal Husbandry Commissioner, GoI; and Dr. Hirofumi Kugita, WOAH Regional Representative for Asia and the Pacific, Japan were among the dignitaries.



Delegates and representatives from global and regional organisations discussed pressing animal health issues such as bird flu/avian influenza, rabies, FMD, ASF, and LSD, recognising the need for a collaborative regional approach due to the borderless nature of these diseases. Discussions emphasised the importance of information sharing and the establishment of multi-sectoral coordination mechanisms involving veterinary services, public health, and environmental health, including wildlife conservation. Recognising that effective coordination necessitates equitable financial and resource allocation, the meeting concentrated on preventive measures such as vaccinations, disease intelligence, competent laboratories, and a skilled veterinary workforce.

Indonesia has expressed interest in hosting the 34th WOAH regional conference for Asia and the Pacific. During the valedictory session, Dr. Baoxu Huang, President, WOAH, Regional Commission for Asia Pacific, delivered a vote of thanks.

UK German Pharmaceuticals Honored as the Most Trusted Veterinary Medicine & EH Human Medicine Manufacturers in India at Industry Leaders Awards 2023



Dr Upkar Kansal (MD, UK German Pharmaceuticals) being felicitated by "Mrs. Shilpa Shetty Kundra" at the "Industry Leaders Awards 2023" by Brand Empower.

Mumbai (Maharashtra) [India], More than 500+ delegates from India & Overseas attended Industry Leaders Awards 2023 at Hotel Sahara Star Mumbai on 8th October 2023, including popular celebrities from the world of TV, Web, Bollywood & Digital Space who graced the Carpet of ILA 2023.

Industry Leaders Awards 2023 at Hotel Sahara Star Mumbai on 8th October 2023, including popular celebrities from the world of TV, Web, Bollywood & Digital Space who graced the Red Carpet of ILA 2023.

The Industry Leaders Awards (ILA) 2023, orchestrated by Brand Empower Pvt Ltd, celebrated remarkable achievements across various sectors. UK German Pharmaceuticals proudly stood out, being awarded the prestigious title of Most Trusted Veterinary Medicine & EH Human Medicine Manufacturers in India. The person called on stage to receive this esteemed accolade was Dr. Upkar Kansal, the Managing Director of UK German Pharmaceuticals.

India's most prestigious corporate award event the 2nd edition of Industry Leaders Awards 2023 was organized by Brand Empower Pvt Ltd in association with Webpulse Solution Pvt Ltd. The star-studded event was graced by the glamorous diva, Shilpa Shetty Kundra as the chief guest, and Mr. Rithvik Dhanjani

the presenter & the anchor enhanced the audience's energy with his unique presentation style. The first edition of the Industry Leaders Awards 2022 was held on 20th November 2022 at Delhi NCR, where Sonali Bendre graced the occasion as Chief Guest.

UK German Pharmaceuticals has firmly established itself as a trusted manufacturer of veterinary and human medicines in India. In a brief statement, Dr Upkar Kansal expressed his gratitude, saying, "We are deeply honored to be recognized as the Most Trusted Veterinary Medicine & EH Human Medicine Manufacturers in India at ILA 2023. This award is a testament to our commitment to quality, innovation, and our relentless pursuit of excellence. We will continue to provide healthcare solutions that enhance the well-being of both animals and humans."

At Industry Leaders Awards 2023, some of the notable awardees from the art & entertainment category included, Surveen Chawla, who received the award for "Best Actress OTT for Rana Naidu", Jennifer Winget awarded "Style Icon of The Year", Nia Sharma received "Fitness Icon of The Year", Arjun Bijlani won the award for "Favourite Anchor of The Year", Juhi Parmar was awarded the "Best Debut Actress OTT-Yeh Meri

Family 2", Arjun Mathur won the award for "Outstanding Performer of The Year - Made in Heaven", Anita Hassanandani awarded with "Fan Favourite Star of The Year - Female", Sonnalli Seygall received "Fit & Fab Actor of The Year", Tina Datta won the award for "Best TV Actress - Hum Rahe Na Rahe Hum", Dolly Singh received "Promising Debutant of the Year", and Manisha Rani awarded "Reality Show Entertainer of the Year". Besides this outstanding Entrepreneurs, Companies, Institutions, and Organizations from Manufacturing, Services, Education, Healthcare, Spiritual, Beauty & Wellness, Charity/NGO, Retail & E-commerce, Start-up Company, got honored for their creativity, innovation, quality, and excellent leadership in the respective industry.

The Industry Leaders Awards, organized by Brand Empower Pvt Ltd, remains a platform that recognizes and honors excellence across industries. The event was organized in association with Webpulse Solution Pvt Ltd - Digital Marketing Partner a renowned company specializing in web development, digital marketing, and branding company. Founded in 2011 by Rahul Ranjan Singh, Webpulse Solution Pvt Ltd has earned its reputation by serving over 3000 clients from diverse industries and countries.

Ingenza & Phibro Ethanol Collaborate to Unveil Novel Yeast Strain to Boost Bioethanol Efficiency



the elevated temperatures in the production vessels can stress the yeast, resulting in decreased fermentation performance and, as a



Ingenza and Phibro Ethanol, a division of Phibro Animal Health Corporation, have collaborated to develop a novel yeast strain that will increase yield in commercial bioethanol production under both challenging and standard environmental conditions, accelerating the transition to clean biofuels. This latest innovation, the result of a fruitful and long-standing collaboration between the two companies, will contribute to making this valuable natural resource more widely available for processing into sustainable fuels in a variety of industries.

Bioethanol is produced in the United States by fermenting typically corn-based biomass with yeast. To make the glucose in this feedstock available to the yeast, however, large amounts of enzymes, including glucoamylase (GA), must be added. Furthermore,

result, lower ethanol yield.

The successful collaboration between Ingenza and Phibro sought to address this issue, resulting in the market introduction of KinetX® yeast solutions - a highly thermotolerant yeast strain that secretes GA throughout the growth and fermentation stages. Ingenza's proprietary strain construction and adaptive laboratory evolution (ALE) platforms were used to create the novel strain. It outperforms traditional yeasts in terms of robustness and reliability at higher temperatures while significantly reducing GA addition, providing significant financial benefits to bioethanol producers. Additional next generation yeast lines in the KinetX portfolio will be introduced to the international market in the near future, along with other programmes incorporating other

novel technologies to deliver even higher bioethanol yields.

According to Dr Leonardo Magneschi, Head of Molecular Biology at Ingenza increasing the efficiency of bioethanol production is critical to boost the commercial viability of biofuels as green alternatives to the fossil fuels we currently rely on. We are fully committed to Phibro's goals, and we are confident that our ongoing collaboration will play a leading role in reducing the carbon footprint of the transport sector, thereby assisting in the achievement of global sustainability targets.

Ingenza's expertise in custom-built strain development, ALE, high throughput screening, and technology transfer has been critical to the successful implementation and scale-up of our industry-leading products said Dr Stephanie Gleason, Director of Technology at Phibro. We look forward to collaborating with Ingenza in the future to implement additional innovations that will aid the global transition to environmentally friendly, bio-based fuels.

Canada Scores Win in Dairy Market Dispute with US, Panel Rejects Allegations

A settlement panel has rejected the United States Trade Representative's office's complaints about how Canada allocates its dairy import quotas.

The federal government is celebrating a significant victory in its ongoing dispute with the US over access to Canada's dairy market.



It is the second panel in three years to investigate US complaints that Canada unfairly favours processors over producers.

The findings of the first one, released in December 2021, were overwhelmingly in favour of the United States, despite Ottawa's efforts to portray it as a victory.

U.S. Trade Representative Katherine Tai and Agriculture Secretary Tom Vilsack both expressed disappointment with the outcome but stated that they will continue to press Canada on its trade obligations.

Meanwhile, International Trade Minister Mary Ng is portraying the latest findings as a vindication of Canada's approach to dairy import quotas.

According to the federal government, Canada's dairy industry generated \$8.2 billion in farm cash receipts and \$17.4 billion in sales last year, supporting over 70,000 production and processing jobs across the country.

The dispute centres on how Canada allocates its dairy tariff rate quotas, or TRQs, which are the quantities of certain dairy products that can enter Canada at lower duty levels under the terms of the United States-Mexico-Canada Agreement.

The first dispute resolution panel, which convened in May 2021, largely agreed with the United States' complaint that Canada's strategy violated the terms of the agreement, known north of the border as CUSMA.

Since the USMCA became law in the

summer of 2020, disagreements and disputes have become a recurring feature. Canada and the United States are jointly chastising Mexico for energy policies that they claim unfairly favour domestic suppliers and threaten to undermine American efforts to jump-start the green energy industry and combat climate change. And, in January, Canada and Mexico won a significant victory when a separate panel ruled against the United States' interpretation of the rules that determine whether core automotive parts are of domestic or foreign origin. The United States has not stated whether it intends to comply with that decision.

Combatting Antimicrobial Resistance: World Awareness Week Spotlights Critical Actions



World Antimicrobial Awareness Week
Preventing Antimicrobial Resistance Together



This year's World AMR Awareness Week, which runs from November 18 to November 24, focuses on the critical actions required to combat antimicrobial resistance (AMR).

When bacteria, viruses, fungi, and parasites no longer respond to the active ingredients, or antimicrobial agents, in medicines used to treat them, AMR occurs. When antibiotics and other antimicrobial

agents (used to treat bacterial infections) become ineffective, infections become difficult or impossible to treat, increasing the risk of disease spread, severe illness, and death.

Each year, AMR causes nearly 5 million human deaths due to bacterial infections alone. This, combined with a lack of R&D investment in new antimicrobials, has led WHO to name AMR as one of the top ten global public health threats facing humanity.

The misuse and overuse of antimicrobials, both for human health and in food production, is the primary driver of AMR, which threatens humans, animals, plants, and the environment. Many countries have developed multi-sectoral AMR national action plans (NAPs) to guide the necessary urgent action. According to recently released data from the annual Tracking AMR Country Self-assessment Survey, which monitors implementation of countries' NAPs, while 93% of countries have established AMR NAPs and 68% are

implementing some elements of their plans, only 27% of countries have a costed and budgeted NAP, including a monitoring and evaluation framework, and only 11% have made financial provisions in their national budget to support AMR NAPs. Countries urgently need to strengthen AMR governance and leadership, as well as additional financial and technical

assistance to develop, prioritise, implement, and monitor their NAPs.

WHO created the Access, Watch, Reserve (AWaRe) antibiotic book in order to improve antimicrobial use in humans worldwide. The publication includes evidence-based treatment recommendations for over 30 common infections, including when antibiotics are not required. WHO is still working with countries to figure out how to best adapt the book to their specific needs. During WAAW, editions in French and Spanish will be published.

World Antimicrobial Resistance Awareness Week, with the theme "Preventing Antimicrobial Resistance Together," encourages leaders and communities from various sectors to work together to preserve antimicrobials and protect the health of people, animals, plants, and the environment. This critical issue will be a major focus at the UN General Assembly High-Level Meeting on AMR in September 2024, when countries will be urged to make bold commitments to combat AMR and work towards internationally agreed targets and accelerated action in countries.

Revolutionizing Veterinary Care: The Impact of AI in Animal Health

The Global AI in Animal Health market was valued at USD 901.81 Million in 2022 and is expected to grow at a Compound Annual Growth Rate (CAGR) of 11.13% by 2028, reaching USD 1688.54 Million in 2028.

Within the veterinary and animal healthcare industries, this market

has emerged as a dynamic and transformative force. AI is revolutionising animal diagnosis, treatment, and care by leveraging cutting-edge technologies, resulting in improved animal welfare, improved disease management, and more efficient veterinary practices. AI technologies such as machine learning, computer vision, natural language processing, and predictive analytics are being used to address a variety of animal health challenges.

One of the most significant areas of impact is in disease detection and diagnosis. AI algorithms can analyse large datasets of medical images, such as X-rays and MRIs, as well as biological samples, identifying subtle patterns and anomalies that humans may miss. This capability enables veterinarians to detect diseases such as cancer, joint disorders, and infections at an earlier stage, allowing for prompt intervention and increasing the likelihood of successful treatment.

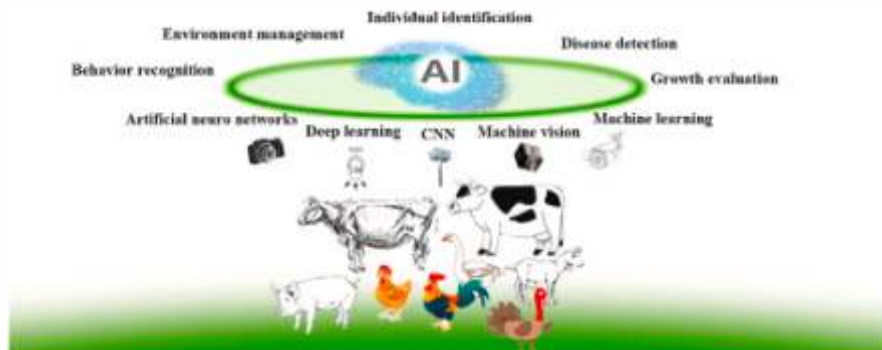
Furthermore, AI-powered predictive analytics are transforming animal health care. AI systems can generate insights and forecasts about potential health risks and disease outbreaks by analysing historical health data, genetic information, and environmental factors. This proactive approach enables veterinarians and animal health professionals to implement preventive measures, optimise vaccination strategies, and reduce

disease spread among animal populations.

AI integration has also resulted in significant advancements in telemedicine and remote monitoring. AI-enabled wearable devices and sensors can continuously monitor animals' vital signs, behaviour, and activity levels. This real-time data can be transmitted to veterinary professionals, allowing for remote monitoring of an animal's health status and prompt intervention when needed. This is especially useful in livestock management, where early disease detection can save money and ensure the safety of the food supply chain.

AI adoption in animal health has resulted in more streamlined and personalised treatment plans. AI algorithms assist veterinarians in tailoring treatment protocols optimised for each patient by analysing individual animal characteristics, medical history, and treatment outcomes. This personalisation not only improves treatment efficacy but also reduces side effects and healthcare costs for animal owners.

However, in addition to its promises, the AI in Animal Health market faces some challenges. Concerns about data privacy and security, as well as the need for robust and diverse datasets, are all critical considerations. Furthermore, the incorporation of AI technologies into established



veterinary practices necessitates proper training and education for veterinarians and animal health professionals in order to ensure effective utilisation and optimal results.

Finally, the global Artificial Intelligence in Animal Health market is undergoing rapid growth and innovation, reshaping the veterinary care and animal welfare landscape. Artificial intelligence (AI) technologies enable early disease detection, predictive analytics, remote monitoring, and personalised treatment plans, all of which contribute to better animal health outcomes and more efficient veterinary practices. As the industry evolves, addressing issues such as data privacy, training, and integration will be critical to fully utilising AI's potential in advancing animal health and well-being.

Global Methane Hub Launches \$200M Initiative to Tackle Livestock Methane Crisis



The Global Methane Hub (GMH) has announced a \$200 million funding initiative for research and development (R&D) technologies to address and reduce methane emissions from livestock. The Enteric Fermentation R&D Accelerator, or Accelerator, is the largest-ever, globally coordinated investment of breakthrough research tackling livestock methane emissions. The Accelerator will unite funders,

guided by a science oversight committee, to invest in a globally coordinated research plan. This strategy aims to address gaps in current research and enhance existing efforts.

About 40% of the world's methane emissions come from agriculture, with 70% of that due to enteric fermentation. Current research on enteric fermentation is not extensive or coordinated enough to provide efficient and transformative solutions to significantly benefit farmers. This is the latest milestone to mark the impact GMH has had on global methane reduction efforts since its founding in December 2021.

Agricultural methane is projected to increase 40% by 2050, and we would have to reduce emissions by 50% to meet the accords of the Paris Agreement to keep the global temperature rise to a maximum of 1.5 degrees Celsius. Reducing methane emissions from all sectors, including agriculture, is the fastest way to mitigate climate change.

Some core projects core to the Accelerator have already commenced:

Rumen Gateway: A global effort led by Queen's University Belfast and involving more than 20 institutions worldwide, it will explore the microbial world within rumen, a complex and little-studied ecosystem in livestock. This project builds on previous research within the Global Research Alliance on Agricultural Greenhouse Gases and aims to enhance scientific understanding of rumen.

Breeding Low-Methane Cattle: An innovative project by Wageningen University aims to introduce a global effort to specifically select cows with low methane emissions. This initiative integrates the reduction of methane alongside

traditional breeding goals like milk quality and weight.

Identifying Low Methane Forages: With support from the Bezos Earth Fund and the Bill & Melinda Gates Foundation, a long-term project led by the Alliance of Bioversity International and the International Center for Tropical Agriculture (CIAT) aims to discover ways to screen, breed, replicate, and deploy low-methane feed and grasses in pastures across the Global South.

Wearable Methane Tracking Device: Current equipment for tracking individual cattle emissions has drawbacks in terms of cost, accuracy, and scalability, especially in free-grazing situations.

Nominations Open for World Dairy Expo® Recognition Awards 2024

Nominations for the 2024 World Dairy Expo® Recognition Awards will be accepted until February 1, 2024. Dairy leaders will be honoured in three categories this year: Dairy Producer of the Year, Industry Person of the Year, and International Person of the Year. Individuals are encouraged to be nominated by organisations, academic staff, producers, and others involved in the dairy industry for their outstanding work and dedication to the dairy industry.

Qualifications for each of the three awards are as follows:

Year's Dairy Producer(s): Awarded to an active dairy producer whose primary source of income comes from his or her dairy business. While incorporating progressive management practices, this producer excels in efficient production and the breeding of quality dairy animals. The award



recipient's involvement in the community, government, marketing, and the World Dairy Expo will also be considered.

Industry Person(s) of the Year: This award is given in recognition of an individual's outstanding performance in research, development, education, marketing, manufacturing, or other fields related to an industry or institution that provides goods or services to the dairy industry. This award recipient must be a US citizen and an active dairy producer whose primary achievements are industry-related.

Person(s) of the Year International: The recipient of this award will be recognised for his or her contribution to international research, development, education, marketing, manufacturing, or other fields that are part of an industry or institution that provides goods or services to the international dairy industry.

The nomination form can be obtained by visiting worlddairyexpo.com or by contacting the Expo office at 608-224-6455 or wde@wdexpo.com. The recipients of these prestigious awards will be honoured on Wednesday, October 2, at the Alliant Energy Centre in Madison, Wisconsin, during World Dairy Expo 2024.

World Dairy Expo, the global dairy

industry's meeting place, brings together the latest in dairy innovation and the best cattle in North America. The global dairy industry will return to Madison, Wisconsin, on October 1-6, 2023, for the 56th event, which will feature the world's largest dairy-focused trade show, dairy and forage seminars, a world-class dairy cattle show, and more.

Arla Foods, Solinest Team Up to Deliver Arla Skyr & Arla Protein to French Consumers

Arla Foods and Solinest, a European dairy cooperative, have collaborated to launch Arla Skyr and Arla Protein in order to expand in the French market. They signed a long-term partnership agreement to launch the two dairy brands in

French retail, and the products are now available in stores across France.

Increased consumer interest in the functional health dairy category is driving the company's entry into one of Europe's largest dairy markets.

Arla Foods will produce the products at its Northern European dairies, while Solinest will distribute them in France, where they will cover 99% of retail.

According to Arla, the dairy protein category is rapidly expanding as consumers seek a nutritional boost to support an active lifestyle. The category is experiencing exceptionally high growth across markets and sub-categories, increasing by 15% to 20% per year.

The dairy protein category is rapidly expanding as consumers seek nutritional supplements in the midst of hectic schedules and an active lifestyle. This is also true in France, where demand for dairy products that promote functional health is increasing by 20% per year.

Arla Protein has grown by more than 50% since last year, and total revenue is expected to exceed €100



million by 2023, according to the company.

In a highly competitive market, there is a lot of potential. Arla Foods has been active in France for over 20 years, and despite the presence of giants such as Lactalis and Danone, the dairy cooperative has performed well.

Revenue in 2022 is expected to be €42 million, and the company is on an aggressive growth trajectory thanks to the new partnership.

Celebrating India's Dairy Excellence: Guwahati Hosts National Milk Day 2023 Festivities



Guwahati celebrated "National Milk Day 2023" with the Department of Animal Husbandry and Dairying. This special day commemorates the birth anniversary of Dr. Verghese Kurien, the "Father of the White Revolution in India," and highlights the achievements and significance of our country's dairy sector.

The chief guest was Shri Parshottam Rupala, Union Minister for Fisheries, Animal Husbandry, and Dairy. Shri Atul Bora, Minister of Agriculture, Animal Husbandry and Veterinary, Govt of Assam, and Shri Parimal Shuklabaidya, Minister of Transport, Fisheries and Excise, Assam, Shri Tage Taki, Members of Parliament from Assam, and other dignitaries graced the occasion.

While congratulating the winners, Union Minister of Fisheries, Animal Husbandry, and Dairying emphasised that India is the world leader in milk production and is making a name for itself in global markets. The Minister emphasised the importance of youth in bolstering the dairy sector and entrepreneurial efforts to grow the sector. This comprehensive approach demonstrates the country's commitment to fostering both domestic and international dairy sector growth, as well as nurturing the innovative spirit of its youth.

During the event, Union Minister Shri Rupala released the "Basic Animal Husbandry Statistics 2023," which shows the milk, egg, meat, and wool production in 2022-23, as well as a Coffee Table Book titled "Milky Way Over the Years," which highlights the dairy sector's ten-year achievements. Shri Parshottam Rupala, Union Minister, has also launched the A-HELP (Accredited Agent for Health and Extension of Livestock Production) training programme for the state of Assam and distributed kits to the first training batch.

Shri Atul Bora emphasised the Assam government's efforts to help farmers increase milk production by introducing sex-sorted sperm across the state. He also mentioned that the Assam government is working to develop market links and value-added milk products.

Ms. Alka Upadhyaya, Secretary, Department of Animal Husbandry and Fisheries, stated in her address that the dairy sector is expanding and playing an important role in our country's economy.

The Best Dairy Farmer rearing indigenous cattle/buffalo breeds, Best Artificial Insemination Technician, and Best Dairy

Cooperative Society (DCS)/ Milk Producer Company/ Dairy Farmer Producer Organisation in the country received National Gopal Ratna Awards.

The event also included a pledge for Constitution Day and a livestream of the 107th edition of "Mann Ki Baat."

A Walkathon and Yoga session were held in the morning before the event, with the active participation of Veterinary students and the NCC unit of Assam Veterinary College, the State Animal Husbandry Department, NDDDB, and WAMUL.

There will also be an exhibition showcasing innovative startups, entrepreneurs, and milk unions, as well as a technical session on "Feed and fodder for Sustainable Milk Production." More than 3000 farmers from Assam and other NER states attended the event.

National Gopal Ratna Awards conferred on 26th November 2023 as a part of National Milk Day celebration 2023

Union Minister for Fisheries, Animal Husbandry and Dairying Shri



Parshottam Rupala conferred the National Gopal Ratna Awards on 26th November 2023 at Veterinary College Ground, Guwahati, Assam.

Chief Minister, Assam, Dr. Himanta Biswa Sarma and Minister of State for Fisheries, Animal Husbandry and Dairying, Dr. Sanjeev Kumar Balyan were also present during the award ceremony. Department of Animal Husbandry and Dairying is organizing National Gopal Ratna Award 2023 as a part of National Milk Day celebration 2023.

National Gopal Ratna Award is one of the highest National Awards in the field of livestock and dairy sector, with an objective to recognize and encourage all individuals like Farmers rearing indigenous animals, AI Technicians and Dairy cooperative societies / Milk Producer Company/Dairy farmers Producers Organizations working in this sector. The Award is conferred in three categories, namely,

- i. Best Dairy Farmer Rearing Indigenous Cattle/buffalo Breeds,
- ii. Best Dairy Cooperative/ Milk Producer Company/ Dairy Farmer Producer Organization).
- iii. Best Artificial Insemination Technician (AIT) and

Award consists of a cash prize of Rs. 5 lakh for 1st rank, Rs. 3 lakh for 2nd rank and Rs. 2 lakh for 3rd rank along with a Certificate of merit and a memento in first two categories i.e Best Dairy Farmer and Best DCS / FPO/ MPCs.

In case of Best Artificial Insemination Technician (AIT) category, National Gopal Ratna Award-2023 consists of a Certificate of merit and a memento only.

The winners in each category as under:

Best Dairy farmer rearing indigenous cattle/buffalo breeds - Shri Ram Singh, Karnal, Haryana.

Dairy Cooperative society/Milk Producer company/ Dairy Farmer

producer organization - Pulpally Ksheerolpadaka Sahakarana Sangam D Ltd, Wayanad, Kerala.

Artificial Insemination Technician (AIT) - Shri Suman Kumar Sah, Araria, Bihar.

The applications were invited through the online application portal i.e. <https://awards.gov.in> developed by Ministry of Home Affairs (MHA) during 15.08.2023 to 15.10.2023. A total of 1770 applications were received.

Guru Angad Dev Veterinary University Set to Launch i-TBI Centre



The Guru Angad Dev Veterinary and Animal Sciences University is planning to build Punjab's first Dairy-Based Inclusive Technology Business Incubation (i-TBI) Centre on its campus for Rs 4.23 crore.

The Department of Science and Technology (DST) is expected to contribute significantly to the endeavour.

Dr. Inderjeet Singh, Vice Chancellor, stated that this would be the region's first-of-its-kind Dairy Innovation & Incubation Centre, promoting innovations that lead to entrepreneurship and self-

employment in the livestock sector. This initiative is consistent with our goal of establishing a sustainable and technologically advanced dairy ecosystem.

(i-TBI) is a three-year initiative supported by DST for educational institutions, idea-generators, innovators, and entrepreneurs to support innovative ideas, startup initiatives, and promote self-employment and job creation through incubation, according to Dr R S Sethi, Additional Director of Research-cum-Principle Investigator.

Dr. Sethi stated that the DST will provide Rs 4.23 crore to establish the centre, which will provide maker space, conference spaces,

and other amenities to startups. Furthermore, individual financial assistance in the form of seed money would be provided in accordance with DST criteria.

Happy Nature Secures \$300K Pre-Series A Funding Led by Inflection Point Ventures

Inflection Point Ventures (IPV) led a \$300,000 Pre-Series A funding



round for Happy Nature, a direct to consumer breakfast brand. Happy Nature will be able to expand its mission of providing high-quality, ethically sourced milk, dairy, and breakfast essential products to its customers as a result of this investment. According to Vikas Singh, CEO of Happy Nature, the company will strategically expand sales through impactful ATL and BTL activations with this infusion.

This round's funds will be used for a variety of purposes, including branding, technology upgrades, processing plant improvements, and geographical expansion. Happy Nature intends to improve its sales, marketing, and branding efforts, as well as to accelerate sales growth and improve customer engagement initiatives.

According to Rahul Wagh, Managing Director of Inflection Point Ventures, Happy Nature is emerging as a preferred D2C brand for thousands of consumers because it is using a tech-enabled platform to help farmers sell their products to newer catchment areas. Happy Nature currently operates in Delhi, Noida, Gurgaon, Karnal, Panipat, Ludhiana, Ambala, Zirakhpur, Panchkula, Chandigarh, and Mohali, serving over 100,000 customers and processing over 15,000 orders daily.

Happy Nature is a technology-enabled company that operates in India's dairy industry, which is the world's largest milk producer. Small farmers face challenges, which the company addresses by providing

them with access to resources and markets. It also addresses consumer concerns by providing 100% clean label and preservative-free milk, dairy, and breakfast products via a simple subscription and delivery model. Happy Nature's innovative approach aims to preserve the dairy way of life while ensuring the mutual benefit of farmers and consumers.

The lead investor in this funding round, Inflection Point Ventures (IPV), has a track record of investing over Rs 600 crore across 190+ deals. IPV is an angel investing platform that provides monetary and experiential capital to new-age entrepreneurs. The firm connects entrepreneurs with a diverse group of investors and has recently launched Physis Capital, a \$50 million CAT 2 AIF to invest in pre-Series A to Series B growth-stage start-ups.

Happy Nature now has locations in Delhi, Noida, Gurgaon, Karnal, Panipat, Ludhiana, Ambala, Zirakhpur, Panchkula, Chandigarh, and Mohali. Every day, the company serves over 100,000 customers and processes over 15,000 orders. Happy Nature's strengths are based on its own dairy farm ecosystem, which ensures fresh, high-quality products, tamper-proof packaging for food safety, and an in-house last mile delivery system for seamless and dependable service.

Happy Nature aims to generate Rs 1,500 crore in annual revenue over the next five years by focusing on a Serviceable Addressable Market of 55 million households and capturing a Serviceable Obtainable Market of 3,00,000 households.

The recent funding round led by Inflection Point Ventures will fuel Happy Nature's growth and allow it to expand its reach in the milk, dairy, and breakfast essential industries. Happy Nature is

redefining the breakfast experience for consumers across India through its commitment to quality, sustainability, and customer-centricity.

Kerala Recognizes Veterinarians' Role in Milk Production, Announces 'Gau Mitra' Awards



Veterinarians will receive state-level 'Gau Mitra' awards for their contributions to milk production, according to Kerala Feeds Ltd. The awards will recognise their contributions to ensuring milk production self-sufficiency, increasing milk production, profitability for dairy farmers, scientific feeding patterns, and the use of government funds for farmer benefit. A national expert committee will be formed to select the best veterinarian. Dairy Development and Animal Husbandry Minister J. Chinchurani made the announcement while honouring the top dairy farmers in the state. Mohandas M.V., Beena Abraham, and Sindhu P.C. were among those honoured for supplying large amounts of milk to cooperative societies. The Managing Director of Kerala Feeds emphasised the importance of scientific feeding patterns for cattle

in order to improve dairy productivity. The government intends to achieve milk self-sufficiency, emphasising the critical role of veterinary professionals.

Tamil Nadu Plans State-of-the-Art Dairy Plant in Namakkal, NDDB Takes the Helm

A high-tech dairy plant with a daily capacity of two lakh litres will be built in Tamil Nadu's Namakkal district soon. The project has been handed over to the National Dairy Development Board (NDDB), a statutory body under the Union Ministry of Fisheries, Animal Husbandry, and Dairying.

The project will allow Tamil Nadu Co-operative Milk Producers' Federation Limited to NDDB to engage in a turnkey production of two lakh litres per day at the plant. The state animal husbandry department announced that the plant would cost Rs 89 crores, and a Government Order relating to the announcement was issued on November 16, Thursday. It was issued by Mangat Ram Dharma, the state government's additional chief secretary for Animal Husbandry, Dairy, Fisheries, and Fishermen Welfare Department.

According to the Tamil Nadu government, NDDB was awarded the project due to its public sector status and expertise in dairy infrastructure project execution for dairy cooperatives. The scheme's main goal is to ensure the livelihood and economic upliftment of milk producers in Namakkal district. This project is critical for meeting the future demand of consumers and the milk processing industry.

Assam Government, NDDB Join Hands for State's Dairy Sector Transformation



The Assam government has signed a Memorandum of Understanding (MoU) with the National Dairy Development Board (NDDB) in a significant step towards transforming the rural landscape through dairy farming. This collaboration is expected to result in comprehensive development of the state's dairy sector.

Assam's Minister of Animal Husbandry and Veterinary, Atul Bora, revealed that the state government has set an ambitious goal of increasing daily milk production to 39 lakh litres. The current capacity is 29 lakh litres per day, with an additional 10 lakh litres per day planned.

Minister Bora emphasised the government's goal of making Assam self-sufficient in milk and egg production over the next few years. The state's collaborative efforts with NDDB aim to establish six mega plants to increase production and processing capabilities.

The Assam government has launched a number of initiatives to help the state's dairy industry grow. Minister Bora emphasised that

approximately 95 percent of total milk production in the state is currently unorganised.

The state government of Assam has identified three sites for mega milk processing plants, each with a capacity of one lakh litres per day. These plants will be established

through a joint venture company of NDDB and the state government as part of the Assam Dairy Development Plan.

The Assam government and NDDB signed a historic agreement in January of the previous year to form a Rs 2,000-crore joint venture. The goal is to achieve holistic development in the state's dairy sector over the next seven years, with a goal of processing 10 lakh litres of milk through six new units.

Telangana's Premium Dairy Brand, Sid's Farm, Eyes Maharashtra Expansion in 2024

Sid's Farm, a premium dairy brand based in Telangana with a presence in Hyderabad and Bengaluru, is thinking about expanding to more cities in Andhra Pradesh and Telangana, as well as venturing into Maharashtra in 2024. Hyderabad is the location of the brand's farm. It intends to establish a farm in Bengaluru.

In 2020-2021, the company's turnover was Rs.44 crore, which increased to Rs.64.5 crore in 2021-2022. Because of its premium positioning based on transparency and healthy produce, the brand may be unable to expand into the country's smallest cities or towns, limiting itself to metros or, at most, tier 1 cities.

For the time being, Sid's farm is attempting to strengthen its presence in Bengaluru. The company also intends to expand its product line. It recently collaborated with Doodh Peda to launch a dessert line. In keeping with its positioning, the brand wished to expand into healthy desserts free of preservatives.

Digivridhhi Technologies Raises \$6M in Series A, Eyes Expansion Across Five States

Digivridhhi Technologies (DGV), a dairy-focused neobanking startup, has raised INR 50 Cr (\$6 Mn) in a Series A funding round led by Omidyar Network India, with participation from existing investors including Omnivore and InfoEdge Ventures, among others.

The Bengaluru-based company will use the new funds to expand its presence in Karnataka, Andhra Pradesh, Telangana, Madhya Pradesh, and Maharashtra. It also intends to use the funds for technological innovation and expanding its product portfolio.

Digivridhhi, launched in 2019 by IDFC Bank's founding member and former business head Ragavan Venkatesan, provides dairy farmers and microenterprises with access to institutional credit while easing and

digitising payments across the dairy value chain. It provides banking services, as well as other financial services and insurance products.

We simplified the payment value chain for dairy farmers and microenterprises with DGV PAY, assisting them with their basic banking needs. We have created a unique underwriting mechanism that facilitates digital working capital and bovine loans through DGV MONEY by integrating ERP systems across the dairy value chain.

He went on to say that the livestock management industry in India represents a \$70-\$80 billion opportunity. DGV CONNECT intends to fill these gaps through embedded financing options.

Digivridhhi received \$3.1 million in seed funding in 2021 from Omnivore and InfoEdge Ventures.

According to an IMARC Group study, the dairy industry market in India reached INR 16,792.1 Bn in 2023 and is expected to grow to INR 49,953.5 Bn by 2032, at a CAGR of 13%.

Maharashtra Plans to Distribute 12.5 Lakh Cattle to Fuel Dairy Expansion

The state's animal husbandry department, which is optimistic about the dairy industry, has planned a large cattle drive in the Vidarbha and Marathwada regions. A proposal to provide 12.5 lakh cattle to farmers in the two regions over the next five years could be presented to the state cabinet soon. It means that over 2 lakh cattle will be distributed to farmers in a single year.

The animal husbandry department has also devised plans to increase the bovine population.

Methods would include artificial breeding with sex-sorted sperm to increase the likelihood of female offspring, cattle surrogacy, and encouraging mini ranches through central subsidy, among others.

The dairy industry can only thrive if output is increased. With the introduction of a large number of animals, an entire ecosystem of dairies, food processing, fodder, and related industries may emerge. Union minister Nitin Gadkari also mentioned the plan at the closing ceremony of Agrovision, a farmers' expo he supports.

During Agrovision, the plan also coincided with the groundbreaking ceremony for Mother Dairy's new plant.

Aside from artificial insemination, embryo transplantation will be used, similar to human surrogate motherhood. The embryo created from a high-yielding variety's egg and sperm will be transplanted into the womb of another cow. A good Indian breed embryo can be implanted in the womb of a Jersey or Holstein cow, and vice versa. All breeds, including buffaloes, will be encouraged.

Under the Centre's breed multiplication programme, the state will also encourage entrepreneurs to start cattle farms. This programme provides a 50% subsidy up to Rs 2 crore for the establishment of a farm with 200 cows. These farms could serve as hubs for breeding cattle for the programme using cutting-edge techniques.

Similar efforts will be made in Maharashtra State Livestock Board farms, which have eight facilities in the state, three of which are in Vidarbha. Floating tenders will also be used to purchase cattle from other states. Instead of giving farmers a single or two milch animals, the idea is to expand dairy farming on a larger scale in villages.

Editorial Calendar 2023

| | | | |
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| Publishing Month: January Article Deadline : 28th, Dec. 2022 Advertising Deadline : 30th, Dec. 2023 Focus : Climate Management | Publishing Month: February Article Deadline : 28th, Jan. 2023 Advertising Deadline : 30th, Jan. 2023 Focus : Nutritional Deficiency Effects | Publishing Month: March Article Deadline : 26th, Feb. 2023 Advertising Deadline : 28th, Feb. 2023 Focus : Herd / Breed Management - Fertility, Breeding & Reproduction | Publishing Month: April Article Deadline : 28th, March 2023 Advertising Deadline : 30th, March 2023 Focus : Disease Prevention/ Risk Assessment |
| Publishing Month: May Article Deadline : 28th, April 2023 Advertising Deadline : 30th, April 2023 Focus : Small Ruminants Management (Sheep, Goat etc) | Publishing Month: June Article Deadline : 28th, May 2023 Advertising Deadline : 30th, May 2023 Focus : Calf & Heifer Management | Publishing Month: July Article Deadline : 28th, June 2023 Advertising Deadline : 30th, June 2023 Focus : Milk Production Management/ Milking Practices | Publishing Month: August Article Deadline : 28th, July 2023 Advertising Deadline : 30th, July 2023 Focus : Feed & Fodder |
| Publishing Month: September Article Deadline : 28th, August 2023 Advertising Deadline : 30th, August 2023 Focus : Vaccination Protocols/ Cattle Herd Immunization | Publishing Month: October Article Deadline : 28th, September 2023 Advertising Deadline : 30th, September 2023 Focus : Dairy By-products | Publishing Month: November Article Deadline : 28th, October 2023 Advertising Deadline : 30th, October 2023 Focus : Potential of Dairy Farming | Publishing Month: December Article Deadline : 28th, November 2023 Advertising Deadline : 30th, November 2023 Focus : Calf Management |

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