

# DAIRY PLANNER

HARBIL/2004/22481

Title Code HARBIL00698

Vol.19 | No. 11 | November - 2022



**Shri. Bhasurangan N**  
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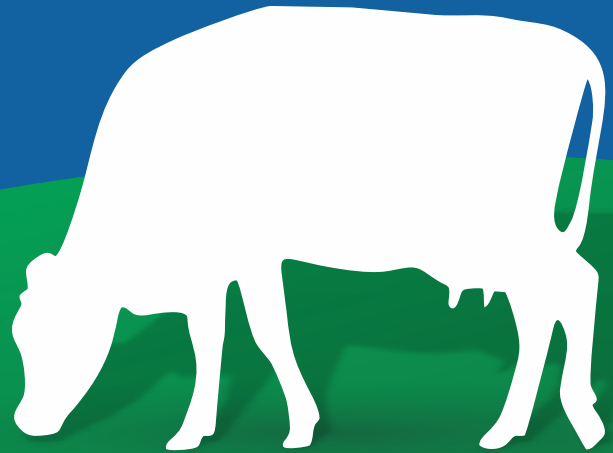
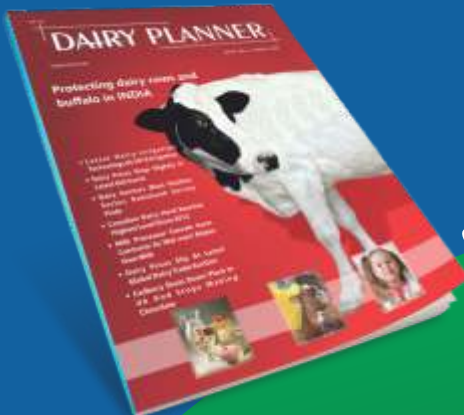
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# From the Pen of Chief Editor



## Wintertime management of Dairy Cattle

As the weather turns colder, it's critical to take extra care of your dairy animals. During the winter, dairy cattle require extra attention. Cold weather can stress cattle and cause health problems, so it is critical to take precautions to protect them from the elements.

During the winter, cattle should be housed in a clean, dry, well-ventilated barn or shed. To keep animals comfortable and dry, bedding materials such as straw or wood shavings should be used. Cattle should always have access to fresh water, and their feed should be stored in a dry place to avoid spoilage. Animals should be checked for signs of illness on a regular basis, and any sick animals should be isolated from the rest of the herd. Cattle should be immunised against common diseases like foot rot and pinkeye.

Dairy animals need more energy to maintain their body temperature in the winter, so they need a higher quality and quantity of feed.

Hoof problems can arise from wet, icy conditions and lack of dry ground. This can lead to cracking, chipping, and even breaks in the hooves. Colds and respiratory infections are more common in winter because of the colder, wetter weather. These can cause significant production losses in dairy animals. Mastitis is another common problem during the winter, as bacteria thrive in colder, wetter conditions. This can lead to decreased milk production and quality, as well as increased culling rates. Metabolic disorders such as ketosis and hypocalcemia can also be more common in winter due to the stress of the cold weather and lack of forage availability. These can cause significant health problems in dairy animals and lead to decreased milk production.

There are a number of ways that dairy farmers can prevent the problems associated with winter management of their animals:

- Ensuring that animals have access to fresh, clean water at all times is also vital, as dehydration can lead to a number of health problems.
- Providing a balanced diet is key, as this will help animals maintain their body heat and energy levels during the colder months.
- Finally, regular monitoring of animals is essential to identify any potential problems early on so that they can be treated quickly and effectively.
- In order to maintain optimal production and health in dairy animals during the winter months, there are a few key management practices to keep in mind.

To summarise, winter management of dairy animals is a critical process that necessitates meticulous planning and execution. Housing, feeding, water quality, and health care are all important considerations. By following these guidelines, you can help ensure that your dairy animals remain healthy and productive throughout the winter.

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Publisher, Printer : **Mr. Vishal Gupta** on Behalf of **Pixie Consulting Solutions Ltd.** Karnal.

Printed at : Jaiswal Printing Press, Jain Market, Railway Road Karnal.

Published at : C/o OmAng Hotel, Namaste Chowk, Near Janta Petrol Pump, KARNAL - 132001 (Haryana) INDIA

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# Use of Growth Promoters and their Alternatives in Animals



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## Introduction

Growth promoter term is referred to any medication that eliminates or inhibits bacteria and is given to food animals at a low, subtherapeutic dose. They are applied to improve production efficiency and growth rate of animals. The usage of antibiotic growth promoters has increased along with the expansion of livestock farming. Farm animals produce less when they are infected, but it has been proven that using low-dose antibiotics and antimicrobials can effectively control the infectious agents. Antibiotic growth promoters are used to help growing animals digest their food more effectively, reap the most nutritional benefits from it, and grow into robust, healthy adults, according to the National Office of Animal Health (NOAH, 2001). Growth promoter use is mostly an issue with intensive farming practices, and industrialized nations are more likely to experience this issue than emerging nations. As per the market overview, animal growth promoter market is estimated to register a Compound Annual Growth Rate (CAGR) of 5.3% during 2022-2027. The animal growth promoters market is fairly consolidated, with many large and small international players occupying the overall market globally. The major players are Cargill Inc., DSM, Elanco Animal Health Inc., Zoetis Inc., DuPont de Nemours Inc., Alltech Inc., Novozymes A/S, and other companies. Thus, growth promoters are primarily used in agricultural animals to promote growth, enhance protein and fat distribution, and improve the feed to muscle conversion ratio.

Although the precise mode of action of growth promoters is unclear, it is thought that antibiotics suppress

sensitive bacterial populations in the intestines. In order to explain how they work, four theories have been put forth: (1) nutrients may be protected from bacterial oxidation; (2) nutrient absorption may improve due to a thinning of the small intestine barrier; (3) antibiotics may reduce the production of toxins by intestinal bacteria; and (4) there may be a decrease in the frequency of subclinical intestinal infections. Antibiotics are used to speed up the growth and improve feed efficiency especially to large number of meat-producing animals, which are raised quickly to slaughter weight before they achieve physical maturity. For therapeutic and preventative purposes, they are supplied with feed and water, however when used as growth promoters, they are added to feed at a lower dosage than when used for treatment.

## Different types of growth promoters

Many antibiotics have been used as growth promoters and few of them are explained below:

### a. Bambermycin

A glycolipid antibiotic generated by *Streptomyces* species including *S. banbergiensis*, *S. ghanaensis*, and *S. ederensis* and is also known as monomycin. Flavophospholipol, and flavomycin is a glycolipid that contains phosphorus, serves as the product's primary component. Bambermycin is solely utilised as an antibacterial in animal diets that promotes growth. It binds to Penicillin binding proteins (PBPs) and prevents cell wall polymerization. Although PBPs are the primary site of action for  $\beta$ -lactams, bambermycin and  $\beta$ -



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lactams do not share any cross resistance. It is generally effective against gram positive organisms, while it can occasionally suppress some gram negative microorganisms as well.

#### **b. Streptogramins**

They always have an A component and a B component that work together synergistically. They are part of the class of antibiotics known as macrolides, lincosamide, and streptogramin group of antibiotics. The macrolides and macrocyclic lactone peptolides make up streptogramin A and B, respectively. The lactone ring is absent from lincosamides. For the most part, three streptogramins—virginiamycin, pristinamicin, and quinupristin/dalfopristin—have been marketed to promote growth.

#### **c. Avilamycin**

It is solely used to promote growth and is a member of the oligosaccharide (orthosomycin) category of antibiotics and is produced by *Streptomyces viridochromogenes*. It acts by attaching to the ribosome's 30S subunit and interfering with the polypeptide synthesis process by changing how aminoacyl-tRNA binds to the ribosomes. They mostly combat gram positive bacteria.

#### **d. Bacitracin**

It is an antibiotic polypeptide produced by *Bacillus licheniformis*. It consists of multiple important components, with A, B, and C being the most significant. It is utilized as a growth enhancer and is more stable as zinc salt. Although there are many distinctions between the bacterial species, bacitracin is primarily effective against gram-positive bacteria.

#### **e. Ionophores antibiotics**

Most ionophores antibiotics are produced by *Streptomyces* spp., although *Streptoverticillium*,

*Nocardiosis*, *Nocardia* and *Actinomyces* spp. are also known to produce them. In addition to the organic byproducts of microbes, there are a number of chemically altered ionophores. They are a part of a large class of ionophores, only a small portion of which are utilized to stimulate animal growth or prevent infections. In Europe, monensin, lasalocid, salinomycin, narasin, and maduramycin are used as growth promoters. Only salinomycin and monensin are legitimately recognized as growth enhancers for pigs and cows, respectively. The other approved ionophores can be used as coccidiostats in chicken feed. The ionophores incorporated into animal feed all belong to the carboxylic group, the best-known representatives of which are the antimycotic agent nystatin and amphotericin B. The dosage of these products needs to be handled carefully as high doses can cause a reduction in growth performance.

#### **f. Other growth promoting antibiotics**

These include quinoxalines (carbadox and olaquinox) which inhibit DNA synthesis, efrotomycin which is used solely as growth promoter etc.

#### **g. Hormone implants**

For greater development and increased feed efficiency, it is currently common practice in the beef cattle industries to implant hormone growth promoters. The growth that occurs during the suckling, growth, and finishing phases of meat production may be improved by these hormonal implants. In the form of depot capsules, they are implanted behind the skin of the animal (often behind the ear), where they release a certain dose of hormones over a predetermined period of time. Commonly used hormonal implants include natural hormones, (estradiol,

testosterone and progesterone) and synthetic ones (trenbolone acetate and zeranol).

#### **h. Growth hormones**

Growth hormone is a single polypeptide chain comprising 191 amino acids. It increases weight by stimulating the metabolism and protein accumulation with a simultaneous fat deposition. Bovine somatotrophine is a bovine growth hormone that is produced by pituitary gland of cattle and is basically an insulin like protein hormone. During lactation, it mobilizes body fat for use as energy and diverts feed energy towards milk production rather than tissue synthesis. In beef cattle, it is associated with improved feed conversion and lean carcass, with decreased carcass fat.

#### **Alternatives to antibiotic growth promoters**

The indiscriminate use of antibiotics is raising a concern of antibiotic resistance and presently there are only a few antibiotics against which resistance hasn't been developed. Thus, there is a need to reduce the use of antibiotics as growth promoters to minimize the risk of resistance. A growth promoter's quality must be evaluated before it is outlawed or gradually phased out of use. There are two strategies to lessen reliance on growth boosters. The first is the creation of substitutes that function similarly to antibiotics and encourage growth. The other option is to increase the health of the animal. It has been shown that growth promoters are most effective in the worst possible situations, such as when an animal is ill and its living surroundings are unclean. The actual requirement for growth promoters may be eliminated if their local environment was improved, with overcrowding decreased and infection control strategies applied.

#### **a. Competitive exclusion products**

These in-feed microorganisms are marketed as being "friendly" and include a variety of bacterial



species. Potential pathogens are prevented from colonizing the gut and causing infection by enabling such bacteria to colonize the gastrointestinal tract (GIT). These products are given to newborn animals, particularly chicken, in order to colonize the GIT and avoid infections with Salmonella and Campylobacter. In order to recolonize a gut that may have been cleared by the antibacterial action of the medications, these items are also administered to animals that have had therapeutic antibiotic treatment.

**b. In-feed enzymes**

These enzymes are given to the diets of pigs and poultry and operate by aiding in the digestion of some feed ingredients that the animal may have trouble digesting, such as glucan, proteins, and phytates. They are created as by-products of bacterial and fungal fermentation and appear to exclusively benefit the animal.

**c. Probiotics**

In monogastric animals, probiotics are live microorganisms added to the meal as a feed additive. The probiotic idea is essentially predicated on the notion that the makeup of the intestinal microbiota may be influenced by the direct feeding of microbial cultures. Selected microbe strains that are thought to have positive impacts on digestion or animal health are employed. The most often used probiotic bacteria for swine are spore-forming *Bacillus* spp. and *Enterococcus faecium*. They are believed to improve the overall health of an animal by improving the microbial balance in its gut. The way probiotics act can be summed up in three ways: 1) large populations of probiotics colonize the stomach, and because they contain beneficial bacteria, they stop infections from occurring. 2) They stimulate the immunological system. Following exposure to probiotic bacteria, the

immune system becomes active, increasing leukocyte surveillance, allowing any hostile bacteria to be detected and removed. 3) The production of bacteriocins, propionic acid, and vitamin B12 is boosted in the intestinal tract as a result of probiotics.

Microbial probiotics have a number of recognised health benefits, however it is not always possible to support these claims with enough scientific data. They typically only exhibit sporadic and limited growth-promoting actions, and the "probiotic effect" is generally not as persistent as it is in the case of antibiotic growth promoters.

**d. Prebiotics**

This includes feeding of certain non-digestible oligosaccharides to regulate or change microbial activity and/or composition in order to help maintain a healthy microflora. Potential prebiotics are typically included in diets at levels between 0.1 and 0.5 percent, and many providers plan to sell them as feed components under the claims that they selectively regulate intestinal flora, lower pathogen populations, and promote good microbes (e.g. *Bifidobacteria*, *Lactobacilli*). In revisiting this idea in relation to human nutrition, Roberfroid came to the conclusion that only two dietary non-digestible oligosaccharides, inulin and TOS (mixture of oligosaccharides derived from lactulose by enzymatic transglycosylation), meet all the requirements for prebiotic classification. Unfortunately, the effect of prebiotics on performance of farm animals like swine and poultry are not consistent.

**e. Essential oil compounds**

These molecules are active components found in a variety of plants and spices. They are feed additives that have the potential to replace antibiotic growth

boosters (e.g. thymol, carvacrol, eugenol). They may be able to alter the makeup of intestinal microbiota and improve the performance of pigs and poultry as a result of their antibacterial activity. An improvement in performance has seldom been noted with these compounds alone; rather, combination with benzoic acid have recently been found to enhance broiler and turkey performances. More research is needed in swine to fully understand the advantages of these components despite the efficacy of these compounds in poultry showing promise.

**Future prospects**

The potential of alternative antimicrobial compounds to replace antibiotic growth promoters has been thoroughly investigated during the past few years. Some natural substances, including bacteriocins, lysozyme, lactoferrin, and antimicrobial peptides, seem to have positive effects. Lactoferrin, extracted from bovine milk is being evaluated for use as a potential feed additive in early weaned piglets but because of its relatively high cost, its practical use is not feasible currently. Lysozyme addition to feed has also shown an improvement in growth performance in young piglets and could be used in future as an alternative to growth promoters.

**Conclusion**

Only a small number of the antibiotics used so far to promote animal growth have undergone thorough research. With the exception of quinoxalines, the range of growth-promoting antibiotics is only effective against gram-positive bacteria. Treatment for multiresistant gram-positive bacterial infections may benefit from new chemical modifications to products currently only utilized for growth promotion. The ideal substitute for growth boosters made from antibiotics is a general improvement in the living conditions of the animals used to make our food. Selection of resistance is a problem that everyone must deal with.

# Estrous Synchronization Protocols In Dairy Animals



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## Introduction

Now a day, various hormonal treatments are used for estrous synchronization in cattle. As donor and recipient should be in estrous synchrony, PGF2 $\alpha$  treatment is given to the recipients 24 hours earlier than the donor to synchronize the estrous cycle of both donor and recipient. Main hormones which are used in synchronization are progesterone (P4), prostaglandins (PGF2 $\alpha$ ) and gonadotrophins. Various synchronization protocols have been developed with help of these three hormones. Different protocols like ovsynch, co-synch used mainly at field level. Further some modifications have been done in these protocols to develop some new protocols.

## Estrous synchronization

Manipulation of the estrous cycle in order to bring a group of females into estrus at a predetermined time is called as estrous synchronization (Odde, 1990). The pharmacological control of estrous cycle is based on two approaches: 1. Either shortening the life span of CL by inducing early luteolysis by using PGF2 $\alpha$ . 2. Extending the life of CL by administration of P4.

## Three hormones used for synchronization of estrous

### Progesterone

Progesterone is the dominant ovarian hormone present in the circulation during the estrous cycle and is secreted from the corpus luteum (CL). This period of the estrous cycle is also referred to as the luteal phase and lasts from the time of ovulation until regression or luteolysis of the CL near

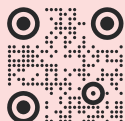
the end of the cycle. Progestins suppress estrus in cattle and have been used extensively to alter the estrous cycle. This led to many studies in which progestins were administered by injection, released by an intra-vaginal sponge, or fed for a period of up to and exceeding the length of the estrus cycle to synchronize estrus following the cessation of administration. It was determined that an increased duration of progestin administration resulted in an increased rate of estrus synchronization. However, fertility was compromised following administration of progestins for 14 days. Some progesterone based protocols for synchronization of estrous are:

## Controlled Internal Drug Release (CIDR)

CIDR is made up of a thin layer of silicon and progesterone mixture (10% w/w) around a nylon spine under high temperature. It contains 1.38gm of P4. It maintains high concentration of P4 of 2.0 ng/ml for 10 days. It is very easy to insert in the vagina of female animal. It is kept for 7 days in the vagina of female and provides an exogenous source of P4 to the animals. After its removal there will be sudden decrease in P4 concentration which leads to estrous synchronization. PGF2 $\alpha$  is administered one day before the removal of CIDR. Advantage of CIDR + PGF2 $\alpha$  is that it increases synchronization rate by approximately 30% and pregnancy rate by 20% both in anestrus and cyclic females.

## Progesterone Releasing Intra-vaginal Device (PRID)

Device consists of 1.55gm of P4



inserted into vagina for 7-10 days and injects PGF<sub>2</sub>α one day before the removal of device, animal will come to heat within 2-4 days.

**TRIU-B:** Device consists of 3 medicated rings (green colour) containing P4 IP 186mg each and one additional ring (pink colour) with P4 IP 400mg.

### Melengesterol Acetate Feeding

- 1. MGA alone:** MGA feed is given to the animals for 14 days so that each female receive 0.5 mg/head/day. At 14th day MGA feed is removed and female start to show estrous. This estrous is not recommended to breed because it is sub-fertile. Animal is bred at the 2nd estrous.
- 2. MGA + PGF<sub>2</sub>α:** In this method MGA is fed for 14 days. Prostaglandins administration is done 16-18 day after the last day of MGA feeding. PGF<sub>2</sub>α given in late luteal phase in this method because it is more effective during the late luteal phase as compared to early luteal phase.
- 3. Ear Implants:** (1) Synchromate B: Implant contains 6 mg of norgestomet. Injection contains 5 mg estradiol valerate and 3.0mg norgestomet. Injection is administered at the time of implant insertion. (2) Crestar: Injection contains 3.0mg of norgestomet. Injection contains 5.0 mg estradiol valerate and 3.0 mg norgestomet. Injection is administered at the time of implant insertion.

### Prostaglandins

PGF<sub>2</sub>α is produced by the endometrial gland of uterus and causes luteolysis. During the 1970s, it was discovered that PGF<sub>2</sub>α was luteolytic in cattle and could be

used to synchronize estrus (Lauderdale et al., 1974). It was later determined that PGF<sub>2</sub>α had limited utility in synchronizing estrus because it was only effective in cattle that were cycling and had a CL (day 5 to 17 of the cycle). Therefore, prepubertal heifers, anestrous females, females on day 0 to 4 of the estrous cycle, and females in the final days of the estrous cycle subsequent to luteolysis were not responsive. It was later determined that the interval from treatment with PGF<sub>2</sub>α to estrus was dependent upon the stage of the follicular wave at treatment (Lucy et al., 1992). Larger, more mature follicles ovulated sooner than their smaller, less mature counterparts.

### One shot PGF<sub>2</sub>α

Cyclic females are administered with an injection of PGF<sub>2</sub>α. When these female express estrous they are bred. But one-third of the females do not respond to this treatment. This protocol is very cheap and can be used for poor farmers. Most of the females come to estrous.

**Two shot PGF<sub>2</sub>α:** Two injections of PGF<sub>2</sub>α given at an interval of 11-12 days if the estrous cycle in cow is unknown. Detection of estrous is not required before or between injections. 2nd injection given only to females those do not come in estrous. It lowers the cost and handling problems.

### Gonadotrophins

Combination of GnRH and PGF<sub>2</sub>α are good for cyclic females. Administration of GnRH causes regression or ovulation of the dominant follicle and initiates the emergence of a new wave of follicular growth. Atresia or ovulation of the dominant follicle depends upon the status (growing, static, regressing) of the dominant follicle at the time of GnRH injection. Pursley et al. (1995) reported that if

a GnRH injection is given 48h after PGF<sub>2</sub>α injection will reduce the range in ovulation time to 8h (72-80 hr post- PGF<sub>2</sub>α). Based on GnRH and prostaglandins there are some protocols:

### (A) Select Synch

Select synch is the breeding option for those herds with good heat detection programs and that prefer to breed animal based to standing estrus. This is the simplest GnRH based protocol. In this protocol, single dose of GnRH and PGF<sub>2</sub>α is injected on day 0 and 7 respectively. Early heats are fertile and the cows are inseminated after 72 hours after detection of heat. The select synch saves on hormonal costs because only those cows that fail to show estrus receive the 2nd GnRH injection. Select synch also facilitate more efficient use of expensive or genetically valuable semen by targeting its use in cows at estrus, whereas less expensive semen can be reserved for the times AI services.

### (B) Ov-synch

This is GnRH-PGF<sub>2</sub>α-GnRH system. One extra injection of GnRH is given than select synch. This injection is given after 2 or 3 days of PGF<sub>2</sub>α. The ovsynch protocol comprise of an injection of GnRH on day 0, an injection of prostaglandin on day 7, a second GnRH injection on day 9 and then timed insemination on day 10 (Pursley et al., 1995). Highest pregnancy rate is achieved when insemination is done 16h after the second GnRH injection. The first GnRH injection alters follicular growth by inducing ovulation of the largest follicle (dominant follicle) in the



ovaries after the GnRH injection to form a new or additional CL. PGF<sub>2</sub>α causes the lysis of natural CL and the secondary CL. A new group of follicle appears after GnRH injection on 10th day.

### (C) Co-Synch

This program is comprised of an injection of GnRH on day 0, an injection of PG on day 7 and then a second GnRH with breeding on day 9. It is used extensively for beef herds. Co-synch eliminates one animal handling by breeding cows coinciding with the second GnRH injection. A small reduction in conception rate occurs when co synch is compared with ov-synch protocol.

### (D) Heat synch

This protocol consists of injection of GnRH on day 0 and PGF<sub>2</sub>α on day 7. On day 8, estradiol ester (Estradiol ester 1.0 mg I/M) is administered. Animals are artificially inseminated in detected estrus or fixed time AI after 48 hrs of estradiol treatment.

### (E) Hybrid Synch

This protocol comprise of GnRH on day 0, an injection of PGF<sub>2</sub>α on day 7 and then estrus detection and breeding from day 7-10. Females which don't come in heat from day 7-10 are bred on day 10 and given a second injection of GnRH. This protocol appears to have the highest conception rates among all GnRH- PGF<sub>2</sub>α protocols.

### (F) Double Synch

A modification of Ovsynch protocol, called as Double synch protocol has been developed by incorporating an

additional PGF<sub>2</sub>α administration at 48h before the start of Ovsynch protocol and claimed to yield superior results.

### (G) Pre-synch

Presynch as the name implies, is a protocol which "pre-synchronizes" bovines to the early stage of estrous cycle for optimum response to GnRH and thereby improves pregnancy rates to ovsynch. Pre-synch involves the use of two PGF<sub>2</sub>α injections given at 12-14 days apart with the last injection given 12-14 days before the initiation of ovsynch protocol. With a true presynch, a PGF<sub>2</sub>α injection is given prior to the voluntary waiting period. Breeding cows after these early heats will likely result in compromised conception due to incomplete uterine involution.

### (H) Estradouble Synch

Another modification of the Ovsynch protocol, called as Estradouble synch has been developed by ICAR-NDRI recently and shown to yield good results in dairy animals especially in buffaloes. The protocol involve administration of PGF<sub>2</sub>α without regard to the stage of the estrous cycle (day of first PGF<sub>2</sub>α treatment, day 0), followed by GnRH on day 2, and by a second PGF<sub>2</sub>α treatment on day 9, followed by an Estradiol Benzoate treatment (1.0 mg) 24 h after the second-PGF<sub>2</sub>α (day 10) and TAI is performed at 48 and 60 h after EB treatment.

### (I) CIDR-GnRH based

The CIDR-GnRH, based protocol involves insertion of the CIDR on day1 and

withdrawal of the CIDR on day 8. An injection of GnRH is given on day of CIDR insertion. On the day of CIDR withdrawal, an injection of prostaglandin is given. The second GnRH injection is given after two days of prostaglandin injection. The advantage of inclusion of the CIDR in GnRH-based programs is that the animal is exposed to progesterone during the period between day 1 and day 8 which will prevent early onset of estrus and ovulation between days 1 and 9 that are inherent to the GnRH- PGF<sub>2</sub>α systems. These are the all methods by which recipients can be synchronized with the donor so that they will be in the same stage of estrous cycle as the donor. Mean interval from PGF<sub>2</sub>α injection to onset of estrus is shorter in super-ovulated donors than normal recipient females. Recipients are given PGF<sub>2</sub>α, 12-24 hours earlier than the donor for getting efficient synchronization of estrus between donor and recipients for embryo transfer works.

### Conclusion:

In last decade, there has been much more improvement in synchronization of the donor and recipients. It is very important to maintain synchrony between the donor and recipient to get better embryo quality. Embryo transfer technology has been used for a long time but still there are some limitations due to insufficiency in estrus detection and synchronization in donor and recipients. It is advantageous to embryo transfer in the recipient with higher P4 concentration and larger CL especially when working with indigenous cattle.

# Winter Management of Dairy Animals: To Increase Productivity

## Introduction

Due to subzero temperatures (-10 °C), frost, snow, and cold winds, the winter season's uncertainties make it difficult to manage dairy cows effectively. Wintertime temperatures below zero have an impact on the efficiency and productivity of cows. Cows need to maintain a steady temperature of 38 °C because they are homo-thermic animals. Animals that are kept in the thermoneutral zone do not need to use more energy to maintain a comfortable body temperature. Cows experience cold stress when temperatures fall below the lower critical temperature, which is the lower end of this range. Cows that are under cold stress use more energy and have faster metabolisms. Stress brought on by the cold is amplified by a lack of fodder owing to pasture fields that are covered in snow and poor quality fodder.

| Animals | Lower Critical Temperature | Upper Critical Temperature | Comfort Zone  |
|---------|----------------------------|----------------------------|---------------|
| Cows    | -5 °C to -10 °C            | 25 °C to 28 °C             | 13 °C to 18°C |
| Buffalo | -10 °C to -15 °C           | 25 °C                      | 10 °C to 17°C |
| Calf    | 0 °C to -4 °C              | 25 °C                      | 15 °C to 22°C |

## Effects of stressful winter on Dairy Animals

- 1. Direct effects:** It affects production, reproduction, body condition score, feed utilization and health of animal.
  - (a) Milk production:** Cold exposure may limit the mammary gland's synthetic capacity directly by lowering mammary gland temperature, or it may act indirectly by affecting the udder's blood supply. A temperature of -11.2 °C resulted in a loss of 2 kilogrammes per day per cow.
  - (b) Reproduction:** Increasing age at first calving (AFC), lack of adequate

follicular maturation, follicular atresia, loss of sexual desire, and lower pregnancy rates all prolong calving intervals and reduce bull fertility due to underfeeding.

- (C) Body Condition Score:** A higher body condition score helps cows protect themselves from winter stress and position themselves to reduce the amount of surface area exposed to inclement weather. Winter stress depletes body reserves, resulting in a loss of living weights and reversing weight increases acquired in the summer. Cows that lose more body weight (16%) are less likely to become pregnant again the following breeding season. Winter stress increases body oxygen consumption and cardiac output, as well as levels of growth hormone,

cortisol, and other stress hormones. It also increases lipolysis, glyconeogenesis, and glycolysis, as

well as hepatic glucose production and insulin response to glucose infusion. Animals' dietary deficiencies can also lead to starvation and pregnant toxemia.

- (d) Health:** Increases the risk of respiratory infections and hypoxia, weakens the immune system in poorly ventilated barns, raises basal metabolic rate, causes frostbite, asthma, sore throats, and coccidiosis, as well as hurdling, shivering, and lack of coordination.
- 2. Indirect effects:** It affects forage production, water quality and quantity; causes shelter overburden and mud accumulation.



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**(a) Shelter and Mud accumulation:**

Need is - Procurement of effective shelter

- Poor shelter causes respiratory issues and reduces an animal's effectiveness.
- Excessive shelter is expensive.

Mud is typically found in areas where animals are compelled to cluster, which can cause foot rot and thrush.

**(b) Forage deficiency both in quantity & quality due to:**

- Declining forage quality
- Frost, sun bleaching, CP levels dropping from 8–11% in the summer to 1–3% in the winter, and TDN dropping from roughly 80% to < 50% in succulent forages are all factors.
- Depletion of fodder resources since there is little land available for their production and climatic fluctuations.

**(c) Water Shortage:** decreasing water sources, drinking water availability, water quality declines, and decreased frequency of watering.

**Strategies to manage winter vagaries**

**1. Nutrition Management**

- I. Increase the energy content (77% vs. 70 -72% TDN) and protein (17.5% vs. 14.5% CP).
- II. To raise milk fat content and lessen the impacts of cold weather, rations containing roughly 20% fibre as opposed to 17% fibre in animal feed are beneficial.
- III. For the season, animals housed outside will require 15–20% more feed than those kept in confined spaces.

**2. Winter Provisions**

- I. Concentrates: Feed Blocks, UMMB Licks, Cubes, Meals and cakes.
- II. Conserved Forage: Hay, Silage, Haylage, Leaf meal etc.
- III. Crop residues: Stover, Straw etc.
- IV. Cultivated fodders: Paddy, Oat, Maize, Berseem, Leucerne etc.
- V. Fodder tree leaves: Willow, Robinia, Alanthus, Salix Populus, Ulmus and Acacia, Moras and Malus.
- VI. Establishment of fodder banks: Forages that are in excess throughout the summer are

collected, preserved, or brought from nearby states to make up for periodic shortages.

VII. Reduction of wastages by chaffing: 15-20% of the straw can be conserved from wastage by chaffing.

VIII. Apple pomace: The dried apple pomace contains 1.86 Mcal/kg DM and 7.7% crude protein (CP). The best feed conversion ratios for the ensiled apple pomace are at 15% dietary inclusion.

IX. Molasses, poultry litter and maize grain can all be utilised as supplemental feed for cows or growing stock.

**3. Urea treatment of straws:** The digestibility is increased by roughly five units when using fertilizer grade urea at a rate of 4–5%; however, the increase in digestibility is doubled when the material is ensiled for 10 days. Cows fed a meal consisting primarily of wheat straw that had been treated with urea gained more live weight than cows fed a diet consisting primarily of hay.

**4. Shelter Management:** It is important to provide adequate shelters to protect against the prevailing cold winds.

- I. Providing heating resources, such as space heaters and blinds.
- II. To prevent body heat loss, bedding (4-6 inches for large animals and 2 inches for smaller animals) should be clean and dry on a concrete floor.
- III. The shed needs to be cleaned at least twice a day to ensure appropriate waste disposal and minimal ammonia gas buildup.

IV. Proper ventilation is necessary, and a relative humidity range of 40 to 80% is preferable.

V. Calf blankets and jackets are very useful for preventing cold calves.

VI. The development of a snow removal plan is necessary since snow poses major feeding and bedding problems.

VII. Calving season should be moved earlier in the spring or summer to prevent cows from lactating late.

**6. Water Management:** Water should

be consumed when it is at least 47°C in temperature, and tank heaters should be employed to prevent water sources from freezing. Drinking enough water promotes good health and performance.

**7. Mud Management:** Dairy management must consider rest periods appropriately for both production and welfare reasons. Dairy cows kept in confinement are supposed to sleep for about 12 hours per day, but if the conditions aren't clean or comfortable enough, the cows will frequently stay up. Mud is typically found in areas where animals are forced to gather, which causes foot rot and thrush. Mud's moisture can also increase the likelihood that parasites will survive.

**8. Health Management**

- I. Vaccination, nutritional supplementation, and deworming protocols must be followed.
- II. Promote exercise by switching up where feeding and watering stations are located.
- III. Exercise can help avoid obesity and enlarged hooves.
- IV. Avoid muddy, moist circumstances and manure contamination of feed because these factors raise the risk of coccidiosis.
- V. A teat dip powder will reduce the probability of teats getting frostbite during the cold winter.
- VI. Inspect bruising on the soles, trim overgrown hooves, and do your best to avoid laminitis and lameness.

**Conclusion**

Within the thermoneutral zone, animals perform at their best in terms of production and reproduction. Animal performance is impacted by conditions above upper critical temperature and below lower critical temperature. To minimize this negative impact, management practices linked to nutrition, shelter, watering, mud accumulation, health, etc. are prioritized in order to prevent anomalies caused by cold stress; calving season is also postponed to late spring or early summer.



# Feeding Management of Dairy Animal in India

The key to increasing dairy cattle productivity is the management. Dairy Cattle used to experience cold throughout the winter, which had a direct impact on their well-being and production. They need to be given extra care and attention at this critical period, including sufficient housing and nourishing feed to promote health. Dairy Cattles are more stressed in winter, which lowers their production. They go through certain physiological and behavioural changes during the winter. In particular in the Northern States of India, the significant metrological variance causes a drastic decrease in temperature even down to zero degrees during the months of December and January. It's quite difficult to handle cattle during this winter, therefore it's crucial to provide them proper care and management. Its better to prepare in advance to take appropriate steps to prepare and altered the sheds of dairy cattle to protect them from cold this will help the dairy farmers to prevent them from economic losses in the dairy farms.



## Shelter management

To stop the wind from blowing directly onto the animals, curtains should be installed in the sheds of a loose housing

arrangement. Materials like bamboo, dried grass, paddy straw, guinea bags, jute, tarpaulin etc. can be used to make curtains. Trees that are shaded by the shed should be trimmed to allow more sunshine to enter the house, which will not only heat it up but also disinfect the animal house due to the action of UV rays. Additionally, animals should be allowed to spend the day in open paddocks exposed to direct sunlight. Animal sheds shouldn't have damp, chilly surfaces for extended periods of time. This might put animals, particularly young ones, at risk for a number of illnesses include pneumonia, fever, coccidiosis, diarrhoea, and even death in extreme circumstances. It's better to provide sufficient bedding on apucca (concrete) floor up to a depth of 4-6 inches for large animals and 2 inches for smaller animals as direct contact between an animal and a cold floor can cause increased body heat loss through conduction. As bedding material, dried grass, wheat straw, sawdust, paddy straw, rice husk, etc can be used. Blankets can be used on

individual animals. However, the animal's coat as well as the blanket material touching the animal's coat must remain dry.



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### Ventilation

During the winter, proper ventilation must be maintained. For effective waste disposal and to ensure that ammonia gas does not build up too much in the shed, it should be cleaned at least twice per day. Regular cleaning of animals with a clean cloth or brush is advised. The animal itself tries to protect itself from the harsh cold as winter approaches by thickening its hair coat, using an insulating subcutaneous fat layer its body reserves, as well as by boosting its metabolism, respiration, heart rate, and blood flow. Animals' hair should not be cut in the winter. Bathing of the dairy cattle should not be done with the cold water.

### Feeding

During winter season should use a healthy, balanced feed for animals. The most widely available green fodder, berseem, has a high protein percentage and a high-water content, making it easy to maintain nursing and developing animals' production levels. Therefore, for cost-effective manufacturing, protein-containing components such cakes in concentrates must be minimised. The order of the many cake kinds that can be employed is perhaps in the following order: mustard cake, cotton seed cake,

groundnut cake, and soybean flakes. For feeding bigger animals when there is a lack of green fodder, 25–30 kg of legume-based fodder can be combined with 5–10 kg of wheat straw. In addition, 3 kg of the concentrate combination will be enough to keep the body temperature stable. If fodder is not in short supply, 40 to 50 kg of high-quality green fodder will be enough to keep cows and buffaloes producing up to 10 litres of milk each day. The leguminous feeds should be blended with either non-legumes or wheat straw in the winter to prevent nitrate toxicity and bloat. Add 1% salt and a 2% mineral mixture to concentrate feed. The microfloral digesting process helps ruminants create a lot of heat in their rumen. Since the nights are longer and colder, more than 60% of the total amount of forage needed should be provided to the animals at night, since the required muscular activity and digestive process would provide enough heat to keep the animal warm. During the winter, animals should have access to clean, fresh, lukewarm water. To prevent the growth of new worm eggs and larvae after the initial dosage, deworming should be repeated 21 days later. To manage this issue, appropriate acaricides should be used on animals and in the shed.

### Conclusion

Management is an important aspect for the farmers that are rearing the Cattle. The best possible animal welfare and performance may be achieved by attending to the unique dietary, environmental, and health demands of cattle throughout the winter. Since prevention is more cost-effective than addressing them. Due to decrease in environment temperature in their surrounding appropriate measures should be taken to protect the dairy cattle herd from the cold. The ideal settings for animal welfare and performance are jeopardised during periods of bad weather. For animals affected by unfavourable environmental circumstances, the use of alternate supplementation programmes must be taken into consideration. To reduce the negative impacts of weather, and cold on animals raised outdoors during the winter it is necessary to employ measures that improve animal space and environmental factors. Livestock farmers have many chances to improve animal wellbeing and lessen the effects of environmental stress due to cold.

# “Dairy Sector - A Tool for Poverty and Hunger eradication in the World”

One essential component of sustainable development is the eradication of poverty and hunger, which is one of the biggest global challenges currently facing the planet. The demand for is fueled by population growth and economic expansion, particularly in developing nations, and

Over the next 30 years, there should be a significant increase in the production of livestock products. The livestock industry can aid in addressing these issues by fostering inclusive social development, long-term economic growth, and efficient resource use. Dairying is a powerful tool for rural poverty eradication. More than 500 million individuals live in extreme poverty and rely heavily on livestock, many of whom engage in small-scale or subsistence dairying with dairy goats, cows, or buffalo. A multi-stakeholder partnership mechanism called the Global Agenda for Sustainable Livestock was established in 2011 with the goal of accelerating and directing the sustainable growth of the world's livestock industry. By channeling the global dialogue into local practice change, focusing on innovation, capacity building, incentive systems, and enabling environments, it provides a platform for comprehensively addressing the sector's numerous challenges for sustainable development. The successes of the Global Agenda have shown that multi-stakeholder partnerships are an effective method of supporting for the Sustainable Development Goals (SDGs) implementation on livestock-related concerns. The goal of the Global Agenda is to increase the livestock industry's contribution to sustainable development. Its objective is to facilitate discussion, produce data, and support the adoption of good practices and policies in favour of the UN Agenda 2030 targets and objectives related to livestock. Its mission is to strengthen livestock stakeholders' commitment,

investments, and adoption of good practices and policies in support of the UN Agenda 2030. Only by working together as a single entity can all stakeholder groups effectively improve the sector's sustainability. Collective global action is crucial given the importance of the environmental, social, and economic challenges facing the sector as well as its growing economic integration.

The World development agenda gives a high priority on reducing poverty and ensuring food security. The potential benefits of livestock to enhancing the livelihoods of smallholder farmers have once again come under the spotlight within the global food production and distribution system as a result of strategies to combat poverty. 17 Sustainable Development Goals (SDGs) were adopted by the 193 Member States of the United Nations in 2015 to direct development efforts by governments, international organizations, civil society, and other institutions over the ensuing 15 years (2016-2030). The SDGs seek to restore and sustainably manage natural resources while eradicating hunger and poverty (SDGs 1 and 2). Around 900 million poor people worldwide survive on less than US\$1.9 per day (World Bank 2015). They are directly dependent on livestock for about half of their income. Farm animals are a valuable resource for the poor because they provide high-quality nutrients as well as capital and, in many cases, a source of income. Livestock serves as a form of household insurance because it can be sold during times of need. They provide draught power and fertilisation for the farm and reward their owners with a variety of goods, including milk, meat, and eggs as well as hides, skins, leather, and wool.

**Livestock therefore contribute to three major pathways out of poverty by**

- increasing resilience



**Sharanagouda B  
Indu  
Sumit Mahajan  
and Kartik**





- improving smallholder and pastoral productivity
- increasing market participation

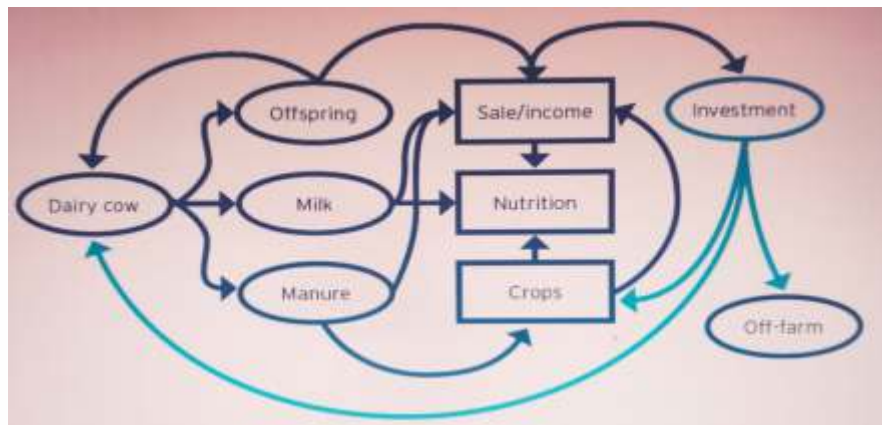
The dairy industry is thought to hold particular promise to support SDG1 among livestock. Nearly 150 million farm households, or more than 750 million people, are thought to produce milk, with the majority of them located in developing countries (FAO 2010). These nations' annual milk consumption growth rates are at Due to the perishability of dairy products, the majority of production is consumed domestically and does not enter international trade, at least twice as fast as that of major staple foods. Dairy production in developing nations has a lot of potential to expand in the future, and if it is developed properly, it could be a potent tool for alleviating poverty.

India experienced acute milk shortages in the 1950s and 1960s and was heavily dependent on imported milk. Despite the fact that milk has always been a significant component of Indian diets and that many Indian farmers, typically with only a few cows, produced milk, they were unable to meet the high and rising demand for milk of the country's rapidly expanding cities. The Indian government established the National Dairy Development Board (NDDB) in 1965 to oversee the country's dairy development as a result of this circumstance. In the past, milk producers in Gujarat's Anand district banded together as a private cooperative to supply milk to the Bombay Milk Scheme, and their successful venture served as the template for similar initiatives across India.

In 1970, the government of India launched Operation Flood (OF), a national-scale, federally sponsored intervention. Of replaced the ad hoc production, marketing, and selling of milk with an organized, continuous dairy-supply chain from production to consumption. It linked rural dairy producers to urban consumers through dairy cooperatives (providing extension, feed, health care, breeding services, and milk collection), chilling and processing plants, and distribution networks (refrigerated vans and railway wagons).

These include:

- Increased milk consumption;
- Increased crop production using cow manure; and
- Increased sales revenues, all of which can improve nutrition and food security.
- Investing additional funds in agricultural and nonagricultural activities that have "multiplier" effects



*Fig: Impacts of Dairy cow ownership on household welfare*

According to estimates from FAO and IFCN (2018), there are approximately 112 million dairy farms that raise cattle and/or buffalo worldwide. South Asia is home to 65 percent of these farms, or 73 million farms. There are estimated 16 and 13 million dairy farms in Eastern Europe, Central Asia, and Sub-Saharan Africa, respectively. There are between 1 and 3 million dairy farms in each of the remaining world regions, which include high-income nations, the Middle East and North Africa, and East Asia and the Pacific. The average dairy herd, which varies greatly by region, consists of three adult female cattle or buffalo. The typical dairy herd size in South Asia is less than two dairy animals. It is between 2 and 4 animals in Eastern Europe, Central Asia, North Africa, and Sub-Saharan Africa. A typical dairy farm raises about 9 dairy animals in East Asia and the Pacific, 15 in Latin America and the Caribbean, and over 42 in high-income nations. The FAO's World Programme for the Census of Agriculture and the IFCN's estimates of the number of dairy farms are based on official data from 57 countries.

Statistics on the number of dairy farms as well as cattle/buffalo farms were available for these nations. For the 57

sample countries, which represent 28 and 72% of the world's countries and rural populations, respectively, FAO and IFCN calculated the regional shares of cattle and buffalo farms keeping dairy animals. These shares were then applied to the number of cattle/buffalo farms from Census data for countries lacking information on the number of dairy farms. The most recent Agriculture Census served as the year of reference,

which varied by nation.

### Conclusion

By making the necessities of life (food, water, shelter, and clothing) as affordable and accessible through dairying has the potential to help people, families, and communities escape poverty. Dairy cattle must meet the following conditions in order to sustainably improve household welfare:

- Households fulfill the minimum requirements for labour supply and land ownership.
- They receive a minimum amount of support in terms of training, input provision and disease control, provision of market access further enhances the development potential of dairying as it stimulates the growth of up and downstream businesses and provides producer households with proceeds that can be invested in other farm and non-farm enterprises. These indirect effects substantially enhance the direct benefits accruing to dairy households.
- Women empowered by dairy farming have increased income and influence over household expenditures, which boosts their social and economic status.

# Management of Dairy Cattle and Buffaloes During Winter

Climate is one of the major factors which affects milk production in cattle and buffaloes. India has three major seasons; winter, summer and monsoon (rainy season) almost of equal duration. The winter season starts in the month of November. The dairy animals have to acclimatise themselves with the ambient temperature to keep them healthy and comfortable. Being a tropical country, Indian winter is very comfortable to dairy animals when they produce good quantity of milk. However, severe winter particularly in Northern Region adversely affects the milk production. To mitigate the impact of extreme cold weather, some amendments have to be made in the management of dairy cattle and buffaloes.

## General Management:

It is essential to protect the animals from sudden fall in ambient temperature. This can be ensured by providing night shelter in covered shed / space to animals. Curtains made of used jute bags or Poly Propylene (PP) bags can be used at night to cover the open areas of shed. To protect animals from cold floor, soft and comfortable bedding material (dry grass, paddy straw, saw dust etc.) should be provided in shed and it should be kept dry and changed / aired frequently, preferably every day. Used gunny bags or old blankets can be used to cover the body of individual animal, this arrangement will retain body heat and animal will remain warm. Keeping animals in group will make them warm due to close body contact. Animals should not be kept in damp area and they should be protected from smoke

(from fires lit to provide warmth). The dampness and smoke increase their chances of contracting pneumonia.

## Feeding Management:

In order to cope with cold weather conditions, animals increase production of body heat by increasing their heart rate and respiration. This increases blood flow and protect animal from cold. They require more feed to maintain their body condition and milk production. Cattle and buffaloes may require up to 20 percent more feed during cold weather.

In order to cope with colder temperatures, cattle grow thick winter coats and increase production of their body heat. They accomplish this by increasing their heart rate and respiration, thus increasing blood flow to keep extremities from freezing. Although this physiological response enables cows to withstand extremely low temperatures in relative comfort, they also require more feed in order to maintain their body weight and milk production. So dairy animals need good quality nutritious feed and fodder supplemented with sufficient amount of essential minerals and vitamins. Wholesome drinking water should also be made available to keep the animals hydrated.

## Breeding Management:

Winter is the best season to plan breeding of cattle and buffaloes when fodder quality is at its best. Good quality nutritious feed and fodder increase reproduction efficiency of dairy animals. This is the time when dairy farmers



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Shed with used bag curtains for sunlight exposure





Rolled up curtains during day time

should keep an eye to detect heat (estrus) symptoms in their cows/buffaloes, call AI technician for timely insemination of the animals found in heat. Due care should be given to pregnant animals.

#### Health Management:

To keep the dairy animals in good health during winter, they should be vaccinated against Foot & Mouth Disease (FMD), Haemorrhagic Septicaemia (HS), Black Quarter (BQ) and other vaccination for the diseases prevalent in the area. Winter is the right time to deworm the animals. Farmers need to take adequate care of milking animals to prevent occurrence of Mastitis.

#### Winter calf management:

Calves born in winter are more prone to cold stress. Lower ambient temperature poses a threat to calf survival. So new born calves less than 3 weeks of age should be effectively protected by putting used gunny bag/ old blanket on

their body, providing thick and dry bedding material, feeding cod liver oil and additional quantity of milk/milk replacer to compensate the need of extra energy to keep them warm and healthy. Older calves should be fed with high protein calf starter, good quality hay and mineral mixture. Young dairy calves have very little stored fat they can use for warmth so they need additional energy to keep them warm during cold weather.

Adequate preventive measures are necessary to combat cold stress (hypothermia) in newborn calves. Regular monitoring of body temperature of calf is necessary to rule out hypothermia. They should be kept clean and dry, hydrated and healthy.

#### Tips for managing cattle and buffalo in winter season:

Following tips would be quite useful for dairy farmers for keeping their cattle and buffaloes in good health and peak production during cold stress;

- Waterless cleaning of floor of animal buildings should be followed. If necessary, very little water should be used.
- During the day time when sun shines, animals should be kept out of the shed, preferably in paddock if available. This will enable the farmer to clean the shed and keep it dry.
- High humidity decreases the insulating capability of cow coat, so it is important to reduce the humidity by keeping the shed and surrounding dry.
- If possible, animals should be given lukewarm water to drink.
- To maintain the body temperature/condition and milk production, dairy animals should be fed with high energy ration containing crushed maize, whole cotton seed, oil cakes and jaggery.
- In winter, feeding time should be shifted towards evening when temperature falls. The activity involved in eating and the fermentation in the rumen will increase heat production to keep the animals comfortable.
- All dietary changes, be they increases or decreases, should be made gradually.
- Preventive vaccinations, deworming and mitigation of cold stress are necessary to keep the dairy animals in good health in winter season.
- Dairy farmers should ensure that breedable females are regularly watched for heat detection and timely insemination of animals is done by trained AI Technician.

#### Conclusion:

To keep the cattle and buffaloes in excellent health and peak production and reproduction, it is essential that they are kept warm, fed with high protein and energy rich feed and roughages fortified and supplemented with vitamins and minerals. They need to be comfortable, energetic and keep normal and stable body temperature in cold stress free environment. Dairy animals should be supported for maintaining their production as well as reproduction performance during winter season. For this, preventive measures for disease control and proper reproduction management are crucial.



Heifer is protected by putting used gunny bag on it and fire lit to provide warmth



# Potentialities of Small Dairy Ruminants: Goat Farming for Milk Production

## Introduction

Goat farming involves the raising and breeding of domestic goats (*Capra aegagrus hircus*) as a branch of animal husbandry. People farm goats principally for their meat, milk, fibre and skins. Goat farming can be very suited to production alongside other livestock (such as sheep and cattle) on low-quality grazing land. Goats efficiently convert sub-quality grazing matter that is less desirable for other livestock into quality lean meat. Furthermore, goats can be farmed with a relatively small area of pasture and with limited resources.

Goats are being raised commercially in almost every corner of the world. In addition, commercial goat farming is slowly becoming popular all over the world. As the world's population grows, so does the

demand for food. Goats are among the main meat-producing animals in India, whose meat (chevon) is one of the choicest meats and has huge domestic demand. Due to its good economic prospects, goat rearing under intensive and semi-intensive system for commercial production has been gaining momentum for the past couple of years. High demand for goat and its products with potential of good economic returns have been deriving many progressive farmers, businessmen, professionals, ex-servicemen and educated youths to take up the goat enterprise on a commercial scale. Commercial goat farming has the potential to play an important role in meeting the rising food demand.

Goats are major source of livelihood of the small farmers and the landless in rural



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communities. The productivity in this system is low and there is ample opportunity for goat farming improvement. Several progressive farmers have adopted commercial farming which helps in doubling the productivity as well as income and also, bridging the demand-supply gap. However the prerequisites for successful goat farming requires improved technologies, prophylaxis, superior germplasm, low cost feed and fodder and innovative marketing. Since, goats are very well adapted to harsh environmental conditions, the portfolio can be diversified. The investment risk in goat farming is much shorter reproduction cycle that gives them the capabilities to rebuild the population much faster than other livestock.

The major concern of farmers due to lack of knowledge during initial phase of goat farming are mortality (due to PPR, diarrhea, pneumonia, tetanus, etc), non availability of vaccines, lack of personal attention and poor

access to veterinary aids. Age at first parturition, parturition interval, litter size and mortality determine lifetimes production as well as production efficiency. The matter is to concern nutrition, health and management.

Under rural area, crop-livestock production conditions improve the farmers status economically. Even the role of women has been considered as great among many ethnic groups in northeastern region of India, especially in Assam. Sustainable goat farming should follow entrepreneurship mode with strategic planning to mitigate the constraints.

#### **Prospects of goat farming:**

Goat farming has several advantages over the husbandry of other livestock species. They are as follows e.g.

- (a) Initial investment for starting goatery is lesser than dairy, piggery, poultry.
- (b) Goat consumes less feed which is about one fifth of the consumption in cattle and buffalo.

- (c) It does not compete with human beings for grains like pig and fowl. So the feed cost is lesser.
- (d) Goat is prolific animal which usually produces twin and some breeds even produce triple and quadruplet.
- (e) Goat being hardy animal, disease incidence is very less in comparison to cattle, pig, fowl and hence health management cost is lesser.
- (f) Goat milk is rich in certain amino acids i.e. histidine, aspartic acid, phenylalanine, threonine; certain minerals i.e. sodium, iron, copper; certain vitamins i.e., vitamin A, nicotinic acid and choline.
- (g) Goat milk is being used to produce different products such as cheese, curd etc.
- (h) Goat skin is of high values e.g. Skin from Bengal goat is of best quality in the world.
- (i) Besides meat, milk, skin, hair is another byproduct obtained from goat, e.g. pashmina and mohair is valued high in international market due to its several uses.
- (j) Faeces and urine of goat being rich in nitrogen, phosphorus and potassium used in field for improving soil fertility and to increase productivity of crop.
- (k) There is no prejudice about the consumption of goat meat. Above mentioned points indicate that goat is potential animal for economic growth and employment generation.

## December 2022

### 1. Agri Livestock 2022

**Dates:** December 2 - 4, 2022  
**Venue:** Myanmar Expo Hall  
**City:** Yangon  
**Country:** Myanmar  
**Website:** www.agrilivestock.net

## January 2023

### 1. Dairy Forum 2023 (IDFA)

**Dates:** January 22 - 25, 2023  
**City:** Orlando  
**Country:** Florida  
**Website:** www.idfa.org/events

### 2. DairyTech

**Dates:** January 25 - 27, 2023  
**Venue:** Crocus Expo International  
**City:** Moscow  
**Country:** Russia  
**Website:** www.dairytech-expo.ru

### 3. IDEX 2023

**Dates:** January 28 - 29, 2023  
**Venue:** Expo Center  
**City:** Lahore  
**Country:** Pakistan  
**Website:** www.internationaldairyexpo.com

## February 2023

### 1. Agroexpo

**Dates:** February 1 - 5, 2023  
**City:** Izmir  
**Country:** Turkey  
**Website:** en.agroexpo.com.tr

### 2. Dairy and Poultry Expo

**Dates:** February 2 - 4, 2023  
**Venue:** International Convention City Bashundhara  
**City:** Dhaka  
**Country:** Bangladesh  
**Website:** www.limraexpo.com

### 3. GulFood

**Dates:** February 20 - 24, 2023  
**Venue:** Dubai World Trade Centre  
**Country:** Dubai  
**Website:** www.gulfood.com

## April 2023

### 1. Canadian Dairy EXPO 2023

**Animal husbandry**  
**Dates:** April 5-6, 2023  
**Venue:** Stratford, Canada  
**City:** Stratford  
**Website:** <https://ifw-expo.de/en/exhib/canadian-dairy-xpo>

## June 2023

### 1. DLP EXPO Africa Dairy LiveStock and Poultry Expo

**Dates:** June 15-17, 2023  
**Venue:** KICC, Nairobi, Kenya East Africa  
**City:** Nairobi  
**Website:** www.dlpexpo.com

## August 2023

### 1. The Dairy Expo @ The Livestock Expo

**Dates:** August 3-5, 2023  
**Venue:** India Expo Center & Mart  
**City:** Greater Noida - Delhi  
**Country:** India  
**Email:** info@thedairyexpo.in  
**Website:** www.thedairyexpo.in

## October 2023

### 1. World Dairy Expo

**Dates:** October 1 - 6, 2023  
**Venue:** Madison  
**City:** Wisconsin  
**Country:** USA  
**Website:** www.worlddairyexpo.com



# Soaring Feed Prices vis-à-vis Sustainable Dairying in India: Current Perspective



## M.S. Mahesh

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Apart from providing livelihood security to over eight crore rural Indians and contributing to one-third of their income, dairying is also central to the rich cultural landscape of the country. India has been dominating the global dairy map for over two decades by occupying the numero uno position in the annual aggregate milk production (210 million MT), which has led to a per capita availability (428 g/day) greater than the requirements (280 g/day as per ICMR). Furthermore, going by 2030, India is poised to top the dairy chart in the world with a healthy growth rate. A comparison of the dairy situation in 2021 and 2030 shows the huge prospects for Indian dairying (Table 1).

every kg of feed dry matter consumed, dairy cows and buffaloes are expected to produce around 1-1.7 kg and 0.5-0.75 kg of milk, respectively. However, at the national level, NITI Ayog (2018) reports a looming shortage of all three major ration components, i.e., green forage, dry forage and concentrates that are deficient to the extent of 45%, 11% and 35%, respectively. As a result, hardly 44%, 52% and 30% of the dairy farmers use green forage, dry forage and concentrates, respectively under field conditions. Consequently, the imbalanced nutrition-led sub-optimal production performance is evident at many farms.

By and large, 'feed' alone is the single

**Table 1. A comparison of key attributes of dairy production in India**

| Attribute                                                                                                 | 2021          | 2030                |
|-----------------------------------------------------------------------------------------------------------|---------------|---------------------|
| Annual milk production (million MT)                                                                       | 210           | 289                 |
| Share (%) in world dairy production                                                                       | 22            | 26                  |
| Herd size                                                                                                 | 1-3           | 20-25               |
| CAGR (%) of milk production                                                                               | 6             | 4                   |
| CAGR (%) of milk productivity                                                                             | 1.6           | 2.0                 |
| Milk production system                                                                                    | Number-driven | Productivity-driven |
| CAGR: compound annual growth rate<br>(Source: <i>Indian Dairy beyond 75; a Yes Bank-CII publication</i> ) |               |                     |

Dairy production is largely fragmented in India, with the bottom of the pyramid typically representing production by masses housing 1-3 or more animals in a typical mixed crop-livestock farming system rather than mass production. And, to completely harness the genetic potential of dairy animals, it is imperative to ensure optimum feeding of scientifically balanced diets. As an example, for

largest entity that makes up majority (~65%) share in the recurring farm expenses. It is well known that to make a dairy enterprise profitable, either the feed cost should be low or the feed offered should result in an augmented milk performance leading to better returns. However, given the current market scenario, keeping the feed cost low is becoming increasingly challenging.



### Price volatility of feed raw materials

Today, owing to various factors including weather uncertainties (for instance, a prolonged monsoon in 2022), geo-political trade issues and economic shocks (e.g., Russia-Ukraine war), among others, have caused a large unprecedented price volatility in agricultural commodities, including the raw materials used in animal feeding. Table 2 and Fig. 1 compare the normal prices vs. price rallies observed for some of the traditional (conventional) raw materials in the last two years.

oilcakes etc. as well as filler materials like de-oiled rice bran, huller bran etc. are hit by price hikes to the tune of 15-50% in the last two years. Surprisingly, the price of dry forage wheat straw has soared by 100% this year compared to a year before. In fact, it has been noted that the wholesale price index-based feed and fodder inflation has skyrocketed to a nine-year high of 25.5% in Aug. 2022 (Indian Express, 9th Nov. 2022). By contrast, the wholesale milk prices have increased at the rate of 5.8% per annum (Economic Times, 10th Jun. 2022).

not be immediately reflected in the raise in procurement price (i.e., receivable). Because there is a close intricacy between milk price and general price rise (i.e., inflation), the additional producer costs may not be readily passed on to the consumers (Deccan Herald, 3rd Feb. 2020). Thus, farm-gate milk realisation will be low under the circumstances of sudden raise in the feed cost. Additionally, the usage of quality feed additives and supplements – that constitutes about 10% of feed cost – would be compromised to minimise the plunging gaps between milk returns and the input costs. Indeed, a prolonged trend of such a market slump would imperil the sustainability of dairy farming.

### The possible solutions

It is recognised that milk production is responsive to the quantity of utilisable nutrients ingested rather than any specific ingredient(s), there is a scope to utilise alternative, non-conventional and lesser-known by-product feedstuffs that are available locally. Besides delivering nutrients in an economical manner, alternative ingredients must also ensure good palatability, not to be contaminated with mycotoxins to keep feed and milk aflatoxin levels within the limit of 20 and 0.5 PPB, respectively. In addition, the government of India's ambitious scheme to initiate the creation of 100 new fodder-specific farmer producer organisations in 2022-23 is also an encouraging and timely step to minimise the hardships faced by country's dairy producers.

**Table 2. Price trends for various feed raw materials in India**

| Sl. no. | Ingredient               | Price variation (INR/kg) | Change (%) |
|---------|--------------------------|--------------------------|------------|
| 1       | Maize                    | 21-25                    | 19         |
| 2       | Barley                   | 26-34                    | 31         |
| 3       | De-oiled rice bran       | 13-19                    | 46         |
| 4       | Huller bran              | 10-14                    | 40         |
| 5       | Rice polish              | 28-40                    | 43         |
| 5       | Sugarcane molasses       | 12-18                    | 50         |
| 6       | Cottonseed extraction    | 32-44                    | 38         |
| 7       | Whole cottonseed         | 40-46                    | 15         |
| 8       | Soybean meal             | 40-110                   | 175        |
| 9       | Saturated vegetable fats | 85-170                   | 100        |
| 10      | Wheat straw              | 6-14                     | 133        |

(Source: Author's own assessment)

From the point of view of feed

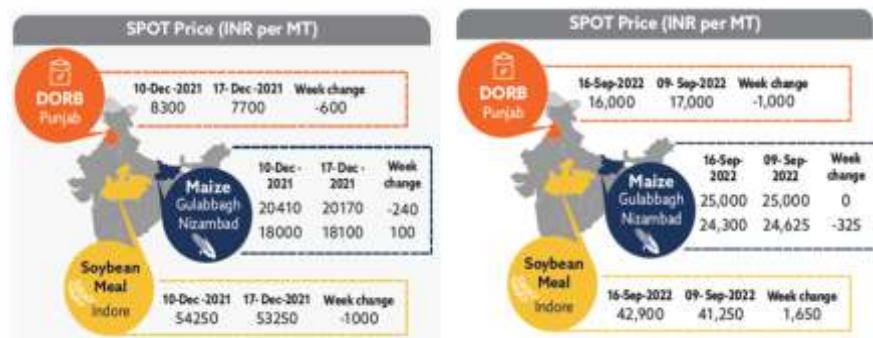


Fig. 1. Spot price analysis of select feed ingredients in the years 2021 and 2022 (Source: Market Byte, Kemin Industries)

### Implications on the feed industry and farmers

The compound feed manufacturing industry suffers directly when both the nutrient-rich ingredients like cereals,

manufacturers, the obvious results of the inflationary prices would be either lowering the nutrient specifications to match the price or increasing the selling price of the finished feeds. Both of these consequences are not healthy for dairy farmers, especially the latter, which results in increased input cost, whilst the additional cost incurred will

### Conclusion

Dairy production continues to struggle with the existing disequilibrium of feed resource availability vis-à-vis actual requirements on one hand and a price rallies on the other. Therefore, an integrated, solution-driven and farmer-friendly policy involving all the key stakeholders of the dairy value chain may pave the way for a sustainable dairy trajectory in India.



# MILMA

## -Thiruvananthapuram Regional Cooperative Milk Producers' Union (TRCMPU)



**Shri. Bhasurangan N**  
Convenor, TRCMPU LTD.



Milma is a cooperative milk producers' organisation founded in 1985 under Operation Flood programme sponsored by the Government of India. It has three regional unions operating in the state of Kerala, namely; Thiruvananthapuram Regional Cooperative Milk Producers' Union (TRCMPU), Malabar Regional Cooperative Milk Producers' Union (MRCMPU) and Ernakulam Regional Cooperative Milk Producers' Union (ERCMPU). All the three Unions are affiliated to a state level apex body, viz. The Kerala Co-operative Milk Marketing Federation who owns the brand name, MILMA.

Thiruvananthapuram Regional Cooperative Milk Producers' Union (TRCMPU) operates in Thiruvananthapuram, Kollam, Pathanamthitta and Alappuzha; the four southern-most districts of Kerala.

It was established in 1985, with 45 primary cooperative societies as members and a procurement of less than 35000 litres of milk per day. Currently TRCMPU has 988 primary dairy cooperatives as members. The present domestic procurement is 4.75 lakh litres per day. The procurement is exclusively through 87 Bulk Milk Chilling Centres spread across the four districts where raw milk is chilled to 4 degree Celsius to arrest microbial growth so as to preserve the freshness. 11 out of the 87 Bulk Milk Chilling Centres are ISO 22000:2018 certified. The present chilling capacity is 3.90 lakh litres per day which will be increased to 4.50 lakh litres per day by the end of 2023.

There are 3.45 lakh producers enrolled as members in these primary dairy cooperatives and 56000 members actively pour milk presently.

The turn over during the FY 2022-23 is 1095 crores. TRCMPU is aiming for a turnover of 1203 crores for the next FY. Fluid milk sales in 6 lakh litres per day. Product revenue is approximately 20 percent of the total turnover.



TRCMPU has three well equipped dairies established in Thiruvananthapuram, Kollam and Pathanamthitta districts. The total processing capacity is 7 lakh litres per day. All the Dairies are ISO 22000:2018 certified.

**The Major products manufactured apart from different types of fluid milk are,**

1. Curd (Toned and Double Toned)
2. Ghee
3. Butter
4. Lassi
5. Pedra
6. Skimmed flavoured milk
7. Paneer
8. Flavoured milk- 6 variants
9. Ice cream – 14 variants in 52 variants
10. Sambharam – A native drink of Kerala based on Butter Milk
11. Ice Candy

**The following products are marketed by TRCMPU Ltd. the manufacture of which are outsourced.**

1. Cakes
2. Cheese
3. UHT Milk
4. Skimmed Milk Powder
5. Payasam Mix
6. Cookies
7. Muffins
8. Chocolates
9. Drops
10. Fruit beverages
11. Bottled drinking water

**Governance**

The Union is governed by a Managing Committee consisting of fourteen

members elected from among the presidents of primary dairy cooperatives affiliated to the Union. The Managing Committee is headed by Chairman. Currently the Union is managed by Administrative Committee consisting of three members appointed by the Government of Kerala. The Managing committee consists of the following members.

1. Shri. N Bhasurangan – Convenor
2. Shri. K R Mohanan Pillai- Member
3. Shri. V.S Padmakumar- Member
4. Shri. D. S. Konda- Managing Director

The aim of the Union is to market surplus milk procured from the rural producers and to provide financial and technical support for their livelihood. It is estimated that TRCMPU is passing 83% of its profit back to the producers as various incentives, schemes and subsidies. The major developmental and welfare schemes are as follows:

- Welfare Schemes
- Benevolent Schemes
- Scholarship for children.
- Cattle feed subsidy
- Revolving fund for cattle purchase.
- Calf Adoption Scheme.

- Cattle Insurance subsidy
- Building grand for APCOS.
- Milk Value Incentive to farmers
- Emergency Veterinary Service
- Farmer Insurance
- Artificial Insemination Facility
- Cattle feed, Fodder, Silage

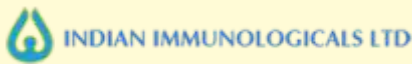
**Mission**

To become the leading organisation in the food and nutrition sector in the region, through the attainment of its marketing objectives and to become nucleus of an endeavour for an accelerated development of the rural economy of the region. Further it would aspire to function as professional, profitable and socially responsible organisation ensuring better returns to farmers, primary societies as well as its customers by providing good value for their money.

**Vision**

To achieve the status of the best union in the country in turnover and profitability by achieving 10-15% growth per annum by accelerating the growth in milk production and sale of milk and milk products and by diversification into related areas in food sector.





## Indian Immunologicals Ltd Strives to Make a Significant Difference in the Lives of People Through CSR Activities

IL is providing additional nutritional supplementation to schoolchildren in support of the NDDB Foundation for Nutrition's Gift Milk Program. Fortified flavoured milk is distributed to students in IIL-adopted government schools under this scheme. This activity benefits over 2500 school-aged children from Telangana and Tamil Nadu.



IIL provides deworming and vaccination to cattle in nearly 115 goushalas with a population of 90000 destitute animals spread across 12 states as part of Operation Gouraksha.







IIL launched Project CHANP with the goal of providing health and nutrition supplementation (mineral mixture fortified with vitamins) to 500 selected female calves aged 1 to 1.5 years in the goushalas for a year.



The majority of India's government schools have been mistreated, disregarded, and undermaintained. These factors deter kids from enrolling in school, depriving them of their right to an education. In order to address this, IIL adopted two public schools close to its Karakapatla facility in Hyderabad, Telangana.

Infrastructure and fundamental amenities, such as assistance with the programme for midday meals, are provided by IIL. Within a few years, IIL's intervention caused the students' strength in the adopted schools to double. Additionally, the schools have received honours from the district.



Project Go GREEN, a pilot project for manure management, is planned for the OMFED, Cuttack, Odisha areas. The project's goal is to increase dairy farmers' earning potential. 100 dairy households with 2 to 5 cattle are anticipated to benefit from this, on average. IIL hopes to expand the scope of Project "Go Green" to additional regions of Odisha and other Indian states after the successful conclusion of this Pilot Project.



# Merck Animal Health Introduces ORBENIN-DC™ in Convenient Pails



Merck Animal Health announces that ORBENIN-DC™ (cloxacillin benzathine intramammary infusion) dry cow treatment is now available in convenient 144-syringe pails.

ORBENIN-DC effectively targets Gram-positive bacteria at dry-off with zero milk withhold post-calving.

According to Austin Snook of Merck Animal Health, "Dairy producers have long relied on ORBENIN-DC to both treat current intramammary infections and help prevent new infections during the dry period." We're happy to provide this efficient dry cow treatment in a larger package option in response to producer requests.

ORBENIN-DC continues to be available in 12-syringe boxes as well. For more information, visit [OrbeninDC.com](http://OrbeninDC.com).

ORBENIN-DC is part of the comprehensive mastitis and scours management program from Merck Animal Health. Other solutions include SHUTOUT®, an internal teat sealant that provides a physical barrier against bacteria entering the teat canal, BOVILIS® J-5, a Gram-negative core-antigen vaccine to aid in reduction of mastitis due to E. coli; and BOVILIS GUARDIAN, a complete scours vaccine for dry cows with broad-spectrum protection against four major bacterial and viral pathogens associated with scours in pre-weaned calves.





*Meeting with CKL*

## Carus Laboratories Exhibits at Aviana Africa in Uganda and introduces its innovative solutions

Carus Laboratories has participated with its team in Aviana Africa (International livestock, poultry and fish expo) which was held at UMA Show Grounds Lugogo in Kampala, Uganda from 28th to 29 October 2022 as an exhibitor and stole the show with its innovative solutions.

As one of the fastest-growing animal health care organization in India, Carus Laboratories Pvt. Ltd. has exhibited a basket of unique solutions well researched and produced in its state-of-art FAMI-QS & ISO 9001-2015 certified manufacturing plant situated at Kunjapura, Karnal 132001, Haryana, India.

Their team members Dr Amit Kumar Pandey (GM: International Business) and Mr Vipin Sardana (International Operation Manager) represented the company at this event. As the African continent has a huge opportunity in the veterinary field, the company main aim was to interact with local stakeholders in the cattle and poultry business and find distributors for their wide range of animal feed supplements and additives. They met some of the stakeholders at Expo and in their offices like Quality Chemical limited, Biyinizika poultry, Goodman international, Vetcenter, Concfeed, etc.

Their team also visited the neighbouring country of Uganda i.e. Kenya. & team met with many renowned brands in Kenya like Twiga Chemical, Elgon Kenya, CKL Africa Ltd., Murphy chemicals, Metrovet and Ultravetis East Africa.











## Vet Varsity Scientists Bring Laurels by Earning National Level Fellowships

It was held at the Uttar Pradesh Pandit Deen Dayal Upadhyaya Pashu Chikitsa Vigyan Vishwavidyalaya evam Go Anusandhan Sansthan (DUVASU), Mathura. NADS awarded Fellowships to Dr. Yashpal Singh Malik, Dean of the College of Animal Biotechnology, and Dr. Nirbhay Kumar Singh, HoD of Veterinary Parasitology. Dr. Jaspal Singh Hundal of the Department of Animal Nutrition, Dr. Nitin Mehta of the Department of Livestock Products Technology, Dr. Santosh Kumar Mishra of the Department of Dairy Microbiology, and Dr. Sunil Kumar Khatkar of the Department of Dairy Technology were inducted as NADS Associate Fellows. The awards were given out by Sh. Dharmपाल Singh, Cabinet Minister of Animal Husbandry in Uttar Pradesh, and Prof Dr. AK Srivastava, President of NADS(I).

The National Academy of Dairy Science, headquartered at the National Dairy Research Institute in Karnal, is one of the world's leading academies of animal sciences, dedicated to scientific and technological advancements in the Indian dairy industry.

Dr. Inderjeet Singh, Vice Chancellor of GADVASU, congratulated all awardees and stated that GADVASU is gaining national and international recognition as a result of the faculty members' meticulous and exemplary work.

He further stressed that the faculty members earned their recognition amongst many applicants for the prestigious award due to the farmer and industry centric research and its extension to the relevant stakeholders.



“ Ludhiana 01 November 2022

Six scientists from Guru Angad Dev Veterinary and Animal Sciences University in Ludhiana were awarded prestigious fellowships and associate fellowships by the National Academy of Dairy Science (India) (NADS) at its 7th convocation and National Dialogue on "Innovations in Reshaping Indian Dairy."

”





# cooperative dairu

## conclave 2022

east & north-east regions  
oct 07, 2022



# Government is Committed to Increase the Domestic Dairy Market of Rs 13 Lakh Crore to Rs 30 Lakh Crore by 2027

The Union Minister for Home and Cooperation, Shri Amit Shah today inaugurated the Eastern and North-Eastern Cooperative Dairy Conclave 2022 in Gangtok, the capital of Sikkim.

Addressing the Eastern and North Eastern Region Dairy Cooperative Conference, the Union Home and Cooperation Minister said that 15 years ago in a Himalayan state, no one could have imagined that cooperative dairy conclaves from across the country could be held here. He said that milk production is the only way for women empowerment, poverty alleviation and doubling of farmer's income and it gives great peace of mind and feeling of joy to see the production of two lakh litres of milk per day by small farmer brothers in Sikkim. Shri Shah said that the Ministry of Cooperation and the National Dairy Development Board (NDDB) have planned a Multipurpose PACS in every Panchayat which will do the work of distribution of Dairy, FPO, Agriculture and Gas Production. Along with making arrangements for LPG distribution and it will provide arrangements for petrol pumps and storage and marketing where ever required.

The Union Cooperation Minister said that for centuries, animal husbandry has played a very important role in the social and economic development of India and once upon a time, rivers of milk and ghee used to flow in our country. Earlier animal husbandry was a very important industry of our country but even after the independence, no one paid attention to it and gradually it ended. Shri Shah said that after the White Revolution, such a foundation is ready today, and the time has come to make dairy a medium of prosperity of the farmer and taking dairy to not just one state but every panchayat. He said that dairy is such an industry through which many objectives are fulfilled.

Along with making dairy, arrangements are made for the nutrition of thousands of crores of children. Shri Shah said that our per capita milk production in the world is still not satisfactory and unless it is increased, there will be nutritional problem in such a large country. Dairy solves the problem of nutrition because when a cheque arrives in the hands of a woman who sells her milk in the dairy while engaging in animal husbandry, then the family becomes prosperous and poverty is also removed. He asked the NGOs working for malnutrition, women's empowerment and the poor to focus on dairy because there can be no greater mean for women empowerment than dairy.





## ETHICAL DAIRY BUSINESS PLAN FOR INDIA

UNDER THE PREVALENT CONDITIONS IN INDIA IS IT POSSIBLE TO-

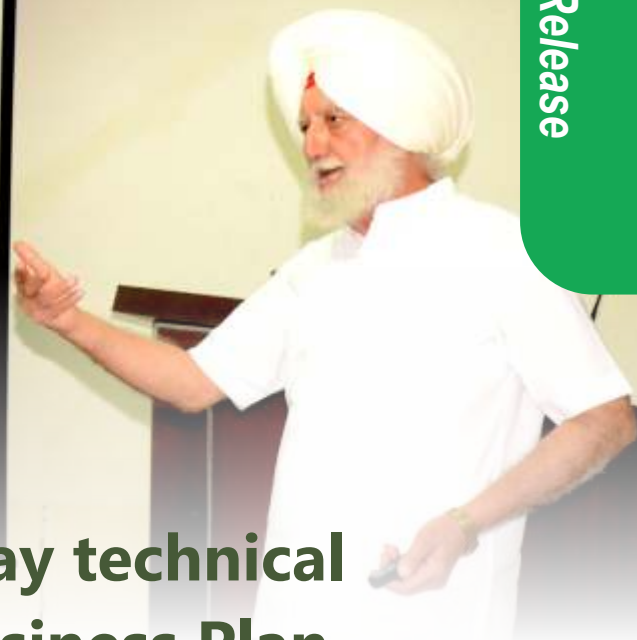
1. DOUBLE THE INCOME OF ETHICAL DAIRY FARMERS IN ONE YEAR?
2. PROCURE, PROCESS & MARKET 100% PURE MILK STRICTLY CONFORMING TO INTERNATIONAL QUALITY REQUIREMENTS?
3. GENERATE NET PROFIT OF >10% OF TURNOVER FOR DAIRY BUSINESS ENTREPRENEURS DEALING ONLY WITH LIQUID MILK?

Presentation By

**Jaswant Singh Bhandair**

Mission Director

International Improvement Mission



# Vet Varsity organizes one day technical lecture on “Ethical Dairy Business Plan for India to Double the Income of Dairy Farmers”

College of Dairy Science and Technology (CODST), Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana organised a one day Technical Lecture for the faculty and students under the umbrella of Institutional Development Plan (IDP). S. Jaswant Singh Bhandair, Mission Director, International Improvement Mission invited as Industry expert. He along with his team deliberated with the teachers regarding significance and purity of milk in context of milk fat and total solids. He demonstrated his in-house developed technology and prototype for pasteurization of milk for extension of shelf life of milk beyond seven days.

In the afternoon session, S. Sandeep Singh Randhawa, Chairman, Punjab Livestock farmers Association and S. Harinder Singh, Manager, Milk Procurement, Verka Dairy, Ludhiana graced the occasion as the special guests. Dr. S.K. Mendiratta, Dean, College of Dairy Science and Technology inaugurated the session and discussed the importance of novel technologies for the need of the hour to promote the value addition of milk at farm scale. S. Jaswant Singh Bhandair delivered a

lecture on “Ethical dairy Business Plan for India to double the income of dairy farmers within one year” in a very interactive way and discussed some practical innovations to promote value addition at farm scale. S. Sandeep Randhawa discussed the need for the realization of the true economic value of milk to benefit the dairy farmers and stressed on the need of ideas to increase the farmer's income.

S. Harinder Singh shared his life long experience in the fields of procurement and handling of milk and emphasized upon maintaining the quality of milk from farm to fork. Dr S.K. Mendiratta presented the award of honour and extended vote of thanks with special thanks to Dr SPS Ghuman, Dean, College of Veterinary Science-cum-Principal Investigator, IDP, Dr. Y.P.S Malik, Dean, College of Animal Biotechnology and Dr. J.S. Bedi, Director, Centre for One Health for providing all sorts of support, facilities and motivation for organizing this event. Dr Inderjeet Singh, Vice Chancellor, congratulated the team of CODST for organizing this event and said that these events will help in devising strategies to support the farmers from time to time.





## Nova Dairy provides assistance to dairy farmers and agricultural communities.



Nova Dairy, India's largest dairy company, is using its most recent projects to improve the lives of dairy farmers.

The organisation recently stated that it has developed techniques for dairy producers to produce clean milk. Furthermore, the company promises to provide advice and experience in animal health and nutrition. To keep milk from spoiling, the dairy employs technological methods to collect and chill it as quickly as possible.

Animal feed prices have risen dramatically, forcing farmers to raise their selling prices. The country's poor dairy infrastructure is another issue that the dairy industry as a whole is working to overcome. As a result, in order to assist dairy producers, the dairy is developing ideas for a dairy market that will benefit both parties.

"As the nation's leading dairy manufacturer, we believe it is critical to express our solidarity with the dairy farming and agricultural communities." Despite milk's short shelf life, we make certain that we reduce waste while also lowering costs. "Sterling Agro's managing director, Kuldeep Saluja, stated that Nova Dairy will make every effort to provide dairy farmers with cutting-edge equipment and information in order for them to support themselves and their families."

## 'CM's White Revolution Scheme' aims to increase milk production and improve the economic situation of dairy farmers



Through its flagship programme, the Chief Minister's White Revolution Scheme, the Arunachal Government has been working to improve the economic situation of dairy farmers (CMWRS).

This ambitious programme aims to provide farmers with entrepreneurial opportunities through financial assistance and scientific dairy animal rearing, with the goal of increasing milk production across the northeastern state, doubling farmers' income, and increasing rural self-employment.

According to an official bulletin issued by the Chief Minister's Office (CMO) Arunachal, nearly 610 dairy beneficiaries received assistance through the CMWRS in 2019-20. They were helped by supplying dairy cows, feed, and other logistical assistance. Meanwhile, 120 dairy farmers will benefit from the scheme in 2021-22.

## Telangana now the largest ice cream manufacturing unit in India

Ice cream lovers all over the country now have one more reason to visit Telangana. The state now has the country's largest ice cream manufacturing unit, which is run by one of India's most well-known

brands.

Hatsun Agro Products Ltd, also known as Arun Ice Creams and Ibaco, completed a seven-tonne-per-day chocolate processing plant and a 100-tonne-per-day ice-cream manufacturing plant in Zaheerabad.

Hatsun's total investment in Telangana is Rs 600 crore, according to IT and Industries Minister KT Rama Rao, who announced this on Thursday. The Minister described the unit as a testament to Telangana's "white revolution," saying it would procure 10 lakh litres of milk per day, benefiting 5,000 local dairy farmers. He also stated that it would employ 1,500 people.

On a daily basis, the company serves over 400,000 farmers spread across 10,000 villages in Tamil Nadu, Andhra Pradesh, Telangana, Karnataka, and Maharashtra. HAP sells milk and curd in these states under the brands 'Arokya' and 'Hatsun' through its own distribution network and 'HAP Daily' outlets. It intends to open more stores in newer markets such as Maharashtra, Kerala, Orissa, Chhattisgarh, Madhya Pradesh, West Bengal, and Jharkhand, as well as expand its presence in existing markets such as Tamil Nadu, Karnataka, Andhra Pradesh, and Telangana.



# Soma Bharath Kumar

## Appointed as Chairman of Telangana State Dairy Development (TSDCFL)



**Mr. Soma Bharath Kumar** is the new Chairman of the Telangana State Dairy Development Cooperative Federation Limited (TSDCFL.)

**Mr. K. Chandrashekar Rao**, the Chief Minister of Telangana, approved Mr. Soma Bharath Kumar's appointment on Monday, November 7th. Mr. Soma Bharath Kumar will take over as Chairman of the TSDCFL immediately and will serve for the next two years, 2024. The TRS-led Telangana government issued an immediate order in this regard.

Following his appointment as Chairman of the TSDCFL, Mr. Soma Bharath Kumar met with the Chief Minister at Pragathi Bhavan and received the appointment orders. He expressed his gratitude to Telangana's Chief Minister and promised to live up to expectations.

Highlighting Mr. Soma Bharath Kumar's political career and early life, he is currently serving as the General Secretary of the Telangana Rashtra Samithi (TRS), now known as the Bharat Rashtra Samithi (BRS.) Since the formation of the TRS in 2001, he has served as the TRS/BRS General Secretary. Mr. Soma Bharath Kumar, an advocate by profession, was one of the TRS members who actively participated in the Telangana Statehood Movement, which resulted in Telangana, then part of Andhra Pradesh, being declared a separate state in 2014.



# Editorial Calendar 2022

|                                                                                                                                                                                                              |                                                                                                                                                                                                             |                                                                                                                                                                                                             |                                                                                                                                                                                                             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Publishing Month:<br><b>January</b><br>Article Deadline :<br><b>30<sup>th</sup>, Dec. 2021</b><br>Advertising Deadline :<br><b>3<sup>rd</sup>, Jan. 2022</b><br>Focus :<br><b>Disease Prevention</b>         | Publishing Month:<br><b>February</b><br>Article Deadline :<br><b>30<sup>th</sup>, Jan. 2022</b><br>Advertising Deadline :<br><b>3<sup>rd</sup>, Feb. 2022</b><br>Focus :<br><b>Herd Management</b>          | Publishing Month:<br><b>March</b><br>Article Deadline :<br><b>28<sup>th</sup>, Feb. 2022</b><br>Advertising Deadline :<br><b>3<sup>rd</sup>, March 2022</b><br>Focus :<br><b>Heat Stress</b>                | Publishing Month:<br><b>April</b><br>Article Deadline :<br><b>30<sup>th</sup>, March 2022</b><br>Advertising Deadline :<br><b>3<sup>rd</sup>, April 2022</b><br>Focus :<br><b>Cold Chain Mgmt.</b>          |
| Publishing Month:<br><b>May</b><br>Article Deadline :<br><b>30<sup>th</sup>, April 2022</b><br>Advertising Deadline :<br><b>3<sup>rd</sup>, May 2022</b><br>Focus :<br><b>Nutrition</b>                      | Publishing Month:<br><b>June</b><br>Article Deadline :<br><b>30<sup>th</sup>, May 2022</b><br>Advertising Deadline :<br><b>3<sup>rd</sup>, June 2022</b><br>Focus :<br><b>Environmental Control</b>         | Publishing Month:<br><b>July</b><br>Article Deadline :<br><b>30<sup>th</sup>, June 2022</b><br>Advertising Deadline :<br><b>3<sup>rd</sup>, July 2022</b><br>Focus :<br><b>Calf &amp; Heifer Mgmt.</b>      | Publishing Month:<br><b>August</b><br>Article Deadline :<br><b>30<sup>th</sup>, July 2022</b><br>Advertising Deadline :<br><b>3<sup>rd</sup>, August 2022</b><br>Focus :<br><b>Processing</b>               |
| Publishing Month:<br><b>September</b><br>Article Deadline :<br><b>30<sup>th</sup>, August 2022</b><br>Advertising Deadline :<br><b>3<sup>rd</sup>, September 2022</b><br>Focus :<br><b>Milking Practices</b> | Publishing Month:<br><b>October</b><br>Article Deadline :<br><b>30<sup>th</sup>, September 2022</b><br>Advertising Deadline :<br><b>3<sup>rd</sup>, October 2022</b><br>Focus :<br><b>Feed &amp; Fodder</b> | Publishing Month:<br><b>November</b><br>Article Deadline :<br><b>30<sup>th</sup>, October 2022</b><br>Advertising Deadline :<br><b>3<sup>rd</sup>, November 2022</b><br>Focus :<br><b>Winter Management</b> | Publishing Month:<br><b>December</b><br>Article Deadline :<br><b>30<sup>th</sup>, November 2022</b><br>Advertising Deadline :<br><b>3<sup>rd</sup>, December 2022</b><br>Focus :<br><b>Methane Emission</b> |

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