



# GOA VET

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## Editorial

It gives me immense pleasure in keeping this 12<sup>th</sup> issue in your hands as the bulletin editor from November 2015. With your tremendous support we could release 11 bulletins before and this is the 12th issue.

As I lay down as bulletin editor ( as there is election today) I wish to thank all the members of TGVA who reposed faith in my work and gave me opportunity to do some service to our profession. At the same time I apologize for some members whose articles could not get justice in time due to many factors viz. article submission time, contents – Number of pages, Total pages per bulletin, cost of bulletin etc. Nevertheless, I as the bulletin editor tried to do justice to all the articles and at the same time when required had to get articles from some of my colleagues in various Institutions all over India to maintain the quality of bulletins.

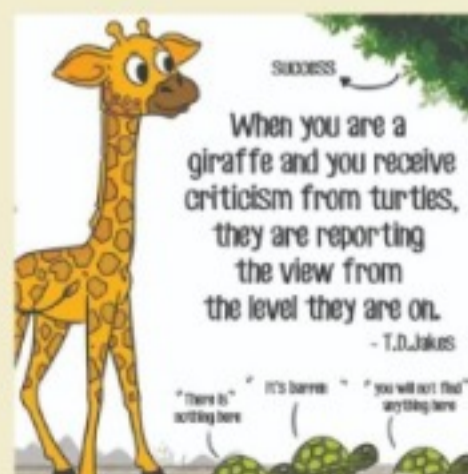
This bulletin we can call "Ladies Special bulletin" as out of 08 articles we have considered, 05 are from Lady Vets. I sincerely thank them for making this bulletin a special one. I thank other writers also and I am proud to say that with the help of our webmaster Dr. Tushar Gaunekar & other E. C. members all our bulletins are online now which we have started from November 2015 after I was appointed as bulletin editor. Our amended bye-laws you can read online and this was possible with the tremendous support from E. C. members and you all.

Hope you will enjoy this bulletin and if you feel any changes are required you may please inform me or new editor by whatever way you can so that we will improve our future bulletins.

Dr. M. A. Bale, Bulletin Editor



Dr Dhuri being felicitated by vets of goa dairy on 30th October 2019 on the day of his retirement



SUCCESS  
When you are a giraffe and you receive criticism from turtles, they are reporting the view from the level they are on.  
- T.D. Jakes

"There is nothing here" "It's barren" "You will not find anything here"

### 10 Things Your Dog Would Tell You..

1. My life is likely to last 10 to 15 years. Any separation from you will be painful: remember that before you get me.
2. Give me time to understand what you want of me.
3. Place your trust in me- it is crucial to my well being.
4. Do not be angry at me for long, and do not lock me up as punishment.
5. You have your work, your entertainment, and your friends. I only have you.
6. Talk to me sometimes. Even if I don't understand your words, I understand your voice when it is speaking to me.
7. Be aware that how ever you treat me, I will never forget.
8. Remember before you hit me that I have teeth that could easily hurt you, but I choose not to bite you because I love you.
9. Before you scold me for being uncooperative, obstinate, or lazy, ask yourself if something might be bothering me. Perhaps I might not be getting the right food, or I have been out too long, or my heart is getting too old and weak.
10. Take care of me when I get old: you too will grow old. Go with me on difficult journeys. Never say: "I cannot bear to watch" or "Let it happen in my absence." Everything is easier for me if you are there, even my death.

## AN ACCOUNT OF KYASANUR FOREST DISEASE IN GOA

Kyasanur Forest Disease (KFD) also known as Monkey Fever is a viral disease of monkeys transmitted by bite of monkey ticks infected with Kyasanur Forest Disease Virus (KFDV) belonging to family Flaviviridae (S.K. Kiran et. al., 2013). It is a disease of zoonotic importance (Bio-safety level-4 containment) which causes fatal viral hemorrhagic fever and death in humans (10-20%). Langurs and macaques become infected with KFDV through bite of infected ticks; virus is then transmitted to other ticks feeding on infected monkeys. KFDV causes severe febrile illness in some monkeys, clinically showing lethargy, dullness and thus easily falling prey or into traps. When infected monkeys die, ticks drop from the body, thereby generate hot spots of infectious ticks that further spread the virus. In enzootic areas, KFDV circulates through small mammals like rodents, shrews, ground birds etc. (Mourya et. al., 2013).

KFDV was diagnosed in Goa as an emerging zoonotic disease ([Emerg Infect Dis](#). 2015 Jan, Vol1) when human deaths were reported in Sattari taluka during summer of 2015 which was correlated and confirmed with monkeys deaths. Recent reports have show that KFDV has spread to new biotopes including Goa (Mourya & Yadav, 2016). A team of doctors from National Centre for Disease Control, Ministry of Health & Family Welfare, Govt. of India-Delhi visited/surveyed the areas with monkey carcasses and collected ticks from forest in Pali village, Sattari in April 2015. Ticks (*Haemaphysalis spinigera*) were tested positive for KFDV by National Institute of Virology (NIV), Pune.

Being a tick transmitted disease, KFD has a seasonal occurrence. This is due to the life-cycle and feeding habits of the tick. KFD occurs from late December until on start of monsoons. High day temperatures are favourable for tick development from eggs to larvae and nymphs. During this stage of its life larva and nymph keep feeding on blood meals. The natural cycle of KFDV involves 2 monkey species; Black-faced langurs (*Semnopithecus entellus*) and Red-faced bonnet monkeys (*Macaca radiata*) and various tick species (mainly *Haemaphysalis*) (Mourya et. al., 2013). Till date KFD has been confirmed only in langurs in Goa. Post-mortem (PM) lesions are mainly haemorrhages in internal organs, but these have been inconsistent with some KFD positive langurs having no gross haemorrhagic lesions.

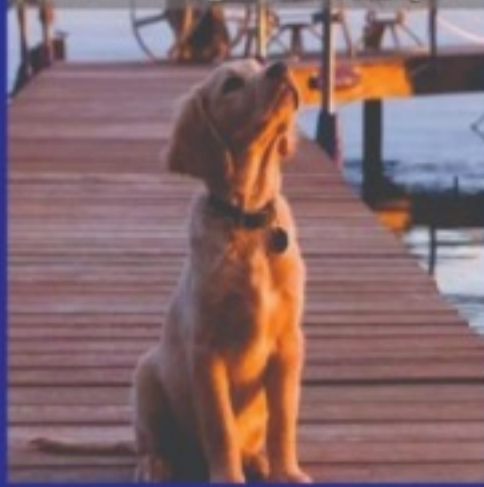
Unfortunately, summer season is also time for harvesting the cashew, kokum and other seasonal crops during which humans can act as sources of blood meal to the ticks. Infection occurs only from bite of KFDV infected tick. Occupational exposure of KFD in cashew nut workers in Goa has been reported by Patil et.al.,2017. Since there is only symptomatic treatment for KFD, vaccination is the preventive measure offering only 62-65% immunity with regular boosters.

In January 2016, monkey carcasses were found by the Forest Dept. (FD) and reported to Veterinary Officer (V.O.) -Valpoi. The V.O.& team from Disease Investigation Unit (DIU)-Tonca, Dept. of AH&VS, carried the personal protective equipment (PEP) and conducted the post-mortems at the site where monkey carcasses were found in the presence of local Veterinary Officer and staff of FD. The PMs were conducted at site to prevent carrying/transfer of the tick to newer/uninfected areas, prevent human exposure and to achieve destruction of ticks using pesticide at the 'hotspot' i.e. the site with maximum population of ticks leaving the carcass. Veterinarians donned the PEP and prepared themselves 4-5meters away from the carcass. For bio-safety measures and for destroying the hotspot, Deltamethrin (2ml in 1L) was sprayed from the periphery to centre of the hotspot containing the carcass, following which PM was conducted by two them. Ticks and tissues (lung, heart, heart blood, liver, spleen & kidney) were collected, transported in ice and preserved under refrigeration (-700C) at the DIU-Tonca. The Veterinarian conducting the post-mortem ensured the carcass was set on fire and instructed the FD staff for controlled burning of the surrounding area as a disposal and biosafety measure. NIV conducted real time 'Reverse Transcriptase Polymerase Chain Reaction' (RT-PCR). Report was then shared with FD and concerned Veterinary establishments.

After the first few visits by Assistant Director and VOs of DIU subsequent calls were attended and PMs done by local Veterinary Officers. PEP, pesticide and other requirements for conducting the PMs were mobilized by DIU-Tonca, to concerned Veterinary Dispensaries and Hospitals. The Dept. of AH&VS, conducted seminar on KFD, for the dept. officers & various sensitization programs were held at affected villages/municipalities. Since the disease was confirmed and well recorded in 15 villages of Sattari, Ponda, Bardez and Dharbandora, the Dept.

did not conduct PMs in these villages and instructed FD to burn carcasses for bio-safety reasons, but however, continued to conduct PMs in previously unaffected areas/villages. The Dept. of AH&VS, in 2017 liaison with Dept. of Health Services (DHS)–Campal, forming a triad of network between the three depts. for faster and better services to the public. Once monkey carcass was necropsied, DHS was informed and it commenced human vaccinations in the area. Simultaneously FD maintained a vigil for monkey carcasses.

Dogs are small rays of light caught on Earth for a short time to brighten our days.



To sum up, the role of the Dept. of AH&VS has been to attend to calls from FD after it has confirmed the presence of monkey carcass, conduct PMs at the site, collect/preserve/dispatch tissues to NIV-Pune and share results with concerned departments. Maintaining proper bio-security, wearing long sleeved clothing, shoes with socks, walking in the centre of forest paths and avoiding brushing against plants, application of dimethyl phthalate (DMP) repellent oil, vaccination and hotspot destruction can help prevent this occupational disease in Veterinarians. Due to proper bio-safety measures followed none



**Dr. M. Niceta C. Costa**

## **BOVINE RESPIRATORY DISEASE (BRD)**

BRD is a general term for respiratory disease in cattle caused by a range of factors, singly or in combination. A major cause of economic losses, BRD affects the lower respiratory tract / lungs (pneumonia) or upper respiratory tract (rhinitis, tracheitis, bronchitis).

### **Etiology**

BRD is defined as a "disease complex":

- It usually is caused by a variety of pathogens, both viral (Bovine Respiratory Syncytial Virus (BRSV), Parainfluenza 3 (PI3), Adenovirus, Bovine Viral Diarrhea Virus (BVDV), and Infectious Bovine Rhinotracheitis (IBR)) and bacterial (Pasteurellamultocida, Mannheimiahaemolytica, Histophilussomni, Mycoplasma bovis).
- Parasitic (lungworm) and fungal (Aspergillus) agents are also pathogens.
- These pathogens interact with one another and the animal's immune system to produce full-blown disease.
- Bacterial pathogens apparently cause the acute syndrome by invading the bovine respiratory tract that has been compromised by viral infections, environmental conditions and/or other stress factors.

Contributing to the disease complex is stress. Stressors include weaning, changes of feed, variation in ambient temperature and humidity, and weather.

### **Clinical Signs**

Classical clinical signs of bacterial BRD include:

- fever of over 40°C (>104°F)
- difficulty breathing occurred to varying degrees
- Serous (watery), then purulent (pus), and/or bloody nasal and eye discharge.
- varying degrees of depression
- diminished or no appetite ('off-feed')
- rapid, shallow breathing
- Coughing
  - In early BRD cases, the lungs and airways are generally painful, so the animal will try to clear the airway with mild, tentative, soft coughing.
  - Loud, prominent coughing or "honking" indicates far more chronic, advanced cases, at which point treatment is difficult.

### **Risk factors**

Environmental factors such as transport, adverse weather, co-mingling, stressful events (ie. dehorning, castration, weaning, auction).

## **Treatment**

Treatment should always be specifically targeted to the disease and the symptoms (anti-infectious agents (Antibiotics and Sulfas), antiparasiticides, non steroidal anti-inflammatories, bronchodilators, mucolytics, oral rehydration fluids.

## **Prevention**

The key to preventing respiratory disease is to reduce stress and to vaccinate against viruses and bacteria that cause disease.

- Vaccination with biological products targeting the viral and bacterial pathogens.
- Appropriate use of antibiotics labeled for control of BRD
- Good cattle handling and stress reduction
  - Minimize exposure to environmental conditions that contribute to disease, such as dust, crowding, fumes (proper ventilation is a key - especially with dairy facilities).
  - Provide adequate rest, feed and water (especially after shipping).
  - Make sure animals receive adequate levels of essential nutrients such as vitamins and minerals.
  - Nutritional soundness also helps prevent disease and improves immune function.
  - Handle animals with care. Use low stress handling techniques.
  - Reduce and/or minimize pen movements.
  - Keep animals as clean and dry as possible..
  - Maintain good housing, ventilation and avoid overcrowding.
  - Make sure animals receive the right deworming program in areas affected by lungworm.
  - Effective colostrum management

## **Economic Impact**

- In the cattle industry world wide, BRD continues to be the primary cause of morbidity and mortality in feedlots contributing to losses in performance, carcass quality and health.
- In the US dairy industry respiratory disease continues to play a major role in death losses in weaned calves and morbidity due to BRD affects survivability and reduced dairy performance later in life.
- Economic losses include death loss, decreased weight gain, and additional labor and treatment costs.

# **RINGWORM**

Ringworm is a fungal infection of the skin with a worldwide distribution. Cattle and sheep are commonly affected, but other species, including man and horse, can be infected. Thus, ringworm is a potential zoonotic disease. The disease is of significant economic consequence to the farmer since growth rates are affected in the active stage of infection and the disease causes hide damage.

## **Aetiology**

Ringworm is caused by infection of the hair and surface layers of the skin by fungi. It occurs in all species of animals including man. Infection of the skin and hair of cattle is most frequently due to *Trichophytonverrucosum* (95% of cases), and less commonly *Tricophytonmentagrophytes*, a spore forming fungi. Spores are shed from the lesion by broken hairs or scabs from the lesion. The spores remain alive for years in a dry environment and thus halters, grooming equipment, or even a barn can remain infective for years.

## **Transmission**

Direct contact with infected animals, particularly with cattle confined to a barn, is a common method of spreading the fungi. Some infected calves have a degree of natural immunity that prevents development of lesions; however, they can be a source of infection. Show calves are frequently infected from spore contaminated equipment that has not been properly cleaned.

Spores germinate and attack the shafts of the hair and the surface layers of the skin. Exudate oozes from the damaged skin and mixes with debris from skin and hair, thereby forming a crusty scab. The scab is grey-white and noticeably higher than the surrounding skin. Infection spreads from the center outwards and results in the circular lesion 1 to 1.5 inches in diameter. Adjacent lesions may overlap and create larger infected areas. Lesions are most frequent on the head and neck, but they may be found over the entire body in severe cases. Scabs may fall from older lesions and leave a hairless area in the center, one that has a ring of exudate at the edge. Hence, the name ringworm.

## Treatment

Treatment of ringworm with topical anti-fungal preparations has been used widely and provides reasonable cure rates. Topical treatment, application of the medication directly onto the lesion, is the usual procedure. Medication cannot penetrate the crusts; the crusts should be removed by scraping or brushing.

Thiabendazole has been indicated to have efficacy in ringworm treatment and may be considered however, it is important to remember that this is primarily an anthelmintic drug and additional use should be limited in order to prevent anthelmintic resistance.

Topical, herbal remedies have been shown to be as efficacious as anti-fungal agents. Vaccination as therapy has also been shown to enhance cure in affected animals. Some studies have also reported the efficacy of selenium and vitamin E injections in curing ringworm infections in cattle. Similarly, vitamin A is recommended as a support therapy to assist recovery.

## Prevention

Cleaning and disinfecting barns with a strong detergent followed by a solution of 1 gallon of household bleach diluted with 3 gallons of water does a good job.

Halters and grooming equipment can be disinfected with bleach or a 4% solution of formaldehyde. At the first sign of the lesions of ringworm, topical treatment should be started. Reducing the density of animals and direct contact in addition to increased exposure to sunlight and being maintained on dry lots help prevent the spread between animals.



**Dr. Laximan Sawant**

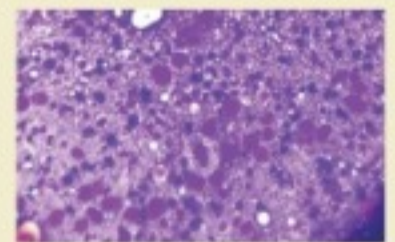
## SURGICAL MANAGEMENT AND MICROSCOPICAL DIAGNOSIS OF A HISTIOCYTOMA

Canine cutaneous histiocytomas are the round cell tumours of epidermal dendritic cells and is a localized form of self-Langerhans cell histiocytes. This is benign tumour which is extremely common in dogs. Dogs of any age and mostly pure breed dogs are affected. Ulceration is common, leading to central umbilication. Head and pinnae are preferential sites. A small percentage of dogs will have multiple cutaneous histiocytomas either synchronously or sequentially. Histiocytomas have been referred to, humorously, as "surgical emergencies." One must remove them quickly before they regress. Complete excision is curative. Occasional tumours will recur, but it is unclear whether these are true recurrences or de novo tumours.

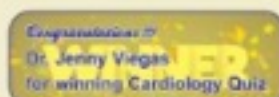


### Case details

A seventeen-year-old female non-descript dog was presented with a complaint of firm, mass located at the left thoracic area just behind the elbow region. The size varied from 3 to 4 inches and the gross examination of the mass revealed multifocal areas of ulceration. According to the owner, the dog had a history of multiple growths of 1 to 2 centimetre, at the same location two years ago and was surgically resected and operated for the same. A fine needle aspiration cytological examination was conducted to examine the type of cells involved in development of the mass. The cytological examination revealed densely packed, slight pleomorphic histiocytes with a prominent hyperchromatic bean shaped or a reniform nucleus and amphophilic cytoplasm. Mitotic figures were not seen. However, few multinucleated cells were occasionally found. Dense aggregates of mature lymphocytes were commonly seen and presumed to be part of the host's immune response and to be partially responsible for tumor regression as reported by the owner. Few inflammatory cells were predominantly reported. Older histiocytic tumours are often ulcerated, and areas of necrosis, which can be extensive, are present in some regressing tumours, usually at



the deep and lateral margins. Complete blood count analysis and Serum biochemistry evaluation was performed which further revealed normal reports. Considering the above facts, age of the patients, history of cardiac complication and the cytological interpretations, the surgery was performed using gaseous anaesthesia (Isoflurane). The rectal temperature, heart rate and pulse rate were within the normal range. The ECG revealed Electrocautery was used and minimal blood supply to the mass was noticed. A smooth resection and debulking was managed by successful removal of growth.



**Dr. Jenny Viegas and Dr. Naik Madhura Prashant**  
(M.V.S.c. Surgery and Radiology) (M.V.Sc. Pathology)

# HAEMOGLOBIN AND PLASMA BIOCHEMICAL PROFILE OF REPEAT BREEDER CATTLE ON THE DAY OF ESTRUS COULD PLAY A ROLE IN EXHIBITION OF ESTRUS AND SUBSEQUENT PREGNANCY OUTPUT

## ABSTRACT

On the day of induced estrus, jugular vein blood samples were collected from healthy repeat breeder cattle (n=45) for the estimation of haemoglobin, glucose, cholesterol and total protein, followed by pregnancy diagnosis on day 45 post-insemination. There was no difference ( $p < 0.05$ ) in haemoglobin, plasma cholesterol and plasma total protein in animals showing weak, intermediate or intense estrus, however, plasma glucose was high ( $p < 0.05$ ) in animals exhibiting intense estrus compared to their counterparts exhibiting intermediate estrus. Between pregnant and non-pregnant counterparts, plasma total protein was high ( $p < 0.05$ ) on the day of induced estrus in the former, whereas other blood/plasma parameters were similar ( $p > 0.05$ ). In brief, plasma biochemical profile of repeat breeder cattle on the day of estrus could play a role in exhibition of estrus and subsequent pregnancy outcome.

**Keywords:** Biochemical constituents, Cattle, Estrus, Haemoglobin, Pregnancy

Haematological and plasma biochemical constituents like glucose, cholesterol and total protein provide reliable information regarding the health and general body condition of dairy animals (Cetin et al., 2009). Keeping this in view, the present study was designed to study the impact of haemoglobin and plasma biochemical profile on the intensity of estrus and conception rate in repeat breeder cattle.

The study was conducted on apparently healthy repeat breeder cattle (n=45) which were estrus synchronized using intravaginal progestational device based Co-Synch protocol. The animals under treatment were observed for the intensity of estrus using estrous score card. The jugular vein blood samples collected on the day of estrus were subjected to estimation of haemoglobin, glucose, cholesterol and total protein. Pregnancy was confirmed by rectal examination on day 45 post-insemination. Haemoglobin was estimated using Sahli's method and plasma concentrations of glucose, cholesterol and total protein were estimated using commercial diagnostic kits (Beacon Diagnostic Pvt. Ltd; Navsari). The statistical analysis was carried out using Graph Pad Prism software version 5.

In repeat breeder cattle of present study, haemoglobin concentrations were similar ( $p > 0.05$ ) irrespective of the status of estrus intensity or pregnancy outcome (Table 1). However, plasma glucose on the day of estrus was high ( $p < 0.05$ ) in cattle exhibiting intense estrus as compared to intermediate estrus (Table 1). Nevertheless, a previous study reported that lower plasma glucose was associated with lower conception rate and higher number of services per conception (Pedroso et al., 1982). In the present study, there was no such difference in pregnancy outcome with respect to blood glucose status on the day of estrus ( $p > 0.05$ , Table 1). Furthermore, plasma cholesterol on the day of estrus was similar ( $p > 0.05$ ) in repeat breeder cattle with respect to estrus intensity or subsequent pregnancy outcome (Table 1). A previous study has reported positive correlation between total cholesterol and reproductive function in crossbred cattle under Indian conditions (Nair et al., 1987). Plasma total protein in repeat breeder cattle was similar ( $p > 0.05$ ) on the day of estrus with respect to estrus intensity, however, the subsequent pregnancy outcome was better in cattle having higher total plasma protein ( $p < 0.05$ , Table 1). In fact, the deficiency of certain amino acids required for the biosynthesis of gonadotropins and gonadal hormones due to low level of plasma protein might impact fertility outcome (Vohra et al., 1995).

**Table 1: Relationship of haemoglobin and plasma biochemical parameters with the intensity of estrus and conception rate in repeat breeder cattle**

Parameters	Intensity of estrus		
	Weak (n=4)	Intermediate (n=27)	Intense (n=14)
Haemoglobin, g/dl	10.25±0.75	9.97±0.26	10.19±0.34
Glucose, mg/dl	59.72±2.00 <sup>ab</sup>	54.76±3.27 <sup>b</sup>	68.47±2.1 <sup>ab</sup>
Cholesterol, mg/dl	123.60±11.94	143.20±11.54	119.00±8.03
Total Protein, g/dl	7.84±1.43	6.24±0.30	5.71±0.26
Pregnancy status	Pregnant (n=18)		Non-Pregnant (n=27)
Haemoglobin, g/dl	9.83±0.21		10.21±0.29
Glucose, mg/dl	60.13±3.19		58.85±3.15
Cholesterol, mg/dl	138.80±11.29		130.60±10.20
Total Protein, g/dl	9.83±0.21 <sup>b</sup>		6.38±0.32 <sup>a</sup>

$p < 0.05$ . Mean value having different superscript within the same row differ significantly



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## TYING THE PERFECT KNOT.....suture selection in daily practice

Wounds can heal by second intention, or they can be closed by variety of methods. Although skill of surgeon and technique used are important, but also important is choice of correct suture materials. Purpose of these sutures is to maintain wound closure until a wound is strong enough to withstand the tensile forces in day today life and to enhance wound healing when the wound is most vulnerable.

It is well known that in ancient India, surgeon Sushruta closed incisions by separating the mouth of ants or beetles from their body so the jaws could be used as a suture. But the times have changed, the variety of suture materials has become staggering, with hundreds of types, brands, and sizes. Because it is impractical to stock all suture types in a given clinic, it is important to select suture materials for the types of surgical procedures typically performed while trying to foresee future needs. The selection, therefore, can be daunting.

There is a common say among surgeons "***A Suture, is a Suture, is Not a Suture?***"

This article is an attempt to give a gist of suture and suture selection.

### Overview

#### **Absorbable versus Nonabsorbable**

Most of the absorbable sutures lose most of their tensile strength within 40-60 days, although they may retain some strength until they are fully absorbed. Nonabsorbable sutures retain tensile strength after 60 days and remain in tissue until they are removed. Absorbable sutures are most commonly used when the suture needs to be buried, and nonabsorbable sutures are often used when high tensile strength is needed for long periods.

#### **Monofilament versus Multifilame**

Monofilament suture is single strand, whereas multifilament sutures are made from several smaller strands that are braided or twisted together. In general, multifilament sutures have greater capillary action, increased pliability (increases knot security), and more tissue drag than the monofilament sutues do.

Multifilament sutures can facilitate infection than its counterpart because bacteria can colonize the gaps of the braided material. **Hence, they are contraindicated for closure of contaminated wounds.**

Sutures with greater capillarity are not recommended for use in skin or for penetration of a hollow viscus lumen.

### **Points to check while searching**

Several interrelated properties should be considered when selecting suture material for a specific pocedure:

- Absorbable versus Nonabsorbable
- Reactive versus Nonreactive
- Tensile strength
- Ease of handling
- Knot security
- Capillarity
- Flexibility

## Antimicrobial Impregnated

The Plus suture line offers a selection of antimicrobial-impregnated sutures. Triclosan-coated sutures have shown broad antimicrobial efficacy against many bacteria, including methicillin-resistant *Staphylococcus aureus* (MRSA).

## Making the Selection

### Monofilament Absorbable

Poliglecaprone 25 (Monocryl®) is a rapidly absorbable suture. In the first week, it loses 40% to 50% of its tensile strength and 100% at 21 days post implantation. This rapid absorption makes it a good choice for rapidly healing tissue, such as **subcutaneous (SC) and urinary bladder tissue**. Poliglecaprone 25 is a poor choice for tissue that is slow to regain tensile strength, such as fascia (linea alba) or tendons. The suture may induce less tissue reaction than polydioxanone (PDS-II®)—especially in cats.

Polydioxanone and Polyglyconate (Maxon®) are slow to absorb. Both suture types lose approximately 40% of their tensile strength at 1 month post implantation, and both are completely absorbed at approximately 180 days. Polydioxanone and polyglyconate are good suture choices **for tissues such as fascia**.

### Multifilament Absorbable

Surgical gut, commonly called Catgut® is an inexpensive suture material, is absorbed at a rate that depends on suture exposure to chromium salts or aldehyde. It is derived from submucosa of sheep or serosa of cattle small intestine and hence a foreign protein which can induce tissue reaction. Medium chromic gut is the most common example of multifilament absorbable suture. It loses tensile strength in approximately 20 days. With the advent of new sutures surgical gut is **not recommended for closure of the GI tract or urinary bladder** because of unpredictable absorption rates and tissue reaction. Plain and low chromic surgical gut has no application in today's world. High chromic is not used because of increased tissue reaction.

Polyglactin 910 (Vicryl®) and polyglycolic acid (Dexon®) are more slowly and predictably absorbed than surgical gut. Both materials are absorbed completely within approximately 100 days. These sutures may lose tensile strength more rapidly if placed in an alkaline environment and are **not recommended for use in the urinary bladder**.

Polyglactin 910 and polyglycolic acid are soft, pliable, and easy to handle (the soft knotted ends can be buried easily). These sutures are **appropriate for vessel ligation and SC tissue closure**.

Vicryl Rapid® suture is one of the new polyglactine 910 product from Ethicon. It has been ionised with gamma radiations to increase its absorption rate. This product is developed with the intention to perform characteristics of collagen or surgical gut suture. It is indicated only **in superficial soft tissue approximation of the skin and mucosa**, where only short term wound support is required.

### Monofilament Nonabsorbable

Polyamide (nylon) is mainly used as a monofilament but is available as a multifilament. Monofilament nylon degrades slowly; it loses only 30% of its tensile strength in 2 years. The monofilament suture is noncapillary and inexpensive and causes minimal tissue



reaction. Nylon has poor handling properties and knot security. This type of suture is a **good choice for skin closure**.

Polypropylene (Prolene®, Surgilene®) is not weakened by tissue enzymes. These sutures have a lower initial tensile strength than nylon does, but polypropylene is retained longer. It is the **least thrombogenic suture** and can be used to repair a rent in a large vessel using a small, noncutting needle. Polypropylene is also a **good choice for fascia, ligament, and tendon reconstruction**.

### **Multifilament Nonabsorbable**

Silk is a common choice because of its good handling properties. This suture has high capillarity and should not be used to penetrate a hollow viscus. Although silk is considered a nonabsorbable suture, it **degrades slowly** (>720 days) by phagocytosis. Silk is a good choice for vessel ligation because it does not slip off vessels.

Polymerized caprolactam (ie, Vetafil®) is an inexpensive suture material with good handling properties and tensile strength. This suture, which is typically used for skin closure, is available on a reel with a chemical disinfectant but is not sterile and should not be buried or placed in a body cavity. **Draining tracts have been associated with multifilament nonabsorbable sutures when used for ovariohysterectomy** in dogs; the tracts originate at the ovarian pedicle and exit externally on the flank. The draining tracts must be treated by removal of the suture material on the ovarian pedicle.

**Polyester suture** (Ethibond Excel®) is a braided and dyed green for enhanced visibility. It is indicated for use in general soft tissue approximation and ligation, including in cardiovascular, ophthalmic and neurological procedures. In veterinary practice it is mostly used for ligament reconstruction as in extra capsular CCL repair and collateral ligament repair.

### **Take home message**

Suture selection can be simplified by giving consideration to the patient (eg. tissue being sutured, speed of healing) and the suture characteristics required for the procedure (eg. tensile strength, capillarity, persistence in tissue).

### **Suture Options by Tissue Type**

<b>Suture</b>	<b>Absorbable</b>	<b>Type of Tissue</b>
Monofilament	Poliglecaprone 25 (Monocryl)	Rapidly healing tissues (eg, SC, urinary bladder tissue)
Multifilament	Polydioxanone (PDS) & Polyglyconate (Maxon)	Deep fascia (eg, of muscles, abdominal wall), visceral & parietal fascia; for GI surgery
	Surgical gut	Limited use in soft tissue (excluding bladder, GI, skin)

	Polyglycolic acid (Dexon) & Polyglactin 910 (Vicryl)	SC tissue; also good for vessel ligation (ie, muscular, connective, epithelial, nervous tissue)
Monofilamen	Polyamide (nylon)	Skin (closure)
	Polypropylene (Prolene, Surgilene)	Fascia (note: also good for ligament & tendon reconstruction)
Multifilamen	Silk	Good for vessel ligation (ie, muscular, connective, epithelial)
	Polymerized caprolactam (Supramid, Braunamid)	Skin (closure)
	Polyester	Ligament repairs.

When choosing suture size, the smallest size possible should be chosen, taking into account the natural strength of the tissue.

This is a brief compilation of the relevant facts about sutures. The article has tried touching most commonly used sutures in veterinary practice. Please refer books and articles for more details. The success of surgery also depend upon proper following of Halsted's principles.

**Dr. Nikhil Prabhugaonkar**



## CONTROL OF TICKS ON LIVESTOCK ANIMAL

### Introduction

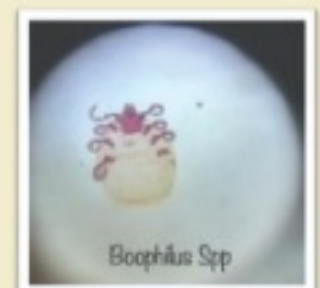
Ticks and tick borne diseases are an important cause of losses to the livestock industry particular of cattle and small ruminant.

In India there is widespread of pathogenic microorganism, e.g: protozoan disease (Thileria, Babesia) and rickettsia disease (Anaplasmosis) and in Canine (tick fever).

All ticks are obligate ectoparasite of vertebrates; they have four pairs of leg as nymph and the adult tick have capitulum (mouth part) and opisthosoma (abdomen). They are 180 tick species and it is divided into two families Ixodeda (hard tick) and Argasidae (soft tick)

### Boophilus spp

The genus *Boophilus* contain only five species of small ticks, all of which are one host ticks and take approximately three weeks to complete their blood meal, preferably on cattle. *Boophilus* ticks are the main vectors of bovine Babesiosis caused by the protozoan parasites, *Babesia bigemina* and *Babesia bovis*.

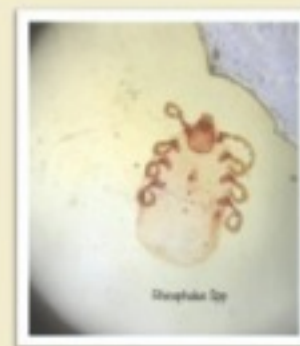


## Introduction

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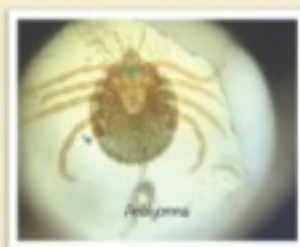
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### Boophilus spp

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only five species of small ticks, all of which are three weeks to complete their blood meal, the main vectors of bovine Babesiosis caused by bigemina and Babesia bovis.

### Rhipicephalus spp

Theileria is transmitted by various organism including Rhipicephalus spp. Marked pyrexia, lymph node enlargement, dyspnea, epistaxis, emaciation, diarrhea and other GI signs.

Ocular signs and masses may develop. Detection of parasite stages is done thin blood smears with Giemsa staining. Schizonts should be looked for in thin smears for positive results.

### Amblyomma spp

These are three-host ticks, characterized by long mouthparts and, usually, beautifully-colored ornamented scuta. The eyes are usually not housed in sockets. It is called as 'heart water' disease typical cases show symptoms such as high fever, respiratory distress, nervous symptoms and hydro pericardium.

## Control of ticks

Eradication of ticks is generally not feasible, because the wild animal frequently act as reservoir host for economically important ticks such as *Boophilus microplus*, *Boophilus annulatus*, *Rhipicephalus appendiculatus*, *Amblyomma variegatum* so hence not feasible to eradicate the ticks. Ticks are responsible for severe economic losses both through direct effect of blood sucking and indirectly vector of pathogens and toxins.

### Direct effect

Large number of ticks causes reduction in weight and anemia along with severe dermatitis. There is drop in milk production. Burning of tick in situ with help of flame should be usually done. Acaricides should be used to wash the area specially the crevices

### Physical damage

There is constant irritation on the skin causing the "tick worry" leaving to redness on the skin. The cattle tick infestations severely have an effect on the productivity due to tick worry and can cause disease and death due to anemia from loss of blood. Vector Pathogens, which are mainly host to host transmission takes place causing Babesiosis, Anaplasmosis and Theileriosis. Isolation and segregation of affected animal.

## Chemical Control of Ticks

The most common tool in the management of cattle tick is the use of acaricides (chemicals that kill ticks) although the resistance of chemicals has been an ongoing problem. Chemicals can be applied by various ways.

1) Acaricides These were the first chemical used for treatment of ticks but the side effects were the resistant evolving in the ticks. It had a bad impact on the human and the environment around us. Regular cleaning of crevices in sheds with the help of Acaricides is necessary.

2) Arsenic it was used in many parts of the world until the resistant became a problem. The cheapest and the most effective. The *Boophilus spp* showed resistant towards in in a very short period of time.

3) Organophosphorous and Carbamates the compounds are not anymore used due to their toxicity level which has been increased drastically on the environment and animals.

Various methods including dipping, spraying, or pour on have been used to apply chemicals to protect the livestock against ticks. Direct application of acaricides to the animal is the most popular method of controlling ticks on livestock.

**Physical:** Burning of ticks in situ with the help of flame.

**Pasture Management:** involving burning of pastures, ploughing and reseeded of pasture.

**Biological:** using bio pesticides and biological control agents such as herbals (neem oil).

**Dipping:** In this method, animals are immersed in dipping tub containing solution of a variety of antitick agents including cotton seed oil, fish oil, crude petroleum, kerosene and a combination of sulphur and kerosene were among the hundreds of possible acaricides tested for dipping

**Spray:** The application of fluid acaricides to an animal by means of a spray has many advantages and has been successfully practiced for controlling ticks on most of the animals

**Spot treatment:** There are predilections sites for certain tick species on part of the body which are not effectively reached by sprays or dips. The inner part of the ear, under part of the tail and between the teats in cattle is especially liable to escape treatment.

**Injectable.**

Ivermectin is a medication used to treat many types of parasite infestation. It can be taken by mouth or injected to the skin for external infestations.

**Latest Approach**

Anti-tick vaccines unchanged immunoglobulin in the blood of the host can cross the intestinal wall into the haemolymph of ticks. The development of an n anti-tick vaccine against *B.microplus* is a major new approach in the control of ticks in Australia. This type of vaccination makes us of tick gut antigens, rather than salivary antigens, as the targets for the immune response.

Major important part is the field management this helps in eliminating the ticks by controlling the population of ticks this can be done mostly by burning or clearing the ticks to prevent desiccation from the heat.

**Treatment**

Theileriosis 1) Oxytetracyclines @ 15mg/kgbw IM

2) Buparvaquone @ 2.5mg/kgbw IM. If necessary second dose.

Babesiosis 1) Diminazene aceturate (Berenil) @ 3-5mg/kgbw S/C or IM for two consecutive days.

2) Imidocarb dipropionate @ 1.2mg/kgbw S/C for prophylaxis 3mg/kgbw.

Ivermectin 1% @ 0.2mg/kg bw S/C

Permethrin 1% solution @ 1ml/10kg BWT as pour on evenly along the midline from back n

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**MVSC 1<sup>st</sup> year.**

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## **SURGICAL MANAGEMENT OF CONTRACTED FLEXOR TENDON IN A CALF**

**Abstract:**

A 20 day old crossbred jersey female calf was presented to the Government Veterinary Hospital Sonsodo Raia, with the history of non weight bearing and knuckling of both the fore limbs. There was difficulty in extension of fetlock on clinical examination. The case was tentatively diagnosed as contracted flexor tendon. The calf was placed in lateral recumbency and Superficial digital flexor tenotomy was done under 2% lignocaine nerve blocks. Post operatively, limbs were stabilized with a splint and soft bandage. After two weeks of surgery animal recovered with normal weight bearing on affected limbs. It is a congenital anomaly which could be corrected by tenotomy procedure along with splint stabilization. Further breeding of this animal should be avoided.

**Keywords:** Knuckling, congenital defect, contracted tendon, tenotomy.

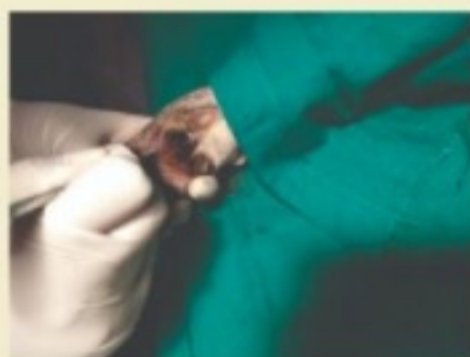


## **Introduction :**

Congenital deformities of the locomotor system are mostly observed in calves, lambs, foals and affects flexor and extensor tendon of fetlock and pastern joints<sup>1</sup>. Due to the deformity of the tendon the animal is unable to achieve or maintain the normal extension of the limbs<sup>2</sup>. This condition may affect the flexor tendon of one or both the forelimbs and hind limbs but fore limb deformities are more common<sup>3</sup>. In severe cases there may be some bony involvement<sup>4</sup>. Congenital contracted tendon is common defect in cattle and there is no breed predilection<sup>5</sup>. Etiological origin of contracted tendon is due to inherited factors, in utero malpositioning and overcrowding caused by the size of the fetus relative to the dam<sup>4</sup>. However, some authors suggest that this condition is caused by an autosomal recessive gene. This article describes the condition and its successful treatment.

## **Materials and Methods:**

The case was presented to the Government Veterinary Hospital Sonsodo Raia, with the history of not being able to bear weight on the forelimbs since birth. When examining a neonatal animal affected with flexural limb deformities, it is important to determine if it can stand without assistance. If it can stand, specific therapy is



often unnecessary.

The calf was restrained in lateral recumbency and surgical site was prepared aseptically. Abaxial sesamoideal and palmar digital nerve block was given using 2% Lignocaine. Tensed ligament and tendon of SDFT was palpable. Skin incision was made on the medial side of the limb along the line of superficial digital flexor tendon and the hyperflexed tendon was isolated. Tenotomy of full thickness of tendon was performed. Same procedure was repeated on the abaxial side. The skin was sutured using simple interrupted sutures. The limbs were stabilized with splint and soft bandage from elbow to hoof in forelimbs for 20 days. Post operatively the animal made an uneventful recovery.



## **Results and Discussion:**

The Calf started to bear 70% weight on the affected limbs immediately post surgery with the soft bandage. In newborn calves, contracture or shortening of flexor tendon results in knuckling of fetlock joints frequently and rarely carpal joints. The degree of knuckling may vary from mild flexion of knee to severe flexion of the fetlock and pastern joints<sup>6</sup>. The majority of the contracted flexural deformity in calves are observed within the first few days of birth. Flexural deformity may vary from mild to severe. In mild case, calf may walk on the toe but heels do not touch the ground. In moderate cases, calf may walk on the dorsal side of the toe instead of heel. Severe cases affected animals are forced to walk on the pastern, fetlock or carpal joints. In chronic cases animals may be recumbent and unable to consume colostrum which leads to arthritis<sup>7</sup>. In the present case the calf was recumbent and unable to bear weight. Treatment of flexural deformity should be initiated immediately after recognition of the problem as when the calf ages contracted tissue becomes less responsive to treatment. Treatment was found satisfactory in the present case as calf was able to walk after surgery with no complications. Bandaging and splinting of limb should be done until the animal can bear 100% weight on the affected limbs. Postoperative complications like muscle, tendon atrophy, adhesion and decubital wound depends upon the adopted surgical techniques and method of immobilization<sup>8</sup>. In the presented case, the calf took about 20 days to gain a good amount of weight and no complications were reported. Postoperatively tramadol @ 0.5mg/kg was administered for three days.



## **Conclusion:**

**Dr.Natasha R. Coutinho**

**Veterinary Officer, Government Veterinary Hospital Sonsodo Raia**



# PRECISION DAIRY FARMING A GAME CHANGER IN DAIRY BUSINESS

Precision Dairy Farming means accurate management of Dairy business. This is a modern approach towards dairy business where in rearing of Milch animals, milk production & reproduction is monitored on online by gathering up to date & realistic data. In our country India where production system is predominantly small-hold and government is the main player in providing veterinary and extension services to the farmers the scope of precision extends from farmer-level animal management to providing of various services and policy making. Global experience is that precision farming, services and policy making resulted in rapid increase in productivity and quality of products. Key to management is measurement – data – analysis – information – knowledge. Management Guru Peter Ducker has rightly said, 'if you can't measure, it you can't improve it'. If you can't measure it you can't understand it and if you can't measure, it is not worth doing it. World is witnessing precision in all walks of life, be it communication, transport, civic administration, etc.

In fact, the data sciences in animal science is quite old, older than most of the sectors. In developed world the custom designed breed development has been possible only because of availability of huge data on individual animals. When we compare livestock sector in developing countries and developed countries one important gap emerges, that is lack of credible animal information. Because of this most of our work has remained conjectural or hitting in dark. As a result, over last six decades as per the animal productivity has increased by about 10-15%. in contrast countries who took our breeds of animals, recorded their performance and managed and bred them based on analytical knowledge generated from huge data collected, have shown worth of Indian breeds of cattle and buffalo.

In case of precision management data requirement is unique: (a) credibility of data should be high, that is fudged date is more harmful, (b) data must come in real time as any lag period would reduce accruing benefits, (c) data should come from animal – side, (d) the data should be analysed in real – time, (d) analysed data should be shared with all stakeholders in service chain as well as policy makers, (e) for effective traceability data should be available any – time from anywhere. Herdman satisfied all these requirements.

**What data is required for precision farming?** As a rule, one should collect and save all the event data of an animal, some may not be of immediate use but in later stages it would become impossible to get access to such data. Typically following data should be collected:

Personal data of farmer – owner: Farmer code (Aadhar Card Number)

Personal data of animal: Unique identification number, Species, sex, breed date of birth, farm where born, current and previous owners, off – springs given birth

Breeding: All breeding events such as first heat in heifer, data of first and subsequent heats and inseminations, names of sires used, pregnancy check results, calving dates, calving history, abortions, treatment for reproductive problems.

Milk (or other products) Production: Preferably daily milk record or one record every 15 days, first milk record on between day 5 to day 10 after calving and three more records every week. Subsequently one record every 15 – 30 days; fat, SNF and total solids.

Health: Vaccination, deworming, treatment, disease testing, surgeries, laboratory examinations.

Movement: Sale, disposal, salvage details

Progeny: All calves born (along with unique ID for traceability)

Insurance: Bank finance, insurance, claims

Input costs: feed, fodder, medicine, vaccines, and other costs

Out – put sale: Sale of milk, dung, excess animals, etc.

Components of the system: The above records can be kept on paper or digitalised. On paper records are difficult to manage, collate and analyse. In contrast animal information system can be digitised easily. Herdman permits digitisation of record keeping.

**Novel Animal Identification Device:** In case of livestock animal identification with a unique number is essential to keep data computerized. Currently there are four different types of identification device in cattle, sheep, goat and swine.

1. Simple polymer ear tag with printed visual number (sometimes linear bar code).
2. Radio – frequency identification device (RFID) – on ear tags.
3. RFID insert (subcutaneous)
4. RFID Transponder – Active RFID as neck belt

There are some specialised companies which are engaged and developed apps for precision dairy farming. After scanning the code animal's file is opened with non – editable ID number. The main benefit of the device is that it provides traceability and animal details anytime anywhere and secondly credibility that the data is not fudged and being sent from animal side.

The Android cell phone Apps which can be downloaded from Google Play Store. The farmer and the service provider are provided user name and password to access the data. It is a complete herd management system usable by farmers as well as veterinarians. The veterinarians can get access to animals under his control. A 'Read – Only' version of the software is also available for managerial staff who are not involved in data update but would like to generate report for monitoring. The Apps enables following functions:

Registration of owner (by scanning of Aadhar code), animal, veterinarian and sire. Opening file after scanning of the code. Search options for ID, farmer ode, herd and lot. Action list to prompt what management functions are due today. Alerts to enlist animals that need attention when underperforming. Report. Lactation. Tele – veterinary. Treatment. Data Sorting. Data Sync. Live Data update

**Herdman – Server:** This can be used by Managers, senior veterinarians and data analyst. A number of reports can be generated extensive data analysis is possible.

**DASHBOARD:** the dashboard enables the Managers to monitor data update traffic in real time. This also enables to understand the work done, distance travelled by the service providers

**Farmers charges Deductions:** The system enables deduction of the charges of services, medicine, semen, visits, treatment online and debiting to the account of the veterinarians.

**Forecast:** The system also enables forecasting of milk production, semen, vaccine and medicine requirements with the help of trend analysis.

**Disease prevalence and cost of treatment:** The data is analysed village/ block basis to generate disease prevalence data, various treatments given and cost of treatment on various diseases.

**Semen – medicine – vaccine inventory management:**

**How the system helps in precision management?** Once the animal is registered with current status, the system starts analysing the data to send management advisories to the farmers and the veterinarians. The advisories are sent as notifications for those who are using smart phone or SMS message in regional languages for farmers who are using normal phone. The farmers and the veterinarians use these advisories to plan their work of the day. At the time of management of an animal after scanning of the code the animal file giving details of previous history is available hence decision is information based. The data can be accessed and analysed by policy makers with the help of accurate and real data and also enable understanding of the real foot causes of problems.

To conclude Precision Dairy Farming is a Key and Boon Dairy business for Productivity Enhancement and Improved Breed Evolution. Please adopt & take up Precision Dairy Farming which is really A Game Changer in Dairy Business.

### **A New Scientific Look for Management of Milch Animals**

The scientific management of milch animals is most important as 80% of dairy economics depends upon the management.

#### **Important points in Dairy Management.**

1. Availability of water: Milch animals should made available clean, hygienic, portable water throughout 24 hours of the day. Average milch animal require 30 to 40 litres of water for its routine body activities and in addition to that every litre of milk produced require 5 litres of additional water intake.

2. Digestive System of Milch Animal. Animal rumen ph is 6.2 to 6.8. Animal manger should be always empty for the 8 hours. This initiates rumination process in the milch animals. On rumination ingesta is well mixed with saliva which leads to optimum digestion and maximum milk production. This also enhances Fat percentage, SNF percentage and total solids in milk produced. Animal owner preferably should not give dry and green fodder without making into pieces of size 1 to 1.5 inches in length. Chaff cutters should be used for this purpose to cut the grass so that there will be minimum wastage of the fodder which is of economic importance. Milch animals require fodder and grass 3% of its body weight. Every milch animal per day require about 6 kgs of dry fodder and 9 kgs of green fodder for its growth and production. Milch animal should be preferably given concentrate in dry form to initiate water intake by the animal, milch animal requires 2 kg of concentrate feed for its body maintenance and 400 gms to 500 gms of concentrate feed for 1 litre of milk production. In other words in order to produce 10 litres of milk production milch animal requires 2 kg plus 5 kg balanced nutritious concentrate

feed. Dairy farmer should preferably bring about 1 month concentrate feed & fodder quota required along with the milch animal when the animal is brought from outside the state. This will help the milch animal which is brought from outside state to get accustomed to Goan condition of feed and fodder. Some dairy farmers are feeding milch animals barely waste which is brought from beer factory. Barely waste fed should be fresh and should not be stored for more than 2 to 3 days and should be given in proper proportion i.e maximum quantity can be given 3 to 8 kgs per day per animal. Milch animal should be given 50 to 100 gms good quality mineral mixture, 30 gms of iodised salt and 20 to 30 gms Soda Bicarb every day to keep animal healthy, productive and disease resistant. Feeding of soda bicarb and rumen buffer prevent rumen acidosis and in turn less chances of occurrence of laminitis and further limping and other complications. Addition of trace elements like selenium, zinc with vitamin A and vitamin E keeps animal more healthy, productive, reproductive and boosts animal's immunity status.

3. **Regular Deworming:** Milch animal should be dewormed every 3 to 4 months. Farmer may opt for different dewormers and dosage should be calculated as per body weight of milch animal. Lesser the worm load in animal body better health condition, better body immunity status and more milk production.

4. **Animal Heat i.e. oestrous cycle:** Oestrous cycle of milch animal is of 21 days. Milch animal should get conceived after 45 days but before 90 days from date of calving. Good quality of semen should be used based on progeny testing and sire index. Now a days sexed semen is being used by progressive farmers to get only female calves. Sexed semen is of course costly and at present cost of one dose i.e. one straw is about Rs. 2,000/-. Dairy farmer should take necessary care so that not a single heat period is lost without performing Artificial Insemination. Losing one heat period costs dairy farmer minimum loss of Rs. 2,100/- as minimum Rs.100/- is required to maintain milch animal every day. Hence every heat is to be attended. The target of dairy farmer should be one calf for every 12 to 15 months in life span of milch animal.

5. **Drying of milch animal is important factor:** It should be done very tactfully and in a gradual manner. At the end of drying intra mammary infusions are to be placed in every quarter without fail to prevent pre partum mastitis.

6. **Prevention of mastitis:** Mastitis is biggest enemy of dairy farmer. Prevention of mastitis and immediate and complete treatment is of utmost importance. Dairy farmer should never wash udder before milking. Udder should be mopped with clean cloth dipped in hot water. After milking animal should be fed concentrate feed. Milch animal should stand atleast for one hour after milking to prevent occurrence of mastitis.

This helps in closing of teat sphincter completely and there by occurrence of mastitis is reduced.

Anoestrous, Repeat breeding i.e. not conceiving, Abortion, Still birth, Retention of placenta, Prolapse of uterus, Death of calves within few days of the calving are the factors of great importance in dairy business. These factors are to be attended immediately and completely till hurdle is over come.

In nutshell for economic dairy farming buffalo yielding 5 litres and above per day and cows yielding 10 litres and above per day should be preferably maintained. The mission should be one calf for every 12 to 15 months and accordingly necessary care and efforts are to be made by all concerned i.e. Dairy farmers and Veterinarians.





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