Indigenous dairy breeds of cattle

- **Gir**
- This breed is otherwise known as Bhadawari, Desan, Gujarati, Kathiawari, Sorthi, and Surati.
- Originated inGir forests of South Kathiawar in Gujarat also found in Maharashtra and adjacent Rajasthan.
- Basic colours of skin are white with dark red or chocolate-brown patches or sometimes black or purely red.
- Horns are peculiarly curved, giving a ‘half moon’ appearance.
- Milk yield ranges from 1200-1800 kgs per lactation.
- Age at first calving 45-54 months and inter calving period from 515 to 600 days.
- This is known for its hardiness and disease resistance.

- **Red Sindhi**
- This breed is otherwise called as Red Karachi and Sindhi and Mahi.
- Originated in Karachi and Hyderabad (Pakistan) regions of undivided India and also reared in certain organized farms in our country.
- Colour is red with shades varying from dark red to light, strips of white.
- Milk yield ranges from 1250 to 1800 kg per lactation.
- Age at first calving 39-50 months and inter calving period from 425-540 days.
- Bullocks despite lethargic and slow can be used for road and field work.

- **Sahiwal**
- Originated in Montgomery region of undivided India.
- This breed otherwise known as Lola (loose skin), Lambi Bar, Montgomery, Multani, Teli.
- The best indigenous dairy breed.
- The colour is reddish dun or pale red, sometimes flashed with white patches.
- Heavy breed with symmetrical body having loose skin.
- The average milk yield of this breed is between 1400 and 2500 kg per lactation.
- Age at first calving ranges from 37 to 48 months and the calving interval is 430 to 580 days.

Indigenous Draught breeds of cattle

- **Hallikar**
- Originated from the former princely state of Vijayanagarm, presently part of Karnataka.
- The colour is grey or dark grey.
- They are compact, muscular and medium size animal with prominent forehead, long horns and strong legs.
- The breed is best known for its draught capacity and especially for its trotting ability.
- **Amritmahal**
- Originated in Hassan, Chikmagalur and Chitradurga district of Karnataka.
- The Maharajahs of Mysore developed this breed.
- Amiritmahals are grey cattle but their shade varies from almost white to near black.
- The muzzle, feat and tail are usually black.
- Horns are long and end in sharp black points.

- **Khillari**
- Originated fromSholapur and Sitapur districts of Maharashtra.
- Closely resembles Hallikar breed.
- Grey-white in colour. New borns have dusty red colour which disappears in couple of months.
- Long horns turn forwards in a peculiar fashion. The horns are generally black, sometimes pinkish.
- Bullocks are fast and powerful.
- **Kangayam**
- Also known as kongu and konganad.
- Originated in Kangayam, Dharapuram, Perundurai, Erode, Bhavani and part of Gobichettipalayam taluk of Erode and Coimbatore district.
- The Kangayam breed was developed by the efforts of the late Pattogar of Palayakottai, Sri N. Nallathambi Sarkari Manradiar.
- Coat is red at birth, but changes to grey at about 6 months of age.
- Bulls are grey with dark colour in hump, fore and hind quarters.
- The horns are spread apart, nearly straight with a slight curve backwards.
- Cows are grey or white. However, animals with red, black, fawn and broken colours are also observed.
- The eyes are dark and prominent with black rings around them.
- Moderate size with compact bodies.
- **Bargur**
- Found around Bargur hills in Bhavani taluk of Erode district.
- Developed for work in uneven hilly terrains.
- Bargur cattle are of brown colour with white markings. Some white or dark brown animal are also seen.
- Animals are well built, compact and medium in size.
- Known for their speed and endurance in trotting.
- Cautious in behaviour and tends to remain away from strangers.

- **Umblachery**
- It is otherwise called asJathi madu, Mottai madu, Molai madu, Therkathi madu.
- Originated inThanjavur, Thiruvarur and Nagappattinam districts of Tamil Nadu.
- Suitable for wet ploughing and known for their strength and sturdiness.
- Umblachery calves are generally red or brown at birth with all the characteristic white marking on the face, on limbs and tail.
- The legs have white markings below the hocks like socks.
- The practice of dehorning of bullocks is peculiar in Umblachery cattle. Unlike in other breeds the bullocks are dehorned.

Indigenous Dual purpose breeds of Cattle

- **Tharparkar**
- Originated inTharparkar district (Pakistan) of undivided India and also found in Rajasthan.
- Otherwise known as White Sindhi, Gray Sindhi and Thari.
- They are medium sized, compact and have lyre-shaped horn.
- Body colour is white or light grey.
- The bullocks are quite suitable for ploughing and casting and the cows yield 1800 to 2600 kg of milk per lactation.
- Age at first calving ranges from 38 to 42 months and inter calving period from 430 to 460 days.
- **Hariana**
- It was originated from Rohtak, Hisar, Jind and Gurgaon districts of Haryana and also popular in Punjab, UP and parts of MP.
- Horns are small.
- The bullocks are powerful work animals.
- Hariana cows are fair milkers yielding 600 to 800 kg of milk in lactation.
- The age at first calving is 40 to 60 months and calving interval is 480 to 630 days.
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- **Kankrej**
- It is otherwise called as Wadad or Waged, Wadhiar.
- Originated from Southeast Rann of Kutch of Gujarat and adjoining Rajasthan (Barmer and Jodhpur district).
- The horns are lyre-shaped.
- Colour of the animal varies from silver-grey to iron-grey or steel black.
- The gait of Kankrej is peculiar called as 1 ¼ paces (sawai chal).
- Kankrej is valued for fast, powerful, draught cattle. Useful in ploughing and carting.
- The cows are good milkers, yielding about 1400 kg per lactation.
- **Ongole**
- Otherwise known as Nellore.
- Home tract is Ongole taluk in Guntur district of Andhra Pradesh.
- Large muscular breed with a well developed hump.
- Suitable for heavy draught work.
- White or light grey in colour.
- Average milk yield is 1000 kg per lactation. Age at first calving is 38 to 45 months and the intercalving period is 470 days.
- Exported to south East Asian and American countries for development of meat cattle.
- **Krishna Valley**
- Originated from black cotton soil of the water shed of the river Krishna in Karnataka and also found in border districts of Maharastra.
- Animals are large, having a massive frame with deep, loosely built short body.
- Tail almost reaches the ground.
- Common colour grey white with a darker shade on fore quarters and hind quarters in male. Adult females are more whitish in appearance.
- The bullocks of this breed are powerful animals useful for slow ploughing, and valued for their good working qualities.
- The cows are fair milkers, average yield being about 900 kg per lactation.
- **Deoni**
- This breed otherwise known as Dongerpati, Dongari, Wannera, Waghyd, Balankya, Shevera.
- Originated in Western Andra Pradesh and also found in Marathwada region of Maharashtra state and adjoining part of Karnataka.
- Body colour is usually spotted black and white.
- Age at first calving ranges from 894 to 1540 days.
- Milk yield ranges from 636 to 1230 kg per lactation.
- Caving interval averages 447 days.
- Bullocks are suitable for heavy cultivation.

Exotic dairy breeds of cattle

- **Jersey**
- It is developed in the Jersey Island, U.K.
- It is the smallest of the dairy types of cattle.
- In India this breed has acclimatized well and is widely used in cross breeding with indigenous cows.
- The typical colour of Jersey cattle is reddish fawn.
- Dished fore head and compact and angular body.
- These are economical producers of milk with 4.5% fat.
- Average milk yield is 4500 kg per lactation.
- Age at first calving is 25 to 30 months and calving interval is 13 to 14 months.
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- **Holstein Friesian**
- This breed was developed in the northern parts of Netherlands, especially in the province of Friesland.
- They are ruggedly built and they possess large udder.
- They are the largest dairy breed and mature cows weigh as much as 700kg.
- They have typical marking of black and white that make them easily distinguishable.
- The average production of cow is 6000 to 7000 kg per lactation. However, the fat content in their milk is rather low (3.45 per cent).
- Age at first calving is 29 to 30 months and calving interval is 13 to 14 months.
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- **Brown Swiss**
- The mountainous region of Switzerland is the place of origin of Brown Swiss breed.
- It is famous in its home tract for its rugged nature and good milk production.
- Average milk yield is 5000 kg per lactation with 4% fat.
- The Karan Swiss is the excellent crossbred cattle obtained by crossing this breed with Sahiwal cattle at NDRI, Karnal.
- Age at first calving is 28 to 30 months and calving interval is 13 to 14 months.
- **Red Dane**
- Developed in Denmark.
- The typical body colour of this Danish breed is red, reddish brown or even dark brown.
- It is also a heavy breed; mature males weighing up to 950 kg and mature female weigh 600 kg.
- The lactation yield of Red Dane cattle varies from 3000 to 4000 kg with a fat content of 4 per cent and above.
- Age at first calving is 28 to 30 months and calving interval is 13 to 14 months.

FEED MANAGEMENT

- **Feeding of Calves Colostrums**
- It will vary with the system followed, but whatever system may be practiced, the calf must receive the first milk which the cow gives after calving and is called colostrums. Be sure to feed the calf enough of colostrums between 2 to 2.5 liters daily for the first 3 days following its birth.
- Any excess colostrums may be fed to other calves in the herd in amounts equal to the amount of whole milk normally fed. If possible where a cow is milked before calving, freeze some of the colostrums for later feeding to the calf. None of it should be wasted. The digestibility of colostrums increases when it is given at a temperature between 99oF and 102oF. The importance of colostrums can be felt more from the following virtues.
- The protein of colostrums consists of a much higher proportion of globulin than doe's normal milk. The globulins are presumed to be the source of antibodies which aid in protecting the animal from many infections liable to affect it after birth. Gamma - globulin level in blood serum of neonatal calves is only 0.97 mg/ml at birth. It increase to 16.55 mg/ml level after first colostrums feeding at 12 hr and subsequently on the second day shows a peak of 28.18 mg/ml. This level more or less persists till the reti-culoendothelial system of the calf starts functioning to produce antibodies.
- The protein content of colostrums is 3 to 5 times as that of normal milk. It is also rich in some of the materials, of which copper, iron, magnesium and manganese are important.
- Colostrums contain 5-15 times the amount of Vitamin A- found in normal milk, depending upon the character of the ration given to the mother during the rest period.
- Colostrums is also superior to milk in having a considerably greater amount of several other vitamins which have been found essential in the growth of dairy calves, including riboflavin, choline, thiamine and pantothenic acid.
- Colostrums act as a laxative to free the digestive tract of faecal material.

- **Feeding whole milk**
- In feeding whole milk, calves may be fed as per feeding schedule. While feeding whole milk the following points should be remembered.
- As far as possible provide milk from the calf's mother.
- Feed milk immediately after it is drawn.
- The total amount of milk may be fed at 3 or 4 equal intervals up to the age of 7 days and then twice daily.
- **Feeding skim milk**
- On many farms, large quantities of separated milk are available for feeding to calves and other livestock. Excellent dairy calves can be raised by changing them from whole milk gradually after two weeks of their age. Here again the feeding schedule should be followed.
- **Feeding dried skim milk, whey or buttermilk**
- The above dried products are mixed with water at the rate of 1 kg to 9 kg of water and then it is fed as skim milk. To avoid digestive troubles the mix should always be fed to calves after warming it up to 100oF.
- **Feeding calf starters**
- Calf starter is a mixture consisting of ground farm grains, protein feeds and minerals, vitamins and antibiotics. After a calf attains the age of 2 weeks the amount of whole milk given to it may be cut down. One should then rub a small amount of starter on the calf's mouth, after each milk feeding for a few days when the calf will be accustomed to it. When they reach four months of age, one should then transfer the calves to a "growing" grain ration.
- **Feeding grain mixture**
- Better growth and greater resistance to calf ailments result from consumption of grain and milk by the calf then when the calf is fed only on milk. At the age of 7-15 days the feeding of grain mixtures may be started. In order to get calves accustomed to grain mixtures, place a small handful of grain mixture in the used pail. As the calf is finishing its milk it may consume a portion, or one may offer a little in the hand immediately after feeding milk.
- **Feeding of Calves**
- Excessive protein rich grain mixture is not desirable as milk is already rich in proteins. A medium protein grain mixture is most suitable when milk is fed freely. A grain mixture of oats - 35 percent, linseed cake - 5 percent, bran - 30 percent, barley - 10 percent, groundnut cake - 20 percent may be fed to the calves. Another good mixture consists of ground maize - 2 parts, wheat bran - 2parts.

Table 1. Feeding schedule for calves up to 6 months

Age of calf	Approx. body weight (kg)	Quantity of milk (kg)	Quantity of calf starter (g)	Green grass (kg)
4 days to 4 weeks	25	2.5	Small qty.	Small qty.
4-6 weeks	30	3.0	50-100	Small qty.
6-8 weeks	35	2.5	100-250	Small qty.
8-10 weeks	40	2.0	250-350	Small qty.
10-12 weeks	45	1.5	350-500	1-0
12-16 weeks	55	-	500-750	1-2
16-20 weeks	65	-	750-1000	2-3
20-24 weeks	75	-	1000-1500	3-5

Table 2. Feeding schedule of growing animals from 6 months onwards

Age (months)	Approximate body weight (kg)	Concentrate mixture (kg)	Grass (kg)
6-9	70-100	1.5-1.75	5-10
9-15	100-150	1.75-2.25	10-15
15-20	150-200	2.25-2.50	15-20
Above 20	200-300	2.50-2.75	15-20

CARE AND MANAGEMENT OF DAIRY ANIMAL

- **Care and management of calf**
- We must give good feeding and management for the calves so that they develop well and, useful for replacement stock. The feeding and care of the calf being before its birth .The dam should be dried 6-8 weeks before expected calving and should be fed well. Under fed animals will give weak and small calves.

- **A) Early Management:**
- Immediately after birth remove any mucous or phlegm from those nose and mouth.
- Normally the cow licks the calf immediately the birth. This helps' dry off the calf and helps in stimulating breathing and circulation. When the cows does not lick or in cold climate, rub and dry the calf with a dry cloth or gunny bag. Provide artificial respiration by compression and relaxing the chest with hands.
- The Naval should be tied about 2-5 cm away from the body and cut 1cm below the ligature and apply Tr. Iodine or boric acid or any antibiotic.
- Remove the wet bedding from the pen and keep the stall very clean and dry in condition.
- The weight of the calf should be recorded.
- Wash the cow's udder and teats preferably with chlorine solution and dry.
- Allow the calf to suckle the first milk of the mother i.e. Colostrums.
- The calf will be standing and attempts to nurse within one hour. Otherwise help too weak calves.
- **B) Feeding of Calves:**
- Feed colostrums i.e. the first milk of the cow for the first 3 days. The colostrums is thick and viscous. It contains higher proportions of Vitamin A Care and management of dairy animal 53 and proteins. The proteins are immune globulin which gives protection against many diseases. Colostrums contains anti trypsin which avoid digestion of immunoglobulin in the stomach and is absorbed as it is.
- Whole milk should be given after 3 days it is better to teach to, drink the milk from the pail or bucket. Feed twice a day which should be warmed to body temperature. For weak calves feed thrice a day.
- The limit of liquid milk feeding is 10 % of it's body weight with a maximum of 5-6 liters per day and continue liquid milk feeding for 6.10 weeks. Over feeding causes 'Calf Scours'.
- The milk replaces can be given to replace whole milk.
- Give calf starter after one month of age.
- Provide good quality green fodder and hay from 4'h month afterwards.
- Feeding of antibiotics to calves improves appetite, increases growth rate and prevents calf scours. E.g. aureomycin, Terramycin etc
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- **MANAGEMENT PRACTICES**
- Identity the calf by tattooing in the ear at birth, and branding after one year.
- Dehorn the calf within 7-10 days after birth with red hot Iron or caustic potash stick or electrical method.
- Deworm the calf regularly to remove worms using deworming drugs. Deworm at 30 days interval.
- Fresh water should be given from 2 -3 week onwards.
- House the calves in individual calf pens for 3 months afterwards in groups. After six months males and females calves should be housed separately.
- Weigh the calves at weekly interval upto 6 months arid at monthly interval afterwards to know the growth rate.
- Mortality in calves is more in first month due to pneumonia. Diarrhea (calf scous) and worms.
- House them under warm condition, clean condition to avoid above condition.
- Extra teats beyond 4 should be removed at 1-2 months of age.
- 8-9 weeks of age, males should be castrated.
- Keep the body clean and dry to avoid fungal infection.
- Mineral-blocks should be provided, so that the calves lick and no changes for mineral deficiency.
- Wean the calf from the mother and feed through pail feeding system.
- **CARE AND MANAGEMENT OF HEIFER**
- Better Care and Management of heifer will give high quality replacement stock to the dairy farm. The following care and Management practices are recommended for a heifer.
- Feed the heifer sufficiently to produce normal growth. During the early stage relatively more protein than energy is needed. Most heifers grow well if excellent hay is given as much they can eat. The amount of growth depends upon the quality of forage fed.
- The heifers should be provided with a dry shelter free from drafts. A loose housing system with a shelter open to one side is sufficient.
- The size rather than the age of a dairy heifer at breeding time is important. Breeding under sized animals is never profitable. They may be stunted or slow to reach maximum size. Small heifers are more likely to have difficulty in calving. Though the heifer that is bred to calve at an older age yields higher milk yield in the first lactation, the total milk produced by such a cow will be less when compared to the heifers that freshens at an

- The heifer should be growing and in good flesh at calving time. This is necessary so that she can produce milk at the most profitable level.
- Place the heifer in a separate shed about 6-8 weeks before she is due to calve.
- Feed 2 - 3 kg of concentrate daily and all the forage she eats.
- Before calving let the heifer becomes accustomed to handling and to the procedures used in the milking herd. Always handle her gently and with kindness.
- Maintenance of health among heifers is very important for proper growth. The health among the heifers is maintained by hygienic housing, water balanced feeding and taking necessary preventive steps against common diseases.
- Periodically the heifers in the herd should be checked for their proper growth and other progress. Animals lagging behind below the required standards should be removed from the herd.
- For the heifer the calving is first time and it may have difficulty in calving. So take extra care during calving.
- **CARE AND MANAGEMENT OF MILCH ANIMAL**
- To get high milk during any lactation, the milch animal should be properly fed and necessary care and manage mental practices should be followed.
- Provide green succulent forage together with leguminous hay or straw to the extent of animal can consume, so that all its maintenance requirements are met with through forage only. Extra concentrate at the rate of 1 kg for every 2 to 2.5 liters of milk should be provided. Salt and mineral supplements should be given to maintain the lactation.
- Never frighten or excite the animals. Always treat them gently and with kindness.
- With proper feeding and care, a cow will come to heat with in 16 days of calving. Do not with hold service unnecessarily after the signs of heat are noticed in a cow. The shorter the interval between calving, the more efficient the animal is as a milk producer. By maintaining proper records of breeding and calving of the animals will ensure a study flow of milk through out the year.
- Individual attention to feed each animal according to its production is a must. For this purpose maintain individual production records.
- Keep up regularity of feeding. Concentrate mix is fed before or during milking, when as roughages after milking. This practice will avoid dust in the shed.
- Water should be provided to drink at will or at frequent intervals. It is more beneficial, if the animal is maintained on paddy straw as sole rough age.
- Regularity in milking is essential. Increase of milk in the udder will reduce further secretion of milk. Milking thrice is better than twice since 10 - 15 % more milk can be produced.
- Rapid, continuous, dry hand milking should be practiced without undue jerking of teats. milking should be done with whole hand, but not with thumb and index finger.
- Cows should be trained to let down milk without calf suckling. This will held to wean the calves early.
- Loose housing with shelter during hot part of the day should be provided. The animals will get maximum exercise in loose housing system.
- Grooming of the cows and washing of the buffaloes before milking help in clean milk production. Daily brushing will remove loose hair an dirt from the coat. Grooming will also keep the animal hide pliable.
- Wallowing of buffaloes or water spraying on their bodies will keeI6 the buffaloes comfortable especially in summer.

- **BACTERIAL DISEASES**

- **ANTHRAX**
- *B.anthracis* causes Anthrax in animals. *Bacillus anthracis* spores remain viable for many years in soil, water and animal hides and products. The main routes of entry of endospores are by ingestion, from soil when grazing or in contaminated food and by infection of wounds. Cattle, sheep and goats are most susceptible to infection.

- **Symptoms**
- In peracute sepeticemia death occurs within 2 hours after animal collapsing with convulsions, sudden death in animals that appeared normal is common.
- In acute septicemia death occurs within 48 to 96 hours clinical signs include fever, anorexia, ruminal stasis, hematuria and blood tinged diarrhea.
- Pregnant animals may abort and milk production often abruptly decreases.
- Terminal signs include severe depression, respiratory distress and convulsions.
- **Prevention and Control**
- Prevention of anthrax in animals is aided by active immunization. The organism is susceptible to penicillin-G, tetracyclines, erythromycin and chloramphenicol.
- **HAEMORRHAGIC SEPTECEMIA**
- *Pasteurella multocda* is small Gram –ve rods or coccobacilli that show*bipolar staining*
- **Symptoms**
- Fever, a sudden drop in milk yield, signs of abdominal pain, severe diarrhoea and dysentery, respiration becomes rapid and shortly before death the mucous membranes appear cyanotic.
- In less acute cases there will be odema development in the region of the head, neck and brisket. The nasal discharge may be blood stained or purulent. Death occurs within 2-4 days.
- **Control and prevention**
- *Pasteurella* is amenable to Penicillin-G, streptomycin, chloramphenicol, chlortetracycline, sulpha and tripmethoprim, enrofloxacin and oxytetracycline.
- Vaccination

- **BLACK QUARTER**
- *C. chauvoei* causes black quarter or black leg in Cattle. Gram positive, rod shaped with rounded ends. Worldwide distribution in soil and pastures.
- **Symptoms**
- The disease usually occurs in young cattle of 6 months to about 2-3 years of age. Crepitating swelling in the hind or fore quarter, lameness, muscles shows trembling with violent twitching. Death usually occurs within 24 hours.
- **Control and prevention**
- Hyper immune serum (HIS) is used to control explosive outbreaks. Penicillin along with HIS is used to treat the disease.
- Oxytetracycline & Chlortetracycline can also be employed effectively in early stages.
- **BOVINE TUBERCULOSIS**
- *Mycobacterium bovis* causes bovine tuberculosis in many animal species and also cause tuberculosis in human
- **Clinical signs**
- **General form**
- Affected animals become docile, Progressive emaciation, Capricious appetite, fluctuating body temperature and rough / sleek hair coat, animal does not put up weight. All these general signs are pronounced following calving.
- **Respiratory form**
- Silent or paroxysmal cough especially during early morning and chilled weather. Chronic cough with dyspnoea, squeaking crackles , enlargement of retropharyngeal lymphnode causes dysphagia and noisy breathing due to pharyngeal obstruction.
- **Reproductive form**
- Metritis and inflammation of placenta leads to infertility, abortion and failure in conception.
- **Control and prevention**
- Treatment and vaccination are inappropriate in control programmes for cattle. In many countries, tuberculin testing followed by isolation and slaughter of reactors has been implemented as the basis of national eradication schemes.

- **BRUCELLOSIS**
- *Brucella abortus* species are obligate intra cellular parasites and cause abortion in last trimester of pegnancy
- **Symptoms**
- The disease in cattle is almost always caused by *B.abortus*.
- The incubation period is usually from 30 to 60 days.
- After bacteraemia the infection localizes in the placentae, if the animal is not pregnant, the infection localizes in udder (interstitial mastitis).
- In the bull, orchitis and epididymitis.
- Abortion at 6 months and retained placentae are the cardinal signs.
- **Prevention and control**
- The attenuated live vaccine is used in female calves 4 to 12 months of age.
- The adjuvant bacterins is used as booster vaccine.
- **VIRAL DISEASES**
- **FOOT AND MOUTH DISEASE**
- Foot and mouth disease (FMD) is the most contagious disease of mammals and cause severe economic loss in susceptible cloven-hoofed animals (cattle, pigs, sheep, goats, and water buffalo).
- Transmission : Direct contact : Through water : manure : Pasture and cattle attendant
- **Symptoms**
- The disease is characterised by the formation of vesicles (fluid-filled blisters) and erosions in the mouth, nose, teats and feet. Initial signs are pyrexia (39.4-40.6ºC), dullness, anorexia, and fall in milk production. These signs are followed by excessive salivation; drooling, serous nasal discharge; shaking, kicking of the feet or lameness; and vesicle (blister) formation in the tongue, dental pad, gums, soft palate, nostrils, muzzle, interdigital space, coronary band, and teats. Pregnant cows may abort, and young calves may die without developing any vesicle. The course of an FMD infection is 2 to 3 weeks. Secondary infection may delay recovery.
- **Prevention & Control :**
- Thorough disinfection of shed, utensils, clothes of attendants.
- Vaccination – polyvalent – once – 4months or varies with type of vaccine

- **METBOLIC DISEASES**
- **Milk fever**
- Milk fever is a metabolic disease in cows soon after calving. Due to fall in serum calcium level in cows after calving as a result of failure to mobilize calcium reserves and of the development of negative calcium balance in late pregnancy.
- **Symptoms**
- Disease flares up with in 72 hours of calving initially the cows show excitement, incoordination of movement muscular tremors in limbs and head, lying in recumbent position with her head directed towards flank. In final stages subnormal temperature, dilatation of the pupil, impalpable pulse, coma and death.
- **Treatment & Control**
- Dramatic recovery by intravenous administration of 300-400 ml calcium borogluconate with Vitamin D3 injected intramuscularly. Continued mixing of ½ liter of supernatant lime water for cow may reduce the incidence.
- **Bloat** : (TYMPANY)
- Bloat is a disease of ruminants in which rumen and reticulum is over distended with the gases of fermentation.
- **Cause**
- Excess intake of fresh legumes and feeding of high grain ration lead to frothy bloat. Obstuction to normal expulsion of gases from rumen by choking the oestophageal passage by corncob, turnip and sugar beet cause free gas bloat.
- **Symptoms**
- Acute form of tympany results in sudden death before rendering any aid to the affected animal. In acute cases, the distension of the rumen occurs quickly, the flank and the whole abdomen is enlarged. On percussion the left flank produces a drum like sound, Initially the animal frequently gets up and lies down, kicks at belly and even rolls. Breath becomes difficult and is evidenced by oral breathing, protrusion of tongue and salivation.
- When the distension of abdomen becomes extreme, the animal exhibits uncoordinated movement, inability to stand, falls all of a sudden. Collapse and death occur quickly. In chronic tympany, the distension of abdomen and intra-abdominal pressure are not serious. The gas is ‘free’ but retained because of obstruction of the pasage thereby preventing normal eructation of gases.
- **Diagnosis**
- Based on characteristic symptoms of distension of abdomen and distress by the affected animal.
- **Control and Treatment**
- In per acute cases puncture the rumen with a sharp knife or with a trocar and canula to expel the gases. Administer orally oil of turpentine 60 ml well mixed with one litre of groundnut oil or gingelly oil or cocounut oil. After six to eight hours administer powdered ginger 30 grams, Asafoetida 30 gram, well mixed to jaggery. Fresh legumes should be wilted and then fed to stallfed animals. Feed dry roughages before turning the cattle to luxuriant pasture to avoid bloating.

- **MASTITIS**
- **Introduction**
- Mastitis is an inflammation of the mammary gland. In which the milk undergo physical, chemical and microbiological changes where as mammary glandular tissue under go physical and pathological changes. In which infected milk colour, consistency change and contains more amount of leucocytes.
- **Etiology**
- Mastitis is caused majorly by Staphylococcus, Streptococcus and coliform bacteria and less importantly by other organism such as other bacteria, viruses, and fungus.
- **Clinical signs**
- Per acute form: Pyrexia, anorexia, respiratory distress, swollen, hot and painful udder. Cessation of milk production. Exudate are often blood stained.
- Acute form: Swollen udder, changes in quality of milk. Milk become curd like, yellow, brown fluid with flakes and clots.
- Subacute form: No changes in the udder tissue.
- Chronic form: Udder is haemorrhagic, and fibrotic. Swollen and palpable supra mammary lymphnode,. Udder is thick, firm, nodular and atrophic, yellowish or white fluid with clots and flakes.
- **Treatment**
- Stripping out the milk from the infected quarters. Cleaning of infected quarters with normal saline and distilled water. Infusion of antibiotic therapies immediately after the infection. Continuous use antibiotics as per the antibiogram.
- **Control:**
- Hygenic measures are important.
- Animals diagnosed positive should be milked at last.
- Milkers should wash their hands before milking and should use well washed white overalls.
- A separate clean cloth for each cow is used for washing the udder with a disinfectant.
- The first stream of milk from each quarter should not be allowed to drop on floor but collected in a separate container. Milkers should not wet their hands with first stream of milk.

- **PARASITIC DISEASES**
- **Anaplasmosis**
- Anaplasmosis is a vector-borne, infectious blood disease in cattle caused by the rickesttsial parasites *Anaplasma marginale* and *Anaplasma centrale*.
- It can also be transmitted via contaminated needles, dehorning equipment, castrating knives, tattoo instruments, biting flies and mosquitoes.
- The intracellular parasite destroys red blood cells. It causes anemia, fever, weight loss, breathlessness, uncoordinated movements, abortion and death.
- **BOVINE BABESIOSIS (Red water disease, Tick fever)**
- Bovine babesiosis is a febrile, tick-borne disease of cattle and buffalo, caused by one or more protozoan parasites of the genus *Babesia.*
- The acute form is generally characterized by rapid growth and multiplication of the parasite in blood with extensive erythrocytic lysis leading to anemia, icterus, hemoglobinuria, enlargement of the spleen, and frequently, death.
- The term "Babesiasis" refers to the subclinical and chronic infections that usually persist following recovery from initial attack by the parasite.
- The chronic form is poorly defined clinically and is associated with anemia and variable weight loss.
- **Theileriosis**
- Theileriosis is a disease of mammals-
- *T. parva* and *T. annulata* in cattle
- **Marked pyrexia**, **lymph node enlargement**, **dyspnoea**, **epistaxis**, **emaciation**, **diarrhoea** and other GI signs.
- **Ocular signs** and masses may develop.
- Pruritus and **skin lesions/plaques** are also seen.
- Neurological and reproductive signs may develop in chronic or endemic disease.
- The degree of pyrexia, pathogen load and host susceptibility will determine the severity of clinical signs at presentation.

- **Vaccination schedule**

Disease	Age	Interval	Month
FMD	3rd month	Every six month	Jan-Feb, June-July
BG	6th Month	Every year	Aug-Sep
HS	6th Month	Every Year	Sep-Oct
Anthrax	6th Month	Every Year (Affected area only)	April - May
Brucellosis	4-8th month of Heifer	--	Mar - April

THANK YOU