3. DAIRY CATTLE AND BUFFALO MANAGEMENT

Can you recall ?

1. The term management and routine management practices followed on livestock farm
2. Different types of cattle and buffalo breeds.

In India, livestock is an integral part of agriculture as both crop husbandry and animal husbandry are dependent on each other. The livestock industry in India depends on the economics of feeding, breeding, management and health care of animals. The animals need to be properly fed for the best production. The main thrust of livestock production depends on how they are managed for economic milk production.

3.1 Raising of calves

It is said that good animals are raised on the farm and not purchased. The future herd is developed from calves hence they are to be home made.

Objectives / Necessity of raising calves

1. To build a good dairy herd with pedigree animals free from hereditary defects
2. To achieve early maturity and productivity
3. To reduce mortality in calves due to poor management

Feeding and management of calf before birth

1. Take special care of feeding pregnant mother
2. The embryonic development in last three months of pregnancy of the mother should be fast enough so as to achieve the desired growth of foetus.
3. In last quarter of pregnancy cow should have free access to feeding and watering.

General care and management of new born calf

1. Remove mucus from nostrils and mouth immediately after birth for easy breathing.
2. Give artificial respiration, if necessary.
3. Allow the mother to lick the newly born calf.
4. Clean the body coat by gunny bag or cloth to provide warmth to the calf.
5. Remove front portion of yellow coloured tender hooves.
6. Help the calf to stand and suckle the mother.
7. Cut the naval cord 3 cm away from the body, with new blade or sterilized scissor and tie it. Apply tincture iodine on the cut portion.
8. Feed colostrum @ 10% of body weight to calf within two hours after birth.

Methods of raising calves

1. Suckling or natural method

2. Weaning or artificial method.

1. Suckling method : In this method, calf is allowed to suckle the dam. This method is adopted in following ways.

1. Calf is allowed to suckle one or two teats of dam during milking or allowed to suckle for a short period after milking.
2. Calf is allowed to remain with its dam for the whole day, so that calf suckles the dam whenever required. This method is adopted in case of low producing cows.
3. Two to four calves of similar age and vigour are kept in a stall or pen with one cow which is called as '**nurse cow**'.

Fig. 3.1 : Suckling method

Advantages

1. Calf suckling stimulates the mother.
2. Calf grows rapidly.
3. Most easy, safe and practical method of raising calves.
4. It requires least management skill.
5. Let down of milk is quick and easy.

Disadvantages

1. It is uneconomical or expensive method.
2. It may cause injury to teats.
3. Quantity of milk suckled by the calf is not known and according to the body weight of calf.
4. There is possibility of over or under feeding.
5. Exact amount of milk given by the cow cannot be recorded.
6. There is difficulty in regular milking of cow if calf dies.

b. Weaning method : Weaning is defined as separation of calf from its mother immediately after birth or within two to three days from birth.

Advantages

1. There is no problem in regular milking of cow, if calf dies.
2. With the help of milk substitutes calves can be raised if dam dies.
3. Feeding is controlled, hence less risk of over and under feeding of cow.
4. Hygienic milk production is possible.
5. When calves are weaned, cows become regular breeder.
6. Culling of calf is possible at an early age.
7. Actual milk production of cow can be recorded.

Disadvantage

- Labour requirement is more.

Table 3.1: Differences between suckling and weaning method

Suckling Method	Weaning Method
1. Calf is allowed to suckle milk directly from udder before and after milking.	1. Calf is separated from its mother immediately after birth or within 2-3 days from birth.
2. It is uneconomical method.	2. It is economical method.
3. Culling of calf is not possible at an early age.	3. Culling of calf is possible at an early age.
4. There is difficulty in regular milking of cow if calf dies.	4. There is no difficulty in milking of cow if calf dies.
5. Possibility of calf scour/diarrhoea is more	5. Possibility of calf scour/diarrhoea is less.
6. No control over milk feeding.	6. Control over milk feeding.
7. Actual milk yield can not be recorded.	7. Actual milk yield can be recorded.
8. Total milk yield is less.	8. Total milk yield is more.
9. It is unhygienic and unsanitary.	9. Milking without calf is more hygienic and sanitary.
10. Labour requirement is less.	10. Labour requirement is more.

Feeding of calf

1. Feeding of colostrum : Colostrum is the first milk of a dam immediately after parturition. It is the first feed for the new born.

1. Optimum time for feeding colostrum : Colostrum should be fed to calf within 2 hours after birth. Because during this period maximum antibodies present in colostrum are absorbed due to increased permeability of the intestinal wall. Later on this absorption rate goes on decreasing.

2. Rate of colostrum feeding : It should be fed @ 10% of calf body weight. About 2.5 kg of colostrum is sufficient for a new born calf.

3. Frequency of colostrum feeding : It should be given in 2 to 3 divided doses in a day. The interval between feeding should be maintained constant to avoid digestive complications.

4. Period of colostrum feeding : Colostrum should be given for at least 3 days and upto 7 days after birth.

5. Advantages / importance of colostrum feeding

a. It contains antibodies γ-globulins which provide immunity / resistance against usual calf diseases.

b. Its laxative action helps to remove meconium, i.e. first faeces of calf.

c. It also creates acidic medium in digestive system and thereby prevents diarrhoea.

d. Its protein content is about 3 to 5 times more than normal milk (about 20 %).

e. Its vitamin A content is very high i.e. about 5 to 15 times as that of normal milk. It also rich in riboflavin, choline, thiamine and pantothenic acid.

f. It also supplies some important minerals like copper, iron, magnesium and manganese.

6. Colostrum substitute

a. If colostrum is not available due to death of dam or non-secretion from the udder, then colostrum from other newly calved cow can be given. or

b. A mixture of the following ingredients can serve as colostrum substitute in emergency.

Water	----------	284 ml
Milk	----------	575 ml
Castor oil	----------	2.5 ml
Egg	----------	1 (One)

c. In addition to this, injection of 50 ml of dam's serum intravenously is also recommended.

Methods of milk feeding to calf

a. Pail feeding : In this method, milking bowl is used for feeding of milk to calf.

Technique

1. Warm the milk to body temperature of calf (39^{0}C. or 102.2^{0}F)
2. Take the required quantity of milk on the basis of body weight of calf (10% of body weight) in clean sterilized milking bowl.
3. Put forefinger in the mouth of calf and lower the head of calf, till the muzzle touches the milk in bowl.
4. The calf then starts licking the finger it and gradually sucks the milk from bowl.
5. Clean the mouth of calf after milk feeding.

Fig. 3.2 : Pail feeding

b. Nipple feeding : In this method pail with nipple attachment near the bottom is used for milk feeding to calf.

Technique

1. Warm the milk to body temperature of calf.
2. Take required quantity of milk in clean pail or bottle.
3. Then place nipple pail at a convenient height.
4. Allow the calf to suckle the milk through nipple.

Fig. 3.3 : Nipple feeding

Advantages

1. It facilities training of calves to suckle milk.
2. It reduces bad habit of calves to suckle each other.

Disadvantages

1. More time is required for cleaning and disinfection of pail.
2. There is occasional passing of milk into the lungs, if pail is placed too high while the calf is suckling.

Feeding of whole milk to calf

1. Give whole milk @ 10% of calf's body weight daily.
2. Provide milk up to 3 months of age.
3. Warm milk to body temperature of calf i.e. 39 ^{0}C or 102.2^{0}F.
4. Avoid contamination of milk by dirt or dust.
5. Use clean utensils (pail, bottle etc.)
6. Preferably give milk from calf's mother.
7. Feeding freshly drawn milk is preferred.

Feeding of skim milk to calf

1. Skim milk is fed after 2 weeks of whole milk feeding @ 10% of body weight daily.
2. Replacement of whole milk by skim milk should be gradual.
3. It may be discontinued at 12 weeks of age.
4. It lowers the cost of raising calves.
5. It can be used for partial replacement of whole milk.

Feeding of calf starter

1. It is first concentrate mixture fed to calves.
2. It should contain 20% DCP and 70% TDN.
3. It is used to replace whole milk.
4. It is fed from 2 weeks to about 4 months of age.
5. Rate of feeding – It is started with 100 gms/ day at 2 weeks, then gradually increased to 1 kg at 2 months and 2 kg at 3 months of age.
6. In the beginning, rub small amount of calf starter on the tongue, lips and muzzle of calf, which will induce it to eat more.

Table 3.2. Composition of an ideal calf starter

Crushed Barley / Maize	50 %
Groundnut cake	30 %
Wheat / Rice bran	08 %
Fish / Meat meal	10 %
Mineral mixture	02 %

Note : In this starter add 5-10 % molasses, 0.5 % salt, 0.2 % antibiotic powder and 10 gm of vitamin mixture per 100 kg of feed.

6. Feeding of milk replacer to calf

1. Milk replacer is a dry feed mixture that is reconstituted with warm water and fed to calf as a replacement for milk.
2. It lowers the cost of raising calf.
3. It can be fed to calves from 2 weeks to 2 months of age.

4. It should contain minimum 50 % spray dried skim milk, 10-15 % high quality fat and 22 % protein.
5. The milk replacer should be reconstituted with warm water.
6. It should be given @ 10% of calf's body weight twice daily.

Table 3.3 Composition of good milk replacer

Dried skim milk	70 %
Dried whey	18 %
Animal fat	10 %
Lecithin	01 %
Di-calcium phosphate	01 %

Note : In this milk replacer add Copper sulphate, Ferrous sulphate, Magnesium sulphate, Cobalt sulphate and antibiotics in traces.

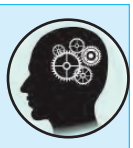
Feeding of roughages to calf

1. During early period of life calf rumen is not developed and hence it is nonfunctional.
2. At pre-ruminant stage, abomasum functions as true stomach and feeding habit is similar to that of simple stomached animal.
3. It is advantageous to make the rumen functional at an early age by giving good quality hay or green tender grass to calf from 2nd week of age.
4. Feeding of roughages establishes ruminal micro organisms and rumen becomes functional.
5. As the rumen starts functioning, efficiency of utilization of milk protein goes on decreasing.

Feeding of concentrates to calf

1. It is usually given to calf after 4 months of age.
2. The amount of concentrate given depends on roughage quality.
3. It should have 18 % DCP and 70 % TDN.

Remember...



- Rumen function starts at the age of 3 months of calf.

Table 3.4 : Feeding schedule for calves up to 3 months of age

Age of calf	Whole milk (g)	Skim milk (g)	Calf starter (g)	Good quality hay (g)
0-3 days	2500 (Colostrums)	----	----	----
4-7 days	2500	----	----	----
2nd week	3000	----	100	300
3rd week	3250	----	300	500
4th week	3000	----	400	600
5th week	1500	1000	500	700
6th week	----	1500	650	750
7th week	----	2000	800	850
8th week	----	1750	1000	1000
9th week	----	1250	1200	1100
10th week	----	----	1300	1200
11th week	----	----	1400	1300
12th week	----	----	1500	1500
13th week	----	----	2000	2000

Table 3.5 : Composition of concentrate mixture

Sr. No.	I		Sr. No.	II	
1.	Maize grain	30 %	1.	Oats	40%
2.	Wheat Bran	25 %	2.	Rice Bran	30%
3.	Groundnut cake	20 %	3.	Cotton Seed cake	20%
4.	Gram /Tur Chuni	22 %	4.	Linseed cake	7%
5.	Mineral Mixture	2 %	5.	Mineral Mixture	2 %
6.	Salt	1 %	6.	Salt	1 %

Housing of calf

1. All calves should be housed separately in calf pens.
2. Calf pens are of two types -
   a. Without run out side and
   b. With run out side.

Table 3.6 : The pen size per calf

Age group	Without run out	With run out
0 to 3 months	7.3 sq m	9.1 sq m
3-6 months	9.1 sq m	10.6 sq m

3. Calf pens should have proper ventilation, drainage and sufficient light.
4. Overcrowding of calves in a pen should be avoided (maximum 10 calves in a group).
5. Height of feed trough should be 0.5 m above the ground level.
6. Floor should be non slippery.
7. Height of partition wall between each pen should be 1.4 m.
8. Calf shed should be at the end of milking barn or somewhere near it.
9. Maintain the calf in individual pen at least up to 8 weeks of age.
10. Bedding of wheat bhusa or other suitable material should be provided in calf pen to keep warm and comfortable atmosphere inside.

General Management of calf

1. Perform tattooing at the age of 3 to 4 days for identification of calf.
2. Perform dehorning when calf is 4 to 10 days old.
3. Remove extra teats within 1-2 months of age.
4. Castrate calf at 8-10 weeks of age to develop for beef production.
5. Clean calf pen daily with disinfectant.
6. Provide clean and fresh water.
7. Record the body weights weekly.
8. In severe winter, protect the calves especially up to 6 days after birth either by providing bedding, heaters high wattage bulb or body cover/blankets.
9. Give supplementation of Vit A @ 10,000 IU once a week after calf is shifted to skim milk from whole milk.
10. Spray calf shed with insecticide to avoid tick or lice infestation.
11. Deworm calf first at the age of 8-10 days and thereafter every month till one year of age.
12. Vaccinate calf against Black quarter (BQ), Haemorrhagic septicemia (HS) and Foot and mouth disease (FMD) at the age of 3 months.

Management of calf after 6 months of age

1. Male and female calves should be housed separately.
2. Space requirement is 3 x 2 m for male calves and 4 x 2 m for female calves.
3. Calf ration (concentrate required)- 500 gm/day/calf.

3.2 Raising of heifers

Well grown and developed heifers are the best foundation stock of dairy herd. In view of this heifers must receive all necessary care to grow properly and attain full size.

Do you know ?

Heifers are often said to be future cow

Feeding methods of raising heifers

a. Grazing method or outdoor system

1. In this method, heifers are fed at the grassland or pasture by allowing grazing.
2. Number of heifers should be proportional to grassland available.
3. Sufficient amount of leguminous forages should be made available for feeding.
4. Rotational grazing should be preferred.

Fig. 3.4 : Grazing heifers

b. Stall feeding or indoor system

1. In this method, heifers are fed inside the byre and not allowed for grazing.
2. Legume hay and green fodders should be made available for feeding.
3. About 1-1.5 kg of concentrate mixture should be given daily.
4. Mineral bricks or mineral mixture should necessarily be provided to achieve maximum reproductive performance or fertility.
5. Extra amount of concentrates should be fed to heifers during last 3 months of pregnancy. This is called as **steaming up**. For this purpose additional 1.5 kg of concentrate mixture (18 % DCP, 65-70 % TDN) should be given daily.
6. The concentrate allowance is increased by 500 gm prior to 15 days of calving for building up of body reserves and to accustom for high concentrate feeding after calving.

Fig. 3.5 : Stall feeding heifers

Housing of heifers

1. Heifers up to breed-able age are to be housed separately.
2. Each heifer should get about 2 sq.m covered floor space and 4 sq.m open area.
3. One month before calving, heifer should be housed along with other milking cows.

General management of heifers

1. Branding should be done at the age of one year for identification.
2. Daily grooming should be practiced.
3. Culling of heifers having poor growth, late maturity and anatomical defects.
4. Heifer attaining weight of 250 kg may be considered for breeding.
5. Deworming should be done regularly as per schedule.
6. Periodical spraying of insecticides is necessary to avoid ecto-parasites.
7. Perform timely vaccination against disease like HS, BQ and FMD.

3.3 Care and management of pregnant cows and buffaloes

The proper care and management of cows and buffaloes during the last 2-3 months of their pregnancy is very important to harvest maximum milk during ensuing lactation besides the normal growth of fast developing foetus.

Housing of pregnant cows and buffaloes

1. A house for pregnant animal should be clean, well ventilated and properly disinfected.
2. House should protect animal from environmental stress like heat, cold, wind, rain or snow.
3. Flooring should be non-slippery.
4. Usually pregnant animals are transferred to calving pen or box, 2-3 weeks before the expected date of calving.
5. The number of calving pens required is 10% of cows on farm.
6. Calving pens should be located near to the labour quarters.
7. Calving pen should have covered area of 3 x 4 m and open paddock of 4 x 5 m.
8. Calving pen should have one feet bedding material on floor.

Feeding of pregnant cows and buffaloes

1. Provide light and easily digestible feed.
2. Animal should have free access for grazing on good pasture.
3. During initial 3/4th period of pregnancy, a maintenance allowance of concentrate mixture @ 1.25 kg / day for indigenous cow and 1.50 kg / day for crossbred cow is sufficient.
4. During last quarter (1/4th) of pregnancy, increase the concentrate allowance by 1.25 kg and 1.50 kg per day for indigenous and crossbred cows, respectively in addition to maintenance allowance.

Do you know ?

Extra allowance of concentrate mixture given during last quarter of pregnancy is called as **'steaming up'**.

Steaming up helps to fulfill additional nutrient requirement for growth of foetus, development of mammary gland and preparation of cow for incoming lactation.

Why steaming up is necessary?

1. It helps in better growth of pregnant heifer and also of foetus.
2. It helps for easy calving and expulsion of placenta
3. It also facilitates proper udder development for ensuing lactation.
4. It helps to regain energy lost during previous lactation.
5. It helps to produce more milk after calving.
6. It also increases lactation length and improves reproduction performance.

General management of pregnant cows and buffaloes

1. Pregnant animals should be housed separately as they need a special care.
2. Prevent the pregnant animals from injury due to slipping or mounting.
3. Avoid fighting, chasing with or by other animals.
4. Do not tire the pregnant animals by moving them for long distance for grazing and transportation.
5. Early and later quarter of pregnancy are critical, hence need great care.
6. Provide adequate clean and cold water.
7. Protect the animals from environmental stress.
8. Keep careful supervision of pregnant animals.
9. Dry off cows at least 60 days before calving.

10. Give injection of vit. D3 @ 10 million I.U. intramuscularly, a week before parturition to avoid milk fever in subsequent lactation.
11. Never allow the pregnant animal to mix with other animals which have the history of abortion or carriers of contagious diseases like brucellosis.
12. Deworm cows/buffaloes during advance pregnancy for prevention of worm load in newborn calves.

3.4 Care and management of newly calved cows and buffaloes

The proper care and management of freshly calved milch animal is the key for the success in dairy enterprise. The special attention of livestock owner is required towards the freshly calved females.

Housing of newly calved cows and buffaloes

1. During parturition, cow is kept in a calving box or pen.
2. Smooth and sufficient bedding is essential in house.
3. Make necessary arrangement in the house to protect cows from environmental stress.
4. Replace bedding material after thorough cleaning and disinfection of floor.

Fig. 3.6 : Newly calved cows

Feeding of newly calved cows and buffaloes

1. Mild laxative, palatable and energy rich feeds should be given immediately after calving.
2. Usually 2 kg bran plus 1 kg jaggary or molasses moistened with lukewarm water is given.
3. A little quantity of palatable and easily digestible green fodder should also be given.
4. After 2 days of calving a mixture of bran and oat mixed in linseed oil should be given.
5. Increase the quantity of concentrate mixture (16-18% DCP and 70 % TDN) gradually within 2 weeks after parturition, to get the cow full fed.
6. Give sodium propionate @ 60 gm daily for 8 to 10 days to prevent ketosis.
7. Provide enough calcium and phosphorus through mineral mixture to prevent milk fever in high yielders.

General management of newly calved cows and buffaloes

1. Immediately after parturition, wash external genitalia, hind legs, flanks and tail with a luke warm water containing few crystals of potassium permanganate (antiseptic wash) or neem leaves.
2. Provide luke warm water alone or mixed with jaggery to keep the freshly calved animal warm especially during winter.
3. Dispose off the placenta by deep burial.
4. Avoid ingestion or licking of placenta by cow.
5. Consult veterinarian, if placenta is not expelled within 8 hours of parturition.

Remember...

- Daily feed requirement of a adult cow is dry fodder 5-7 kg green fodder 20-25 kg concentrates 1.5 Kg as maintenance and additional 1 Kg for every 2.5 milk yield per day.

3.5 Care and management of lactating cows and buffaloes

Milking cows and buffaloes are sophisticated machines which convert feed to superior nutrients for human consumption. Therefore, it is mandatory to provide them balanced ration and comfortable housing.

Housing for lactating cows and buffaloes

1. Each cow requires 1.5 x 1.2 m standing space and 0.6 to 0.7 m feeding space.
2. The shed for milking animals should be at higher place and near to calf pen and milk collection room.
3. Floor should be hard, impervious non slippery and with normal slope.
4. House should be well ventilated and should protect the milking stock from rain, cold, strong sunlight, wind etc.
5. There should be separate manger for each cow.

Feeding of lactating cows and buffaloes

1. Feeding should be planned to obtain peak milk production in about 1.5 to 2 months of lactation and mature body weight in 2nd lactation.
2. While feeding green legumes provide dry fodder to ensure adequate consumption of dry matter and to avoid the possibility of bloat.
3. The interval between feeding of coarse roughages and concentrate should be at least 2 hrs, otherwise the digestibility of concentrates is also reduced.
4. Usually concentrate allowance is given at the time of milking which stimulates the process of letting down of milk.
5. In addition to maintenance allowance give 1 kg concentrate mixture (16 % DCP) for every 2.5-3 kg milk produced in indigenous cow and for every 2 to 2.5 kg milk in buffaloes and crossbreds.
6. The concentrate mixture should contain required quantity of important minerals like calcium and phosphorus.
7. Pelleted feed is generally preferred than mash feed for milking animals.
8. At about 15 days of calving, give slightly more quantity of concentrate than actual production which is called as '**challenge feeding**' or '**lead feeding**'.
9. A concentrate mixture should be soaked or sprinkled with water to reduce its dustiness before feeding at the time of milking.

General management of lactating cows and buffaloes

1. Milking cows should be handled with kindness.
2. Milking shed and cow should be washed before milking.
3. Grooming should be performed 2 hours before milking to avoid contamination of milk with filth (hair, dust or dung particles).
4. Before milking, udder should be wiped off with a cloth dipped in antiseptic solution.
5. Gentle, rapid and complete milking should be done by adopting full hand milking method.
6. Avoid excitement of cow before and during milking.
7. For safe milking, secure hind legs with anti-kicking device or 8 knot with rope.
8. Follow regular milking time and uniform interval between two milkings.
9. Usually cows are milked two times a day. However for cow giving more than 10 lit of milk per day 3 times milking is recommended which increases 10-15% milk production.
10. Cow/ Buffaloes should be inspected daily for any health problem.
11. Periodical (monthly interval) testing of milk for mastitis should be done.
12. Cows/Buffaloes in the herd should be tested each year for contagious diseases

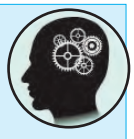
like Tuberculosis, Johne's disease and Brucellosis.

13. Dry off the cow/buffalo 60 days before expected date of next calving.
14. Routine vaccination and deworming schedule be followed.
15. Regular spraying of insecticides should be practiced for control of ecotoparasitic.

3.6 Care and management of breeding bulls

Breeding bull plays an important role in producing good livestock and thereby profitability from the animal husbandry. Physical and physiological maturity depends in how best the bull is cared for.

Remember



Bull is said to be '**half of the herd**' as it passes 50 % characters to the offspring.

Housing for breeding bulls

1. There should be separate pen for each breeding bull.
2. The location of bull pen should be such that, bull can view cows or heifers. This avoids bull becoming ferocious.
3. Bull pen should have covered area of 12 sq.m (3 m x 4 m) and open yard or paddock of 24 sq.m.
4. Flooring of pen should have rough cement concrete i.e. non slippery.
5. An open yard adjacent to bull pen be provided with 2 m height boundary wall or strong fencing.
6. Bull pen should have easy access for feeding and watering without entering inside.
7. Bull pen should have enough light and ventilation.
8. Bulls should have exercise ward.

Feeding of breeding bulls

1. Underfeeding as well as overfeeding of bull should be avoided for maintaining optimum breeding efficiency.
2. Overfeeding causes fattiness that leads to reduced sex libido as well as stress and strain on feet and legs.
3. Underfeeding may lead to nutritional deficiencies reflected by reduced breeding performance.
4. Feeding schedule of bull should be based on body weight and intensity of service (usually 2 kg DM intake / 100 kg body weight)
5. Feeding of good roughage like legume hay @ 1 kg / 100 kg body weight along with 2-3 kg concentrate mixture (12 to 15% DCP and 70% TDN) @ 0.5 kg / 100 kg body weight is sufficient.
6. Young bull must receive sufficient greens to satisfy higher need of vitamin A, other wise poor quality semen is produced.
7. During breeding season, the concentrate allowance should be increased and vice versa.
8. While feeding bull, care should be taken to avoid phosphorus deficiency which leads to infertility.
9. Excess of calcium in bull's diet may cause bone deformities, leading to poor mounting, hence may be avoided.
10. Bulls are not usually allowed for grazing with the herd because of difficulty in controlling them.

General management of breeding bulls

1. Ringing of bull with smaller nose-ring at 1 year of age and with larger nose-ring at maturity. Nose ring should be made up of copper metal as it is non rusting.
2. Regular trimming of hooves should be done.
3. Regular handling or leading the bull using a bull holder and string halter is necessary in bull exerciser.
4. Grooming and brushing should be regularly done.

Fig. 3.7 : Sahiwal breeding bull

5. Dehorning is performed before 10 days of age in bull calf.
6. Exercise: Moderate daily exercise is must for bull to keep active and in good breeding condition. Exercise also keeps bull toes well worn. For exercise to breeding bull provide an open yard (20 x 40 m) or exercise ring (bull exerciser).
7. Body weight should be recorded monthly.
8. Teasing the bull should be avoided.
9. Over grown of prepucial hair should be clipped or cut to 1 cm length to avoid interference with ejaculation and to reduce chance of mixing filth with semen.
10. During summer, 2 to 3 times splashing of cool water on body during hot part of the day should be done to avoid heat stress.
11. Paddock should be cleaned daily to avoid slipperiness.
12. Routine vaccination and deworming schedule should be followed.
13. Regular spraying of insecticides in cattle shed and on animal body should be practiced to control ecotoparasites.
14. Training of bull : For leading a bull, bull-leader or bull-holder should be used. Bull should be trained at an early age, so that they can be safely handled and easily teachable at this age.

Selection of breeding bull

1. Young bull should be preferred for breeding.
2. Bull should be true to the breed characters.
3. Bull should be healthy, masculine, vigorous, active and docile.
4. Bull should be free from physical deformities or defects.
5. Bull should be free from diseases like T.B. vibriosis, trichomoniasis and brucellosis.
6. Bull should have good pedigree record to get high inheritance.
7. Examine the quality and quantity of bull semen.

Breeding management

1. One bull for a herd of 50-60 cows is sufficient.
2. Bull can be used for breeding after 2.5 year of age.
3. The number of services should be restricted to one per week in young bulls and 2-4 per week in mature bulls.
4. Breeding efficiency of bull increases up to 4 years, maintained up to 6 year and then declines gradually.

Disposal of breeding bull : Bull can be successfully used for service up to 10 years of age and thereafter bulls should be culled or sold.

Do you know ?

Nutrient requirement of working bullocks?

a. **Heavy work :** 2.5 kg of concentrate and 12 kg of dry roughages.
b. **Light work:** 1.5 kg concentrate and 12 kg of dry roughages.

3.7 Care and management of livestock during different seasons

Management during Summer Season

Amongst the environmental factors, hot ambient temperature has significant impact on the productive and reproductive performance of livestock species. Several factors are responsible for causing heat stress and major factors are high ambient temperature and high humidity.

Heat stress is the point where the cow cannot dissipate adequate quantity of heat to maintain bodys thermal balance."

Symptoms of heat stress

1. Animal moves to shade
2. Water intake increased while feed intake reduced
3. Prefers standing than lying down
4. Increased respiration rate, pulse rate and body temperature
5. Increased production of saliva
6. Open-mouth breathing/panting

Effects of heat stress

1. Decreases in milk yield between 10-30 % along with lactation length.
2. Reproductive efficiency decreases
3. Dry period increases
4. Age at first estrous also increases
5. Negative impact on immunity and health

Fig. 3.8 : Signs of heat stress in animal

Strategies to reduce the negative effects of heat stress

Breeding management

1. It is necessary to adopt a good heat detection technique.
2. It is always advisable to continue artificial insemination instead of using bulls because in natural breeding both bull and cows suffers infertility due to summer stress.
3. Genetic selection of heat tolerant animals and inclusion of heat tolerance as a trait in selection programme.

Cooling systems in the farm

1. Fans in combination with water sprinkling facility provide the best cooling option.
2. Excessive sprinkling should never be practised as it can result into wet bedding making animal prone to mastitis and other diseases.
3. The farm should be well ventilated.
4. Provision for wallowing for buffallos.

Fig. 3.9 : Foggers and fan arrangement in cattle shed

Feeding management

1. Provide adequate green fodder
2. Feed during cooler times of the day
3. Increase the frequency of feedings
4. Keep feed fresh as much as possible
5. Provide high-quality forage and balanced ration.
6. Provide adequate fibre
7. Use of by–pass proteins can enhance the milk yield and protein content.
8. Provision of sufficient cool and fresh water.

Providing natural or artificial shade area

- Plantation of trees around the farm will help in alleviating heat load from the animals.

Selection of heat tolerant animals

- Genetic Selection of animals based on specific molecular genetic markers for heat tolerance will definitely be a boon to alleviate heat stress in cattle and buffaloes by identifying the heat tolerant animals.

Management during winter season

1. To protect animals from a sudden drop in temperature, keep the animals in a covered shed/area during the night.
2. Blankets can be used to retain body heat for individual animals.
3. Avoid keeping animals in a damp area, as well as protect them from smoke from fires which are led to provide warmth. The dampness and smoke increases their chances of contracting pneumonia.
4. Animals should be given lukewarm water to drink during winters.
5. To maintain the body temperature of animals in milk, they should be fed with a mixture of oil cakes and jaggery.
6. Provide salt mixtures in adequate quantities along with their feed.
7. This is the right time to deworm the animals.
8. If the animals have not yet been vaccinated against FMD, PPR, Haemorrhagic Septicaemia, Enterotoxemia, Black Quarter etc, ensure that this is being done now.
9. The bedding/hay in the animal sheds must be kept dry and changed/aired every day.
10. Take adequate care to prevent occurrence of mastitis in animals.

Management during rainy season

Common problems in a livestock farm during rainy season

1. **Feeding :** Grass, which sprouts during rainy season contain more of water and less fiber. The water fills up the stomach and hence, it is virtually useless. This causes animals to pass watery dung during wet seasons.
2. **Moisture :** Water leaking in the animal shed affects the comfort of the animals. Coccidiosis can also occur due to leakage of water from dirty shed. Hoof diseases are also common in animals kept on wet floor. Moisture present on ground produces a lot of bacteria that can cause diseases. Worms are mostly seen in rainy season.
3. **Tick problem :** Ticks spread faster in rainy season. They suck blood and eventually cause death due to haemoprotozoan diseases. Tabanus flies spread surra disease in cow
4. **Udder diseases :** Diseases of udder are very common in rainy season due to dirty sheds.
5. **Mouldy feeds :** If the feeds become wet due to leakage of rain water from damaged roof, then they develop moulds. This mouldy feed is harmful to the animals.
6. Slippery floor and floor with pebbles must be checked as the pebbles get lodged between the hooves of the animals

Preventive measures required during rainy season

1. Make the roof of livestock sheds leak-proof and clean.
2. Green grass cut during rainy season be dried in sunshine for some time before feeding as it reduces water in grass and it will turn into a good feed.
3. Deworming must be done in the beginning and throughout rainy season because worms multiply at a faster rate during this period.
4. Farmers should spray insecticides on their animals regularly for removal of ectoparasites.
5. Farm should be disinfected regularly.
6. It must be made sure that feeds are stored in a dry place.

Try this...

Visit the near by dairy cattle and buffalo farm and collect the information.

Exercises

Q.1 Fill in the blanks.

1. The colostrum should be fed at the rate of ……..% of calf's body weight.
2. The milk should be fed to the calf @ ……..% of calf's body weight.
3. Calf starter should contain……% crude protein.
4. Pregnant cow must be dried at least…….days before calving.
5. Breeding bull is said to be…….the herd.
6. To avoid ketosis in freshly calved cow……is given daily for 8 to 10 days.
7. Heifers attaining weight of…….. kg. should be considered for breeding..
8. Breeding bull should receive concentrate mixture @..... kg/100kg body weight.
9. Breeding efficiency of bull increases up to ……..…. years.
10. Lactating cow should be provided with additional allowance of concentrate @1kg for every ….kg of milk produced in buffalo.

Q. 2 Answer in one sentence.

1. Enlist methods of raising calves.
2. Mention methods of milk feeding to calves.
3. What is mean by weaning?
4. What are the methods of raising of heifers?
5. What is steaming up?
6. Give dimensions of calving pen.
7. Which is the easiest, safe and practical method of raising calves?
8. What is colostrum?
9. Enlist types of calf pen.
10. Give additional allowance of concentrate mixture to be given to crossbred cows during advanced pregnancy.

Q. 3 Answer the following questions in brief

1. Give the necessity of raising calves.
2. Differentiate between suckling and weaning method of calf rearing.
3. Write general care of freshly calved cows.
4. Give the advantages of steaming up in heifers.
5. How will you select breeding bull?

Q. 4 Answer the following questions in detail.

1. Write in detail care and management of newborn calves.
2. Explain in detail feeding, housing and management of pregnant cows and buffaloes.
3. Describe in detail care and management of lactating cows and buffaloes.
4. Write in detail the care and management of breeding bull.