PRACTICAL MANUAL

Course Title : Sheep and Goat Production
Course No. : ASDS – 364 (New Course)
Course : B.Sc (Agri.)
Semester : VI

INDEX

WWW.BSCAGRISTUDY.ONLINE

EXERCISE N0. 1

BODY PARTS OF SHEEP AND GOAT

1. Title : Study of body parts of sheep

2. Objectives : The study of external anatomy is useful for following .

I. Study of breed characteristics
II. Judging of animals
III. Locating the external abnormalities on body
IV. Writing report of treatment, dressing of parts etc.

3. Relevant information :

It is essential to study the external parts of animals to distinguish the species, breed and individual phenotype. The study of body parts helps in identifying the individuals phenotype and also in carrying out scientific studies related to growth and development of animals. The study also helps in assessing defective body parts if any. Thorough knowledge of body requires knowledge about body parts. Placement of differentiating characters becomes easy when the person know the body parts.

4. Precautions :

- Be careful and cautious while approaching the animals.
- Carefully restrain the animal.
- Do not excite the animals
- Beware of the vices of the animals.

5. Materials required :

- A live specimen of sheep/ goat
- Ropes, crate, peg, measuring tape
- Green fodder
- Photographs/ charts/ models/ slides/ live specimen of sheep and goat.

6. Procedure :

- Tie the animal with the help of rope to a peg.
- Allow some green fodder to it.
- Hold the animal with the help of attendant.
- Take the guidelines of teacher in identifying and locating the different parts of the Sheep and Goat.

WWW.BSCAGRISTUDY.ONLINE

7. **Body parts :**

- The animal body has generally four regions :
- Head
- Neck
- Body
- Quarter Region : A) Fore quarter and B) Hind Quarter

HEAD REGION	NECK REGION	BODY	QUARTERS	
			Four quarters	**Hind quarters**
Horns	Neck	Back	Shoulder	Sacrum
Head crest	Neck crest	Loin	Shoulder Blade	Rump
Face		Hollow of Flank	Arms	Pinbone
Fore head		Hip Bone	Point of elbow	Thigh
Nostrils		Chest	Fore arms	Tail
Muzzle		Abdomen	Knee joint	Milk Vein
Mouth			Shank	Milk mirror
Eyes			Pastern	Udder
Cheeks			Fetlock	Teats
Ears			Coronet	Anus
			Hooves	Vulva
			Dew Claws	Scrotum
				Sheath

8. **Observations:**

- Take another sketch and label the parts looking at the body of the animal.
- Mark different wedges on the body of the animals
- Measure the body length, girth and height of the animal with the help of measuring tape.

9. **Questions :**

a. Draw a neat sketch of sheep/ Goat body and label the various body parts.
b. State the points of difference in respect of body parts of sheep and goats.

.....

WWW.BSCAGRISTUDY.ONLINE

EXERCISE NO. 2. (A)

1. Title : Differences between the sheep & Goat.

2. Objectives : To study the difference between sheep and goat in respect of General, Physical, and Reproductive characteristics.

3. Material required : Live specimen of sheep and Goat.

4. Procedure :

S.N.	Characteristics	Sheep	Goat
A	**GENERAL**		
1.	Chromosome number (2n)	54	60
2.	Domestication before year	6000-7000	8300-9000
3	Population (million)	68 74.26 Mi	143 148.88
4	Annual growth rate (%)	2.34	3.39
5	No. of Breeds in India	40	20
6.	Position of India in the world's total population	V III rd	V II nd
B)	**PHYSICAL CHARACTERISTICS**		
7	Tail	Generally long, hanging and fairly broad	Short, thin and upright
8.	Back and Withers	Round and well fleshed	Sharp and little fleshed
9.	Thorax	Barrel shaped	Flattened laterally
10	Radius	1.25 times long as metacarpus	Twice as long as metacarpus
11	Scapula (Triangular bone of the shoulder)	Short and broad, superior spine, bent back and thickened	Posses distinct neck, spine straight and narrow
12.	Sacrum(A thick triangular bone situated at the lower end of the spinal column)	Lateral borders thickened in form of rolls.	Lateral borders thin and sharp.
13.	Flesh	Pale red and fine in structure	Dark red and coarse with goaty odour.
14	General appearance	Fatty and mostly roundish type.	Tall, thinner and more angular
15.	Body covering	Wool, coarse and hairy	Hairy
16.	Presence of beard	No. beard or any odoriferous tail gland	Beard and strongly odoriferous tail glands on male
17	Face gland	Present	Absent
18.	Foot glands in hind feet	Present	Absent
19.	Nature of horns	Mostly homonymous	Heteronymous

Sebaciou

WWW.BSCAGRISTUDY.ONLINE

C)	REPRODUCTIVE BEHAVIOUS		
20	On set of puberty	4-12 Months	4-8 Months
21.	Average age at first service	12-18 Months	12-18 Months
22.	Length of estrous cycle	14-20 Days	17-24 Days
23.	Duration of estrus	24-48 Hours	16-50 Hours
24.	Gestation period	150 days	150 days.
25	Time of ovulation	12.24 hours after the onset of estrus	25-30 hours after the onset of estrus.
26.	Optimum time for service	18-24 hours after the onset of estrus	12-20 hours after the onset of estrus.
27.	Advisable time to bred	Usually in next winter	80-90 days after parturition.
28.	Breeding life span	5-8 years	6-10 years

5. Observations :

Observe the live specimens of sheep and goat carefully and mark the physical difference.

6. Questions :

I. Enlist the general characteristics of sheep and goat.

II. Distinguish between sheep and goat in respect of physical characteristics.

III. Distinguish in respect of reproductive characteristics of sheep and goat.

.....

WWW.BSCAGRISTUDY.ONLINE

EXECRCISE NO : 2(B)

1. Title : Grazing habit of Sheep and Goat

2. Object : To know the feeding and grazing behavior of Sheep and Goat.

3. Relevant Information:

Performance of sheep and Goat depends on, how they are fed during the period of growth, pregnancy and lactation. Animals maintained for meat purpose will also perform according to what they are fed. Therefore, for planning the practical feeding programme of Sheep and Goat, one must be aware of their feeding habits, feeding standards and feeding problems.

4. Material required :

Grazing land, harvested fields, shrub, bushes, tree leaves, straw and Live sheep and goat.

5. Procedure :

I) Grazing habit of sheep :

No other class of animals is so well adapted to the utilization of maximum quantities of pasture as sheep. Although cattle compete with sheep for many of the same grazing areas, sheep are unique in their marked preference for short, fine forages and flocking instinct.

Sheep cannot thrive on one pasture continuously. They graze close to the ground. They do not need tall grown grasses, but need short grasses for grazing. They thrive very well on stubbles of kharif crops in winter and by products left after harvesting of Agricultural crops. Sheep posses a unique ability to ssurvive on natural grasses, shrubs and farm waste products like residues of the fields. With their small muzzles and split upper lips, they can nibble tiny blades of vegetation which can not be eaten by large animals. They are called as natural weed killers.

In traditional sheep rearing, practically very little or no supplementary feeding is provided to sheep. They have been maintained for efficient production through maximum output of pasture and natural lands. However, some supplementation of concentrate feed containing some grains and mostly agro- industrial by products and conserved fodders may be necessary for increasing the mutton production.

Inadequate availability of feeds and forages due to reduction in area and deterioration of grazing lands, of sheep is becoming a limiting factor. This has been the compelling reason for large scale migration of sheep for the sake of grazing.

WWW.BSCAGRISTUDY.ONLINE

The flock should graze on light soils in the morning and the fallows of heavier soils in the afternoon. During the monsoon, flocks must move on to well drained area of rainfall. The winter dew on the grass is not healthy for sheep. Pods of acacia tree, wherever available are topped and fed as a part of concentrate feed. Sheep are not selective in its feeding habits, and they will eat whatever they get but it should be free from off flavour. They like less bitter fodder than goats. As far appetite sheep require less feed than goats. They do not relish fodders like sorghum, maize, silage or straws.

II. Grazing habits of Goats :

By means of their mobile upper lips and very prehensile tongue, goats, are able to graze on very short grasses and browse on foliage not normally eaten by other domestic animals Goats are very good climbers in addition to their browsisng habit. They have slective feeding habit, accepting a wide veriety of feed. Goats have higher tolerance for bitter taste than sheep. They consume certain species of grasses and tree leaves at definite stage of maturity and reject at mature stage. Goat can thrive on herbs when there is sparse food supply. The browsing form is an important part of the diet of goats. It is efficient in digesting the crude fiber part of the feed. Goat feed should be of tree leaves, shrubs and agro-byproducts after harvested crops.

The goat can consume substantially more feed than either cow or sheep. Goat do not graze close to the ground as like that of sheep. They are fond of leguminous fodders. Goats have special mouth parts and are able to extract nutrients from the poorest of the waste land vegetation. They cans browse and thrive well in the areas richer in bushy plants. They like to stand on their hind limbs and pluck the tender leafy twigs of herbs, shrubs and small leaves.

Of all the domestic animals, goat has the wide range of adaptation . No. sother animal has been knowns to withstand the varieties of the harsh environments as goats. The early domestication process (goat is considered to be one of the first animals domesticated by man) along with certain definite physiological characteristics are perhaps responsible for its better adaptability.

Although goats consume wide variety of feeds, they are, contrary to popular opinion, fastidious in their feeding habits. Feed that is acceptable to one goat is some times may not be acceptable to another goats. They like fresh feeds and usually refuse the feeds which have been soiled by other animals. Goats can distinguish between bitter, sweet, salty and sour tastes and show a higher tolerance for bitter taste than cattle. They like variety in their feed and di not thrive well when kept on a single type of feed for longer period. The feeding habits of grazing goat vary not only with the ecology but also with the season of the year in same locality.

Goat can take 80 per cent of total intake as browse however, where browse is not available, goats are quite capable of utilizing grasses and other crop residue much as cereal straws and stovers.

WWW.BSCAGRISTUDY.ONLINE

What type of feed does goat like ?

In tropics goats commonly feed on tree leaves particularly in humid region. Farmers provide top trees in addition to grazing. This common management practice is advantageous because it adds variety to the diet and helps to meet the nutrient requirement for maintenance and production. In rural areas this practice is followed on large scale.

When pastures are grown legumes should also be included to increases the nutritive value of the forage. The important legume crops which can be grown and fed to the goats in tropics are stylo, siratro, berseem, Lucerne etc. variety of grasses can be grown. In general, goats prefer succulant grasses such as guinea grass than coarse type(elephant grass).

6. Observations :

i) Allow the sheep / Goat to graze / browse and observe their grazing / browsing habit.
ii) Supply straw / green fodder to the Sheep / Goat and observe feed intake under stall feed condition.
iii) Compare feed intake during grazing and in stall-feed condition.

7. Questions :

i) Write in brief about the grazing habits of Sheep / Goat.
ii) Write the feeding practices followed in rural area for goats.
iii) Compare and differentiate between grazing of sheep and goat .

.....

WWW.BSCAGRISTUDY.ONLINE

EXERCISE NO. 3 (A)

1. Title : **Selection of Sheep and Goat.**

2. Object : i) To establish a flock of sheep which gives economic production of wool and meat.

ii) To establish f flock of goat which gives economic production of milk and meat.

3. Relevant information:

Selection is the choice of the individual to be used as parents. Individual selected must pusses desirable characteristic. The ultimate objective in selection is to increase the frequency of desired genes in the population for the traits under consideration. Real selection yields immediate returns since only the best animals remain in the flock to consume available feed supplies.

Many factors need to be considered for establishment of the successful sheep or goat farm. These animals are maintained primarily for the production of milk , meat and wool. Each individual breeding animal in the flock should be selected on the basis of efficiency in producing these products. For this purpose the owner should continuously take effort to improve his flock through better breeding and selection.

Indian Sheep Breeds in different Agro-Ecological regions :

i) North temperate region :

Sr.No	Sheep Breeds	Region
1.	Gaddi	Kashmir , Himachal Pradesh
2.	Rampur Bushair	Uttar Pradesh , Himachal Pradesh
3.	Bhakarwal	No distinct home
4.	Karnah	Kashmir
5.	Gurez	Kashmir
6.	Kashmir Merino	---
7.	Changthangi	Kashmir
8.	Poonchi	Kashmir

ii) Northern Western Arid and Semi-Arid region:

Sr.No	Sheep Breeds	Region
9.	Chokla	Rajasthan
10.	Nail	Rajasthan, Haryana
11.	Marwari	Rajasthan
12.	Jaisalmeri	Rajasthan
13.	Pugal	Rajasthan
14.	Malpura	Rajasthan
15.	Sonadi	Rajasthan , Gujrat
16.	Pattanwadi	Gujrat
17.	Muzaffarnagri	Uttar Pradesh , Delhi , Haryana
18.	Jalauni	Uttar Pradesh
19.	Hissardale	Uttar Pradesh
20.	Magra	Rajasthan

WWW.BSCAGRISTUDY.ONLINE

iii) **Southern region :**

Sr.No	Sheep Breeds	Region
21.	Deccani	Maharashtra ,Andhra Pradesh , Karnataka
22.	Nellor	Andhra Pradesh
23.	Bellari	Karanataka
24.	Hassan	Karanataka
25.	Mandya	Karanataka
26.	Mecheri	Tamil Nadu
27.	Kilakarsal	Tamil Nadu
28.	Vembure	Tamil Nadu
29.	Coimbatore	Kerala , Karanataka
30.	Nilgiri	Tamil Nadu
31.	Ramananad White	Tamil Nadu
32.	Madras	Tamil Nadu
33	Tiruchy Black	Tamil Nadu
34.	Kenguri	Karanataka

iv) **Eastern region :**

Sr.No	Sheep Breeds	Region
35.	Chotanagpur	Bihar and West Bengal
36.	Balanagar	Orissa
37.	Ganjam	Orissa
38.	Tibetan sheep	Arunachal Pradesh
39.	Bonpala	Sikkim
40	Sahabadi	Bihar

Classification of 40 India Sheep Breeds according to their Major functions

Garments	Carpet Wool	Meat and Carpet Wool	Meat
Kashmir Morino	Chokla	Muzzafarnagri	Nellore
Nilgiri	Nail	Jalouni	Mandya
Hissardale	Pattanwadi	Deccani	Hassan
Karnah	Tibetan sheep	Belary	Mechari
	Gaddi	Ganjam	Kilakarsal
	Ramur Bushair	Balangir	Vembur
	Bhakarwal	Shahbadi	Ramanand white
	Poonchi	Chottanagpuri	Madras red
	Gurez	Coimbatore	Triuchy black
	Changthangi	Marvari	Kanguri
	Gaddi	Jaisalmari	
		Pugal	
		Malpura	
		Sonadi	
		Bonapala	

WWW.BSCAGRISTUDY.ONLINE

B) TWINTY INDIAN GOAT BREEDS :

i) Northern Temperate Region :

Sr.No	Goat Breeds	Region
1.	Gaddi	Himachal Pradesh and Uttar Pradesh
2.	Changthangi	Ladakh (above 4000 m)
3.	Chegu	Himachal Pradesh and Uttar Pradesh

ii) north Western Arid and Semi arid Region :

Sr.No	Goat Breeds	Region
4.	Sirohi	Rajasthan and Gujrath
5.	Marwari	Rajasthan and Gujrath
6.	Jhakrna	Rajasthan
7.	Beetal	Punjab and Haryana
8.	Barbari	Uttar Pradesh and Rajasthan
9.	Jamunaprui	Uttar Pradesh
10.	Mehsana	Gujrath
11.	Gohilwadi	Gujrath
12.	Zalawadi	Gujrath
13.	Surti	Gujrath
14.	Kutchi	Gujrath

iii) southern Region:

Sr.No	Goat Breeds	Region
15.	Sangamneri	Maharashtra
16.	Osmanabadi	Maharashtra
17	Kanni-Adu	Tamil Nadu
18.	Malabari	Kerala

iv)Eastern Region :

Sr.No	Goat Breeds	Region
19.	Ganjam	Orissa
20.	Bengal	West Bengal, Assam, Manipur, Tripura, Arunachal Pradesh, Meghalaya.

6. procedure : Selecting Breed

While selecting a breed of sheep or goat, following factors are considered.

i) Environmental condition under which the animals will thrive.
ii) Market price and demand for the principle product to be produced.
iii) Cost and availability of breeding stock.
iv) Availability of feed, fodder and water.
v) Personal likes.

WWW.BSCAGRISTUDY.ONLINE

Selection of basic stock of sheep:

- ❖ Keep in mind economic characters of sheep to be improved i.e. wool, mutton and milk and market demand for it.
- ❖ Decide the native breed to be kept, considering topography, agro-climatic area, type of feed and pasture and adaptability of breed.
- ❖ It is always better to start with well recognized breed of the area.
- ❖ Have a clear-cut objective of sheep farm and adopt appropriate mating system.
- ❖ Decide about exotic breed to be introduced.

Selection of Rams :

* Purchase the ram from well reputed sheep breeder or Govt. Farm.

- ❖ Exert special care in the selection
- ❖ Select Rams for good lineage, muscularity, vigor, wool covering and mutton qualities.
- ❖ See thoroughly the breed characteristics.
- ❖ Examine testicles properly which should be healthy, soft, pliable and free from any disease.
- ❖ Do not purchase cryptorchids rams with small atrophied testicles.
- ❖ Avoid rams showing poor libido.
- ❖ Get semen quality evaluated, if possible.
- ❖ Purchase rams of 2 to 4 teeth age only.
- ❖ The animal should appear compact, blocky with straight top. Legs should be strong.
- ❖ Muzzle should be broad and square
- ❖ Chest should be deep and of good width.
- ❖ Back should be straight and strong.

Selection of Ewes:

- ❖ see the breed characteristics properly.
- ❖ Purchase only 2 to 4 teeth young ewes.
- ❖ Select for good constitution, well shaped body, robust frame and sturdy legs.
- ❖ Select for heavy, fleece and its quality for fine wool production and stocky body for mutton production.
- ❖ Examine the udder properly and see that it is soft, pliable and free from any disease. Ruptures, blind or missing teats make ewes useless for breeding purpose. Ewes with hard meaty udders and abnormally large teats should be rejected.
- ❖ Old ewes with broken mouths are poor choice.
- ❖ The surest way of selecting animals for breeding purpose is by production test. Production test includes the type and finish at weaning time, prolificacy, weigh of lamb at weaning time and weight and quality of fleece.

WWW.BSCAGRISTUDY.ONLINE

Selection of sheep for wool production:

1. **Body type and confirmation:**

It should be as per the characteristics of breed chosen. In India, fine wool breeds are very fews, while most of the breed are carpet and coarse carpet quality type.

2. **Quantity of wool :**

It is determined by the density of fleece, staple length and completeness of wool covering. Density determines the closeness with which fibers are packed and is estimated by number of fibers per sq. m. of the skin surface. More is the density more is the quantity of wool. The staple length influences both quantity as well as quality of fleece from the grading point of view. Staple length of 75 mm and above is considered of the superior quality.

3. **Quantity of wool :**

It is determined by the fineness of its fibers, medullation percent, staple length and soundness. The fineness of wool is judged by measuring its diameter. According to the ISI standards of grading and classification of wool, the wool of 34.4 micron and below is considered as 'A' Grade.34.4 to 37.0 is 'B' Grade. 37.1 to 40.0 micron is 'C' Grade. and 40.1 and above 'D' Grade. The diameter and medullation of fiber can be adjudged under lanometer. Fine wool have no medullation, while carpet wool should have 10 to 20 per cent medullation. The staple length of 3.5 cm and above can successfully be processed on the worsted system. While selecting and judging the sheep, soundness,s referring to healthy and uniform wool growth on skin surface, should be considered.

4. **condition of wool :**

It is determined by purity, presence of foreign matter, amount and distribution of yolk and colour of fleece.

Selection and judging of sheep for mutton :

Mutton types characterized by a deep, wide, blocky body with symmetry, balance, breed character, thick, fleshing, a strong constitution and quality.

While selecting a mutton quality sheep, one should actually look for good carcass characteristics, which are defined by the tenderness and juiciness of mutton. High proportion of lean to fat and also high proportion of meat to bone ratio etc.

WWW.BSCAGRISTUDY.ONLINE

Some of the general points to be considered are as under:

1.	**Breed type**	**Breed chosen should suit to mutton produced**
2.	Fleece and skin	Pink skin is usually an acceptable type among most medium wool breeds.
3.	Constitution	Strong head with breed characters, strong back and loin. Four well placed legs.
4.	Natural fleshing and finish	A lamb should have deep covering of natural fleshing and fat which spread firmly and fully over shoulder, ribs, back, loin, rump and legs.
5.	Quality	Clean cut well shaped head, bones of ample size and clean joints. Firm and evenly distributed flesh. Good light dense fleece symmetrically balanced body.
6.	Sex characteristics	The rams with masculine characters should have strong bold head and neck, massive and powerful appearance and bold carriage for being a potent sire. The sheep should have feminine characters, fineness of features and maternal instinct.
7.	Balance	Blending together of all components of individual. It should be uniform in width, depth, fleshing character and quality.
8.	Type	Erect and well set head and neck, alert action, pleasing disposition.
9.	Size	It should be proper as per age, sex and breed.

SELECTION OF GOAT :

Selection is the choice of the individual to be used as parents. Individual selected must posses desirable characteristics. Goats are generally maintained for the production of milk and meat. Therefore, the care should be taken to improve the flock for milked and meat production through better breeding and selection.

Desirable characteristics in the buck :

1. It should be heaviest in the flock with a wide chest and well developed barrel, straight body, in excellent condition and strong legs are necessary.
2. There should be complete absence of physical defects, i,e. twisted legs, overshot or undershot jaws.
3. The buck from a twin is preferred.
4. It should be aggressive.
5. It should possess rugged mane on the neck and shoulders as this reflex breeding ability.
6. Good semen characteristics, especially absence of abnormal sperms.
7. Sexual organs should be well developed.

WWW.BSCAGRISTUDY.ONLINE

Desirable characteristics in the Doe :

following points should be considered while selection breeding female.

1. She should be large animal, excellent in confirmation, with well developed body and should display the particular breed characteristics.
2. For meat goats, the rectangular confirmation of the blocky meat animal should be apparent. The dairy animal should display wedge shaped confirmation typical of good dairy animal. The legs should be long, udder should be well developed, non pendulous and without supernumeray teats.
3. The doe from a twin is preferred.
4. The temperament should be good particularly for the dairy goats, docility and good mothering ability are good featured.
5. she should be good milker.

.....

WWW.BSCAGRISTUDY.ONLINE

EXERCISE NO. 3 (B)

1.Title : Identification Marks
2.Objective : To establish the identity of individual animal.
3. Relevant Information :

Identification of an animal has to be established soon after its birth. Many dairymen name their large animals i.e. cows and buffaloes. This can serve the purpose to some extent, if the number of animals are less. But for a large farm, it is always necessary to put some identification marks on the animals, like sheep and goat a number or a scar cut is essential. This will help in :

i) Identifying the animal if lost or stolen.
ii) In recording the details of animal in respect of breeding, feeding management and treatment.
iii) Pedigree of the animal tracing back to its ancestors becomes easy and accurate.
iv) For insurance purpose.

4. Precautions :

Checking and ensure the number to be given to the animal before actual marking from breeding record. Use proper methods for putting the identification marks. Restrain the animal before putting the identification mark. Keep the record of numbers of identification in the livestock register to avoid confusion. The same number should not be repeated.

5. Material required :

Tags and strings, forceps, ear punch , sharp scissors, cotton, spirit, tincture iodine, paint etc.

6. Method of identification of sheep and goat :
I) Ear tagging :

Metal tags with any combination of letters numbers are used sometimes two tags, one in each ear may be fixed. One tag caries the individual number and the other the flock number. This system provides not only owner identification but also identifies the lamb with its sire and dam.

Procedure :

i) Hold the lamb or kid properly.
ii) Disinfect the self piercing tag with spirit or tincture iodine.
iii) Clean the portion of the ear with spirit where tag is to fitted.
iv) Fix the self piercing tag directing with the help of forceps and locked keeping the number visible outside on upper edge of the ear.
v) Keep the tag neither tight nor lose on the ear.
vi) Apply tincture iodine to the wound to prevent infection.
vii) In case of non-piercing tag, make a hole on the upper edge of ear close to head, with central ear notch or punch and disinfected with spirit.

WWW.BSCAGRISTUDY.ONLINE

viii) Place the tag through the held with numbered side in the back of ear and locked in position with pincers.

ix) Take care that tag should not be tight or too loose but leaving enough space for growth of ear.

x) Apply tincture iodine on the wound to prevent infection.

II) Ear notching :

Notches cut in the ears make a rather easy method to identify animals. A notch represents a number depending on its location.

i) Sterilize the side, ear punch and central ear punch on pair of sharp scissors or spincers.

ii) Clean the ear with the help of cotton and spirit.

iii) Side ear notches must be ' V ' shaped.

iv) In case hole is required, make use of sterilized central punch.

Care should be taken not to make notches too small to close up soon and not too large to deform the shape of ear.

III) Neck tags :

Some owners prefer metal or plastic tags large enough to be read from distance. These tags are fastened on neck chains. The disadvantage is that sometimes there is a chance that they may be lost.

IV) Tattooing :

Tattooing is done with an instrument tattoo punch, in which numbers or letters can be inserted. Each number is outlined with sharp needle projections. Tattooing can be done in the ear carefully. Print the cleaned area of ear with the number and rub tattoo ink into the holes with the fingers. The tattooing can also be done on the inside of the skin flap of tail of sheep and goat.

V) Paint Brands :

Paint brands are quickly applied and are quite reliable. However, they may wear off to the paint where they are difficult to see. Ordinary lead-base paints should not be used as they will not come out with normal wool-scouring and may lower the market value of the fleece. Commercial branding fluids that will remain on the sheep for a year and may be removed from the fleece in the regular scouring process are now available.

V I) Observations :

Observe and record the following:

i) legibility of mark after one week / one month / six months.

ii) Extent of healing of the wound after one week / one month / six months.

iii) Identify the marking after one week / one month / six months.

8. Questions :

i) Name the different methods of putting identification marks on sheep and goat.

ii) Why spirit is used for cleaning ears ?

iii) What precautions are necessary in tagging and notching ?

WWW.BSCAGRISTUDY.ONLINE

EXECRICES NO : 4

1. Title : Feeding of Lambs and Kids

2. Objective : To know the feed requirement of lambs and kids for proper growth.

3. Relevant information :

The profit from sheep and goat depends largely on the knowledge and ability of the farmer to feed his flock economically and yet derive maximum productivity.

The leaves of common leguminous plants which are relished by sheep and goat are matki, mung, kulthi, udid, Lucerne, berseem, weeds, grasses, tree leaves and shrubs. Roots and cereal leaves furnish a subsistence to these wonderful animal.

4. Material required :

Colostrums , milk, container, bucket, feeding bowl, milk measure, heating device. Clean water, concentrate mixture / ingredients, green and dry fodder female Sheep and Goat, milk feeding bottle , nipple etc.

5. Procedure :

I) FEEDING OF LAMBS :

There are different methods at different stages depending upon the age of animal. They are as bellow:

a. Feeding suckling lambs :

This is the early part of a lambs life in which it is dependent on its mothers milk to a considerable degree for its nutrition. Colostrum should be fed @ 10 % of the body weight, four times in a day, for four days. Colostrum is the first milk drawn and fed to lamb within two hours after its birth. Milk should be fed to lambs at 1 / 10^{th} of body weight upto 2 months and 1/ 20^{th} up to weaning at 3 months of age. This period ends when the lambs are weaned.

It will be most economical to put the ewes and lambs on good pasture grazing in good pasture will sustain milk production of the ewes at a high level. Similarly, the lambs also will nibble ons succulent green forage. If the pasture of poor quality, the rations of these lambs may be supplemented with grains and oil cakes (starter feed) in addition to their mothers milk and pasture. Starter feed includes maize 42 parts, GNC 35 parts, wheat bran 10 parts, fish meal 10 parts, mineral mixture 2 part and common salt 1 part.

b. Feeding early—weaned and Orphan lambs :

Lambs are usually weaned at five months of age. But early weaning at eight ot twelve weeks of age has been found to be advantageous and will intensify the whole operation. Similarly, some lambs may be orphaned due to the death of ewe or due to disowning by the mother, therefore, young sucking lambs on creep feeding, early weaners and orphan lambs must be well fed on creep feed.

WWW.BSCAGRISTUDY.ONLINE

C. Rations for creep feeders, early weaned and orphan lambs.

Up to six weeks age, grain should be cracked before feeding to lambs. After this, grains can be fed as such except hard grains. The infant lambs should get good pasture or high quality legume hay preferably in the pellet form in addition to the grain. If only poor roughages are fed, their grains ration should be supplemented with a protein-cum-vitamin supplement with approximately 12 per cent digestible crude protein.

A few recommended rations for the creep feeders and weaners are as follows:

i) Maize 40 % , Oat 30% , Barley 30% plus Lucerne hay fed adlib.

ii) Oat 20%, Maize 40%, Barley 20%, and Groundnut cake 10% plus supplementation vitamin.

iii) Maize 20%, Oat 40%, Wheat bran 20% , Ground cake 15% plus vitamin supplements.

The above feed should include 2 % common salt and 2% mineral mixture.

d. Feeding from weaning to market age:

The type of feeds used and the methods of feeding will vary with economic and climatic conditions and feed available. On an average lamb may be fed 225 to 450 gm of grains mixture depending on the grazing condition.

Concentrate mixture for lamb during summer

1. Ground cake	:	20 parts	Add 2 per cent common salt and
2. Wheat Bran	:	35 parts	2 per cent mineral mixture.
3. Crushed Gram	:	10 parts	
4. Oat / Barley	:	35 parts	

Concentrate mixture for lamb during Winter

1. Wheat Bran	:	25 parts	Add 2 per cent common salt and
2. Oats / Barley / Jowar	:	35 parts	2 per cent mineral mixture
3. Groundnut cake	:	25 parts	
4. Crushed Gram	:	15 parts	

II) FEEDING OF KIDS :

Kids should be allowed to suck their dams for the first 5 days to receive colostrum. After 5 days kids may be given whole milk @ 1 / 10^{th} of their body weight for the first 30 days. It is better to wean the kids and feed this quantity of milk from the pail or feeding bottle in equal installment. The quantity of milk may be reduced to 1 / 20^{th} during the third month. From the second week onwards a palatable and easily digestible mixture (starter ration) with 20-24 % DCP and 70% TDN and good quality fodder may be offered to the kids. Milk feeding can be completely stopped at the end of third month.

WWW.BSCAGRISTUDY.ONLINE

Feeding schedule for kids of different ages:

S.N	Age	Appro. Live Wt. (in kg)	Milk (ml)	Starter Ration(g)	Green feeder (g)
1.	Birth to 5 days	1.2 to 2.0	Colostrum	-	-
2.	5-30 days	2.0 to 3.0	300-500	Small quantity	Small quantity
3.	30-60 days	3.0-5.0	400-500	50-100	Small quantity
4.	60-90 days	--	350-500	100-150	250
5.	90-120 days	5.0-7.5	--	200-250	250
6.	5^{th} and 6^{th} month	10.0-15.0	--	250-300	750

III) FEEDING GROWERS :

Composition of two kid rations

Ingredients	Ration I Parts	Ration II Parts
Ground cereals, Oats, Barley, Maize or wheat	50	40
Wheat bran / Rice polish	25	15
Deoiled ground cake	12	12
Skimmed milk powder	10	--
Mineral mixture	2	1.5
Common salt	1	1.5
Horse gram	--	30

FLUSHING :

About two weeks before the rams are turn it with the ewes the good sheepman will put ewes on a grain ration or move them to fresh pasture areas, where feed is more abundant. This process is known as **" Flushing"** . flushing the ewes starts the heat periods earlier, which is an advantage when early lambs are desired. It also has effect on bringing all the ewes into heat at nearly the same time than other wise resulting in more uniform lamb crop. Flushing also increases the lambing rate and incidence of multiple births in the flock.

When the ewes are gaining flesh their reproductive organs usually begins functioning normally. Twins under rugged range conditions are some times a disadvantage. Twins are smaller than a single lamb and ewe's milk is in scanty condition. However twins have an advantage when the flock are provided with extra fodder and grain.

FLUSHING RATIONS :

Flushing rations for ewes may consists of:

A) A good mixed pasture of legumes and grasses.
B) A grass pasture plus 150 gm of wheat bran per head per day.
C) Grass pasture plus 250 gm of grains and 450 gm of oil cakes.
D) Legume hay full fed plus 100 gm of wheat bran and 150 to 200 gm of grain.
E) Green fodder @ 10 per cent of body weight and 100 gm of oil cakes per head per day.

WWW.BSCAGRISTUDY.ONLINE

6. Observations :

i) Note the body weight of the lambs and kids every week and month.

ii) Not the quantity of green fodder, dry fodder and concentrate fed to the lamb / kid every week.

7. Questions:

i) What are the different methods of feeding the lambs ?

ii) Give ingredients suitable for lambs and kids ration ?

iii) Suggest the satisfactory ration for lamb and kid ?

iv) Why it is important to feed colostrum to the kids for the first 5 days ?

v) What is flushing ? Describe it's importance in ewe's diet.

.....

WWW.BSCAGRISTUDY.ONLINE

EXERCISE NO: 5

1. Title : Feeding practices for milking goats.

2. Objective : To know the feeding practices followed for milking goats

3. Relevant information :

The major part of expenditure in keeping a goat init is on feed and fodder and it is to the extent of 70 to 80 % of the total expenditure. Therefore one should see that a quality feed is available to his livestock at moderate rate. Along with regular maintenance ration, additional feed is required for pregnant and lactating females. Proper and timely feeding of quality feed is the key for a successful goat keeping.

4. Material required :

Concentrate mixture, Green fodder, Dry fodder, Feed ingredients.

5. Procedure :

In a hot country like India, a green feed may be short during several months. The goats generally fed on tree leaves, and tender buds of mulberry, beans, ber, babul and tamarind. These leaves, however, should be sparingly used for feeding dairy goat, as they do not provide sufficient nutrients.

Balanced ration should be made by taking into consideration the nutritive value of available feed stuffs and at the same time utilize ingredients, wherever possible from a cheaper source. Usually milk type goat consume dry matter 5 to 7 per cent of its body weight.

Nutrient requirements are higher during lactation. The ration for lactating does should contain high quality roughages like Lucerne, berseem and other cereals grasses from which they will receive fresh nutrients i.e. minerals, vitamins and proteins. To supplement more nutrients particularly of energy, cereal grains at the rate of 350 gm for each liter of milk must be provided. The protein per cent may vary from 14 to 16 per cent. The feed may be given in two lots. Add 1% trace mineralized salt and 1% calcium phosphorous mineral mixture to concentrate mixture. Molasses may be used to increase palatability and reduce dustiness. Keep clean fresh water available at all times.

Main components of the dairy Goat Ration (Feed) :

1. **Roughages :**

This includes green and dry fodder, tree leaves, tender branches, dry and green fodder etc. These contain more fibre and cellulose. Until the rumen is 2/3 full, the activity of regurgitation does not starts. Therefore, giving of roughages is must. Goat also receives minerals and vitamins from the greens.

WWW.BSCAGRISTUDY.ONLINE

2. Concentrates (Pre mixed Goat feed) :

The feed is usually prepared from the cereals and pulses (grains) available in the particular tract. These grains are taken in proportion, ground and mixed together. These include maize, jawar, barley, oats, gram, tur, pea, wheat, rice bran and various oil cakes etc. A productivity of goat needs concentrate mixture containing 14 to 16 % protein, @ 200 gm per day for maintenance and additional 300 to 500 gm per day as production allowance depending upon milk production.

3. Minerals , Vitamins and Antibiotics :

Readymade available mineral mixture is either added in the regular feed or else mineral brick is made available for licking in the goat pens. Vitamins like A, D3, supplement is given with feed. For keeping the feed free from bacterial fungus, antibiotics are added to the feed.

Formulation of concentrate mixtures with different DCP levels:

S.N	Ingredients	Concentrated mixtures			
1	Per cent DCP	14	17	20	24
2	Ground Oat	20 parts	18 parts	--	--
3	Ground barley	20 parts	18 parts	17.5 parts	7.5 parts
4	Ground mustard cake	30 parts	26 parts	--	--
5	Groundnut oil cake	--	12 parts	32.5 parts	42.5 parts
6	Wheat bran	30 parts	26 parts	17.5 parts	7.5 parts
7	Ground gram	--	--	32.5 parts	42.5 parts
8	Common salt	1 part	1 part	1 part	1 part
9	Mineral mixture	1 part	1 part	1 part	1 part

The quantity of feed given to the lactating does depends on the amount of milk produced for tropical goats weighing 20-40 kg. the above schedule may be followed for every additional kg of milk produced 0.4 kg of concentrates or 1.0 kg good quality green fodder may be fed.

Nutrient requirement of milking goat :

S.N	Particulars	Nutrient requirement
1.	Maintenance	A animal weighing 40 kg will require 40 gm DCP 500 g TDN, 2.5 gm calcium and 1.2 gm phosphorus For maintenance
2.	Milk production	For each liter of milk produce the dairy goat should Be provided with 70 gm DCP, 350 gm TDN, 3.0 gm Calcium and2.1 gm phosphorous

6.Observation:

i) Note the green and dry fodder consumed by sheep / Goat par day.

ii) Note the concentrate supplied to the sheep / Goat per day.

iv) Take the weights of animals every month.

v) Note the ingredients incorporated in the concentrated mixture.

WWW.BSCAGRISTUDY.ONLINE

7.Questions:

i) Prepare a concentrate mixture for milking doe using following ingredients.

a. Maize
b. Jowar
c. Wheat bran
d. Rice bran
e. Common salt
f. Minerals mixture

ii) State the nutrient requirements of milking goat.
iii) Write in brief about the main components of daily goat ration.

.....

WWW.BSCAGRISTUDY.ONLINE

EXERCISE NO : 6

1. Title : **Shearing and Grading of Wool.**

2. Objective : **To know the methods of shearing and grading of wool and Mohair.**

3. Relevant information :

Shearing is nothing but clipping of wool and mohair from sheep and goat, respectively, quickly, completely easily and with minimum discomfort to the animal and operator, Sheeps in India are generally shorn immediately after the end of winter season when warm weather commences and when sufficient grazing is available in fields. In Place, where two shearings are obtained, the second one is carried out at the end of rainy season. The sharing should not be done until there have been enough warm days to bring out out the grease in the fleece. Shearing should not be carried out at a time when the climate is very hot or very cold. So shearing is done during March and April.

Shearing is now done mostly with shearing machine. In India the traditional sheep farmers still use hand shears. With the machine, the shearer does a neat job, gets more wool and is not so likely to cut the sheep as with a hand shears. Hand shearing is recommended for flocks of 20 or less, hand machine (clipper) for flock of less than 150 and power machine for flock above 150.

4. Materials :

i) Shearing Scissors ii) Hand clipper and iii) Power machine

5. Procedure :

i) Shearing with Scissors or Hand Clipper :

Shearing commences early in the morning before flock has access to feed and water. A clean dry place is selected as shearing yard so that wool is not contained with dust. Each sheep is taken out from the pen. The shearer squats the animal on the ground and holds it between his legs. Wool is clipped with the shears held in the right hand and the left hand is placed on the body area to be shorn and it therefore, directs the clipper.

Shearing with well sharpened blades are essential to obtain uniform cuts and to do quickly shearing. Good skill in handling of sheep and shearing along with the necessary stamina is essential in a successful shearing operation. It is desirable to clip the wool in legs, belly and head first and kept these separate from the body wool. The aim should be to cut the fleece in one piece. The fleece should be rolled up with the skin side cut.

There are number of disadvantages in hand shearing. It is time consuming and the fleece cannot be evenly cut. It becomes tedious. One important advantage of hand shearing has over machine shearing is that the fleece can be graded on the basis of individual cuts.

WWW.BSCAGRISTUDY.ONLINE

ii) Machine Shearing :

Recently machine shearing has been introduced in India. The incentive are being given to machine shearing is considerable as in addition to the low cost of shearing by machine grazer is also able to sell the wool on the spot.

The shearing machine is metal comb over which a cutter is driven the whole being held in hand piece. A system of flexible cut, encased and broken by various joints makes it possible to reach the various parts of the sheep. The power is usually supplied by oil or electricity.

Grading of wool and mohair:

An expert grader examines the scored wool for length, diameter, fineness, crimp, pliability, colour, luster and other qualities before giving each bundle a grade. In India the grading or standardizing of wool has not been undertaken on any appreciable scale. Wool is obtained from such a large number of breeds of sheep and the varieties are so many that the trade finds it difficult to define its quality.

However, the factors that are taken into account for judging the quality of wool are as under:

i) Fineness of Fibre :

The thinner and finer the fibre, the more valuable is the wool. The unit for measurement of thickness is micron or 1 /1000 of centimeters. The wool fibre has a diameter varying from 12 to 80 microns. Fine wool ranges from 15 to 25 microns in diameter. The fleece obtained from Merino sheep breed and mohair from Angora breed of goat are of this quality.

ii) Length of Fibre :

The staple length of the fibre is important in determining the use that may be made of it in manufacture. Within limits of length classification long wool is more valuable than short wool.

iii) Shrinkage :

A wool contains grease , dirt , various kinds of vegetable matter and other materials. The difference in the amount of clean wooland the grease fleece weight is called " **Shrinkage".**

iv) Curliness of Fibres :

Wool as it grows on sheep and goat develops a wavy structure which is called the **"Curliness".** In the fine wool these curls are larger in number and more regular in unit length of fibre than in coarse fleece.

WWW.BSCAGRISTUDY.ONLINE

v) Strength of Fibres :

The stronger the fibre and less they break, the higher is the quality of the wool.

vi) Luster, Colour and Elasticity :

The more lustrous and shining to the wool whiter colour and more elastic wool, more is the price because it produces smooth and shinning yarn and clot and can be dyed better.

vii) Medullation :

A true wool fibre has no spelling central core in it. As a rule the finer the wool and more and more elastic and uniform the fibre are the better it is considered for spinning purpose.

Classification of Indian wool for export :

The system of classification of Indian wool for export trade is more or less based on the territorial nomenclature of by breed and type of sheep.

The following are the chief recognized qualities used in the export trade:

1	JORIA	Superior white; first white; first yellow; light grey
2	HARNAI	White; Grey
3	BIKANERI	Super white; Superior pale yellow; First yellow, Average white; Grey, Black; Ginned
4	RAJPOTANA	White; Yellow; Grey
5	BIBRIK	White Grey
6	BEAWAR	White'; Yellow; Fawn and Grey
7	MARWAR	White; Yellow; and Grey
8	COMMON BLACK AND GREY	Black; Grey

6. Observations :

Take the weight of wool of each Sheep / Goat. Grade the wool considering length, shrinkage, curliness, strength, colour, elasticity and medullation. Note the time required for shearing Sheep / Goat by hand clipper and machine shearing.

7. Questions :

i) Give the detail procedure of shearing wool / mohair.
ii) Why the grading of wool is necessary?
iii) Give various factors affecting grading of wool.
iv) Give main classification of wool for export.

.....

WWW.BSCAGRISTUDY.ONLINE

Exercise No : 7

1. Title : Important management practices for sheep and goat

2. Objective :

i) To get the farm operations completed in time and properly.
ii) To provide returns better and care to animals.
iii) To get higher returns through efficient management practices.

3. Relevant information :

The livestock farm is full of life and activity with a multitude of operations being carried out from time to time. The Farm Manager organizes the various activities on the farm as a routine. On the livestock farm, it is customary to draw up a schedule for daily farm operations so that personnel working on farm cancarry out operation smoothly (routinely)

4. Material required :

Broom, Water, Brush, Bleaching powder, phenol, Washing soda, Malathion, Cryosol, Copper, sulphate, Nicotine sulphate , Lindane, Pyrethin, **Arsenic sulphate**, Coar tar, Creoste, Tobacco, Knife, Hot iron, Rubber band, Clipper, Resor etc.

5. Procedure :

i) Cleaning:

- Sanitation and cleanliness are key to good health. Unsanitary conditions provide scope for development of pathogens which cause diseases.
  Regular cleaning and disinfection of animals and sheds prevent infection.
- Empty the water troughs and scrap sides and bottom with a brush.
  Wash it with clean tap water and apply white wash.
- Clean the floor, gutter, manager by removing, dung , urine and fed left over carefully.
- Scrape the floor with the brush and broom and wash it with clean water.
- Remove the cobwebs with the help of long broom.
- Prepare the spraying solution of the desirable concentration of appropriate chemical and spray it.

1. Bleaching powder	:	30 %
2. Phenol	:	1 to 2 %
3. Washing soda	:	4 %
4. Malathion (10 ec)	:	2 to 2.5 %
5. Malathion (40 ec)	:	0.5 %
6. Cryosol	:	2 to 3 % in hot water.

- Repeat the spraying at frequent intervals.
- After spraying is over, leave the shed for few hours, so that it gets fresh air.
- Take the animal in the shed when it is dry.

WWW.BSCAGRISTUDY.ONLINE

ii) Deworming :

internal parasites are more numerous and heavy infestation is more likely to occur when sheep goat are confined to the same area year after year. Low, wet land and humid conditions are favourable to the development of internal parasites.

Common stomach worms, (round worms or tape worms) twisted stomach worms are more common.

Symptoms :

Infested animal becomes restless, thin, weak and unthrifty. When infestation is heavy a swelling known as bottle jaw, may develop under the jaw.

Prevention :

Since the tiny worms that appear on the blades of grass are dependent upon a host for survival. The rotation of pasture every two weeks will help to control the common stomach worms.

Treatment :

- Drench may be given with the help of bottle.
- Care should be taken that the mixture should not get into the lungs.
- Prepare 1 % of the solution of Copper sulphate should be dissolved with 45 liters of water.
- Take part of the water and heat it properly and add Copper sulphate to dissolve,\\
- Second dose should be given after 15 days.
- The animal should be kept away from food for 12 to 14 hours.
- When round worms and tape worms are present in intestine, add 28 gms of Nicotine sulphate to each 4.5 one per cent Copper sulphate solution.

vi) Dipping :

Sheep and goat are to be dipped at least once in year to eradicate ectoparasites (ticks, mites and lice etc.) In India sheep can dipped immediately before post winter shearing and post autumn shearing.

Precaution :

- Ewes and does in advance stage of pregnancy should not be dipped.
- Avoid dipping in rainy days as the dip may be washed off the fleece.
- Always water and rest sheep / goat before dipping so that sheep / goat will not drink dip solution.
- Do not dip sick animals, sheep / goat with open wounds, every young lambs / kids and stock being sent for slaughter.
- Dip on day which is neither too hot nor too cold.
- Allow sheep / goat fifteen minutes in draining pen after dipping.
- The ram / buck should not be dipped during breeding season for fear of injuries to penis.

WWW.BSCAGRISTUDY.ONLINE

Procedure : Follow the manufacturer's instructions thoroughly for preparation of solution. The soiled and dung stained wool on the crutch of sheep / goat should be removed.

Common chemicals used for dipping livestock

S.N	Chemical	Concentration	Remarks
1.	Lindane Dip	0.31 % gamma Isomer concentration	For young stock
2.	Pyrithrin arsenic Sulphide powder dip	0.2 % total arsenic	Including 0.13 % soluble arsenic
3.	Coal tar cresole or Phenol dip	0.76 % total tar oil	Including 0.36 % Tar acids
4.	Nicotine or Tabacco dips	0.1 % nicotine	Soak 15 kg Tobacco In 500 liters of waters

- Animal can be dipped by hand method or by a swim bath method.
- Hand bath is used for small flocks. A tank of galvanized iron about 1.2 x 0.5m is used.
- Each sheep / goat is held above knee and then lifted into the bath and then turned over on its back
- It should be kept in dip for two minutes, its head should be immersed at least once.
- It is then lifted to a draining board where the surplus dip is squeezed from its fleece to go back in to the bath.
- Swim bath is used for large flock of sheep / goat.
- In general measurements of tank are 1.5 x 2.5 x 2.0 m.
- The sheep / goat lowered into the deep end of the dip, swim through and walk up to the drying pen.

Following is the list of dips to be done according to ecto-parasites :

Maggots : Any sulphur containing dip.
Lice : Fennorvate powder, Butox, Malathion.
Thicks : Fennorvate powder, Butox, Endosulphate.
Filies : Butox and Malathion dip , Nuvon.
Scab : Any lime sulphur solution.

Spraying :

This comprises spraying a weak fly repelling dip solution over backs and sides of animals packed. Fairly, tightly together in a pen. Spraying sheep and goat at a regular intervals is very effective in controlling trick especially in tropical countries.

Prepare same solution as that of dip solution. Fill up the solution in a hand sprayer or power sprayer. The use of sprayer is depending on the size of the flock and equipment available.

Spray the solution over back and sides of sheep / goats. About eight to ten litres of solution are required for spraying each animal effectively.

WWW.BSCAGRISTUDY.ONLINE

Docking :

Removal of tail from the body in sheep / goat is called " Docking ".

Lambs not docked accumulation on filth around the tail, which often result in fly strike and maggot infestation.

Methods of docking :

a) Docking with knife.
b) Docking with hot iron.
c) Rubber band method of docking .
d) Docking with emasculator.

Holding the lamb for docking :

The lamb should rest on a block of wood or on bench of convenient height for the operator. The lamb should be held in much the same position as for castration with tail resting top side of board.

For docking with knife the lamb is held in the same way for castration. The tail is served about 2.5 cm from the body a smeasured on the under side of te tail. Prss the skin towards the body before cutting, leaving loose skin abve the cut (this closes over the wound) serve the tail at desirable level. A band may be tied at the base of the tail before cutting to prevent bleeding, which should be removed three to four hour after cutting. Apply some antiseptics to the wound.

Use of hot instruments : pincers or chisels :

Results in less loss of the blood and less danger of infection than knife, but wound heal more slowly.

Heat the instruments to dull red colour protect the buttocks of the lamb by placing tail in a slot in the end of the board or by putting it through a whole in the board. Serve the tail rather quickly avoiding excessive burning.

v) Ringing :

if the ram is not completely shorn, then he should be clopped. For clipping hold the ram on his hind legs and clipped from the neck and from the belly in the region of the penis (ringing). This will make it easier for the ram to make proper contact with ewes during act of mating.

vi) Tagging :

Shearing the locks of wool and dirt from the dock. Tagging the ewes makes service by the ram more certain. The ram is also trimmed around the sheath.

vii) Painting of rams :

To obtain a visual picture of the progress of mating, the rams may be marked by the painting their breast with thick paste made for this particular purpose.

Ewe that accept the ram is therefore marked by a smear on the ramp.

WWW.BSCAGRISTUDY.ONLINE

6. Observations :

i) Observe and record the appearance and weight of animal before and after deworming.

ii) Observe and note the external parasites on the body of animal before dipping / spraying.

iii) Note the time required for healing the wound of docking.

7. Questions:

i) Write the importance of regular cleaning.

ii) What chemicals are used for dipping / spraying.

iii) What is meant by Deworming? Write in detail about Deworming?

iv) Why docking is done? Explain the methods used for of sheep.

.....

WWW.BSCAGRISTUDY.ONLINE

EXERCISE NO. 8

1. Title : Study of Systems of Rearing in Sheep and Goat

2. Objectives : 1) To study the different systems of sheep and goat rearing.
2) To study the economy of different rearing systems.

4. Material required :

Pegs, roap feeding boxes, grazing land, harvested fields, shrub, bushes, trees leaves and live sheep and goat.

3.Relevant information:

In traditional management practices, sheep and goat are left for grazing this natural feeding behavior of these species fulfill there nutrient requirements. Although both of these species are fed on grazing still there is a difference in their behaviour of feeding. Apart from this, there are different conditional methods of rearing these species depending upon the availability of the resource and no of the animals, following four systems of rearing are these.

Methods :

i)Tethering, ii) Extensive, iii) Semi intensive, iv) Intensive.

i) Tethering:

in this system goat (one / two) are tied at one place with a roap of 3-5m length with a support to a peg of 35-50c.m length. The peg is kept in grazing area and goat is able to feed / browse over limited area depending upon the length of roap. The location of grazing can be changed, if necessary.

ii) Extensive:

In this system the goats are left for grazing for 8-9 hours/day. This system of feeding is very common. The goats are let loose in flocks and some times both sheeps and goat are left commonly. This is very easy & convenient method, requires very less resources and less expensive the system is helpful to add the fertility of the soil and control f the weeds. But the animal are fed on residues of natural herbages , tree leaves, hence poor avaibility of nutrient and low productivity.

One of the advantage of this system is that the continues presence of rams / bucks / in female flocks. The number of ewes/does to be in estrous will be more. The only drawback of this system is that when the rams/ bucks are allow to run with the ewe/ doe flock. The ewe /does are too much disturbed by the rams/ bucks to pushing and fighting among themselves. Another limitation of this method is that as the mating is purely random, no accurate breeding records for either males or female can be maintained.

iii) Semi Extensive:

This is the combination of both extensive and intensive methods. In this system Goat are let loose for 4-5 hours and then they are brought back under stall and fed with tree leaves or dry fodder. This system spares better nutrients avaibility than extensive system.

WWW.BSCAGRISTUDY.ONLINE

iv) Intensive:

This system include feeding of goats under the stalls for complete day. They are fed with cultivated fodder tree leaves/ grasses and concentrates to meet the requirement. The advantage of this system is that the quality feed can be given which may increase the productivity. Secondly, the flock can be protected from the contaminated water and pasture, so that the controlled breeding can be adapted and breeding records can be maintained. Limitation of this system is that the limited varieties of feeds / fodders the goat may develop some mineral deficiency.

The precaution under this system should be taken that, the animals should be let loose atleast two time a day for sallicient excite the limitation of this method is that as the male are away from the females flock the numbers of does / ewes to be in heet may be comparatively less.

Observations :

Feed intake weekly body weight, under different rearing systems.

Questions :

i) Merits and demerits of different rearing systems.
ii) Compare and differentiate between different rearing system.
iii) Write in brief about rearing systems in sheep and goat.
iv) What are the different methods / rearing in sheep and goat system.

WWW.BSCAGRISTUDY.ONLINE

EXERCISE NO. 9

1. Title : Preparation of animal for show

2. Objective : To offer an opportunity to observe and to advertise the flocks and to make profitable sale.

3. Relevant information:

Sheep shows offer an opportunity for the producer to exhibit the public fruits of their efforts. Sheep show is the better place for a prospective breeder to learn the ideal character in desirable type of sheep. Many farmers attend shows for the purpose of buying animal with which they improve their flocks. Thus, show helps us to make profitable sale.

Show Classification :

Show of sheep are classified according to the age and sex. The classes may vary some what from show to show. In general, sheep show consists of individual classes for breeding males and females of different ages and group classes consisting of either females and males or mixed sex groups. In addition to the breeding classes, many shows have market classes for sheep. Market classes are judged largely upon their market qualities.

Following are the example of show classes that are common at may shows.

INDIVIDUAL CLASSES FOR BREEDING ANIMALS :

i) Two more year old or over :

This class is usually provided for both ewes and rams. To qualify the animal must be of two years older by a certain time. Usually, the base data is either September or January for determine the age. Some shows base the age entirely upon the teeth.

ii) One year, under two : In this class the animals to be shown must be of one year old but less than two years.

iii) Lamb class : This includes the lambs of both ram and ewes which are less than one year age.

iv) Group classes :

They are for showing a group of animals by the various exhibitors rather than singles. Group usually consist of from 3 to t 5 animals. They may be of mixed sex and age, same sex but different ages , mixed age but same sex, both the same sex and the same age.

v) Market class :

Market classes vary considerably with different shows. Some prefer to classify according to age, while other classify according to weight. Groups may range in numbers from three to a truckload.

WWW.BSCAGRISTUDY.ONLINE

BREEDING ANIMALS FOR SHOW :

Breeding animals are generally put into a high degree of flesh before showing, while the excessive finish is undesirable for the best reproductive performance. The show flock should be selected early.

FEEDING ANIMALS FOR SHOW :

Proper feeding of animals for show depends upon the class and the age of sheep i.e. medium wool sheep, fine wool sheep and long wool sheep. The length of the time required to put show sheep into proper finish depends upon their condition at the beginning of the feeding period and to the class of the sheep.

A) Feeding medium wool sheep :

Medium wool sheep often refer to as the mutton breeds and these should be fed with the purpose that their mutton qualities will show to best advantage.

Usually a grain ration is required to finish sheep for shows. High protein particularly linseed meal gives the more bloom which materially adds to their appearance.

B) Feeding fine wool sheep :

Legume hay of high quality should be fed free of choice when pastures are not available. Cabbage , Carrots, turnips are excellent feeds. For conditioning sheep for shows there keep the digestive system in good condition and may be fed while on the show circuit.

C) Feeding long wool sheep :

Long wool breeds tend to develop unevenness and patchiness in their fleshing when over finished. To minimize this tendency, more oats and bran should be included in their ration.

D) Feeding the breeding lamb :

Ewes need excellent pasture to produce a heavy milk for rapid growth and finishing the lamb. "Creepfeeding" for show lamb is usually necessary to develop the lambs for success in the show ring". Breeding lambs should not be fed a concentrate ration too high in the high energy grains.

E) Feeding market lambs :

Market lambs are fed same as breeding lambs except the more of high energy grain such as corn, sorghum grain, and barley are fed.

MANAGEMENT OF SHOW SHEEP :

i) Keeping the animal cool:

During warm weather show animal should be kept in open, well ventilated barn, shade or under shade. The bed ground be kept clean and dry to prevent wool staining.

ii) Pest control :

the feet of the show animals should be inspected every six weeks and necessary trimming be done.

WWW.BSCAGRISTUDY.ONLINE

TRAINING THE SHEEP TO SHOW :

The sheep should be tought to stand properly upon all four legs and not to move the hind feet when the showman shows the sheep. In teaching the animals to stand properly and in showing, the showman should take a position to the lift, he should grasp the wool lightly under the chin with his left hand and with his right hand to keep the sheep in proper position.

Point to be considered while showing the sheep :

i) The animals must be in the best possible condition.

ii) The sheep should be placed in the line and the showman should take the position to left.

iii) The animal's merit should not be pointed out to Judge.

iv) If required at time of the show, the animal should be moved to new position from behind and never from the front.

v) The animal should be kept standing properly on its feet.

.....

WWW.BSCAGRISTUDY.ONLINE

TRAINING THE SHEEP TO SHOW :

The sheep should be tought to stand properly upon all four legs and not to move the hind feet when the showman shows the sheep. In teaching the animals to stand properly and in showing, the showman should take a position to the lift, he should grasp the wool lightly under the chin with his left hand and with his right hand to keep the sheep in proper position.

Point to be considered while showing the sheep :

i) The animals must be in the best possible condition.

ii) The sheep should be placed in the line and the showman should take the position to left.

iii) The animal's merit should not be pointed out to Judge.

iv) If required at time of the show, the animal should be moved to new position from behind and never from the front.

v) The animal should be kept standing properly on its feet.

.....

WWW.BSCAGRISTUDY.ONLINE

EXERCISE NO : 10

1. Title : Culling of sheep and Goat

2. Objective : To bring about genetic improvement in the flock

3. Relevant information :

In order to bring out genetic improvement in the flock, the farmer must cull undesirable sheep and goat every year. It is better to feed fewer good yielders than to feed many poor producers. The proper culling depends largely on ability to classify sheep and goat correctly. Cooling is the continuous process.

Proper time for culling :

It is better to cull a sheep during September- October shearing so that the culled stock are not required to be maintained during the lean period that follows.

The important points due to which culling is done are:

i) Lambs / kids : Lambs / kids may be culled at weaning stage on the basis of following consideration:

a : Not confirming the type.
b : Coloured or spotted if the objective is t maintained the white fleeced flock.
c : Malformed.
d : Suffering from incurable disease.
e : Not attaining proper weight / slow growth.

ii) Ewes/ Does : 2 to 3 weeks before mating, cull the ewes / does

a. Which did not lamb / kid successively in 2 years?
b. Which did not nurse their lambs / kids?
c. Which are still ewes more than required number, cull according to fleece weight of woo quality.

iii) Rams / bucks :

a. Which are not fit for breeding.
b. Which are continuously used for more than 2 year in flock.
c. Which are five years old or more.
d. Whose fleece weight are below the average for that particular crop of rams in that season.
e. Whose merits in an other required characteristics are below the standard setup for the flock.

WWW.BSCAGRISTUDY.ONLINE

Other important defects for which sheep or goat should be called are :

i) Aged sheep/ goat especially if the incisor teeth are faulty.
ii) Long or short jaws.
ii) Undesired sheep or goat.
iv) All deformed sheep or goat with crooked legs or feet with hocks approaching with each other.
v) Leggy sheep having a carcass not in proportion to legs.
vi) Sheep with narrow shoulder.
vii) Patchy wool sheep.
viii) Sheep growing very light and musty wool and not characteristics of the breed or suited to the type of country.
ix) Ewes / Does with defective udders.

Questions :

i) List out important defects for which sheep or goat should be culled.
ii) Why the culling is necessary on sheep / goat farm.

.....

WWW.BSCAGRISTUDY.ONLINE

EXERCISE NO.11

1. Title : Judging of Sheep and Goat
2. Objective : To judge the best animal for milk purpose.
3. Relevant information :

There is close relationship between the production and type of dairy goats. Therefore, the breeder should also consider the type of dairy goats. The standard of the breed is largely shaped in exhibitions and shows by judging the goats. Hence, judging of the goats provides chance for buying or selling superior breeding goats.

4. Precautions :

- The Judges must be trained and experienced in observing weak and strong points in goat/ sheep.
- The sheep/goat should be observed carefully for giving correct score.

Methods :

i) By considering milk production records. ii) By following pedigree sheet
ii) By using score care.

Procedure :

i) By considering milk production records :

For judging the goats, it necessary to take into consideration the milk production records. In this method, the milk is weighed (morning and evening) and composite sample of the milk is taken to determine the butter fat content. These test are of value to the goat breeder in selecting breeding animals.

ii) By following pedigree sheet :

It is possible to judge the goats by checking owner's pedigree records and the records of the ancestors for two or more generation's back.

iii) By using score card :

Ideal type and breed characteristics must be considered in using score card. Ask the attendant to it loose the animals a short walk of five minutes. Watch the animals from 1.5 to 3 meters distance to find out defect while walking. Bring the animal again and arrange in the ring for making close inspection for age by dentition quality of skin and udder. Make the total of the marks given and place the animals according to the order of merit based on total marks obtained by the animal i.e. 1, 2, 3 and support the placing with brief but sound reason.

The animals are classified on the basis dairy type as follows:

S.N	Grade	Score point
1	Excellent	90 and above
2	Very good	85-89
3	Good	80-85
4	Acceptable	70-79
5	Fair	60-69
6	Poor	Below 60s

WWW.BSCAGRISTUDY.ONLINE

SCORE CARD FOR JUDGING DAIRY GOAT

S. N	Phsical parameters	Perfect Score	Students score				Teachers score			
			A	B	C	D	A	B	C	D
I) GENERAL APPEARANCE (30 POINT)										
1	Head : Medium in length, Clean cut, broad in muzzle Strong jaws, bright eyes Broad fore head	5								
2	Shoulder blade : Set Smoothly, forming junction With the body.	2								
3	Back : Strong, straight	2								
4	Lion : strong and nearly Leveled	2								
5	Rump : Long, wide and Nearly leveled	2								
6	Hips : wide, level with back	3								
7	Thurls : wide apart	3								
8	Pin Bones : wide apart lower than hips	3								
9	Tail head : Slightly above and neatly set	2								
10	Tail : symmetrical with body	2								
11	Legs : Wide apart, squarely, strong with fore legs straight	2								
12	Hind legs : Wide apart, bone flat and flinty, tendons well defined paterns strong, hocks cleanly moulded	2								
II	DAIRY CHARACTERS (20 POINTS)									
1	Neck : Long and lean clean Cut throat	3								
2	Wither : well defined and wedge shaped	3								
3	Ribs wide apart, rib bone Wide , flat and long	4								
4	Flank : Deep and arched	3								
5	Thighs : in curving to flat Form side, apart when Viewed from rear	4								
6	Skin : fine texture, loose hair, fine	3								

WWW.BSCAGRISTUDY.ONLINE

III	**BODY CAPACITY (20 points)**									
1	Barrel deep, strongly supported, ribs Wide apart and well sprung, depth and width tending to increase towards rear	10								
2	Heart girth : Large, resulting From lung , well sprung four Ribs, wide chest floor	10								
Iv MAMMARY SYSTEM (30 POINTS)										
1	Udder capacity and shape, Long, wide and capacious, Extended well forward, Strongly attached	6								
2	Rear attachment of udder : High and wide, halves Evently balanced and Symmetrical	6								
3	Fore attachment of udder : Carried well forward tightly Attachment without packet, Blended	6								
4	Texture : soft , pliable and elastic, free of scar tissue, well collapsed after milking	5								
5	Teats : Uniform, of convenient length and size, cylindrical in shape, well apart, squarely placed and easy to milk.	7								
	TOTAL	100								

WWW.BSCAGRISTUDY.ONLINE

EXERCISE NO: 12

Title : **Preparation of animal for slaughter and difference methods of slaughter.**

Objectives :
i) Precaution to be taken for preparation of animal for slaughter.
ii) To know the different methods of slaughter.

Material Required :
1) Knife
2) Carbon-di-oxide gas.
3) Electric stunner.
4) Pan for collection of blood.
5) Weighting balance
6) Captive boll pistol.

Procedure :

Slaughtering means putting the food animals to death and therefore prepare the carcass for human composition.

Before slaughter the animals following points are to considered so as to keep the animal ready for the process.

1. Allow the animals at least 24 hrs before slaughter.
2. Keep the animals off-fed during resting period .
3. Provide clean water adlib.
4. Do not give solid or any such food.

B) METHOD of slaughtering :

Methods of slaughtering should be aimed at complete heeling as for as possible and least unnecessary suffering and minimum struggling to the animals. For good bleeding more than half of the blood must drain out at the time of slaughter which determines keeping quality of meal.

There are two main types of slaughter method.

1. Scientific or Humen slaughter.
2. Ritual slaughter.

1) Scientific or Human Slaughter :

This method avoids unnecessary pain and cruelty to the food animal and ensures as complete bleeding as possible. It also ensures speed of operation and safety of the personnel.

In this method the animal is stunned before slaughter and which bleeds more perfectly.

Stunning can be done by mechanical (captive boll-pistol) electrical or chemical method. Then bleeding of animal is done.

Then yield of blood is as follows.

1. Buffalo x Cattle - 10-12kg in 5 minutes
2. Sheep x Goat - 1-15 in 5 minutes
3. Pig - 2-3kg in 5-6 minutes.

WWW.BSCAGRISTUDY.ONLINE

2) Ritual Slaughter :

Slaughter without prior stunning slaughter of food animal as per the religious rites are referred as 'Ritual Slaughter'. These are widely practiced in many countries. In India and for -East practically all the meat animals are slaughtered in conscious state.

This method includes following types.

I) Jhatta or Sikh method :

In this method the head of the animal is choppedh off with one big stroke of a sword. This method is inferior as far as the efficiency of bleeding. Here, since the medulla oblongata is damaged, bleeding remain incomplete.

2) Halal Method :

This is the method followed in Muslim countries. In this method neck of the animal is severed by cutting the four major blood vessels- carotid arteries and jugolar veins with a sharp knife Spinal chord is left intact. So the nerve centres controlling the heart and lungs remain functional and an efficient bleeding is ensured. It also enhances the keeping quality of meat.

3. Jewith Method :

Here the animals to be slaughtered snould be active. In this method the incision across the neck is made by single rapid thrust of sharp knife which sever skin, muscles ,esophagus, trochea , carried arteries and jugular vein.

The blood vessels must be removed before retail sale of meat. It is for this reason that only fore quarter are normally eaten. Jewith slaughter is under taken by a cuter. Carcass fit for jewish consumption is stamped with cutter seal on the brisket.

4. Neck stab (Evernazive) method :

It is followed in spain, some parts of Italy, Mexico and some south American countries. In this method cattle are plunging a short- double edged knife at grope of neck severing the medulla oblongata.

Observations :

Slaughter the animal with different methods and compare.

Questions :

1. How the resting of goal before slaughter is essential.
2. Why the drinking water is given before slaughter.
3. Why stunning is not followed in ritual methods of slaughter.

WWW.BSCAGRISTUDY.ONLINE

EXERCISE NO.13

1. Title : **Dressing percentage meat, Bone ratio, Difference meat cuts.**

2. Object : 1) To know the dressing percentage of sheep, Goat at different cuts.
2) To know the different cuts.
3) To know the meat, Bone ratio in sheep- goat at different cut.

3. Material Required :
1) Slaughter table.
2) Slaughter equipments
3) Live animal (sheep / goat)
4) Weighting balance.

Relevant Information:

Here the term meat cutting may be defined the art- skill or craft of separation of carcass / wholesale prival cut into different portion so as to suit various needs in the meat trade and to facilitate easy handling.

Meat cuts :

Following are the different cuts of meat.

1. Whole sale cuts :

It is an international method of dividing the carcass. In this method the division of carcass is into fore saddle (53%) and Hand saddle (47%) by cutting between two last ribs.

a. Fore Saddle :

It includes following part

1) Neck : Cut at last-cervical vertebra where it blends with shoulder.
2) Shoulder : Cut between 5^{th} and 6^{th} rib
3) Rack : Portion between 6^{th} to 12^{th} rib
4) Breast : Cut farward from midway of last rib to 1/2 above elbow.
5) For shank : Cut the portion having fore shank bones

b. Hand saddle :

1) Loin : Cut hind quarter by sawing in front of lip bone in between lan two lumbar v Vertebra.
2) Leg : Remaining portion of hind quarter.
3) Flan : Thin meat without bone from natural seam starting from breast.
4) Suel and kidney : in India people generally go for six cuts only neck, shoulder , rack, fore shank and breast loin and leg.

$$\text{Dressing \%} = \frac{\text{carcass wt}}{\text{Live wt}} \times 100$$

WWW.BSCAGRISTUDY.ONLINE

Dressing percentage is offered by

a) Amount of ingesta filled in digestive tract
b) The fatness
c) Thickness of hide.
d) The amount of wool
e) Nutrition
f) Age
g) Castration

The final cuts are

Leg	-	30 %	Hind saddle 47%
Loin	-	10 %	
Flanks	-	3%	

Rack Rib	-	10%	Fore saddle 53%
Shoulder	-	25%	
Neck	-	4%	
Shank	-	6%	
Breast	-	8%	

Observations :

Slaughter the animal, calculate the dressing percentage and record the meat bone ratio of different parts.

Questions "

2. What are the different factors affecting the dressing percentage.
3. How many cuts are in Indian method of slaughtering.

WWW.BSCAGRISTUDY.ONLINE

EXERCISE NO. 14

1.Title : **Study of composition of Sheep and Goat milk and its product Preparation.**

2.Objective : 1. To study the composition of sheep and goat milk.

3. Relevant Information :

Goat milk has its own significance for home use. In rural area a majority of poorer sections fully depend on goat milk for domestic use. It has various important properties viz easily digestible, rich in Protein and has essential minerals and fat soluble vitamins small size fat globes soluble, low fat, highly distributed fat globes and having essential nutritive value. It is useful for old and young ones.

The term market milk refers to fluid whole milk that is sold to individuals usually for direct consumption. It excludes milk consumed on the farm and that used for manufacture of dairy product.

Compositions :

a) Milk constituents :

The major constituents of milk are Water, Fat, Protein, Lactose, Ash or mineral matter.

The minor constituents are Phospho lipids, sterols, vitamins , enzymes, pigments etc

The true constituents are milk, fat , casein, lactose.

b) Composition of milk:

The average chemical composition of milk of different species / sheep and goat.

Species	Constituents %				
	Water	Fat	Protein	Lactose	Ash
Cow (Crossbred)	86.54	4.50	3.37	4.92	0.67
Buffalo	82.76	7.38	3.60	5.48	0.78
Goat	87.10	4.25	3.52	4.27	0.86
Sheep	81.00	7.90	5.80	4.50	0.80

Factors Affecting composition of milk :

a) Milk differ widely for composition. All milks contain the same kind of constituents but in varying amounts. Milk from individual goat / sheep shows greater variation than mixed flock milk. The variation is always greater in small flock than as large ones. In general milk fat show the greatest daily variation then comes protein followed by ash and sugar.

WWW.BSCAGRISTUDY.ONLINE

b) The factors affecting the composition of milk.

1) **Species** : Each species yields milk of a characteristic composition.
2) **Breed** : In general breed producing the largest amounts of milk yield milk of lower fat percentage.
3) **Individuality :** Each sheep / goat tends to yield milk of a composition that a characteristic of the individual.
3) **Interval of milking :** In general a longer interval is associated with more milk with a lower fat test.
5) **Completeness of milking :** If the sheep / goat is completely milked the test is more. If not it is usually lower.
6) **Frequency of milking :** Whether the cow / sheep / goat is milked two, three, or four times in a day it has not great effect on the fat test.
7) **Regularity of milking :** Frequent changes in the time and interval of milking result in lower test.
8) **Day to day milking :** May show variation for the individual / sheep / goat.
9) **Disease and abnormal condition:** These tend to alter the composition of milk especially when they result in fall in yield.
10) **Portion of milking :** Fore milk is low in fat content (less then 1 percent) while stripping are highest (close to 10 percent). The other milk constituents are only slightly affected on a fat free basis.
11) **Stage of lactation :** The first secretion after calving (colostrums) is very different from milk in its composition and general properties the charge from colostrums to milk takes place within a few days.
12) **Yield :** For a single / sheep / goat there is a tendency for increased yield to be accompanied by a lower fat percentage and vice versa.
13) **Feeding :** Has temperature effect only.
14) **Season :** The percentage of both fat and solids not fat show slight but well defined variation during the course of year.
15) **Age :** The fat percentage in milk declines slightly as the age of sheep / goat advances.
16) **Condition of cow/ sheep/ goat at Lambing / kidding :** If the sheep/ goat in good physical condition at poor / lambing / kidding. It will yield milk of a higher fat percentage than poor physical condition .
17) **Excitement :** Both yield and composition of milk are liable or transient fluctuation during period of excitement for what ever reason.
18) **Administration of Drugs and hormones :** Certain Drugs may affect temporary charge in the fat percentage. Injection or feeding of hormones results in increase of both milk yield and fat percentage.

Observation:
Composition of studied milk sample.

Qustions:
1. Write down the different factors affecting the composition of milk.

WWW.BSCAGRISTUDY.ONLINE

b) The factors affecting the composition of milk.

1) **Species** : Each species yields milk of a characteristic composition.
2) **Breed** : In general breed producing the largest amounts of milk yield milk of lower fat percentage.
3) **Individuality**: Each sheep / goat tends to yield milk of a composition that a characteristic of the individual.
3) **Interval of milking** : In general a longer interval is associated with more milk with a lower fat test.
5) **Completeness of milking** : If the sheep / goat is completely milked the test is more. If not it is usually lower.
6) **Frequency of milking** : Whether the cow / sheep / goat is milked two, three, or four times in a day it has not great effect on the fat test.
7) **Regularity of milking** : Frequent changes in the time and interval of milking result in lower test.
8) **Day to day milking** : May show variation for the individual / sheep / goat.
9) **Disease and abnormal condition:** These tend to alter the composition of milk especially when they result in fall in yield.
10) **Portion of milking** : Fore milk is low in fat content (less then 1 percent) while stripping are highest (close to 10 percent). The other milk constituents are only slightly affected on a fat free basis.
11) **Stage of lactation** : The first secretion after calving (colostrums) is very different from milk in its composition and general properties the charge from colostrums to milk takes place within a few days.
12) **Yield** : For a single / sheep / goat there is a tendency for increased yield to be accompanied by a lower fat percentage and vice versa.
13) **Feeding** : Has temperature effect only.
14) **Season** : The percentage of both fat and solids not fat show slight but well defined variation during the course of year.
15) **Age** : The fat percentage in milk declines slightly as the age of sheep / goat advances.
16) **Condition of cow/ sheep/ goat at Lambing / kidding** : If the sheep/ goat in good physical condition at poor / lambing / kidding. It will yield milk of a higher fat percentage than poor physical condition .
17) **Excitement** : Both yield and composition of milk are liable or transient fluctuation during period of excitement for what ever reason.
18) **Administration of Drugs and hormones** : Certain Drugs may affect temporary charge in the fat percentage. Injection or feeding of hormones results in increase of both milk yield and fat percentage.

Observation:
Composition of studied milk sample.

Qustions:
1. Write down the different factors affecting the composition of milk.

WWW.BSCAGRISTUDY.ONLINE

EXERCISE :15

1. Title : Goat milk and its products prepartion.

2. Objective : 1) To study the goat milk and its product \s

3. Relevant information :

Flavour :

Goat milk to be used for liquid consumption posses problem off falvour adversely affecting its acceptability. These flavours are usually due to two reasons. One of them is the high proportion of medium chain fatty acids, viz caproic capralic and capric in lipids of goat milk than in cow milk fat which impart typical undesirable flavour. When lacting does and bucks are kept together, the off flavour in goat milk is described as **" goat flavour"**

Goat milk product:

Use of goat milk for preparation of various dairy product is age old practice throughout the world. Some of the products are exclusively prepared from goat milk for instance cheese in Europe and Kefir in Russia , Greece and France have the largest goat cheese production. Goat cheese is white because goat milk lacks carotene. In Spain, goat milk represents 11 percent of the milk used for cheese making.

Indigenous :

A very limited research work on utilization of goat milk for preparation of Indian dairy products has been done so far.

1) Khoa:

Goat milk khoa had characteristic yellow colour slightly sticky texture. However it's pronounced salty taste made it unacceptable which is probably be due to a high chloride lactose. Khoa from goat milk tends to stick to the side of the pan and did not come off easily. This sticky character may be attributed to the fact that their might be no release of free fat in the final stage unlike khoa from cow and buffalo milk. This problem could also be solved by use of admixture of goat milk and duffels milk in 1:1 proportion keeping minimum 5 percent fat and 9 to 10 percent SNF which also save satisfactory body and texture to the finished product. This khoa having 29.85% moisture 25 percent fat 18.2 percent protein , 23.03 percent lactose and 3.5 percent Ash, pedal prepared from this khoa was also satisfactory Homogenization of goat milk tends to produce khoa with objectionable soft body pasty texture and dull yellow colour.

2) Butter :

Butter made from goat milk is move or less comparable with cow milk butter except that the farmer is retained nor-moisture which contributed for its soft. A weak body moreover the higher proportion of medium chain fatty acid as goat milk might be partly responsible for poor standup characteristics of this butter.

WWW.BSCAGRISTUDY.ONLINE

3) Channa :

Gargoat (1976) found that goat milk channa had softer body and smoother texture than that of cow milk channa. Therefore excellent quality Rasogolla could be prepared from goat milk.

While Jaikhani and De(1980) observed that there was no difference in channa prepared from Goat milk and cow milk except that goat milk channa was whitish as colour. All desirable characteristic like soft body smooth texture mild acidic flavour needed for manufacture go channa based sweets were found as goat milk product. Goat milk channa contained 55.37 percent moisture 23.52 percent cutst fat 17.26 percent protein, 2.21 percent lactose and 1.63 percent ash. Milk channa is similar to that of cow milk.

4. Curd Chakka and Shrikhand :

Development of acidity in goat milk curd set by LF40 culture was higher (0.87%) as against cow milk curd (0.80%). However volatile acid production in goat milk curd was significantly low, the card tension of goat milk was also substantially lower (21.42) than that of cow milk (26.37gm). However, sensorial goat milk curd scored equally well in comparison with cow milk curd. In face appearance of goat milk curd was better due to bright shiny white colour and smooth body without whey separation. It did not receive any adverse comments for flavour unlike milk rate of synergetic of goat milk curd was noticed slower and retained more moisture (71.48%) in chakka as compare to cow milk chakka (45.43%). As result shrikhand obtained from goat milk chakka though was smother in texture had weak body goat milk shrikhand therefore had higher moisture (49.88%), than in the cow milk shrikhand (45.43%)

5.Ghee :

Largest (28 %) portion of milk produced in India is converted in to Ghee. In addition to its nutritional significance ghee has unique place in Ayurvedic medicine and religious holy function one of eh important sensory parameter is and sirp quality of Ghee is its body and texture. Generally in ghee is valued much which is decided by the composition a fatty acid profit in lipids. This is particularly dependent and species of milk producing animal in addition as to many more other variable such as breed, feed , season region stage of lactation etc. proportion on of soft and hard fat along with temperature of storage decided body and texture of ghee.

Proportion of liquid function in goat milk ghee was 2.4 to 2.6 times that of in cow and buffalo milk ghee the ration of saturated glycosides to unsaturated glycosides was maximum in cow ghee (0.73) followed by buffalo ghee (0.69) and goat ghee (0.49). in other word goat ghee possessed maximum liquid function at ambient-temperature leading to its poor granularity.

Conclusion :

It could be concluded that, for preparation of indigenous milk products goat milk is equally good to that of cow milk. However for those indigenous products which need buffalo milk for their better quality. Even the quality of goat milk products might not reach to the level which is obtained for those mad exclusively frm buffalo milk. In general it could be said that goat milk can conviently be used for preparation nearly all indigenous milk products of acceptable ability.

WWW.BSCAGRISTUDY.ONLINE

EXERCISE NO: 16 (A)

1.Title : Study of Farm Records

2.Objective :

i) To study the Sheep and goat farm records
ii) To evaluate the sheep and goats
ii) Selection of progeny for replacement and further breeding.

3.Relevalnt information :

Sheep and goat records are the mirror of the breeding information of the flock. Selection of progeny for further improvement is made on the basis of the information. The records are generally deal with the information on the performance of individual animals. It helps in culling inferior, uneconomic stocks

4. Precautions :

- Information entered in the records should be checked for its correctness.
- It should be reliable.

5. Material required :

All records to pertaining to various aspects of the sheep and goat.

WWW.BSCAGRISTUDY.ONLINE

Table 1 : Individual Ewe / Doe History Sheet

S.N	Ear No.	Flock No.	Date of Birth or Purchase	Type of Birth Single or twin	Description Of the ewe / Doe	Particulars Of sire	Particulars Of dam	Defects And Abnormal lities	Disposal particulars		
									Date	Reason	To whom

WWW.BSCAGRISTUDY.ONLINE

Table 2 : Kidding / Lambing record

Dt of Birth	Ear / Tag No.	Sex	Birth wt. kg	Type Of birth	Sire	Condition Of birth	wean		disposal		Date Of weighing	Age	Weight	Remarks
							Age	Wt.	Date	How				

WWW.BSCAGRISTUDY.ONLINE

Table 3 : Ewe / Doe record

Ewe's / Doe's No.	Sire' No	Dam's No.	Age of dam at the time of Ewe/ Doe was borne	Date of The ewe/ Doe was born	Birth Wt.	Type of Birth	Type of Rearing/ ewe/doe natural / artificial	Age and Wt. at Weaning	Shorn Fleece Wt.	Body wt. Of ewe / Doe When her lambs / Kids were Weaned	Her lamb / kid detains In nut shell	Remarks Healthy / defective

WWW.BSCAGRISTUDY.ONLINE

Table 4 : Ram / buck record

Ram's / bucks No.	Sire's No.	Dam's No.	Age of Dam when Ram/ buck Was born	Date of birth of ram/ buck	Type of birth (single/twin)	Type of rearing of ram/ buck artificial / natural	Age of ram/buck at the time of weaning	Wt.of ram /buck at the time of weaning	Wt. of ram/buck at one year of age	Shorn Fleece Wt.	Average Performance Of his Progeny	Remarks

WWW.BSCAGRISTUDY.ONLINE

Table 5 : Lamb / kid crop Register

Year	Season	Dt. Ram buck turned in	Dt. Ram/ Buck turned out	Ram/ buck used	Ewe/ doe no.	Lambing / kidding dt	Lamb kid no.	Sex	Birth wt.
1	2	3	4	5	6	7	8	9	10

Table 5 ... continued....

Year	Type of birth	Nursed by ewe / doe	Dt. of weaning	Date of calf ration	120 days wt.	Market wt.	Disposal how?	Disposal date	Remarks
1	11	12	13	14	15	16	17	18	19

WWW.BSCAGRISTUDY.ONLINE

Table 6 : wool production (Use one line for each year)

Dt. Of Shearigh	Days Of Wool growth	Sodies		Shoulder		Belly		Thigh		Total	Greas e wt	% of Yield	Clean Wt.	Remarks
		Fineness	Yield	Fineness	Yield	Fineness	yield	Fineness	Yield					

WWW.BSCAGRISTUDY.ONLINE

Table 7: health and other information

(Record facts like dipping veterinary aid, vaccinations, under conditions, Abortions etc)

S.N	Date	Particulars
1		
2		
3		
4		
5		
6		

WWW.BSCAGRISTUDY.ONLINE

Table 8 : slaughter data (Slaughtered for meat)

Date	Live Weight (Kg)	Antimortum Features	Dressed Weight	Dressing %	Weight Of skin	Remarks

WWW.BSCAGRISTUDY.ONLINE

Table 9 : General information sheet.

Date	Animal flock No.	Information about (Disease, Vaccination Identification, Deworming etc)

Observations: Compare the different records maintained on your sheep and goat farm with the above specimen roformae given to you and find out the difference if any.

Questions : i) State the importance of record keeping on sheep / goat farm in brief.
i) List out the different record maintained on goat farm.

WWW.BSCAGRISTUDY.ONLINE

EXERCISE NO. 16 (B)

1. Title : Proposal for sheep and goat unit

(Under stalfed condition for 100 goats + 5 male)

I. Capital Expenses

A) Purchase of 100 does and 5 males

(pregnant does should be purchased, which are going to kid for the first time)

Doe	-	2500 x 100	2,50,000
Buck	-	3500 x 5	1 75 000
		(A)	**4,25,000**

B) Construction of shed :

Each goat will require
10 sq.ft- area in shed
and 20 sq.ft-for outside
Total area for 105 animals = 1050 sq.ft-
opened area – 2100 sq.ft

cost of construction (Rs.400/sq.ft)

400 x 1050	4,20,000
Opened space 80' x 27 '	
Total running 214 feet	
Rs. 150 / running ft	32,100
Provision of water sheds	
1.5' x 6' water cement pipes Each of Rs. 2000/ Total 5 pipes	10,000 = 00
Total B	**4, 62,100**
Total A + B	**8, 81,100 = 00**
Say	**(8, 80,000 = 00)**

WWW.BSCAGRISTUDY.ONLINE

II) Recurring Expenses:

A) Labour charges:

2 labours x 2000 / p.m 4000 = 00

(1 in day and 1 at night)

B) Feeding Expenses:

A) Concentrate

I) It is necessary to give some quantity of concentrate

(250gm /day/goat

250 X 105 X 365 = 95.81 Qt Say 96 qt

96 qt X @ Rs. 600 /qt = Rs. 57,600=00

B) Fodder :

Dry Matter required 4 %

Avg body weight - 35kg

Total DM required - 1.4kg

DM from concentrate 225 gm(90%)

DM from fodder 1125 gm

1/3 from green fodder 375 gm from green

2/3 from dry fodder 750 gm from dry

Green fodder

1875 gm daily

1875 x 105 x 365 = 718 Quintal / year

Out of these 30 % will be available from tree leaves

i.e. 215 gm

718 – 215 = 503 qt cultivated fodder

503 x150 (Rs.150 / qt) = **Rs.75,450 = 00**

WWW.BSCAGRISTUDY.ONLINE

Dry fodder

800 gm daily

800 x 105 x 365 = 318 Quintal / year

318 x100 (Rs.100 / qt) = **Rs.31,800 = 00**

C. Feeding expenses for kids :

I. Concentrate.

75 gm /kid/day

75 x 118 x 240 = 21.24 say 21 qt

Kid will be fed From fourth month onwards for

total 8 months i.e. for 240 days)

21 x 600 12,600=00

Kid will be fed on available tree leaves so no separate expenses for fodder

3) Health cover Rs.10,000=00

Total expenses (1+2+3)

= 4000+57600+75450+31800+12600+10000

Say 191450= 00

Income :

i) Av. body weight of kid at one year 25 kg

25 x 59 = 1475

Rate 100 /kg (live wt.)

100 x 1475 = 1,47,500=00

2) sale of manure

Av.200 kg faces from adult /year

20kg from kid/year

200 x 105 = 210 qt say 21 tones

20 x 108 2160 say 2 tones

Total 23 tones of faces

Rate Rs.500/tones

23 x 500 = Rs.11,500

WWW.BSCAGRISTUDY.ONLINE

3. Sale of empty gunny bags

Total feed 117 Quintals

Each bag 65 kg

Total bags 180

Cost of empty bags Rs. 50 / bag

Total 9000

II. sale of skin

Animal death 12

Rs.200 / Skin **2400 = 00**

III. Each year 20 % sale of female goat(Replacement)

20 x 2500 = 50,000=00

Total

1+2+3+4+5 = 2,20,400=00

Recurring expenses 1,91,450=00

For 100 goats =Rs.28950=00

For one goat 289.50 say 290/year

WWW.BSCAGRISTUDY.ONLINE

EXERCISE NO. 17

1. Title : **Minimum requirement for sheep and goat meat export.**
2. Object : i) To study the food safely standards in India.
ii) To study the legal frame work in India for safely standards of meat.

3) Relevant information:

Food safely is a concept that food will not cause any harm to the consumer when it is prepared and eaten according to its intended use. A wide majority of the food related issues go unnoticed and undocumented. Inspite of under reporting, the available epidemiological data itself necessitates establishment of standards with a reference to the microbiological criteria for meat, fresh and poultry products.

Meat export is largely driven by sheep and goat meat. Which is growing at close to 30 per cent annum in terms of quality. It is considered that the growing number of fast food outlets in the country has and will have a notable impact on the meat processing industry.

Various industries and agencies undertake the activities related to microbiological criteria for meat and food products i.e. the limits of microbiological parameters are specified in the respective Indian standards, which are elaborate the **Bureau of Indian Standard (BIS)** has formulated standards on test methods for detection and enumeration of pathogenic microorganisms in food and specifications for ingredients used in media for microbiological works.

In the domestic market there are number of legislations that becomes relevant to the food processing in its entire chain perhaps terminating at the global market. The most important legislative initiatives can be summarized (i.e. Ministry of Agriculture).

- Insect act
- Milk and Milk Product Control Order (MMPO)
- Meat food product-order (1973)

4) Precaution

Meat to be exported should be critically observed for the microbiological standards given by Food Adulteration Rules.

Prevention of food adulteration

Goat meat and its products has following criteria.

Total plate count	:	1000/gram maximum
E Coli	:	Absent in 25/gram
Salmonella	:	Absent in 25/gram
Staphylococcus aureus	:	Absent in 25/gram
Cl perfringens and Cl Botulinum	:	Absent in 25/gram

Frozen mutton of goat meat

Total plate count	:	10,000/gram maximum
E coli		100/gram maximum
Salmonella	:	Absent in 25/gram
Staphylococcus aureus	:	100/gram maximum

WWW.BSCAGRISTUDY.ONLINE

Perfringens and Cl. Botulinum	:	30/gram maximum
Listeria monocylogenesis	:	Absent in 25/gram
Yeast and mould count	:	1000/gram maximum

5) Materials required

The mutton should be exported should be brought to the food testing labs for the bacterial study.

There are 72 food labs under the administrative control of Central and State Governments as well as local bodies.

Central food labs

Four central food labs have been established under PFA act to serve as appellate labs. Here samples of food articles taken by food inspectors from state and local levels are tested two of these labs. The food research and standardization labs, Ghaziabad and Central food labs, Kolkatta are under the administrative control of the Directorate General of Health Services. The other two Central Food Labs (CFL), Pune and food central lab, Mysore are under the administrative control of Government of Maharashtra and Council of Scientific and Industrial Research. In addition to this there are 84 state food labs and one third are under the administrative control of local bodies.

Laboratory analysis

The establishment of specification and standards is meaningless without laboratory analysis or an evaluation programme. Laboratory analysis is the phase in which a quality control programme is implemented after product is produced. A sampling plan, along with an analysis frequency (time schedule defining how often analysis are made) is absolutely necessary compile the methods of analysis used in the laboratory in a special working note book. Microbiological, chemical and physical analysis of food are available in the book. Official methods of analysis, published by the associative of official analytical chemists.

6) Observations

The sample of the mutton should be observed for the different analysis

7) Questions

1. What is food safely?
2. What are the legal frame work of India with respective microbial standard of meat?.

WWW.BSCAGRISTUDY.ONLINE

Practical (Teaching Schedule)

Course Title : Sheep and Goat Production

Course No. : ASDS – 364 Credits : 2 (1+1) Faculty : Agriculture

Lecture No.	Topic to be covered
1	Study of body parts of sheep and goat
2	Differences between sheep and goat
3	Selection of animals Identification marks
4	Feeding of lambs/ kids
5	Feeding practices for milking goat
6	Shearing and grading of wool
7&8	Important management practices such as clipping, spraying, dusting, docking, deworming , ringing
9	Preparation of animals for animal show
10	Culling of animals
11	Judging of sheep and goat
12	Preparation of animal for slaughter and different method of slaughter
13	Study of farm records. Preparation of proposals for sheep and goat unit.

WWW.BSCAGRISTUDY.ONLINE