Commercial Goat Farming

Government of Nepal
Ministry of Education, Science and Technology
Curriculum Development Centre
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Technical and Vocational Stream

Learning Resource Materials

Commercial Goat Farming

(Grade 11)

Secondary Level

Animal Science

Government of Nepal

Ministry of Education, Science and Technology

Curriculum Development Centre

Sanothimi, Bhaktapur

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Preface

The curriculum and curricular materials have been developed and revised on a regular basis with the aim of making education objective-oriented, practical, relevant and job oriented. It is necessary to instill the feelings of nationalism, national integrity and democratic spirit in students and equip them with morality, discipline and self-reliance, creativity and thoughtfulness. It is essential to develop in them the linguistic and mathematical skills, knowledge of science, information and communication technology, environment, health and population and life skills. It is also necessary to bring in them the feeling of preserving and promoting arts and aesthetics, humanistic norms, values and ideals. It has become the need of the present time to make them aware of respect for ethnicity, gender, disabilities, languages, religions, cultures, regional diversity, human rights and social values so as to make them capable of playing the role of responsible citizenswith applied technical and vocational knowledge and skills. This Learning Resource Material for Animal Science has been developed in line with the Secondary Level Animal Science Curriculum with an aim to facilitate the students in their study and learning on the subject by incorporating the recommendations and feedback obtained from various schools, workshops and seminars, interaction programs attended by teachers, students and parents.

In bringing out the learning resource material in this form, the contribution of the Director General of CDC Dr. Lekhnath Poudel, Dr. D.K. Singh, Dr. Shambhu Shah, Dr. Yam Bahadur Gurung, Dr. Shisshir Bhandari, Dr. Asmita Subedi, Shivlal Bhandari, Ganesh Gautam and Shusila Shrestha is highly acknowledged. The book is written by Dr.Hari Prasad Panta and the subject matter of the book was edited by Badrinath Timsina and Khilanath Dhamala. CDC extends sincere thanks to all those who have contributed in developing this book.

This book is a supplimentary learning resource material for students and teachrs. In addition they have to make use of other relevnt materials to ensure all the learning outcomes set in the curriculum. The teachers, students and all other stakeholders are expected to make constructive comments and suggestions to make it a more useful learning resource material.

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Unit - 1

Introduction and Status of Goat Farming in Nepal

Background and history of goat farming

The goat is a versatile animal. It is also known as the 'poor man's cow' in Nepal and 'wet nurse' of infants in Europe. The goat was one of the earliest ruminants to be domesticated (before 6700 BC) probably in Palestine or Iran. The following four species of wild goats are found:-

Capra ibex	Ibex
Capra pyrenacia	Spanish Ibex
Capra falconeri	Markhor – found in Quetta, Turkistan, Afghanistan, Baluchistan & Kashmir
Capra aegarus	Bezoar / Psang / Wild goat - found in Baluchistan, Sind, Asia Minor; various domestic goat breeds have evolved from this

The present world-wide distribution of goats shows that the number of milch type goats is more in the temperate zone and dual types are mostly located in sub-tropical Asian and African countries.

Zoological classification of Goat

Kingdom:	Animal
Phylum:	Chordata (with Back bone)
Class:	Mammalia (Suckle their young)
Order:	Artiodactyla (Even toed hoofed)
Family:	Bovidae (presence of rumen, gall bladder)
Genus:	*Capra*
Species:	*C. hircus*

Important facts about goat

Group of sheep:	Flock/ Band
Act of mating:	Serving
Act of parturition:	Kidding
Castrated male:	Wether
Castrated female:	Spayed
New-born:	Kid
Young male:	Buckling
Female with its offspring:	Suckling
Young female:	Goatling
Pregnancy:	Gestation
Adult male:	Buck/Billy
Adult female:	Doe/Nanny
Sound Produced:	Bleating
Length of Estrus cycle:	19 days
Length of estrus:	48hrs
Type of estrus:	Seasonal Polyestrus
Volume of Semen per ejaculation:	1ml
Sperm per ml:	3000 million
Gestation Period:	5month and 5 days
Puberty:	4-12 month
Temperature:	101.5-103.5˚F
Heart rate:	70-90 / min
Respiration rate:	20-30 / min
Meat:	Chevon

Chromosome No.:	60(2n)
Age of weaning:	16wks (Add 2wks in sheep)
Castration age:	4wks (Add 2wks in sheep)
Age of docking:	10 days
Dental formula:	Temporary 0030/4030 Permanent 0033/4033
Dressing Percentage:	48-50

1.2 Importance of goat farming

- Poor man's cow (or mini-cow).
- Contribution to the poor people's economy.
- Supplies nutritious and easily digestible milk.
- Additional income for poor and landless or marginal farmer.
- Being small sized animal, easily managed by women and children.
- Cost of feeding is very low.
- Returns on capital of up to 50% and recovery of 70% of retail price are possible in goat farming
- Five goats can be maintained as cheaply as one cow.
- No market problem and can be sold whenever people have money problem.
- Provide meat, milk, skin and manure and also used as pack animal.
- Goat milk is finer than cow milk i.e. the fats and proteins are present in a finer state and are more easily digestible, especially by children and invalids.
- Do not need expensive building for housing.
- Can survive in extreme condition.
- Goats can be raised by landless agricultural laboures, ladies and children because they can thrive well on variety of leaves, shrubs, bushes, kitchen waste etc.
- Resist to diseases, especially tuberculosis.
- Goat milk has a higher content of B-complex vitamins.
- Goat milk has less allergic problem.
- Due to the small-sized fat globules, and the soft curd, it is easily digested.

- Goat is called "Foster mother of man" as milk is considered better in human nutrition.
- Excreta and urine of the goat is 2.5 times richer in Nitrogen, potash and phosphorus than cow dung.
- They are highly prolific and multiplied rapidly.
- Goat milk is used as a Ayurvedic medicine for person ailing with asthma, cough, diabetes etc..
- There is no prejudice by any community towards mutton.
- Goat milk has higher buffering qualities and this enhances its value for patients suffering from peptic ulcers, liver dysfunction, jaundice, biliary disorders and other digestive problems.
- Buck has special preference for religious purpose.
- Goats form an excellent animal for physiological and biomedical research
- Pusmina (Cashmere) from Chyangra prized for its fitness and warmth.

Constraints of the Goat farming

The following could be considered as the technical constraints for securing a thriving goat industry in the country:-

a) Non-availability of high-yielding breeding stock.

b) Low level of nutrition and managerial efficiency.

c) Lack of definition of the production objectives.

d) Limited attention to application of the modern techniques for improving the reproductive efficiency, e.g. AI, synchronization of estrous, semen freezing etc.

e) Limited use of outstanding exotic breeds for improvement.

f) Inadequate control of diseases and parasites due to non-availability of prophylactic vaccines against important contagious diseases.

g) Lack of knowledge on successful rearing of kids. Kid mortality is very high when weaning is practiced at a very young age.

h) Lack of knowledge on silvi-pastoral system.

i) Housing for goats in different eco-zones requires a very elaborate and systematic

study.

j) Organized marketing is very limited. This has resulted in unscrupulous exploitation by the middle-man who is often seen moving with the goats along the migratory routes.

1.3 Terminology related Goat farming

Creep Ration:

System of feeding of young animals prior to weaning

FCR (Feed conversion ratio):

Number of kg of food consumed by an animal required to produce a live weight gain of 1 kg.

Full mouthed:

Condition in which complete set of permanent teeth have grown i.e. 4 yrs in sheep & goat.

Mohair:

The covering of Angora goat

Pica:

Depraved appetite, It is often the result of a deficiency in the diet such as lack of fibre or salt or inadequate trace elements such as phosphorus or copper.

Ottorrhoea:

Discharge from ear.

Nymphomania:

Prolonged or constant estrus causing excessive sexual desire in female

Red Meat:

Meat that is red when raw. It includes beef, veal, pork, mutton and lamb.

1.4 Population distribution of goats in Nepal

Situation of Goat farming in Nepal

- Population: 183,940 (Statistical Information on Nepalese Agriculture 2016/2017)
- Goat Population growth rate: 3.4%.
- Chevon production annually: 67706 MT
- Per capita meat consumption of Nepalese is 8.4kg
- WHO recommended is 14 kg annually.
- Average 4, 76,104 numbers of goats are imported through legal route (Quarantine check Post) from India Annually for meat.
- Besides this 81,073 buffaloes are imported annually

1.5 Production and productivity of goats and its products

Meat production is predominantly from buffalo and goats, although poultry are common in urban areas. Out of the total meat produced buffalo meat comprises slightly above 64 percent, goat meat 19.5 percent, pork 7.7, chickens 6.7. Meat production figures indicate that there exist more potential for fattening of buffaloes, goats, pigs and poultry development in the country. Buffalo meat is more produced in central region followed by western and eastern region while goat meat is more produced in eastern region followed by central, mid-western and western region. Pig production is most popular in eastern region while poultry for both meat and egg production in central region.

Goat meat is accepted and consumed by all cultural and religious communities in Nepal while certain ethnic group only consumes buffalo meat and pork. Per capita consumption of meat is estimated at 8.1 kg per person per year. According to the Department of Livestock Services (DLS) more than 300,000 goats are annually imported from India and Tibet to meet regular and festival seasonal demand. The domestic production does not meet such a high demand. Therefore, meat production from goats has been given priority by DLS in recent years considering its increasing demand in the urban markets and higher preference provided by large section of the population. Government of Nepal has also initiated goat development activities as an income generating package program in certain potential pockets where mostly small farmers, landless and women are motivated to participate and to some extent basic

infrastructures required have also been developed.

Products of Goats:

a) Chevon

Goat meat has several desirable features:

- It is preferred in Nepal.
- The digestibility coefficient and biological value of dried goat meat are 95.2 and 60.4 per cent, respectively.
- It has less fat due to active disposition of the animal.
- It has no religious taboo.
- It is liked by all classes of people.
- Its markets are well-established.
- Chevon is pinkish-red in colour, coarse-textured and has a characteristic goaty odor.
- Good quality, tender meat is obtained from 6-8 month old goats.
- Black Bengal & Angora chevon is considered more delicious than meat of other goats and fetches more prices.
- Guts from goats are preserved in refined salt and exported for use as casings in sausage making.

b) Milk

- Composition of goat milk (%) : Water 86.81, Total solids 13.19, SNF 8.17, Fat 4.17, Protein 3.75, Lactose 4.54, Ash 0.80
- Goat milk protein has a digestibility coefficient of 85% and biological value of 67.5%, and contains many essential amino acids.
- Fat globules are small in size and hence easily assimilated, facilitating easy assimilation in children and invalids.
- It is rich in lactoperoxidase (Lp) which is effective against a variety of bacterial diseases.

c) Skin

Goats skin are also of high importance. It is generally used in weather industry to make

different leather or products such as shoes, jackets, etc.

d) Pashmina, Mohair & Hair

Pashmina (or Pashn) is used for production of the magnificent ring shawls of Kashmir. Mohair is the long, straight, uneven, translucent, lustrous fleece from Angora goats. It is used for making blankets, fabrics, summer suiting, linings, braids, nets, rugs, hats, decorative trimmings, bed spreads, show laces, curtains etc. Hair from common goats is used for making ropes, coarse blankets and bags.

e) Manure & Urine

Goat manure helps maintain the soil fertility. It is several times richer in fertilizing ingredients (nitrogen and phosphoric acid) than the manure of cows/buffaloes/sheep. Each goat produces 0.8-1.0 tonnes/year. Goat urine is equally rich in both nitrogen and potash, and is more valuable than that of any other animal. Goat manure fetches ready cash to the owner. He usually leaves the goat to graze on stubbles in the field and is paid by the farmer for his field being thereby manure. It is said that one hectare of land receives a sufficient dressing of manure if 4800 goats are folded there for a night.

Unit - 2

Major Breeds of Goat

Breeds of goat

Broadly goat breed can be classified into meat purpose, milk purpose and dual purpose breed according to their use. Bengal is meat purpose breed, Saanen is milk purpose breed and Jamunapari is dual purpose breed. Some times Chyangra like breeds are also classified as fur type breed.

Classification of goat breed

2.1 based on utility (dairy, meat, dual purpose, hide and pashmina)

2.2 based on origin (Asian, African, European, Oriental)

2.3 based on availability (indigenous and trans-boundary)

2.4 Importance of indigenous breeds (Chyangra, Sinhal, Khari, and Terai)

According to origin, it can be classified as indigenous and exotic breed.

Indigenous breeds of Goat:

Breed	% population (of indigenous breed)	Location	Altitude (feet)*	Remarks
Chyangra	1	Mountain	Above 9000	Pashmina production, Transportation
Sinhal	16	High hill	7000-9000	Hair production, Transportation
Khari	56	Low hill	1000-7000	
Terai	27	Teari	Upto 1000	

Chyangra:

- Originated in Tibet and mostly found in the higher hills of the Himalayan ranges
- Maintained under transhumance system according to the season.
- They are medium sized goats and average weight is 25 to 30 kg.
- The whole body is covered with long hairs to protect them from cold weather in the higher hills (12000ft to 14000ft).
- Mostly they are black in color and brown and gray are not uncommon.
- They are famous for meat as well as Mohair (Pashmina), which is grown on either side of the shoulder and sides under the long haired coats. The long hairs are used for making ropes and rugs.
- Average Pashmina production ranges from 50 to 200 gram annually.
- Horns are long, curved, twisted backward and upward and thick.
- 1st kidding at around 2 yrs, one kid is produced in a year although twining occurs sometimes.
- They are used as pack at higher hills of Far-Western and Mid-Western Development region of Nepal.

Sinhal Goat:

- This breed is found in high hills of Nepal.
- Maintained under transhumance system according to the season.
- Average body weight is 30-45 kg, highest among the indigenous breeds.
- They are generally black in color but with white and brown patches. It may be creamy with darker heads and gray or pale are not uncommon.
- Body is covered with long, coarse hairs.
- The estrus behavior is seasonal and generally one kid is produced in a year although twining occurs sometimes.

- The hair produced by this breed is devoided of Pashmina and is about 1kg per female or 2.5 kg per male. Sometimes the females are milked.
- They prefer to graze in the flock of Bhyanglung and Baruwal breed of sheep

Khari/pahadi/Aunle Goat:

- This breed of goats is found in the Mahabharat, the mid hill range of Nepal.
- They are small with low height, weighing about 25 kg for the adult females and 35 kg for the adult males.
- The head is small and ears are erect.
- The color is white, black and gray but red are not uncommon.
- The age at first kidding is 16 months. They generally produce twins three times in two year.
- They are meat purpose goats but produce 0.64 liter of milk per day and 68.1 liters of milk during a lactation period of 206 days. The milk contains 3.5% fat.
- Kid mortality is very low.

Terai Goat:

- Found in Terai areas of Nepal.

- It is not as pure bred and considered as cross breed of Jamunapari.
- Presence of roman nose and pendulous ears.
- Medium sized, different color, commonly brown color with white stripe.
- Average body weight is 18-35kg.
- Dual purpose breeds.
- First kidding at 15 month.
- Breeding capacity similar to Khari.

Exotic breeds of goat:

Commonly reared exotic breeds are Jamunapari, Barbari, Saanen, Nubian, Beetle, Boer goat, Black Bengal etc.

Jamunapari:

- Its home lying between the Ganges, Jamuna, and Chambal River.
- These are dual-purpose goats, combining milk and meat qualities.
- The Jamunapari are probably the most handsome of the Indian breeds.
- They are generally white or yellowish fan with light brown spots on the neck and face, and occasionally patches of fan or black are found on the body.
- They have long folded pendulous ears and a prominent Roman nose resembling the Nubian goats.
- The Jamunapari is large-sized, tall and has rather long legs. The hind quarters have long thick hair. They are said to thrive best under village conditions and rough terrain.
- The Jamunapari are hardy and very active.
- The average weight of full-grown buck varies between 60 to 90 kg and the female weighs 50 to 60 kg.
- The best milking goat of this breed has yielded 5.4 kg of milk a day,

but the average production is likely to be near two to three kg.

- Usually the Jamunapari doe kids once a year, giving birth to single kid but twins are not rare.

Barbari:

- The Barbari breed is a dairy type goat that is said to have originated in the city of Barberi in British Somaland in East Africa.
- The goats have short legs, short hairs, and straight facial line and prick ear.
- The goats are preferably white with fawn or tan spots but some time black spots are found.
- The Barbari goat is suitable as a family goat because it is a good milker. The breed has good dairy conformation.
- Average weight of the male is 40 to 50 kg and that of female is 30 to 40 kg.
- Looks like deer.
- Reared in urban and semi-urban areas in stall feeding. They are not interested in grazing.
- It is prolific and may kid twice in a 12-15 month period (3 kidding in 2 years). They produce more milk, if they bred only once a year. Some of the goats in this breed have given 4 kg of milk yield.
- Can breed at any time of the year.

Saanen:

- World popular Dairy breed.
- Originated in Saanen valley of Switzerland.
- White cream colored.
- Medium sized, Average body weight: M-95kg & F-65kg.
- Ear erect and large udder.
- Milk=2-4 kg per day.
- Generally polled.

Beetal:

- This breed is commonly found in Punjab and Rajisthan of India.
- They have no standard color or markings but generally they are black, tan white, brown, often heavily spotted on white.
- The head resembles that of Jamunapari with a Roman nose and long pendulous ears, but the ears are not so long, curved or prominent as in the Jamunapari.
- The breed has curved horns sloping backward and the males have beards, but not the females.
- The average male goat weighs about 60 kg and the female 40 kg.
- The goats are prolific. They yield 2 to 3 kg of milk a day but the average milk yield during a lactation period of 133 days is 161.8 kg with butter fat content of 4.5 %.
- Does usually kid for the first time when they are 22 month old.
- Generally 2 kidding in three years.

Black Bengal:

- Black Bengal is found in West Bengal, Assam and in the adjoining areas.
- They are dark black in color or sometimes white or spotted.
- The skin is comparatively superior to other breeds.
- They are prolific breeders and commonly have twins.
- Two kidding are possible in a year.
- The milk production capacity is poor and sometimes kids may require additional milk supply during early stages of growth.
- They are short-legged, compact animals with a deep body and wide chest and a straight back. The body weight of adult buck varies from 19 to 30kg and that of doe is 13 to 22 kg.

Angora:

- Originated in Turkey or Asia Minor.
- It is believed that this goat was originally indigenous to the Himalayas.
- Small-sized with short legs. Horns are spirally twisted and inclined backward and outward.

- Produces valuable textile fibre known as “mohair”. The soft, silky hair covers the white body and most of the legs with close-matted ringlets. Average fleece weight is 1.2 kg.

Boer:

The Boer goat was probably bred from the indigenous goats (they originated from South Africa) of the Namaqua Bushmen and the Fooku tribes, with some crossing of Indian and European bloodlines being possible. They were selected for meat rather than milk production; due to selective breeding and improvement, the Boer goat has a fast growth rate and excellent carcass qualities, making it one of the most popular breeds of meat goat in the world. Boer goats have a high resistance to disease and adapt well to hot, dry semi deserts.

Boer goats commonly have white bodies and distinctive brown heads. Some Boer goats can be completely brown or white or paint, which means large spots of a different color is on their bodies. Like the Nubian goat, they possess long, pendulous ears. They are noted for being docile, fast-growing, and having high fertility rates. Does are reported to have superior mothering skills as compared to other goats. Mature Boer bucks may average 110–135 kg (243–298 lb) in weight, and mature does, 90–100 kg (200–220 lb).

Unit - 3

Breeding Management of Goat

Breeding is the process of producing offspring by the individuals to maintain the generation. Scientific breeding is a planned activity in farm management whereby desired changes in the offspring of the farm animals are obtained for overall improvement in animal productivity. A sound knowledge on reproductive behaviors of animals and principles of genetic inheritance are essential to implement scientific breeding practices in farm animals.

Practical Sheep/ Goat Breeding

The following point should be considered for practical sheep and goat breeding

- Select the breed suited for the prevailing environment, note that indigenous breed are more adapted than any other breed for the particular environment.
- Avoid inbreeding in the flock either change the breeding buck or ram every year or adopt rotational mating plan.(feasible only in commercial goat or sheep farming)
- Select breeding male based on the 6 months body weight (There is high correlation between 6 month body weight and adult body weight). Preferably from the twins pairs and with high daily growth rate.
- The indigenous goats breed have been superior to the cross breed in term of total meat of output/doe/annum. Cross breed can only be done for production of slaughter goads for market and not for further breeding.
- Synchronize matting or kidding or lambing for easy management of farm or flock.
- Castrate males not intended for breeding early enough, so that unwanted matting does not happen in the flock.
- Negative selection practice (Castration of good individuals and sacrifice) should be avoided.

3.1 Selection of doe for better reproduction

- Docile in behavior
- Regular breeder
- Have average 3 kidding in 2 years
- Persistent in milk production
- Have average productive life of 5 years
- Tendency to utilize feeds for more production.
- Animal with top, front and side wedges well defined. Body conformation is typical of good breed.
- Doe from twins
- At first parturition doe should have two permanent teeth.
- Skin pliable, wide nostril, prominent muzzle and wide chest
- Deep barrel, indicating good feed intake capacity
- Well defined rumps, hip and pin bones with better prolificacy
- Good capacious, well formed udder with convenient sized well placed teats with no deformity
- Bright eyes with long face and famine look
- No abortion record
- high milk yield revealed by actual milk in pail
- Have average age at first kidding 16 to 18 months
- At birth time kid selected for doe should have 2kg body weight.
- Disease resistant and adaptable to environment of locality
- Easy adaptation on local environment

3.2 Selection of buck for breeding

The breeding male is considered as half of the flock. For regular improvement of the flock (depending upon the objectives of animal rearing) the breeding male should be selected on the following criteria:

- Buck have high body weight within the flock
- Higher growth rate than the contemporary in the flock

- Physically sound with wide chest and well developed barrel, straight body and strong legs
- Most preferably be from twin pairs
- Should have good semen quality (without abnormalities)
- Well developed and equal testes.
- Free from reproductive and other diseases.
- At birth time kid selected for doe should have 2kg body weight.
- After 6 month buck should have 15 kg weight.
- After 18 month with high body weight gain and should have two permanent teeth.
- Buck should be cross breed

3.3 Selection of male kid for fattening

Goats are slaughted mostly for lean meat. For fattening ration should be 30-40 % DM from roughages & 12-14 % protein & 60-65% TDN from concentration. Generally goats attain slaughtering age by 10-12 month. Body weight having variable (20-30) as specific for various breed.

Score card for meat type goats:

1. General appearance (25 points)

- Live weight 5
- Form: Straight top, Deep broad, compact and well proportioned 10
- Quality: Hair fine, strong and fine bones but strong , features fine not to decline 10

2. Condition

Flesh covering on body parts: firm deep and even, fullness in shoulder and brisket, thick dock, thick covering over back, ribs, shoulder and loin. (15points):

3. Head and neck (10 points)

- Head: Clean cut, lips-thin, nostrils large, large eyes, active look short face, strong mouth, forehead-broad, wide apart ears, 5
- Neck: Thick, short and smoothly joined with shoulder 5

4. Fore quarters (10 Points)

- Shoulder: Compact on top, well covered with flesh 8
- Brisket: Full, round, well extended 1
- Legs: Strait, short and wide, apart 1

5. Body (20 points)

- Chest: wide deep and full 3
- Ribs; Well strong, long, close and thickly covered 5
- Neck: Broad, straight, evenly covered with flesh 6
- Loin: Wide, thick and well covered 6

6. Hind quarters (20 points)

- Hips: wide apart, level and smooth 3
- Rumps: Long, leveled wide and thick at dock 5
- Thighs: Full deep and Wide 5
- Legs: Wide apart, straight, strong and wide apart 5
- Udder/scrotum: 2

Doe: udder well formed, large and soft

Buck: Both testes be large and well developed

Total: 100 (point)

3.4 Selection of female kids for future doe (Replacement doe)

Replacement animals should be selected each year, accounting for mortality of adult does, culling of poor performer from the flock and strength of flock to be maintained. The follows point should be considered while selecting replacement animals.

- True to breed type
- Good milker (from good milking mother)
- Good mothering ability
- Preferably be from twins
- Good growth potential
- Rectangular confirmation for meat type breeds.

- Dairy breed should display a wedge shape confirmation, long legs and well developed udder.
- Do not have any reproductive disorder.

3.5 Introduction to selection and mating system for goat improvement

Selection and judging of the breeding stock are the first and foremost steps to start with any breeding program. Appearance of the animal alone is not always a reliable guide to its breeding value as its appearance depends on the inheritance it has received from its parents and on the environment in which it grows up. It is, therefore, necessary to correctly estimate the breeding value of the individual which depends on the accuracy in selecting the animals as per the defined objectives

Mating:

As far as possible, rams should be kept away from the ewes and the two should be brought together only for breeding. Natural breeding is done either by flock mating, pen mating or hand mating.

- In flock mating, breeding rams are usually turned out in the flock during the mating season at the rate of 2-3 per cent of the ewes all through day and night.
- In semi-flock breeding or pen mating, rams are turned out for service with the flock in the pen during night, and confined and stall-fed or grazed separately during the day time in order to conserve their energy and give them rest.
- Hand mating is practiced when exotic purebred sires are used, or when it is considered desirable to extend the services of the ram over much larger flocks.

Selection of breeding animals

Selection of breed depends on the objective (meat, milk or other) and the prevailing environment of the intended area. The breed developed on entirely different environment should not be attempted to establish in areas with different climate conditions.

Age of maturity-

a) In female animals

The age of sexual maturity is influenced by breed, feeding level, environment and even

the presence of males. The female kid (goat) shows the signs of estrous as early as 14 weeks, but should not be bred till the reproductive organ of animals is fully developed. The weight rather than the age should be better criteria for mating of doe/ewes for the first times. The estrous activity in doe in tropics is greater than in temperate regions. Sheep normally attain full growth about 2 year of their age. This age however varies from 18 months to 3 years with breed and localities. The ewes are mated to rams between the ages of 9-14 months but are always preferred to wait till ewes attain proper stage of growth to ensure the birth of healthy lambs.

b) In Male animals

The male goat has very high sex libido. Bucks may show libido by the age of 4-6 month. A well grown buck may be bred to doe by the age of 6 month , however at this age the semen volume and motility is too low . For better performance the bucks should be used for mating after the age of one year. Bucks are sexually active mostly in winter and spring and can be used successfully up to the age of 8-10 years if kept with proper feeding. Rams are found to be used for breeding purpose as one year of their age, but it is desirable to use rams for mating from the age of 2 and half year till they attain about 7 years of age.

Selection of doe for better milk production:

a) Head: It should be long and of moderate width, with a full and well-developed muzzle and prominent nostrils. It should be naturally hornless or disbudded. The head in the doe should be well carried and should bear a feminine appearance. The eyes should be large and bright, set well apart, indicating docility and some capacity for understanding.

b) Neck &shoulders: The neck should be long and slim, and of good depth, with the tassels, if present, evenly hung. The withers and the shoulders should be fine in appearance, and connect the neck with the body with little break in continuity. A considerable thickness in the shoulders or a drop immediately between the shoulder blades is undesirable.

c) Chest: This should be moderately deep and of good width, giving the appearance of strength without coarseness.

d) Forelegs: They should be straight, strong and possess good bone.

e) Feet: The animal should stand well on its legs without the tendency to "turn toes" or "walk on its heels". The hairy growth covering the hoof should be kept trimmed to the 'sole' of the foot, leaving the latter bare underneath.

f) Body: Good depth is an important feature. It should drop in a gradual curve from the point meet the udder. The back should be level from the shoulders to the hips and then drop slightly at the tail region. The hips are often slightly higher than the shoulder, but this need not be regarded as a defect. An excessive dip in the back, however, is highly undesirable. Plenty of length from the head to the tail is a desirable feature where the abdomen unites with the chest, i.e. a little way behind the forelegs, and then rise slightly again.

g) Ribs: The ribs should be well sprung so as to give a barrel effect; flat sides are a common fault. The abdomen should not be protruding beyond the width of the ribs, so that its roundness is not affected.

h) Hind-quarters: There should be sufficient width across the hips and the rump, and between the pin bone and the hocks. The hind-legs should face straight forward and not outward; the latter tendency is one of the commonest defects in goats resulting in the so-called 'cow hocks'. There should be a slight rise from the back to the hips and a gradual drop from the rump to the tail. A sharp drop from the hips to the tail is regarded as a defect.

i) Hind-legs: Bones should give the appearance of strength with the hocks slightly bent. The pastern should be short, its joint showing no sign of weakness that might result in dropped pastern.

j) Udder and teats: The udder should be carried well under the body. When viewed from the side it should be in front of the hind-legs. It should be large, but its size should be proportional to the size of the goat. The skin of the udder is usually covered partly with fine, soft and pliable hair. The texture of the udder should be reasonably soft. Heavy milk production is associated with the amount of milk-secreting tissue. The udder should undergo considerable shrinkage after milking. Milk ducts and teats should be entirely free from hard lumps (indicating chronic

inflammation), these being sometimes discovered only after milking. The teats should be quite separate from the udder with a distinct line of demarcation, point downward and slightly forward, and be of moderate length and of suitable size to be conveniently held in the hand during milking. Large milk-veins should be present under the belly and lead to the udder. These veins, although usually better developed in old goats, indicate superior milk quality. The shape of the udder in the Indian breeds varies considerably. The occurrence of four milking quarters, all lending themselves to being used in milking, is not uncommon in Jamunapari goats.

k) Skin and hair: The skin should be soft, supple and loose. The coat varies in different breeds, but is generally glossy, with fine, short hair.

Mating systems of goat

1. Hand mating

- In this system the females are allowed to mate one by one.
- In this system a ram or buck will not be allowed to mate more than three ewes/does in a day.

Merits

- This method ensure the expected time of lambing / kidding
- This system allows the farmer to know that the animal has actually bred.
- This system reduces the risk of injuries to the animals.
- It is beneficial when mating older male with a younger female.
- It also improves the breeding efficiency of male, resulting in an increased number of females that can be bred in shorter period of time.

2. Pen mating

- In this mating system the ewes/does are divided into batches varying from 20 to 25 ewes/does.
- Males are turned in to the flock only during the night time and separated during day time.

Merits

- This system of mating prevents the disturbances to the ewes/does by the male

during grazing hours.

- Males are also given enough rest and they can be fed properly.

3. Flock mating/pasture mating

In this system males are allowed to run along with the females throughout the day and night.

The male may lose it most of its body reserves in chasing the females and they may lose their body conditions.

Demerits

- The ram or buck sometimes may develop attraction for particular ewe or doe in heat and serve it a number of times while other remains unattended resulting in empty ewes/does and low fertility rate.
- The ram/buck some time exhauss itself overnight by serving more than a dozen times and the last served ewes or do not receive optimum number of spermatozoa and remain un-conceived.

4. Artificial insemination

- Artificial insemination offer the best means of distributing germplasm from nucleus breeding flock to many small flocks within each eco system.
- Fresh as well as frozen semen is used.
- The speculum method of insemination is used for ewes and does.
- Generally artificial insemination leads to lower reproductive rate than natural service and frozen semen gives even much low pregnancy rate that is around 40%.
- Cervical insemination is generally followed for better conception rate.

3.6 Breeding calendar and buck to doe ratio

Reproductive management, comprising of detection of estrus, mating, identifying pregnant animals, care of pregnant animals, care at parturition and care of the male, plays a major role in the profitability of a sheep or goat farm. Effective managerial interventions can increase reproductive health, incidence of twinning/triplets and lamb/kid livability.

A. Sheep

Age at mating: Sheep normally attain good growth at about 24 months (range 18-36) of age. Breeding too young ewes results in more weaklings and higher lamb losses. It is desirable to use rams for mating from the age of 2 years till the age of 7 years.

Mating season and estrus cycle: Sheep are seasonally polyestrus. In Nepal, there are three main breeding seasons viz. summer (Mar-Apr), autumn (Jun-Jul) and post-monsoon (Sep-Oct). In general, higher fertility is observed in autumn season in the plains and in summer season in the hilly areas. The ewes usually come in heat about 2 months after lambing. The duration of the estrus cycle is 17 days (range 14-19) and heat period lasts for 27 hours (2-60). Ovulation occurs about 12 hours before the end of heat period.

Preparations for breeding:

1. **Flushing:** Feeding extra grain or lush pasture 2-3 weeks prior to the breeding season for the purpose of increasing the number of ova shed from the ovary and increase the incidence of twinning. Feeding about 250 gms grains daily to each ewe results in an increase in the lamb crop by about 10-20 per cent.
2. **Tagging:** This refers to the shearing the locks of wool and dirt from the dock of the ewes, thus facilitating mating by the ram.
3. **Eyeing:** This refers to the clipping of excess wool around the eyes to prevent wool blindness in some breeds.
4. **Ringing:** This refers to shearing of wool from the body of the ram, especially in the neck, belly and sheath region prior to the breeding season.

Detection of estrus: As sheep in heat show few external indications of estrus other than standing to be mounted, heat is generally detected with the help of a teaser. Wet paint (dye mixed in grease or linseed oil) can be smeared on the brisket of the teaser ram to spot the ewes in estrus. The color of the dye should be changed every 16-18 days so that the repeaters can be discovered. Other indications of estrus are vulva swelling, frequent urination, and restlessness and reduced appetite.

Mating:

As far as possible, rams should be kept away from the ewes and the two should be

brought together only for breeding. Natural breeding is done either by flock mating, pen mating or hand mating.

- In flock mating, breeding rams are usually turned out in the flock during the mating season at the rate of 2-3 per cent of the ewes all through day and night.
- In semi-flock breeding or pen mating, rams are turned out for service with the flock in the pen during night, and confined and stall-fed or grazed separately during the day time in order to conserve their energy and give them rest.
- Hand mating is practiced when exotic purebred sires are used, or when it is considered desirable to extend the services of the ram over much larger flocks.

Identifying pregnant ewes: Identification of pregnant ewes is essential for the re-breeding of empty ewes and efficient management of pregnant ewes. Pregnancy can be diagnosed by observing for cessation of estrus cycle, abdominal ballottement (from third month onwards) and by means of a chemical test.

Procedure: Mix 5 ml of urine sample and 5 ml of 1% Barium chloride solution. Turbidity indicates pregnancy whereas clear solution indicates non-pregnant condition.

Care of pregnant ewes: Careful management of pregnant ewes will have a marked influence on the percentage of lambs dropped.

- Do not handle the pregnant animals too frequently.
- House the pregnant ewes in separate enclosures and protect from inclement weather and extremes of temperature.
- Crutching is done 7-10 days prior to lambing to avoid lambs suckling dung.
- Separate the advanced pregnant animals form the main flock and take effective care in their feeding and management.
- Extra feed during the later part of pregnancy (3-4 weeks before parturition) will be beneficial for the condition of pre-parturient ewes, thus improving milk production of ewes, and birth weight and growth of lambs. Inadequate and poor nutrition may result in pregnancy toxaemia, abortions and premature births of weak lambs.

- Bring lambing ewes into lambing corrals 4-6 days before parturition and provide soft, clean bedding, individual lambing pens and maximum comfort.
- Watch gestation length which ranges from 142-150 (avg. 147) days.

Care at lambing: An ewe about to lamb prefers to leave the flock. She is restless, the udder is often distended and external genitals are in a flushed and flaccid condition. Normally there is no necessity of assisting the ewes at the time of lambing except in the case of dystokia. The following precautions may be taken at lambing:-

- Maiden ewes in poor condition or small-framed ewes mated to big rams will generally have difficulty in parturition and will have to be assisted.
- Ensure that the nose and mouth are free of membranes and mucoid fluid immediately after birth.
- Ligate, sever and antiseptically dress the navel cord of the lamb.
- Do not handle lambs too frequently immediately after birth and let the dams lick and recognize them properly.
- Newborn lambs, after being licked by their mother, generally stand on their legs and start seeking for teats and suckle milk. In case they are not able to do so, assist them in suckling colostrums.
- Take up artificial milk feeding or arrange foster mother for disowned or orphan lambs. These lambs can either be reared on goat milk or by foster mothers. To aid the adoption of the orphan lambs by the foster mother, rub its milk on the rump of the orphan and the nose of the foster mother; keep both animals in close proximity to each other. Orphan lambs can also be reared by hand using a clean bottle and nipples, feeding about 30 gm milk at two hourly intervals for the first two days, and increasing the quantity and decreasing the frequency subsequently.
- Give a teaspoonful of castor oil or liquid paraffin to the lamb to facilitate defecation and easy passing out of meconium.
- Allow newborn lambs to be with their dams all day long during the first week.
- Protect newborn lambs from adverse climatic conditions.
- Feed sufficient quantity of good quality hay and concentrates to the lactating

ewes for meeting the nutritional requirements of early lactation.

- Provide plenty of clean, fresh drinking water as the lactating ewes drink higher amounts of water.

B. Goats

Age at mating: Does may be mated at 12-15 months age so that they kid at the age of 17-20 months. The average gestation period is 151±3 days. Bucks of 18-24 months of age may be used to serve 25-30 does; and when they attain full maturity at the age of 2-2½ years, may be allowed to serve 50-60 does in a breeding season.

Mating season and estrus cycle: The does are more or less continuous breeders. It is better to breed the female once a year. Some goats can be made to kid twice in 18 months. Most does come in heat in September and March. The buck is sexually more active in winter and spring. The duration of the estrus cycle varies from 18-21 days. Duration of estrus is about 36 hours. The best time of mating/insemination is 10-12 hours after the onset of heat and a second service again after 10 hours if heat continues.

Detection of estrus: The signs of heat in the doe usually are uneasiness, redness and swelling of the vulva, frequent wagging of the tail, loss of appetite and reduced feed intake, frequent urination, frequent bleating, mounting by other does, sudden drop in milk yield and mucous discharge from the vulva.

Buck to Doe Ratio in the flock-

It is important to use an optimum ratio of male (buck/rams) to females (Doe/Ewe) in order to achieve good reproductive efficiency. A suitable ratio for the tropics is one buck to 40 does. Under controlled and intensive condition, hand serving can increase the number of does to 50 per buck. In case of sheep, one rams is allowed to about 25-30 ewes, but in village condition, generally 40-50 ewes are allowed per Rams.

Unit - 4

Nutrition and Feeding Management in Goat

4.1 Digestive system of goat

The digestive system is composed of alimentary canal and its accessory gland. The alimentary canal consists of mouth, pharynx, esophagus, stomach, small and large intestine. The accessory glands include salivary glands, liver and pancreas.

Ruminant digestive system	
Alimentary Canal	Function
Mouth	Prehension, mastication, salivation, deglutition, rumination and regurgitation
Pharynx	Common passage of food , water and air
Oesophagus	Passage of food
Ruminant stomach / compound stomach	
a. Rumen (pouch)- like Turkish towel	Microbial digestion through absorption of VFA
b. Reticulum (Honeycomb)	Separate foreign objects like nail, stone etc
c. Omasum (Many plies)	Remove50% water from ingested materials
d. Abomasum (True stomach)	Microbial digestion of protein & passage food to small intestine
Small intestine(Duodenum, Jejunum & Ileum)	Secretion digestive juice &digestion of Carbohydrate, fat & protein & absorption as glucose, amino acids &

	fatty acids
Large intestine (caecum , colon & rectum)	Little microbial digestion with absorption of food materials.
Accessory glands	Function
a. Salivary gland (parotid, mandibular & sublingual)	Saliva secretion which help to lubricate &maintain p H of food.
b. Pancreas	Secrete pancreatic juice help in digestion of protein , fat & starch
c. Liver	Detoxification & synthesis of plasma protein

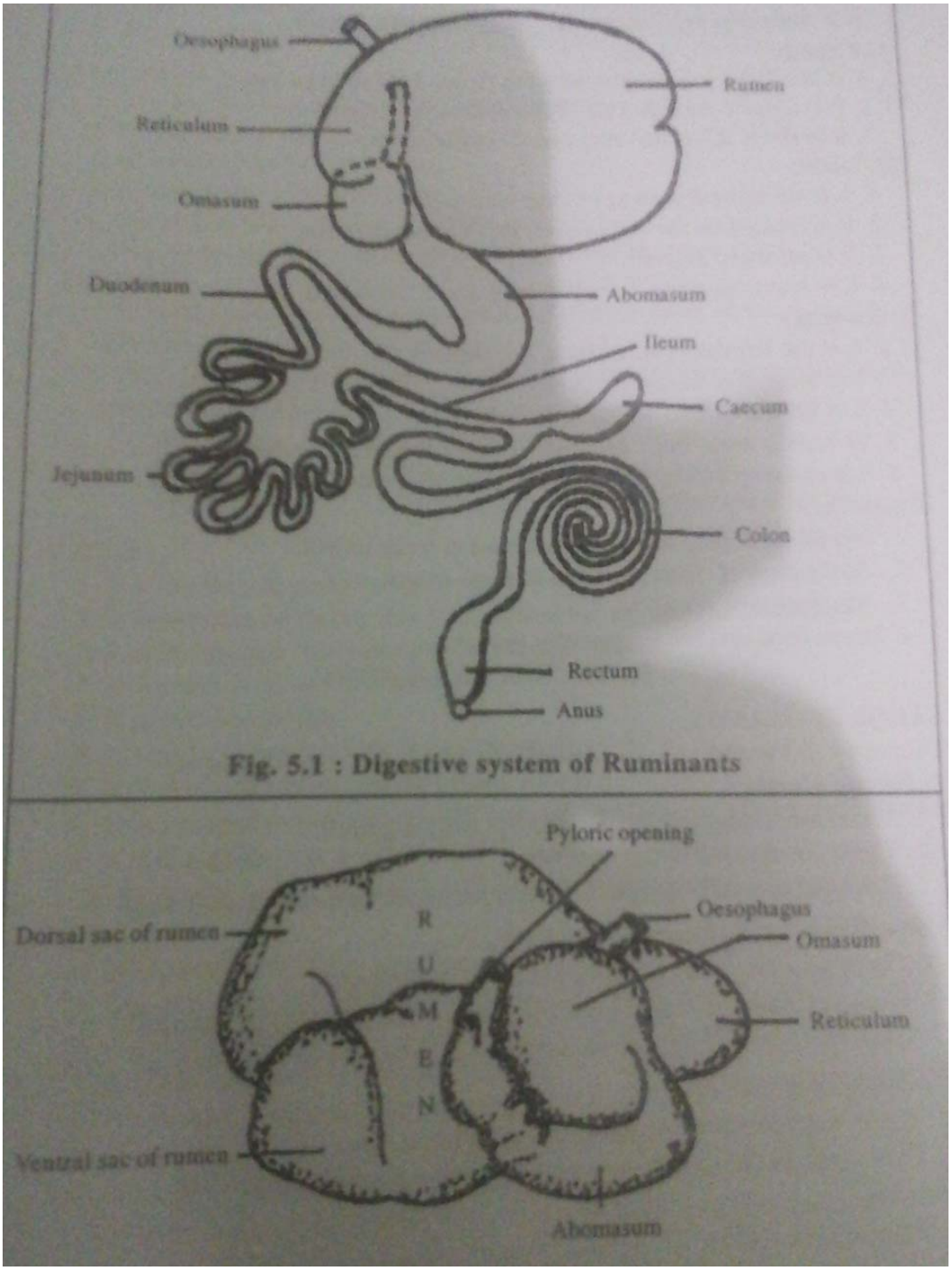


Figure. Digestive System of Goat
Source: Handbook of veterinarian clinicians

Goat digestion

Digestion: It is the process of conversion of complex food material into simpler form.

Enzymes: These are soluble organic catalysts manufactured by living cells.

Mouth:

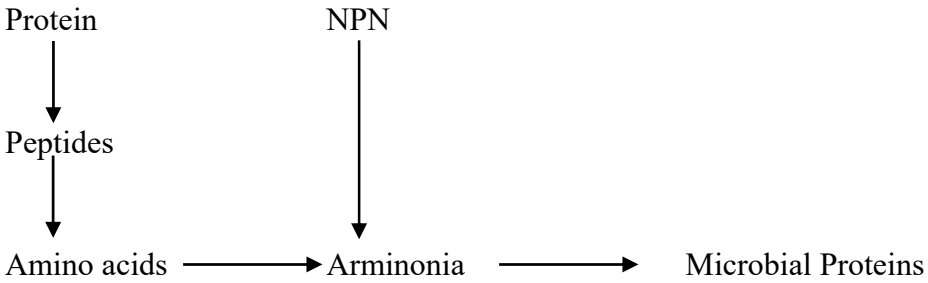
The offered feed is taken up by the animal with the help of tongue and is partially chewed and swallowed. The swallowed food reaches rumen. Animal during rest brings back the food into mouth by regurgitation, where it is remasticated, reinsalivated and again swallowed. This act is called as rumination which is the typical feature of ruminant animals. After rumination, food reaches the rumen where major digestion takes place.

Stomach:

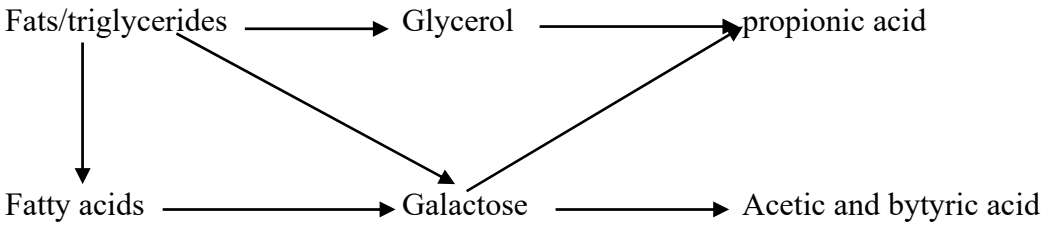
In rumen CHO compound of the diet cellulose, hemicelluloses, starches, sugars are converted to volatile fatty acids i.e. Acetic acid, Propionic acid and Butyric acid along with production of gases viz. methane and carbon dioxide. These volatile fatty acids are absorbed through ruminal wall and the gases are eructed through mouth during rumination.

Cellulose	Microbial enzymes	Volatile fatty acids like
Hemicelluloses	Carbohydrates ⟶	acetic acid, Propionic
Pectin		acid and butyric acid+ gases
Starch		like methane and Co2

The fed proteins are hydrolyzed to amino acids and peptides by the proteolytic enzymes produced by ruminal microbes, while small portion of dietary proteins escape ruminal action which are called as bypass proteins. Some amounts of amino acids formed are used by microbes for their body protein synthesis. The remaining amino acids are then deaminated to produce ammonia, co2 and short chain fatty acids. Further the NPN substances from the diet are also converted to ammonia in rumen. The ammonia thus formed in the rumen is mostly utilized by rumen micro-organism to synthesize their body proteins. The ammonia reaching the liver is converted to urea. Some part of this urea recycles back in the urine.



Fats/ Triglycerides are converted to glycerol and galactose which in turn are converted to volatile fatty acids (VFA) by microbial enzymes.



The heavier food components settle down in the reticulum, thus reticulum acts as a filter for food material. The food then reaches the omasum where about 50% of water from food material is removed. The omasum also helps in fine grinding of food material.

The food after reaching abomasums is acted upon by the gastric juice which contains hydrochloric acid, mucin and enzymes like pepsin, rennin and lipase.

a) Hydrochloric acid-

- It activates Pepsinogen to form pepsin.
- It provides suitable pH for enzymatic action of pepsin.
- It also protects body by killing most foreign bacteria ingested with food.

HCL

Pepsinogen ⟶ Pepsin

b) Rennin- It is present only in claves and which coagulates milk proteins.

Rennin

Casein + ca++ ⟶ Calcium paracaseinate (coagulum)

c) Pepsin –it hydrolyses small amount of microbial body protein and by pass dietary protein into peptone/ polypeptides.

$$\text{Microbial/Dietary by pass proteins} \xrightarrow{\textbf{Pepsin}} \text{peptones and polypeptides.}$$

d) Gastric lipase- it hydrolyses fats into fatty acids and glycerol's.

$$\text{Fats} \xrightarrow{\textbf{Lipase}} \text{Fatty acids + glycerol's}$$

Small intestine:

The partially digested food then reaches to small intestine where the action of bile, pancreatic juice and intestinal juice completes the remaining digestion.

The bile secreted by liver reaches to duodenum through bile duct. The bile contains bile salts (sodium and potassium salts of taurocholic and glycocholic acids) and bile pigments (bilirubin and bilierdin).The bile activates the secretion of pancreatic lipase. Further bile salts help in the emulsification of the fats.

$$\text{Fats} \xrightarrow{\textbf{Bile}} \text{Fat emulsion}$$

The pancreas secretes pancreatic juice which is carried to duodenum by pancreatic duct. Pancreatic juice contains three enzymes namely trypsin, lipase or steapsin and amylase or amylopsin.

a) Trypsin converts food and microbial proteins to short chain peptides.

b) Lipase hydrolyses fats into fatty acids and glycerol's.

c) Amylase converts disaccharides to monosaccharides.

The intestinal juice contains enzymes like enterokinase, peptidase and invertase.

a) Enterokinase- activates trypsinogen to form trypsin.

b) Peptidase converts peptides to amino acids.

c) Invertase is composed of 3 enzymes i.e. maltase, sucrose and lactase. They convert disaccharides into monosaccharides.

The end products of nutrient digestion are then absorbed through villi of small intestine

and reaches blood and lymph circulation.

Large Intestine:

The digested but unabsorbed food compound and water are absorbed through large intestine. While the undigested and unabsorbed portion mixes with the mucous secreted by large intestine and also with the glycerols and soluble soaps to form faces. The peristaltic movements of large intestine expels out the faces through anus via rectum.

4.2 Feed requirement and formulation for different age groups of goats

Feeding of goats

Goats generally produce more milk than a cow from the same quantity of nutrients. The nutrient conversion efficiency for the production of milk in goats is 45.71 per cent, whereas a dairy cow averages 38 per cent. It has been observed that goats are 4.04 per cent superior to sheep, 7.90 per cent superior to buffaloes, and 8.60 per cent superior to cows in crude fiber utilization. The goat uses more useless feeds for its maintenance than a cow.

The secret of successful feeding is in devising a cheap and efficient ration. While preparing a ration for goats, factors like bulk, palatability, availability, price and digestibility should be considered along with the nutritive quality of the feed. Abundant clean, fresh water, changed every morning and evening should be made available to goats at all times. Some of the most serious diseases of goats result from the drinking of dirty water from shallow pools. Water troughs should be thoroughly washed at least twice a month. Goats in milk require more water than dry goats and should be watered regularly at least three times a day.

Feeding habits

Goats are sensitive animals with peculiar feeding habits. By the means of their mobile upper lips and very prehensile tongue, goats are able to graze on very short grass and to browse on foliage not normally eaten by other domestic livestock. Unlike sheep, goats relish eating aromatic plants in areas of scarce food supply and hence can penetrate deep into deserts. They are fastidious about cleanliness and like frequent change in the feed. Feeds given must be clean and fresh, since goats eat nothing that

is dirty or foul-smelling. They dislike wet, stale or trampled fodder. For this reason, it is advisable to feed them in hay-racks or hang the feed in bundles from a peg in the wall or from a branch of a tree. Double-sided portable hay-racks are the most suitable and convenient for stall feeding. It is preferable to serve them small quantities at a time; when served in large quantities at a time, they waste a lot of it by trampling. Goats are very fond of leguminous fodders. They do not relish fodder like sorghum/maize silage or straw. Goats do not relish hay prepared from forest grasses, even if cut in early stages, but very much relish hay prepared from leguminous crops. Some of the common green roughages liked by goats are : lucerne, berseem, napier grass, green arhar, cowpea, soyabean, cabbage and cauliflower leaves, shaftal, senji, methi, shrubs and weeds of different kinds; and leaves of trees such as babul, neem, ber, tamarind and pipal. The common dry fodders liked by goats are straws of arhar, urid, mung, gram, dry leaves of trees, and lucerne/berseem hays (which are the main forage crops for milch goats).

Feed requirement for different age groups of goats

Creep feeding: The size of adult goat is much variable and it ranges from 25kg to 50 kg according to the breed. Therefore, a wide variation in the birth weight of kids is recorded. Depending upon the breed and nutritional status of the pregnant doe, birth weight of kids ranges from 1 to 5 kg. Feeding of kids should start on creep ration immediately after 1-2 weeks of age. After nourishing the kids for 4-7 days on colostrum and milk, kids should be separated from their dams and kept away on creep ration. They should be allowed restricted suckling 2 to 3 times a day or should be bottle-fed a definite amount of milk. Free choice legume hay, minerals and drinking water should be made available along with the creep/starter ration.

Grower feeding ration:

A complete ration providing 9-10% DCP and 60-65% TDN with 20 to 25% DM from good quality roughage will meet the requirements. Two to six months of period is considered to be the active growth periods for goats. A 500 g green fodder + 100-200g dry fodder + 250-300 g concentrate mixture along with 6 hours grazing is sufficient to meet out the nutrient requirement of growers.

At 6-9 months of age: 0.5-1.0 kg green fodder + 200-250 g dry fodder +250-300 g concentrate mixture along with 6 hours grazing is required for better growth.

At 9-12 months age: 1.5-2.0 kg green fodder + 200g dry fodder + 300-350 g concentrate mixture+ 6 hours grazing will meet out all essential nutrient requirements.

Finisher ration for goats: Generally, one third gains in the body weight are achieved during finishing period. According to market demand feeding regime has to be regularized in the finishing period. For fatty carcass, cereal based energy rich feeds are required to be fed. The roughage should constitute about 20-25% DM for fatty finish and 30- 40% for lean carcass production. A complete ration providing 5-6 % DCP & 60-65% TDN is quite satisfactory for finishing period.

Maintenance ration: As goats have a higher BMR than cattle, their maintenance requirements are higher. The maintenance requirement is 0.09 per cent DCP and 0.09 per cent TDN. For its size, a goat can consume substantially more feed than cattle or sheep, viz. 6.5-11 per cent of its body weight in dry matter when compared with 2.5-3 per cent for cattle or sheep. This means that the goat can satisfy its maintenance requirement and produce milk from forage alone.

Production ration: Requirements for the production of 1 litre of milk with 3 % and 4.5 % fat is 43 gm of DCP and 200 gm of starch equivalent (SE), and 60 gm of DCP and 285 gm of SE, respectively. The nutritional requirement of a goat weighing 50 kg and yielding 2 litres of milk with 4% fat may be met by feeding 400gm of concentrate mixture and 5 kg of berseem or lucerne. The ration should have 12-15 % protein content. The following concentrate mixtures may be used to feed the goat : (i) 1 part of wheat bran, 2 parts of maize grain, and 1 part of linseed cake, or (ii) 2 parts of maize grain, 1 part of barley, 2 parts of mustard-cake, and 2 parts of gram husk, or (iii) 1 part of wheat bran, 2 parts of barley grain, and 1 part of groundnut cake, or (iv) 2 parts of gram grain and 1 part of wheat bran. The above mixtures should also contain 2 % each of mineral mixture and salt.

Pregnancy ration: The foetal growth in the last 2 months of pregnancy is rapid and the metabolic rate of the goat rises rapidly. During this period, the content of ration should be increased to the level of production ration. A week before she kids, the doe

should be provided with more succulent type of food. For three or four days after kidding, the level of diet should be lowered and made more fibrous. This is necessary to minimize the shock to the goat's udder. After this period, the feeding should be done at a normal rate.

Feeding of young stock: Performance of the adult stocks depends on how they are reared when they were young. Feeding schedule for kids should be such that a weekly growth rate of 0.6 kg is obtained. The kids should be fed 56-112 gm of colostrums 4-5 times a day, depending on its birth weight, for three days. From the fourth day onwards, they may be fed the following ration schedule:

Body weight (kg)	**Milk**		**Concentrate* mixture per day (gm)**	**Green fodder (lucerne/berseem) kg**
	Morning (ml)	**Evening (ml)**		
2.5	200	200	-	-
3.0	250	250	-	-
3.5	300	300	-	-
4.0	300	30	-	-
5.0	300	300	50	*ad lib.*
6.0	350	350	100	*ad lib.*
7.0	350	350	150	*ad lib.*
8.0	300	300	200	*ad lib.*
9.0	250	240	250	*ad lib.*
10.0	150	150	350	*ad lib.*
15.0	100	100	350	*ad lib.*
20.0	-	-	350	*ad lib.*
25.0	-	-	350	1.5
30.0	-	-	350	2.0
10.0	150	150	350	*ad lib.*
40.0	-	-	350	2.5
50.0	-	-	350	4.0

60.0	-	-	350	5.0
70.0	-	-	350	5.5

*Concentrate mixture should contain (in parts) : gram 20, maize 22, groundnut-cake 35, wheat bran 20, mineral mixture 2.5, and common salt 0.5.

Mineral mixture: the requirements of calcium and phosphorous for maintenance are 6.5 and 3.5 gm, respectively, per 50 kg body weight. Goats require slightly larger quantities of calcium than sheep. The mineral mixture may be included in the concentrate ration at the rate of 2 per cent.

Salt: Salt licks or lumps of rock salt of fairly good size should be hung up in some suitable place where the goats can easily get them. This is important as goats secrete a good amount of sodium and chloride ions in the milk.

Vitamins and antibiotics: Goats particularly need vitamins A, D and E. Vitamin A can be supplied by feeding green forage and yellow maize; 1 kg of lush-green fodder will provide 1500 IU. Vitamin D can be obtained by exposure to sunlight. Vitamin E is present in adequate amounts in most normal rations. Synthetic vitamins A and D may be supplemented in the ration of growing kids. Feeding of aureomycin or terramycin increases the growth rate of young kids, reduced the incidence of scours and other infectious diseases and improves the general appearance of the kids.

4.3 Important fodder and forages for goat feeding and their nutritive values

Forage is the edible herbage eaten by the animals. The term forage is used for roughages. The forage is bulky feed either due to lightweights of dry forage or due to high moisture and loose structure of green herbage. Nutrient density varies from very low feeding value of straw to very high nutritional value comparable with many concentrates such as berseem, lucerne and well cobbed green maize, harvested at milk stage.

Forage is grown for feeding domestic animals reared on a farm. Domestic animals are either allowed to graze for themselves or simultaneously are also feed to supplement grazing with cut grass in stalls. Although forage and fodder crops are synonymous terms, yet the latter is referred to cultivated forage crops, which may be either cereals

or legumes.

At present almost 90% of the herbivores subsist on naturally growing grasses, which are of low nutritive value. Moreover the amount available to the herbivores is less than the requirement. For better health and high production, the animals especially the ruminant must be provided either with additional forage crops (fodder) or concentrate feed. Unfortunately, farmers cannot afford to feed the bulk of the ration as concentrate feeds.

Importance of forage crops:

1. These are highly digestible when harvested at proper time.
2. Grass proteins are particularly rich in ariginine and also contain glutamic acid and lysine.
3. Green fodder contain higher amount of carotene.
4. Green fodder reduces the cost of production of milk, meat and wool.
5. Green fodder is the cheap source of animal feed, which provide proteins, vitamins, minerals, carbohydrates, fat etc.

Advantages of fodder trees:

- Fodder tree provide green during dry and winter season.
- The left over by the animals can used as a fuel wood.
- It can also be used for timber purpose.
- It can also used as bedding material for animals.
- Fodder tree minimizes the soil erosion.
- It is used as a wind- breaker in cropland.
- It is used for live fencing.
- It is also planted for beautification.
- It can also provide fruits, pollen, tannin and gum, which are used for various purposes.

Important fodder trees found in different climatic region of country are given below.

Fodder trees propagated by seed:

Common name	Botanical name
Ipil-Ipil	*Leucaenalecocephala*
Koiralo	*Bauhinia variegate*
Kutmero	*Litseamonopetala*
Khaniu	*Ficussemicordata*
Khari	*Celtisaustralis*
Githi	*Boehmeriaregulosa*
Gogan	*Saurauriana paulensis*
Chiuri	*Aesendrabutyracea*
Tanki	*Bauhinapurpurea*
Painu	*Prunuscerasoides*
Badahar	*Artocarpuslakoocha*
Bakaino	*Meliaazedarach*
Baanj	*Quercusleucotricophora*
Berulo	*Ficusclavata*
Bhimal(Fosro)	*Grewiaoptiva*
Saaj	*Terminaliatomentosa*

Fodder trees propagated by vegetative parts:

Kabro	*Ficuslacor*
Mallbery	*Morusalba*
Chuletro	*Brassaiopsishainla*
Jingat	*Laneacoromandelica*
Timilo/Nimaro	*Ficusroxburghii*
Dudhilo	*Ficusneriifolia*
Pakhuri	*Ficusglaberrima*

Bans	*Bambusa spp.*
Bains	*Salix babylonica*
Amriso	*Thysanolaena maxima*

Fodder tree and their habitat:

Terai & inner terai	**Mid-hill**	**Mountain/hill**
Ipil-ipil	Ipil-ipil	Ipil-ipil
Kabro	Kabro	Kabro
Mulberry	Mulberry	Raikhainu
Koiralo	Koiralo	Khari
Kutmero	Kutmero	Githi
Jingat	Khari	Timilo
Kane khanue	Raikhanue	Chuletro
Tanki	Githi	Painu
Timilo	Gogan	Baanj
Pakhuri	Chiuri	Berulo
Badahar	Jingat	Bhojpatra
Bakaino	Chuletro	Bains
Bans	Tanki	Bhimal
Saaj	Timilo	Khasru
Amriso	Pakhuri	Painu
	Badhar	

Factors affecting the nutritive value of forage

The term nutritive value is generally used for the relative contents of nutrients in the feed. The nutritive value of a forage crop has been described as a function of the amount of dry matter consumed, the concentration of energy and nutrients within it, and the efficiency with which these are used for maintenance and production.

The nutritive value of a feed is determined by-

a) the concentration of nutrients in the feed
b) the amount eaten
c) the proportion of the nutrients digested, and
d) the efficiency with which absorbed nutrients are used

Reduced voluntary intake and digestibility of a poor quality roughage means that this feed has low nutritive value. In contrast, as legumes, green forages and concentrates have much higher amounts of TDN, they have high nutritive value for ruminant feeding. Intake contributes at least equally with nutritive value in determining the feeding value of forages and both are determined by the structure and chemical composition of pasture plants.

The factors affecting the nutritive value of an animal feed as a whole are very complex because the quality of each individual feed is influenced by a number of factors. For example, the nutritive value of a pasture may be influenced by stage of maturity, rate of growth and season of the year, pasture species, grazing rate or frequency of cutting, soil fertility and fertilization and rainfall. This may not be equally applicable in case of other feeding stuffs.

The following points have been considered in determining the nutritive value of straw:

1. Cereal species
2. Variety of tannin content
3. Stage of harvest
4. Length of storage
5. Proportion of leaf to stem
6. Fertilizer application and soil fertility
7. Irrigation
8. Plant diseases
9. Weathering
10. Maturity.

Due to the complexities mentioned above, the following points may be considered in

general:

A) Effect of environment and quality of fibre

B) Phenolics (an integral part of the hemicelluloses fraction, also complex phenolic compounds are known to be present in cereal grains) in the forage plants and their effects on the digestion and utilization of carbohydrates and proteins.

C) The effect of genotype

D) Level of voluntary intake

E) Anti-nutritional factors

The nutritive value of the fibrous fraction is determined by the degree of lignification, while that of the soluble non - fibrous portion is completely available to digestion. It has been expressed that higher temperatures increase lignification of the plant cell wall and promote more rapid metabolic activity which decreases the pool of metabolites in the cell.

Nutritive value of plants is also influenced by a group of chemicals called phenolics because each group can have different effects. Polyphenolics are very reactive and precautions are needed to avoid reactions during handling that affect quantitative and qualitative analysis for evaluating forages has been called into question on the basis that composition does not predict nutritive value and that such analyses are too expensive relative to the amount of information provided.

Unit - 5

Housing Management for Commercial Goat Farming

Goats are important sources of milk and meat. Both readily adapt to a wide range of climate and available feed supplies. They also have similar housing requirement and will therefore be treated together. A good goat house should be a compromise between that which is most comfortable and health giving to goats and that, which is most convenient and economic from the management point of view. Normally sheep and goat do not require elaborate housing facilities but minimum provisions will definitely increase productivity, especially protection against inclement weather conditions (sun, rain and winds) and predation. Housing of sheep\goat is not a serious problem. It is enough if the goats are provided with a dry, comfortable safe and secure place, free from worms, and affording protection from excessive heat and inclement weather. In Nepal, the system of sheep and goats raising varies according to the ecological belts.

In the high hills (above 2000 m) sheep and goats are raised in the transhumance system. They move to the high alpine pasture during the summer and come down to about 1200 m altitude during the winter.

In the lower hills and terai, sheep and goats are usually allowed to graze in the communal grazing lands, forests or fallow lands according to the seasons during the day and are in housed during the night. Sheep and goats are usually herded near by the shepherd's tent or cave during the night in open area in the high hills. If they have to stay for long period due to the availability of good pasture, they are paddocked usually in a circular or rectangular paddock constructed with wooden planks, which are raised vertically as closely packed pillars. There is usually only one door passage.

Generally a farmer have 200-250 sheep and goat in a flock raised under transhumance system. There are 2-4 shepherd and have 3-4 Tibetan mastiff dog for security from predators. Generally flocks have Sinhal goat and Baruwal and Bhyanglung sheep where Sinhal directed the way for flock so Sinhal act like leader. Sheep and goats are usually housed in the side rooms of the farmer's house or in lower hills and Terai region of Nepal. The floors are usually raised 45-60 m from the ground level and slatted with

bamboo poles, wooden planks or beaten bamboos.

To protect the animals from predators and drought walls made using wooden poles. Lightning system is not made available in the pen. Many farmers protecting newborn from cold by keeping them in own house. Sheep and goat are prone to respiratory infection if kept in enclosures without ample ventilation. Slatted floors housing system is slightly modified system of housing (Slatted floors housing) sheep and goat prevent respiratory trouble.

Management System

Depending primarily on the availability and use of land, three system of production are practiced:

1. **Subsistence:** in which a few animals are roped during the day and put into a protective shelter at night.
2. **Extensive:** in which the flock/herd grazes over large areas of marginal land unsuited to agriculture. The flock I usually shut into a yard at night. Both these systems are practiced extensively in East Africa.
3. **Intensive:** in which animals are confined to yard and shelters and feed is brought to the flock. This system offers the greatest protection for the flock from both predators and parasites. Although it may make the best use of limited land resources, this system also increase labors and the capital investment required for facilities.

5.2 Types of housing (Ground level and stilted housing):-

Ground level housing: It is traditional system of housing which is suitable in the upper hills, high altitude of Nepal, where winter is prolonged. The house can be made up of bamboo, wood or wood flack and the roof is usually thatched.

Slatted floors housing: This system of housing is preferred in the area where wood and bamboos are available in cheaper rate where as there is shortage of bedding materials. There should also be ample room beneath the slats so that the under floor can hold manure for a certain period of time without cleaning. The slats must be laid parallel to the entrance doors, so that from the eye level of sheep when they enter the building the floor appears solid. Such floors can easily be lifted by two men for

cleaning and disinfections. Although the spacing and size of slats depends upon the wood type (durability), breed and the number of animals to be housed, size has been 37.5mm x 37.5 mm- tapered 35mm on under side width and a 12.5mm to 20mm gap. The depth of the dung pit to the slats is usually 0.9m. The height of the pen side is 1.0m. Animals are fed from common hayracks and concentrate troughs mounted on the pen side nearest to the central gangways. Hay rack of V shaped is placed inside the house for feeding forage and fodder.

Fig. Slatted floors housing of Goat

Shed for goat farms

General flock pens:

Adult breeding ewes or nannies are housed in this pen. Nannies pens are constructed either with concrete floor or with slatted floors. One adult unit is provided with 0.8 to 1.5 Sq. M. floor space each pen should accommodate 40-50 ewes or nannies. The pen usually includes one or two hay or fodder racks parallel located along the walls, which are raised to about 75 cm. from the floor. Just beneath the racks, concentrate feeders are used in such a way that animals cannot step into feeder.

Shed for buck

Bucks are housed separately in these pens so as to control unwanted breeding. 2.2m x 1.25m floor space is provided to each animal and there should be provision of hay rack and concentrate feeder.

Kidding pens

These are the maternity pens. Pregnant ewes or nannies are housed individually in these pens. These pens shall be made draught free. Pens should be provided with

some heating device, particularly in the cold season to keep the new born warm. Proper bedding with dries straw or saw dust helps better survival of the newborns. The pen is provided with hayracks and concentrate feeder.

Kid pen

Kids from weaning up to attaining maturity are housed in these pens. Usually kids are housed in groups of 40-60 animals per pen. The pen is provided with hayracks and concentrate feeder.

Sick animal pen

Away from the general pen, one or more (depending on flock size) sick animal pens of about 3 x 2 x 3 M size may be constructed. Such pen should be free from any contamination, well ventilated and with smooth surface so that harmful germs cannot grow or survive.

Accessory buildings

There should also be weighing yards, stores for concentrate mixture medicines, farm equipment etc. and shed for hay straw storage at convenient places. Another important structure required on a goat farm is the dipping tank.

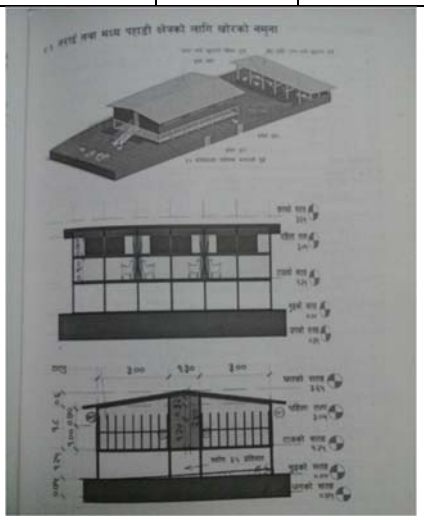
Building for milch goat

Milch goat is rarely seen in Nepal, although Jamunapari goats in the western Nepal Saanen and local goats in some town areas are being used as supplementary milk producers. All the goat milk is used only for home consumption in Nepal. When there is large number of milch goats the shed is divided into a number of stalls, one stall for each doe. This facilitates milking and stalls feeding of goats individually. The stalls may be arranged in two rows with a passage between them. The dimension should be 1.2m x 0.8m.

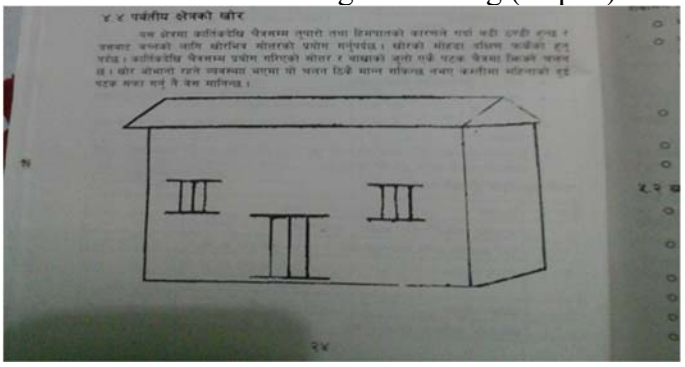
Types of sheds

S.N.	Type of shed	Size (m)	Height (m)	Maximum animals
1.	Ewe/doe shed	15 x 4	3	60
2.	Ram/buck shed	4 x 2.5	3	3
3.	Lambing/kidding shed	1.5 x 1.2	3	3

4.	Lamb/kid shed	7.5 x 4	3	75
5.	Weaner shed	7.5 x 4	3	75
6.	Yearling shed	10 x 5	3	50
7.	Sick animal shed	3 x 2	3	1
8.	Shearing shed and store room	6 x 2.5	3	
9.	Shepherd's room	6 x 4	3	



Source: Commercial goat farming (Nepali)



Source: Commercial goat farming (Nepali)

(figure not clear)

Unit - 6

Care and Management of Goats of Different Stage of Growth

6.1 Care and management of pregnant doe

Symptoms of early pregnancy:

- Sluggish temperament
- Cessation of estrus
- Gradual increase in volume
- Increase in weight

Advance stage of Pregnancy:

- Sinking on both sides of rump and forward of the hips
- Keep away from group in search of lonesome place
- Scratching the ground with forelegs
- Restless-in changing position by sitting and standing alternately
- Vertical movement of tail
- Emergence of water bag from vulva
- Stretching on side and heaves her body
- On set of contraction
- Appearance of part of lamb
- About 6-8 weeks before kidding doe should be dried off for developing healthy unborn kid, keep good health and maintain high milk yield during lactation.
- Feed laxative, leguminous and nutritious rations along with 450 g concentrates daily
- If they are permitted to go on range then separate pasture is used for these does.
- Avoid overfeeding and underfeeding to prevent metabolic disorders. Unduly thin goat prior to kidding is likely to have kidding problems leading to birth of weak kids, whereas over fat goats are likely have increased incidences of difficult

kidings.

- Avoid sudden changes in ration of does.
- Provide ration with enough protein and minerals as per requirements according to body weight and stage of pregnancy.
- Water is made available at all times.
- House the pregnant doe in separate pen to avoid accidents, injuries from other animals and also to give better care.
- Make provision of clean soft bedding material in maternity pens for pregnant goats in last 15 days of gestation.
- Reduce the concentrate mixture for goat at 100gm/day in last week of gestation before kidding.

6.2 Care of lactating doe:

- Give good quality greens and concentrate 450 gm/liter milk production.
- Wash the udder with 5% Dettol solution.
- Milk the doe completely with dry hand
- Clip off the hair from hind quarters.
- Carry out measures of clean milking.
- Daily grooming of milking doe makes them docile, clean body, increase circulation, eradicates parasites, keep them in good health and is advantageous in making close observation of body.
- Clean the place of kidding, disinfect and dispose of the placenta.
- Wash the hind quarters of goat with antiseptic solution.
- Protect the doe against the inclement weather specially cold
- Give a warm bran mash containing a small amount of oat meal, ginger, a pinch of salt, mineral mixture and jaggery.
- Two days after kidding, provide ration of her choice.
- The concentrate amount per day should not be more than 500g/days.
- Doe may return to heat after about a month but breed only 40 days after kidding.

6.3 Care of new born kid:

- Ensure that nose and mouth are free membranes and mucoid fluid immediately after birth.
- Place the lamb in a clean and sheltered place.
- Clean the mucus from the body of lamb and make it dry.
- Let the ewe also lick her lamb for:
- Cleaning and removal of mucus from lamb's body.
- Establishing the affinity between lamb and ewe.
- Leaving 3 cm from the body cut the navel cord with sterilized scissors and treat with tincture iodine.
- Mark the kid and give permanent number and record age and number of doe, sex of kid, date horn.
- Weight the kid and record it (normal birth weight varies from 2.5 to 3.5 kg in Indian sheep).
- Help the kid to reach the teats of ewe for suckling.
- Makes sure that kid gets first milk.
- Protected the kid getting chill by wrapping in Jute/blanket.

6.4 Care of breeding buck:

- Buck is half of the band therefore select pure bred buck of good breeding ability.
- Breeding males should not be tethered.
- Bucks should be housed separately to have enough movement and exercise. A single stall measuring 2.5 X 2 m with usual fittings for food and water is suitable for the buck.
- Two bucks should not be kept together, particularly during breeding season because they may fight causing injury to each other.
- Buck should be taken to does for breeding only when needed. Ensure proper nutrition for bucks especially during breeding season.
- Give enough exercise to prevent them becoming sluggish.
- Buck should neither be overfed nor underfed; otherwise health break down may

occur. Good pasture alone will maintain them healthy. Also provide enough salt, minerals and vitamins in diet.

- Cleanliness and feeding plenty of greens will help to reduce "goaty smell". Average green fodder per buck/day is 7 to 8 kg.
- Carry out grooming/ brushing every day to keep them clean, free of parasites and to make them docile.
- Young buck up to 1 year age be used for not more than 25-30 does, but those of age 18-24 months may be used for 50 does.
- Periodical trimming of hoofs to prevent lameness and drenching with vermifuge be carried out to keep them free of parasites.

6.5 Care and management of kids for fattening:-

- Goats are slaughter mostly for lean meat
- Ration should be 30-40% DM from roughages & 12-14% protein & 60-70% TDN from concentration.
- Generally goat attain slaughtering age by 10-12 month
- Body weight having variable (20-30kg) as specific for various breed.

Raising of orphan kids:

(i) Adoption to strange lamb by foster mother: The measures are as follows:

- Rubbing the foster mother's milk on the rump of kid and nose of the ewe.
- Tying such doe(s) that have lost their kid closer to orphan lamb with small halter in a small pen. Putting the whole skin of the dead lamb over the body of orphan lamb.

Note:

- Patience helps in getting doe to accept an orphan kid.
- An attempt by ewe to lick an orphan kid is an indication of success.

(ii) Raising orphan lambs by hand:

- Feed small quantity of milk frequently, i.e. 30 g milk at 2 hours interval for two days.
- Increase the quantity of milk with age and weight/size of kid and its appetite.

- Increase the interval between feedings.
- Make use of nipples and clean bottle.

Note:

- More troubles are noticed from overfeeding than from underfeeding. Therefore don't feed too much at one time.
- The greatest losses in productivity in most flocks are due to mortality of kid during first 48 hours or first week of life.
- Protect young kid from cold or heat stress, small carnivores etc.

Unit - 7

Identification and Husbandry Practices

7.1 Ageing by dentition

Incisor pair	Type of incisor	Possible age (years) / range (month)
0-2	Temporary	At birth
All 4 pair	Temporary	0.6-0.10
First	Permanent	1(Range 14-20)
Second	Permanent	2(Range 21-25)
Third	Permanent	3(Range26-30)
Fourth	Permanent	4(Range 30-40)

7.2 Identification of goats

Purpose:

- For designation and identification of animals.
- To carry out proper feeding.
- For better management practices whenever needed.
- To maintain proper records of all animals.
- **Branding:** It involves searing a number, letters, designs or a combination of these on the skin with a hot iron or with chemicals. Branding is most suited for making cattle, buffaloes, horse and camels. Calves should be branded by the time they are about one year old. A sunny day in the non-fly season should be chosen for branding animals. These comprise figures 1 to 9 and 0, and letters A to Z.
- **Tattooing:** Tattooing is permanent and cheaper method. Generally lambs and kids are given number on their ears. It consists of piercing outlines of desired number of figures on the skin indicate ears and then incorporating a black vegetable pigment into these punctures. The various letters and figures are outlined by steel points, each of which carries a small amount of colored paste into the subcutaneous tissues and cartilage of ear. These pastes contain insoluble

carbon (black) or green pigments that are inert to tissues. Tattoo figures cannot be read without handling and close inspection of the animal and the marks are not easily legible when imprinted on pigmented skin.

- **Ear tagging:** Ear tags are of metal pieces with number or letters engraved on them. There are two types of ear-tags, self-piercing tags and tags that require a hole in the ear made with an ear punch. Generally, the tags are inserted within one-third of the way out from the base of the ear, generally on the upper edge of the ear with number on top.
- **Ear Notching:** Notches cut in the ears make a rather easy method to identify animals. A notch represents a number depending on its location, whether in the top, bottom or end of ear, and which ear it is in. The method is common in swine and sheep.
- **Docking of kids:** Generally it is not practiced in lamb and kids however sometimes it is practiced in lamb. Docking in kids is very rare.

Purpose:

- To give a square and blocky appearance to market.
- To keep lamb/kid cleaner.
- Docked lamb/kid do not subject to maggots in moist and hot weather.
- Lambs/kids with long tail are not wanted for the feed lot.
- To get clean wool.
- To avoid interference of long tail in breeding the ewes/does.

Materials:

- Sharp docking knife
- Tincture Iodine/ Benzene
- Docking pincers
- Sulphanelamide powder
- Hot chisel
- Silk thread
- Emasculater

- Pin tar
- Cotton wool
- Olive oil
- Bandage

Suitable age and time: It may be performed at any day or time but preferably on sunny day and at about 10 days of age of lamb/kid.

Procedure:

- Secure the lamb/kid and hold its dorsal side on floor/ table. Place it on its rumps with tail placed along the surface.
- Push the skin slightly towards the body so that some surplus skin will be left to cover the stub.
- Mark the tail at a point about 1 to 1.5 from the body as measured on the underside of tail.
- Sterilize the tool(sharp knife or docking machine)
- With the help of sterilized tool cut the tail so quickly that lamb/kid could hardly know that its tail has gone.
- Apply pinetar and carbolic acid to keep off the flies and prevent maggots (to prepare mixture).
- Apply sulphanelamide powder and bandage the wound.

Limitations:

- Docking does not add much to market value.
- It causes temporary set back to lamb.
- Causes loss of blood.
- If not properly cared there are chances of infection.

Precautions:

- Provide a clean place for lamb/kid after docking.
- If weather is not good keep it inside pen.
- Keep the lamb/kid quite comfortable.
- Examine the lamb/kid for 2 to 3 days for pus and drainage.

- Operation of docking may be performed in the morning to watch animal excessive bleeding, if any, during day time.

7.3 Disbudding:

Disbudding is the practice of removing the horns buds from the very young kid. Under group managements in loose housing system the horn of goats/sheep are nuisance.

Material required

- caustic soda
- caustic potash
- ZnO
- Electric dehorner

Age of disbudding

Average age=10 days

1. Male kids 4 to 5 days
2. Female Kids 10 to 12 days

Methods:

- Hairs around the horn buds are clipped and this area covered with Vaseline to protect from burning when caustic is used.
- Rub the caustic potash stick on the horn bud to cauterize it put some dusting (ZnO) powder.
- Electric dehorner can also be used at 5390C for 8sec
- Precautions:
- Use hand gloves to protect skin when caustic is used.
- Protect the eyes of kid/lamb from contact of caustic.

7.4 Castration

Purpose:

- To stop indiscriminate mating.
- To remove surplus males for market preference.
- To make males more docile.

- To make mutton/chevon of superior quality.
- It is important in treatment of orchitis, other aliments like tumour, accidental injuries.

Time: Any part of the day, preferably on sunny day in the morning.

Optimum age: Within a month (preferably 2 weeks age for sheep & 4 weeks for goat)

Materials:

(A) Bloodless Castration:

- Burdizzo's castrator/ Emasculatome
- Rubber bands

(B) Incision method:

- Castration knife with double blade
- Surgical spirit
- Tincture iodine
- Sulphanelamide powder mixed with iodoform
- Cotton wool
- Acriflavin solution

Procedure:

Emasculation method:

- Secure the lamb and place it on its rumps with tail placed along the surface of slab/ floor.
- Manipulate the testes and slightly pull out with scrotum.
- Hold the spermatic cords tightly on both sides making sure that spermatic cord does not slip.
- Apply tincture iodine at the site of crush.
- Take emasculatome/ Burdizzo's castrator with clean and smooth edge of jaw, place it over the spermatic cords and punch quickly.
- The same process may again be repeated 1\2 cm below first crush. 7. Watch the animal for few days for any infection.

Precautions:

- Emasculatome must be clean and disinfected.
- Make sure to protect testes from any injury and crush spermatic cords well above the testes.
- Tr. Iodine must be applied on the site of crush before the lamb is let loose after castration.
- No fold scrotum skin be pressed or crushed.

Rubber band method:

- Secure the lamb and make it lie down one side.
- Select a tight rubber band.
- Place it over the spermatic cord of scrotum little above the testes on scrotum
- The constant pressure exerted by rubber band shuts off the blood supply to testes.
- The testes will get dissolved and absorbed. A rubber band slips off and falls on the ground.

Incision method:

- Secure the lamb/kid on clean floor and make it lie down one side.
- Clean the hands and castrating knife and sterilize with spirit soaked cotton.
- Wash the scrotum in acriflavin solution.
- Make incision on lower side of scrotum with sharp knife.
- Allow proper drainage of blood.
- Remove the testes by pulling them out, bring as much of the cord is possible.
- Scrotum and surrounding parts must be thoroughly disinfected with Tr. Iodine.
- Apply little sulphanelamide powder mixed with iodoform.

Precautions:

- Incision method should not be followed in rainy weather.
- If performed then lamb should not be allowed to go out in rain.
- Prevent infection from flies, use fly repellent like iodoform.
- Perform operation on clean, clear and bright day.
- Do not excite the lamb.

- After operation provide clean pen well bedded.
- Keep lamb under close observation.
- Keep hands and tools properly sterilized.

7.5 Hoof trimming

Purposes:

- Prevents over growth of hoof.
- Keeps animal fit for walk.
- Prevents weakness of leg.
- Prevents foot rot and other aliments which ruin the feet and lowers milk production.
- Necessary for general well being.

Materials:

Sharp pen knives, curved hand pruning shears, hoof knife, Hoof rasp, Turpentine oil.

Method:

Secure the goat. Make it lie down on one side or back. Trim the hoof as necessary to remove over growth. Rasp it to level and apply turpentine to disinfect.

Frequency:

3 to 4 times a year for goats reared in confinement.

Unit - 8

Goat Health Management

8.1 Common external and internal parasites of goat

External Parasites (Arthropods)

Flies

There are a number of fly species which are primarily a nuisance, especially under confinement conditions. The fly season is April-October. The constant buzzing of nuisance flies is irritating and can result in reduced foraging that may lead to production losses. Blood loss due to large numbers of feeding mosquitoes, may lead to anemia, unthriftiness, and weight loss/reduced gains. However, these fly problems are not all that common and control measures are usually not emphasized. There are many insecticides that can be used for control when necessary. Routine disposal of manure and organic materials will help control nuisance flies, and the local mosquito control program will help control mosquitoes.

Lice and mites

These parasites are relatively permanent residents on the animal. Infestation (commonly called mange when mites are involved) may be seen as intense irritation with the animal scratching and chewing creating skin lesions that can become ugly. They thrive and reproduce during the cooler months (October-March) of the year. Transmission from animal to animal is by contact, so crowding should be avoided. Control can be accomplished by using appropriate insecticidal products at the onset of cooler conditions and as necessary thereafter.

Ticks

Ticks thrive on blood obtained from the host. They are subdivided into hard and soft ticks according to structural characteristics.

The bodies of hard ticks are roughly oval and pointed at the front. The anterior segment is a false head the structure of which may help to identify them. The structures on the head anchor the tick to the host's skin and facilitate blood feeding. The abdomen,

flattened top and bottom, can expand to several times its original size as a tick feeds on its host. This phenomenon, referred to as engorgement, is seen only in females. The patterns of pigmentation on the top side of the tick also help with identification. A further classification of hard ticks is made based on whether their life cycle involves one, two, or three hosts. Ticks have a life cycle incorporating incomplete metamorphosis. Adult ticks feed and mate on mammals. Engorged females drop to the ground and lay eggs. The eggs hatch, producing larvae, called seed ticks. The seed tick moults twice, passing through a nymphal stage before reaching maturity. A blood meal must be taken before each moult can occur. Ticks are classified as one-, two-, or three-host ticks, depending on how many times they drop off, moult, and seek a new animal. A one-host tick remains on the animal from the seed-tick stage to maturity. A two-host tick drops off the initial host to moult from larva to nymph. The nymph seeks a second animal for the final blood meal before final moult to adult. The three-host tick drops to the ground for each moult, after which a new host is sought.

Soft ticks differ from hard ticks in many respects. They have a leathery outer skin rather than a hard cuticle, and both males and females engorge when feeding on the host. Their shapes vary among species and their false head is located on the bottom side of the tick near its front so it is not pointed as in hard ticks. Otobiusmegnini, the spinose ear tick, is an example of a soft tick. Only larvae and nymphs of this species are parasitic and can cause swelling of the ear resulting in scratching and signs of disorientation. Adults live in hidden areas in the environment, such as within cracks in the wood of barns.

Insecticides recommended for other ectoparasites will control ticks. Dipping or high pressure sprays provide the best results.

Diagnostic methods

In general, most external parasites can be collected with various equipments. For flying insects, nets and aspirators are used. For crawling insects/ticks, jars, traps, combs and forceps are used. For mites, skin scrapings are used. Most external parasites can be seen readily and identified using published descriptions and keys. However, the use of a microscope is usually necessary.

Internal parasites

1. **Abomasal worms**
   - Haemonchus contortus (Barberpole worm)
   - Telodorsagia (Ostertagia) circumcincta – (Brown stomach worm)
2. **Small intestinal worms**
   - Trichostrongylus colubriformis (Bankrupt worm)
   - Nematodirus spp. (Long-necked bankrupt worm)
3. **Large intestinal worms**
   - Oesophagostomum spp. (Nodular worm)
   - Trichuris spp. (Whipworm)

Control of internal parasites (Deworming)

- Deworming should be done at 3 months interval (yearly four times) and all the kids should be dewormed specifically for cestodiasis at 3 months of age.
- Dosing of trematode infection should be given in the post monsoon period (January to march) of every year.
- The most suitable time of deworming is the early stages of infection when the worm load is less.
- Young animals should preferably be dewormed every month using a suitable anthelmentic.
- Older stock can be dewormed at 4-6 months intervals.
- It is good to deworm adult females after parturition.
- In adult animals deworming is done on examination of dung.
- All the animals should preferably be fasted for 24 hours before giving the anthelmentic.
- The deworming drugs should be rotated annually to avoid anthelmintic drug resistance.
- Periodical screening of individual and pooled dung samples for assessment of parasitic load should be carried out to keep the parasitic load under control.
- The local veterinarian should be consulted for all suggestions regarding

dewormers and deworming.

Deworming schedule

Albendazole @ 5-10mg/kg body weight (For Broad spectrum)

Febendazole @ 5-7.5 mg/kg body weight (For Broad spectrum)

Oxyclozanide @15mg/kg body weight

Niclosamide@50-100mg/kg body weight

Piperazine@200-300mg/kg body weight (for round worm)

NOTE: Deworming in every 4 month is recommended. However, deworming should be done according to fecal examination finding.

External parasites control-dipping

Purpose

- To remove waste materials and dung from the hair.
- To eradicate ectoparasites.
- To wart off attacks by blow flies resulting in maggots.

Dipping is done usually twice a year i.e. once before shearing and a second time when the fleece has grown long.

Precautions before dipping

- Do not dip does in advanced pregnancy to avoid inducing abortion.
- Always offer water before dipping so that goat will not drink the dip.
- Always rest goat before dipping.
- Do not dip sick animals.
- Dip about a month after shearing when there is sufficient dip
- Dipping should preferably be completed before noon.
- Allow goat in a draining pen for sometimes before turning them out on the pasture.
- Chooses a day is possible when the weather is not too hot.
- Dipping should be done during sunny days.

- Care should be taken to avoid contact of eyes and mouth with the solution·
- After dipping place the animal in the open place for quick drying.

8.2 Common diseases of goat

Spotting of sick animals

S.N.	Parameter	Healthy animal		Sick animal
		Sheep	Goat	
1.	Look of animal	Alert		Dull
2.	Head	Raised		Bent downwards
3.	Eyes	Wide open, bright		Dull with white deposition at the corners
4.	Conjunctiva	Normal		Pale or congested
5.	Nose	No discharge		Slimy discharge
6.	Movement	Active		Sluggish, lameness
7.	Response	Quick		Slow
8.	Feces	Normal		Hard / loose, mucus/blood-stained, discoloration, dysentery
9.	Pulse (/min)	70-90	70-90	Increased
10.	Body temperature (°F)	102.4	103.8	Increased
11.	Respiration (/min)	12-30	12-30	Increased, difficult
12.	Grazing	Normal		Abnormal
13.	Rumination	Regular		Irregular
14.	Feed and water intake	Normal		Reduced
15.	Udder	Normal		May be swollen
16.	Skin	Healthy		Infected, external parasites

Common Diseases and Their Control

Morbidity and mortality are the two important factors resulting in heavy losses in goat/sheep production and improvement programmers. Prevention is always better

than cure as it is a lot cheaper. This has special significance with sheep as they seem to respond less to treatment when sick than other livestock species. Diseases in goat/ sheep can be broadly classified as non-infectious and infectious.

a) Non-infectious diseases

Approximately 80% of deaths in lambs have been estimated due to non-infectious causes. Starvation, primarily from mis-mothering and behavior, nutritional and environmental stress, reproductive problems and predation are the major causes reported.

(1) Pneumonia

It is one of the most common and important pathological conditions in sheep. It is characterized clinically by increased respiration, coughing and abdominal breathing. A toll of 20-40% of the mortality has been reported at organized sheep farms due to pneumonia of bacterial or viral origin. Another type of pneumonia is "aspiration" or "drenching" pneumonia caused to wrong and forceful drenching operations. If some fluid has erroneously entered the animal's respiratory tract, its head should be lowered immediately and slapped a few times.

(2) Ruminal tympany (Bloat)

It is the over-distension of the left flank either due to free gas or froth. This is generally encountered in "greedy feeders" when lush green pasture is available. Tying a bitter (eg. neem) stick in the mouth as a bit to increase secretion of saliva is the most practical and can be done immediately. Oral administration of sweet oil with turpentine oil or at times with formalin is advised.

(3) Rumen acidosis

Ingestion of large amounts of highly fermentable carbohydrate feeds causes an acute illness due to excess production of lactic acid in the rumen. Clinically, the disease is manifested by dehydration, blindness, recumbency, complete rumen stasis and a high mortality rate. Normal saline, sodium bicarbonate and antihistaminics are advised.

(4) Intussusception

It occurs commonly due to nodular worms, change in feed and local intestinal

problems. The animal is dull, off-feed, kicking at the belly with no rise of temperature, frequent straining with no defaecation, colic symptoms, and at later stages, recumbency. Emergency surgery is the only rational treatment.

(5) Deficiency diseases

Young goat/sheep grazing on drought-stricken pastures can suffer serious depletion of reserves of minerals and vitamins.

1 Copper and Cobalt: Characterized by anorexia and wasting. Growth and wool production are severely retarded. Wool may be tender or broken. Fine wool becomes limp and glossy and loses crimp, developing straight, steely appearance. Anemia, diarrhoea and unthriftiness occur in extreme cases. Copper or cobalt sulphate treatment causes rapid disappearance of the symptoms.

2. Calcium, Phosphorous &Vit. D: The daily requirement of Ca, P &Vit. D for an adult sheep is about 2.5 gm, 1.5 gm and 300-500 units, respectively. Deficiency may result in rickets in lambs and osteomalacia in adults. Mineral supplementation in diet is essential to prevent this deficiency.

3. Vitamin A: Vit. A deficiency occurs in sheep on dry countryside during periods of drought. Symptoms include night blindness, corneal keratinization, ptyriasis, hoof defects, loss of weight and infertility. Congenital defects are common in the offspring of deficient dams. Animals should have access to green pasture and should be supplied with Vit. A in feed to prevent deficiency.

(6) Pregnancy toxaemia (Ketosis)

It is a highly fatal disease caused due to a decline in the plane of nutrition and short periods of starvation (40 hrs) during the last two months of pregnancy. Hypoglycaemia and hyperketonemia are the primary metabolic disturbances. It is primarily a disease of intensive farming systems. Symptoms include separation from the flock, apparent blindness, constipation, grinding of teeth, drowsiness, tremors of the head, twitching of lips, in-coordination, ketonic breath, leading to coma and death. Treatment comprises intravenous administration of 50% glucose. Supply of molasses in the ration and provision of additional concentrate in the last two months of pregnancy helps prevent the condition.

(7) Poisoning

- **Organochlorine compounds:** This group includes DDT, BHC, lindane, aldrin, dieldrin, chlordane, toxaphane, methocychlor etc. which are used as pesticides on crops and as ectoparasiticides on sheep. Toxicity symptoms include increased excitability and irritability followed by muscle tremors, weakness, paralysis etc. Treatment consists of administering antidote, usually short-acting barbiturates.
- **Organophosporous compounds:** This group consists of malathion, darathion, chlorathion, carbophenothion, demton, dasnon, dimethylparathion, trichlorphon, dioxalthion etc. Symptoms of toxicity are profuse salivation, muscle stiffness, dyspnoea with open mouth breathing, tremors. Treatment consists of administering antidote, usually atropine sulphate.
- **Snake bite:** Sheep are usually bitten on the scrotum or udder. The presence of hair may obscure the typical fang marks. Prolonged pain, muscular weakness, impaired vision, nausea and paralysis are generally exhibited along with symptoms of shock. If anti-venin is not available and the bite is located in an area where a tourniquet cannot be applied, excision of an area of skin and sub-cutaneous tissue can be life-saving.

(8) Wounds

During the monsoon season, a large number of animals suffer from wounds at various sites esp. around the ear, sternum and fore- and hind-legs. The main reason seems to be the awns of Aristidia and Heteropogonspecies of grasses, which initially break the continuity of the skin, which is then attacked by flies making the wound infected and maggoty. It causes great stress in young lambs, and may also lead to conjunctivitis, corneal opacity and blindness.

(9) Dystokia

The common causes are insufficient opening of the cervical canal, heavy lambs (esp. crossbreds), abnormal fetal position and uterine torsion. The condition can be relieved surgically.

(b) Infectious diseases

(1) Blackleg

It is an acute, infectious disease caused by Clostridium chauvoei and characterized by inflammation of muscles, severe toxaemia and high mortality (approaching 100%). All age groups are susceptible. Increased protein feeding of sheep increases their susceptibility. The spores are highly resistant to the environment and the portal of entry is through the alimentary mucosa. Infection in sheep generally takes place through skin wounds following shearing and docking. Symptoms include high fever, anorexia, discolouration of skin, crepitation and depression. Penicillin is the drug o choice for treatment.

(2) Enterotoxaemia (pulpy kidney)

It is an acute disease of sheep of all ages, but primarily of lambs. It affects animals in a high state of nutrition on a lush feed, grass or grain. Morbidity rates seldom exceed 10% but mortality rate approximates 100%. It is caused by Clostridium perfringens type D which normally inhabits the alimentary tract of sheep. Under certain conditions, the organism proliferated rapidly in the intestines and produces lethal quantity of toxin. In lambs, the course of illness is very short, often less than 2 hours and never more than 12 hours, and many are found dead without manifesting early signs. Symptoms include green, pasty diarrhea, staggering, recumbency, opisthotonus, and acute, clonic convulsions with frothing at the mouth. A history of sudden death of several big lambs justifies a tentative diagnosis of enterotoxaemia. Suphadimidine may be effective for treatment. Two major control measures include reduction in the feed intake and vaccination.

Infection with Cl. Perfringens type B (lamb dysentery) and type C (struck, hemorrhagic enterotoxaemia) result in severe enteritis with diarrhea and dysentery in lambs.

(3) Tetanus

It is an acute, infectious disease manifested by tonic convulsions of the voluntary muscles. In sheep, it commonly follows routine operations such as shearing, docking, castration and even vaccination. Clostridium tetani form spores which are capable of persisting in soil for a number of years. The portal of entry is usually through deep, puncture wounds. Symptoms include stiffness of limbs; lock jaw, opisthotonus, followed by death due to asphyxiation. Tetanus antitoxin is usually administered but

is of little value when the signs have appeared.

(4) Pasteurellosis

It is primarily caused by Pasteurellahaemolytica in sheep and usually occurs in pneumonic form, although a septicaemic form is not uncommon in lambs. Morbidity and mortality rates may be as high as 40%. Transmission occurs by the inhalation or ingestion of the infected material. Symptoms include pyrexia, mucopurulent discharge from the eyes and nose, coughing, depression and anorexia. Preventive vaccination is recommended, after which the animals should not be sent out for grazing for 2-3 days.

(5) Paratuberculosis (Johne's disease)

It is a chronic, wasting disease caused by Mycobacteirumparatuberculosis and characterized by progressive emaciation and a thickening and corrugation of the intestinal wall. Mortality rate may be as high as 10%. The disease causes severe economic losses in infected flocks. As the progress of the disease is slow, it is mostly seen in older animals. No treatment is successful.

(6) Goat pox

It is a highly contagious viral disease characterized by development of vesicles and pustules on the skin and internal lesions. Spread may be by contact with infected animals and contaminated articles, or by inhalation. It often causes death in 50% of affected animals. Infection of the pustules by secondary organisms may cause pyrexia and other complications. The course of the disease is 3-4 weeks, during which time the sheep becomes emaciated and may shed their wool. Vaccination is the best control.

(7) Foot and mouth disease

It is an extremely contagious, acute viral disease characterized by development of vesicles in the oral cavity and in the interdigital space. Mortality is usually low (3%), but the economic loss is chiefly due to the loss in condition of the affected animal. Transmission is by contact with the diseased animal and incubation period is less than 24 hrs. Antibiotics are recommended to check secondary infections. Vaccination is the best control.

(8) Contagious ecthyma

It is a viral disease characterized by the formation of papules and pustules and the

piling up of thick crusts on the lesions. The virus gains entry through unobserved wounds on the lips. The incubation period is dependent on the amount of virus introduced. The lesions are mostly found on the commissures of the lips and are covered by scabs. The course of the disease is 1-4 weeks. Antibiotics are recommended to check secondary infections

(9) Blue tongue

It is an infectious but non-contagious, exotic disease of sheep. Natural transmission takes place through insect vectors viz. Culicoides and Aedes species, and sheep Melophagusovinus. Incubation period is less than a week. Pyrexia upto 106oF is the common initial symptom.. The disease has three clinical forms: abortive, acute and sub-acute. The abortive form mostly goes unnoticed. In the acute form, there is fever lasting for 5-6 days with nasal discharge, frothing, marked salivation, highly congested and cyanotic nasal and oral mucosa, epithelial excoriation in the oral cavity and purplish discoloration of the interdigital space, pasterns and coronets. Symptoms are less severe in the sub-acute from. Morbidity rate may be 50% or more whereas mortality rates vary widely. Antibiotics are recommended to check secondary infections.

8.3 Dipping, pouring spraying and drenching in Goat

A. Dipping

Dipping chemicals: BHC, Lindane (0.25%), DDT (0.5%), Garathion, Malathion (2.0%), Cimathion, Pyrethrin-arsenic sulphide powder (0.2% arsenic), coal tar-creosote (0.76%), nicotine and tobacco dips (0.1% nicotine, 15 kg tobacco leaves in 500 lit. water).

Dipping tanks:

a) Hand bath: In case of small flocks, a tank of galvanized iron (1.2 x 1.0 x 0.5 m) can be used. Goat can be lifted one by one into the bath and kept for two minutes. The goat are removed and placed on a drain board to drain off surplus dip back into the dip tank.

b) Swim bath: In large flocks, the dipping tank can be constructed of metal or concrete. It should be 12 feet long at the top and 6 feet long at the bottom, with

a incline for the other 6 feet. The tank should be 2 feet wide at the top, sloping to one foot at the bottom, and it should be 6 feet high. The sheep should be completely immersed in the liquid (including their heads and ears).

Precautions:

1. Follow the manufacturer's instructions thoroughly for preparation of the dip as well as its disposal.
2. Always water and rest the goat before dipping to avoid their drinking of dipping solution.
3. Choose a bright, sunny day (neither too hot nor too cold) so that the treated animals will dry quickly and the insecticide will not be diluted by rain.
4. Avoid dipping of goat in advanced stage of pregnancy.
5. Avoid dipping of sick animals, goat with wounds, young lambs (less than one month old) and stock being sent for slaughter.
6. Avoid dipping of buck in breeding season to guard against injury to penis or scalding of thigh.
7. Keep goat in the holding pen for at least five to ten minutes so that they drain properly, thus avoiding wastage of dip and resultant pollution of the environment.
8. Complete each day's dipping by 4 PM so that the goat will have some hours to dry before nightfall.
9. Do not return treated goat to the shed from which they came until it is completely cleaned.

B. Pouring

When an individual sheep is affected with scab or badly affected with maggots and has open wounds, dipping is not advisable. In such animals, a small quantity of dip is poured into the fleece along the back, sides and belly to achieve the objectives of dipping.

C. Spraying

Spraying sheep with a fly repellant insecticide solution over the backs and sides is an effective method of controlling ectoparasites in tropical countries. In developed

countries, fly-repellant solution is sprayed in the form of a fine mist through a series of nozzles into a roomy tunnel through which the sheep are forced to pass.

However, spraying can be done with the help of a power sprayer or hand sprayer in case of small flocks. Spraying is not as economical or efficient as dipping and is recommended only for young lambs which cannot be dipped.

D. Drenching/dosing

Drenching is the method of administration of medicine or others liquids via oral route. During drenching operator stands by keeping the animals in between his two legs and controls the animals by pressing its shoulders with the help of his knees. He controls the head by placing the thumb on the bride of the nose and fingers under the lower jaw and he puts one end of the rubber tube in to the mouth. An assistant pours the medicines through the others end of the tube with the help of a funnel.

Drenching through stomach tube:

Stomach tube is a thick long rubber tube to introduced the liquid medicine directly in to the stomach

Advantages:

- Useful for the animals suffering from respiratory troubles
- Safe for the medicine with unpleasant taste and odour
- To avoid the risk of choking.
- For the administration of whole dosage without wastage.
- Easier control of the animals.
- Less disturbances and struggling.

Disadvantages

- It requires a skill hand.
- It may cause injury to the mucous membrane of the esophagus and stomach.

8.4 Vaccination in goats

Disease	Age and booster doses	Route	Remarks

PPR	3-4 month, 1ml	s/c	Falgun/ Chaitra
Contagious Caprine Pleuro Pneumonia (CCPP)	3-4 month, 0.2 ml	s/c	Poush/Magh
Goat pox	Scratch method Chaitra/Baisakh		
Foot and mouth disease	6-8 weeks, repeat every 6-9 months	s/c or i/m depending on the vaccine	Baisakh/Jestha
Enterotoxaemia	3-4 months, repeat after 15 days and then annually.	2.5 ml s/c	First two doses before august
Hemorrhagic Septicaemia	3-4 months,, repeat annually	1ml s/c	May/June
Anthrax	4-6 months, repeat annually	0.5 ml s/c at tail fold	In endemic areas only
Tetanus	3-4 months, repeat at 6 months and then annually	0.5 - 1 ml s/c or i/m	

Unit - 9

Goat Enterprise and Business Planning

9.1 Definition of enterprise and characteristics of a good entrepreneur

Entrepreneurs, with their new business formations and enterprise activities, are handled as an important factor on the process of countries' development and growth. Because entrepreneurship consists of originating, or starting, a company, and management consists of operating an existing company (Zeithaml et al., 1987). Entrepreneurs always take a place in the front row while forming innovations and making the dreams come true. Because entrepreneurship is about creating new realities; transforming ideas into new ventures, and transposing old ideas into new situations (Nicholson & Anderson, 2005). Realizing the new investments real, forming production processes have been perceived as identical with entrepreneurship. When the characteristics which belong to entrepreneurship that can be expressed in general lines are examined carefully, we will see that more detailed characteristics have existed. Consequently, a wide range of business behavior has variously been classified in the literature as "entrepreneurial", including starting a business (i.e., new venture creation), innovation, business ownership, business growth and size achievement, and managing a large business (Verheulet al., 2005). In addition to these characteristics, entrepreneurship focuses on newness and novelty in the form of new products, new process, and new markets as the drivers of wealth creation. Somewhat differently suggested that discovering and exploiting profitable opportunities is the foundation for wealth creation through entrepreneurship. Both of these viewpoints agree that opportunity recognition through entrepreneurship (Ireland et al., 2003).

Some Terminologies:

Entrepreneur: An individual who sets up and runs a new business and takes on the risks associated with the business

Enterprise: The process by which new businesses are formed in order to offer products and services in a market

Business startup: Quite simply - a new business. A startup begins life with a new

product idea or sets up to operate an existing idea or format. But until it begins trading, a startup has no customers.

Risk: The probability or chance that hoped-for outcomes will not occur. E.g. that a new business idea will not prove popular with customers

Reward: the returns (e.g. profits, personal satisfaction) that are earned from taking a risk.

Opportunity cost: The cost arising from taking a decision which means that the next best opportunity is missed. E.g. an opportunity cost of investing in new machinery might be the lost opportunity of investing in a marketing campaign if cash resources are scarce.

Characteristics of a good entrepreneur:

- Risk acceptance
- Innovation, vision and initiator of new activities
- Personal drive (High need for achievement)
- Belief in control over events.
- Ambiguity tolerance
- Need for independence
- Identification of market opportunities.
- Intuitive
- Vision
- Self confidence
- Takes responsibility
- Resources marshalling
- Value adding
- Good networkers
- Capacity to inspire
- Growth orientation
- Diligent
- Self-made

- Professional
- Industry related experience
- Ability to mobilize intangible assets
- Proactive

9.2 Developing business plan for a commercial goat farm

Objectives

- To rear goat for milk, wool, kids and meat production so as to meet out domestic demand.
- To establish these units as avenue of self employment and income generation enterprise among rural youths for their sustained livelihood.
- Locality and area of operation
- The project may be located in rural or semi-urban area with adequate raw materials & clientele
- Area of operation could be a cluster village, district with adequate infrastructure of roads/transport & market

Market Plan

Existing market: Contacting owners of meat & shops and milk vender or customers for sale

Future demand: Collecting information about goat unit as well as meat shop and milk vender/consumers to assess the further demand of these products.

Marketing strategies: Participating in goat fairs & contacting owners of meat/mutton, distributing leaflets etc.

Project component

- Quality breeds doe and bucks.
- Shed
- Feed (green & dry fodder) & concentrates, veterinary health centers
- Utensils &equipments (feeding & watering devices buckets, cans) etc.

Technical Assumptions

- Own land is available for construction of shed. However, loan will be borrowed for construction of shed and purchase of animals.
- Constant breeding stock, 100 breeding goats stock is maintained. However, in mixed herd of goat would be 60:40.
- Kidding rate about 90% in the female parents. Male female rating would be 1:1.Moreover, the conception rate is assumed @ 70%.
- Deaths in the breeder stock will be compensated by insurance claim.
- Kids are weaned from mothers after two months, reared as yearling up to 10 months.
- Kidding interval 8 months i.e. three kidding in two years. However, twinning rate at 50%
- Milk production would be1.5kg/goat in 150 days of lactation. However, per kid 500gm/days milk is required to feed one kid for 90 days.
- Average weight of male/female is assumed 25 kg/kid.
- Bank loan will be 80% of the project cost or the amount required for launching the project, whichever is applicable.
- Repayment of bank loan will be done in 60 monthly installments with the amortized repayment plan. The loaner can negotiate on the period of moratorium needed for setting up the infrastructure.
- For stall feeding one ropani may rear 6 goat and for semi intensive system of rearing 12 goat in one ropani.
- Culling rate 5%
- Goat dung per day 500gm/doe & 250gm/kid.

Financial assumption:

- Duration of project 5 years
- Land rent per ropanirs. 2000/year
- Interest on bank loan @ 10% annum
- Goat shed cost per goat @ rs.1500

- Depreciation cost of shed at 10 %
- Cost of fodder production for first year at Rs. 3000 &from 2nd year Rs.1000
- Cost of feed per kg at 25
- Medicine , vaccine cost per goat @ 75 (stall fedding) & for semi intensive rearing goat at 100
- Cost of per breeding doe at Rs 5000
- Cost of breeding buck at Rs. 7500/buck
- For 100 goat rearing labour need 3 head per head cost per month at 7000
- Selling cost of 1 year buck at rs.320 live weight/kg.
- Selling cost of castrated male at rs.270 liveweight/kg(30kg live weight) =rs 8100
- Selling cost of 1 year female kid at Rs.250 liveweight/kg(25kg live weight) = Rs 6250
- Dung cost per kg Rs 5
- Instrument cost per goat Rs. 200
- Miscellaneous cost for 100 goat per year = 30000

Financial details of the project for 100 goat (95 does &5 buck):-

A. Initial capital investment

a) Cost of shed: 100 × 1500 = 150000

b) Cost of animals: 95doe at 5000 & 5 buck at 7500 = 512500

c) Cost of instrument:-200×100 = 20000

d) Dipping tank: 50000

Total = 732500

B. Expenses:

a) Fixed expenses

i) Interest on bank loan (total initial investment cost) at 10 % /annum= 73250

ii) Depreciation cost of animals at17% /annum=87125

iii) Depreciation cost of shed at 17% =25500

iv) Depreciation cost of instrument at 20 % =4000

v) Depreciation cost of dipping tank at 10% =5000

vi) Land rent at 2000 /ropani (1ropani=6 goat) =33334

Total fixed expenses =228209

b) Variable expenses

i) Cost of fodder production = Rs3000 × 16.67 ropani =50010

ii) Cost of feeding concentrate ration = 20.25kg/day× 25×365=184782

iii) Labour cost = 3×7000×12= 252000

iv) Medicines, vaccine =75×100=7500

iv) Miscellaneous = 30000

Total variable cost = 524292

Total cost (a+b)= 752501

C) Income

Goat milk 225kg/lactating (1,5kg/goat/day for150 days lactating) total milk production would be =27000 kg

The milk to be consumed in feeding of 133 kids at 500gm /days for 90days=6000kg

Milk for sale (21000kg at Rs 25) = 525000

Sale of 133kids (1 year) = 1077300

Manure= 84kg/day ×365×5= 153300

Total income = 1755600

Net income/ annum = 1003099

Net income/month=83592

9.3 Goat marketing

Goats are categorized as being hill goat (small frame and short stature with more gut fill), terai goat(leaner with less gut fill), Indian goat of the jamunapari breed type with large frame size, and Tibetan goats described as Kashmiri type. Butchers prefer the terai and Tibetan goats because of their higher dressing percentage and also because of the taste of Tibetan goats. Goats with black color are preferred for religious ceremonies and traders reported a preference for this color believing they have a higher

dressing percentage. In Nepal the major source of goats are from the hill and terai areas. Goat are concentrated in the transition areas between the hills and terai which are forested. The general grazing area is north of the east-west highway. Large herds of goats can be seen herded in these areas or left to graze uncontrolled.

Eastern zones

This zone compares with the central zones in number of goats being imported from India. The major difference is the large numbers of goat existing this zone through Kakarvitta back to India. In the eastern zone, the key markets for goats are Bailbas (sunsari), Belbari, Dhulabari. Sanischare, Damak (Jhapa), Dohomana (Morang) and Lahan (Siraha). Lahan market is one of the most important in term of volume and importance of supply to Kathmandu and Pokhara.Animals are brought to this market by producers or by traders who have purchased animals in the village or from producers travelling to market. While in the market, goats may be sold several times on a given market day. It is estimated that Lahan supplies 600-700 goats per weeks to their market. In the mid –hill district, like Illam, goats will be transported by bus to market in the terai. From these markets goats moves either west to urban centers in the terai, like to Janakpur or to larger urban centre such as Kathmandu and pokhara. Goatsalso flow east to kakarvitta and to india. A primary destination in india for goats is Silguri, Goats from Lahan reported to move east to Silguri (India) or west to Birgung and Kathmandu. Goat flow into the eastern zone markets from town in India such as Meerut, Baharaich, kuchnow, Itawa and Bareilly.

Central zone

The level of recorded imports into the central zone is similar to that of the eastern zone. In the central zone, the key goat markets are thori (parsa), Sakhauwa (Dhanusa), Lalbandi (Sarlahi), Hariwon (Sarlahi), and Kalaya (Bara). The main sources of these goats and from india. Large number of goat move from sakhuwa market to Kathmandu and pokhara, but also to the east to Kakarvitta and into India.It was reported that the Kalaiya market is reported to ship 50 goats per week to Kathmandu. Goats origin in Stamadhi, India are transshipped through markets in sarlahi district to Kathmandu. The estimate is 300-400 goats per weeks.

Western zone

The western zone does not have large, organized goat markets of the number and size as in the eastern and central zones; Goats are typically bought by traders in the districts in the western zones. Traders travel in their selected areas among the districts and transit through Butwal either north to tansen, Syangja and pokhara or east to Kathmandu valley. Large herds of goats were seen in Dang district where the drier climate and available grazing areas are suitable to goats. It was reported that100-150 goats per week from Dang district are taken by traders to Butwal, Tansen, Syangja and Pokhara. During the Dashian festival period the number can increase fivefold. The major entry points for Indian goats are reported to be through Bhairahwa (Rupandehi) and Nepalgunj (Banke). The sources of goats are from several large markets in India. The Kalpi market is 200km from Nepalgunj and to be the largest goat market in India with over 20,000 goats on a market day. The major flow of India goats to the western zones is during the month of July to October, leading upto and during the period of Dashian festival.

Northern Zone

The northern zones comprise the district bordering or near Tibet. These districts consume larger amounts of sheep than goats. Tibetan goats are highly regarded by the Nepalese for their unique taste of the meat. Sheep and goats graze on high altitude summer pasture .In the past, the grazing pattern were for flock and herd for Tibet and Nepal to co-mingle during summer month moving back and forth across the border. Tibetan goat and sheep are mainly trekked into Nepal during the month of August to December. This period coincides with movement of animals off summer pasture in the high mountains. This period conveniently coincides with the Dashian festival season. The marketing period can be shortened if early snows occur in the mountain passes between Tibet and Nepal. The major crossing point where livestock are recorded is at Tatopani, northeast of Kathmandu. In Tibet, these animals are trekked to central collection points by Tibetans herders. Nepalese traders cross the border and purchase these animals. Sheep and goats are trekked through Tatopani to Barabise they are put on trucks. Animals may be sold along the trek route and town along the road to Kathmandu

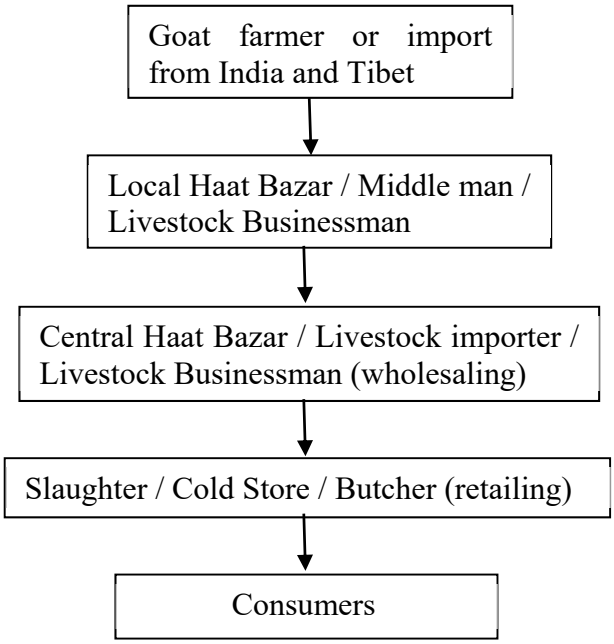
Second entry point is near Gyala Bhanjyang crossing point in the northeast corner of Gorkha district. Animals are trekked into Lumjung district and consumed within the district. The final destination point was stated to be Basisahar. In mustang district two entry points are reported. One entry point is at crossing point of Parcheka Bhanjyang and another one is Chunphunla Bhanjyang. Another entry point is reported from west. Several thousand hyangra (Kashmire) goats move each year across the Tibet-Nepal border into Mugudistrict. The final entry point of Tibetn goats and sheep are in Darchula district in the far western development region. Animals are trekked south on traditional trek routes. No specific information is known about the volumes and destintion of these nimal. But animals are belived to be consumed within the region or shipped into India.

Kathmandu valley and Pokhara

Two major terminal markets for goat are Pokhara and Kathmandu valley. It is reported that Pokhara receives two trucks of goats per week for an estimated total of 350 goats. The goat arrives at seven holding areas on the main roads into the city. The majority of these goats are from India via Nepalgunj with fewer goats arriving during the monsoon. The main source of goats into the market were reported from Lahan (Sarlahi), Sakhuwa (Dhanusa), Hariwon (Sarlahi) and Katari (Udayapur) and from India through Nepalgunj (Bake), Krshnapur (Kapilvastu) and Bhairahawa (Rupandehi). Surkhet and lamahi in Dang district in the western zones are sources of goat to Pokhara. About 50 goats per week arrive from Dang district supplies by private traders. There are about 35 traders working in Dang district

In Kathmandu valley there are two goat markets. The largest market is at Balkhu and is operated by a private cooperative. The market in Kathmandu is at Tokucha which is smaller and is located in the downtown area of the city. The market channels of goats and the lesser quantity of sheep (collectively known as mutton in Nepal) are somewhat complex and involve more than one trading agent. Local butcher purchase goats from livestock markets from where they are then taken to the butchers retailing stall. At shop they are held, and slaughtered according to demand. The whole procedure may become very protracted.

9.4 Value chain and value added of Goat and goat product



Value added products of Goats

(a) Chevon

- Goat meat has several desirable features:-
- It is preferred to mutton in Nepal.
- The digestibility coefficient and biological value of dried goat meat are 95.2 and 60.4 per cent, respectively.
- It has less fat due to active disposition of the animal.
- It has no religious taboo.
- It is liked by all classes of people.
- Its markets are well-established.
- Chevon is pinkish-red in color, coarse-textured and has a characteristic goaty odor.
- Good quality, tender meat is obtained from 6-8 month old goats.
- Black Bengal & Angora chevon is considered more delicious than meat of other goats and fetches more prices.

- Guts from goats are preserved in refined salt and exported for use as casings in sausage making.

(b) Milk

- Composition of goat milk (%): Water 86.81, Total solids 13.19, SNF 8.17, Fat 4.17, Protein 3.75, Lactose 4.54, Ash 0.80
- Goat milk protein has a digestibility coefficient of 85% and biological value of 67.5%, and contains many essential amino acids.
- Fat globules are small in size and hence easily assimilated, facilitating easy assimilation in children and invalids.
- It is rich in lactoperoxidase (Lp) which is effective against a variety of bacterial diseases.

(c) Skin

The maximum numbers of goat skins are produced in India due to an annual removal of goat of approx. 45%. The finest quality skins for the leather industry are obtained from the Black Bengal goat, and are exported to many countries, particularly to the USA, where they are mostly used in the shoe industry. Goat skins are of two types viz. Amritsar and Calcutta. The former are used as lining for shoes and the latter are used for shoe uppers.

(d) Pashmina, Mohair & Hair

Pashmina (or Pashn) is used for production of the magnificent ring shawls of Kashmir. Mohair is the long, straight, uneven, translucent, lustrous fleece from Angora goats. It is used for making blankets, fabrics, summer suiting, linings, braids, nets, rugs, hats, decorative trimmings, bed spreads, show laces, curtains etc. Hair from common goats is used for making ropes, coarse blankets and bags.

(e) Manure & Urine

Goat manure helps maintain the soil fertility. It is several times richer in fertilizing ingredients (nitrogen and phosphoric acid) than the manure of cows/buffaloes/sheep. Each goat produces 0.8-1.0 tones/year. Goat urine is equally rich in both nitrogen and potash, and is more valuable than that of any other animal. Goat manure fetches ready

cash to the owner. He usually leaves the goat to graze on stubbles in the field and is paid by the farmer for his field being thereby manure. It is said that one hectare of land receives a sufficient dressing of manure if 4800 goats are folded there for a night.

Unit - 10

Record Keeping

Introduction

Several kinds of records may be kept in a goat farm. Records of production should be kept by all herd man. The important records which should be kept are:

(a) Performance record register

(b) Breeding record

(c) Health record

(d) Kid registers

(e) Goat history and pedigree sheet register

(f) Financial record

Advantage of recordkeeping

- Basic evaluation of animals
- Systemic breeding program for improvement of herd
- Progeny testing of buck
- Better supervision and management of herd
- Selection & culling of animals for breeding program
- Economic feeding of animals
- Help in preparing complete pedigree & history of animals
- Detect health condition
- Ascertaining the income & expenditure of farm
- Compare efficiency of labor herd with others farm
- Determine the degree of profits each year
- Determining the cost of production of animals
- Analysis cost –benefit analysis

10.1 Performance record keeping

Performance records are the records of the animals measured in several important traits

that are essential for profitable animal production. In order to have performances of the animals recorded, we must know the important parameters. They may be different parameters for different animals and breeds. The details of the traits/ parameters in dairy animals are:

I. Weight traits

- Birth weight
- Weaning weight
- Post weaning weight at certain intervals
- Adult weight (varies- 2yrs for exotic and 3-4 yrs in native)

II. Production traits

- Dairy milk yield
- Lactation milk
- Lactation length
- Fat, SNF and protein%

III. Reproduction traits

- Age and weight at 1st service
- Age and weight at 1st calving
- Calving interval
- Gestation length

IV. Health traits

- Pre-weaning death and its causes
- Post weaning death and its causes

V. Feed intake

- Concentrate
- Forage etc.

10.2 Physical record keeping

10.3 Financial record keeping

A. Journal

Journal is a record of day to day transactions. Before journalizing, it is necessary to determine the debit and credit items of the transaction. The rules of debit and credit under different types of accounts are:

(a) Personal account

Debit the receiver

Credit the giver

(b) Real account: it is the record of an asset.

Debit what comes in

Credit what goes out

(c) Nominal account: it is a record of expense or loss and income or gain.

Debit all expenses and losses

Credit all incomes and gains

B. Ledger

Ledger is a book where different accounts are prepared to have a consolidated view of the similar transactions. A ledger is simply the grouping of the accounts that are used to prepare financial statements for a business.

C. Trial balance

Trial balance is that kind of statement which shows either the balance or total amount of debit items and credit items of all the ledgers and the bank and cash balance. It is the statement of debit and credit balance of the ledger account, which is prepared to check the arithmetical accuracy.

D. Balance sheet

Balance sheet may be defined as accounting statement of financial position of a business presented at specific point of time usually at the end of accounting period. It shows assets on one side and liabilities and capital on the other, the balancing of the statement being immediately apparent. Thus balance sheet discloses the information regarding assets, liabilities and capital.

Unit - 11

Livestock Insurance and Risk Management

Benjamin Franklin said, In this world nothing can be said to be certain except death and taxes. Even this statement can be qualified. Because there is some uncertainty about these two phenomenons also: no one can be sure when death will come and taxes too are frequently changed. In fact whole life is surrounded by uncertainities. The uncertainties, which may cause financial loss or otherwise, are called risks. Any business or activity is prone to a variety of risks. Some risk directly relates to the activity. Such as risk of loss in business- the failure of production, loss of market, fall in price, change of fashion and taste of consumer and adverse government regulation. Such risks are called the business risks or speculative risks. The other risks are the uncertainties due to occurrence of such events as fire, flood, burglary accidents or breakdown of machinery. This type of risk is called pure risk.

Objectives of insurance livestock:

a) To safeguard the farmers from financial pressure in case of death of livestock.

b) To increase the income of low income group.

c) To increase the production of meat, milk and milk production to become self-sufficient.

d) To make easier for the banks to recover the loans from the borrower in case of death of the livestock.

e) To create interest of the farmers to go to rearing of improved breed livestock.

f) To increase export and to decrease the import of meat, milk and milk products.

The document also specifies the following conditions under which NIC (National Insurance contribution) is not liable to pay compensation to the insurer.

a) If the livestock is used in contrary to the purpose as specified in the policy document.

b) If the death of livestock is due to the disease prior to its insurance.

c) If the livestock is killed intentionally.

d) If the death of livestock occurs due to transport of livestock by air or by sea.

e) If the livestock is taken 25 km away from its shed.

f) If the livestock is taken on foot 50 km away from its shed.

g) If the insured livestock is stolen or sold.

h) If the livestock is disabled (partially or wholly).

i) If the livestock in milk is disabled to give birth and to give milk and if the bull and buffalo are disabled to be used for transport.

j) If the death of livestock is caused due to war, internal riot, internal disturbance and external intervention.

k) If the death of livestock is due to nuclear weapons

The document issued by NIC further reveals the following conditions under which the insurance policy prevails.

a) The policy will automatically be terminated if the insurer does not specify the true facts and gives the false statement and if the statements given in the report during renewal, does not tally with the previous report. In such a case, the premium paid in advance will not be refunded.

b) The livestock should be free of disease and should not have met any accident before filing the proposal form for insurance and this is effective for each successive renewal year.

c) NIC can inspect the insured livestock and its shed as and when necessary and the insurer is liable to follow all the rules and regulations issued by NIC.

d) If the insured livestock meets an accident, it has to be reported to NIC as soon as possible by the insurer.

e) The insurer must keep the insured livestock in good health, must be given proper food, must be kept in a clean shed, must be kept safely and must be given good care.

f) In case of death of livestock the insurer must inform NIC or the concerned bank. The carcass must be kept for 24 hours for inspection and it must not be destroyed prior to that time.

g) The insurer must submit NIC the documents regarding the death certificate, the cause of death of livestock, tag and the market price of the livestock.

h) If the livestock happens to be double insured the compensation amount will be equally divided.

i) If the death of livestock is due to the negligence of any individual or individuals and not claim and compensation procedures have been done against them and if it is informed to NIC, the Corporation can help take legal action against the third party. In such a case the compensation paid by the third party will be the property of NIC and the legal expenses, if informed to NIC, will be refunded to the insurer out of the received compensation amount. NIC can terminate the insurance policy any time by giving 7 days notice to the insurer and in such a case the premium paid in advance as to the period of policy will be refunded at pro-rata basis. The insurer on the other hand can also terminate the insurance policy by giving 7 days notice to NIC. If no claims have been filled during the policy period NIC will refund the paid premium at short period scale to the insurer.

j) If any disparity occurs with regard to the policy, a mediator will be appointed for the settlement of the dispute and in case the dispute is not settled then both the parties will again appoint their own mediator within two months and if the dispute still remains unsettled the decision will be done as to the prevalent rules and regulations.

Problems in Livestock Insurance Program

Livestock insurance is a new concept in the Nepalese context of livestock rearing practice. It is the third year since the LIS has been implemented and the problem encountered during the implementation is directly and indirectly related to the problems related to LIS only. Although, livestock sector has a vital role to play in the Nepalese agro-based economy, it has not been able to develop because of inherent weakness in the policy and its implementation. Livestock sector as the sub-sector of agriculture has received less priority both in physical and financial facilities in the effort of development planning. Therefore, even after three and half decade of development planning, livestock sector is suffering from preliminary lacunae which have adversely affected the livestock insurance program as well.

Some of the problems faced by Livestock Insurance Program are as follows:

(a) Lack of Basic Data

The basic detail data of livestock and its mortality are essential for the smooth operation of Livestock Insurance Program. They are all the more important to calculate the premium rate and determine the terms of coverage. But the basic data revealing the livestock population, fertility, and mortality and production capacity are not available because the systematic collection of statistical information in this field has not yet been developed.

(b) Poor Animal Husbandry

The livestock rearing in Nepal is in a traditional method which has adversely affected the health and development of the livestock. This has a direct impact on the high mortality rate of the livestock which has resulted in the high risk to the insurance institutions.

(c) High Mortality

Although adequate data of livestock mortality is not available, it has been assumed that the livestock mortality rate is high because of ignorance in proper care, lack of nutritious food and veterinary services. It has resulted high risk in livestock rearing and also in livestock insurance program. This has become one of the discouraging reasons for the insurance institutions for the extension of their livestock insurance program.

(d) Lack of Transport Facilities

Transport system in Nepal has not been able to build a net work link to reach the interior parts of the country. The mountainous topography of the country has made the movement of the people and the livestock still much difficult. This has resulted in the difficult for providing necessary service to facilitate the livestock development and livestock insurance program as well.

(e) Illiteracy

The majority of the Nepalese people live in the rural areas and their illiteracy rate is 65 percent. It is very difficult to convince illiterate people about livestock insurance and this is a hindrance for the spread of livestock insurance scheme in the country.

(f) Food Habit

The contribution of livestock products in the Nepalese food menu is not substantive and thus the demand for livestock products as a food item is low. This has become a disincentive for livestock rearing farmers and thereby to the livestock insurance institutions.

(g) Lack of Market

The livestock rearing farmers must be given a better market to give them better price for their products which will add to their incentive for livestock rearing. In case of Nepal, the farmer always has to seek for the market of their products to get a good price. This naturally, has discouraged the livestock rearing farmers to rear more livestock which in turn has become one of the reasons for the limitation of livestock insurance program in the country.

(h) Limitation of Feedstuff

As there are very limited farms to produce proper healthy feedstuff of the livestock, the livestock rearing is not scientific in Nepal and as such the livestock is ill-fed. This in turn affects the health and production capacity of livestock which results in high risk for the insuring institutions.

(i) Lack of Dairy Farms

The Dairy industry in Nepal has not been developed in public as well as in private sector. As such the need for livestock insurance has not seriously been felt which is also responsible for the limitation of livestock insurance program.

(j) Inadequate Veterinary Services

The Veterinary Service in Nepal has not been able to cope with the demand both in terms of quantity and quality. Quantitatively, the institutional development of the field offices is inadequate to meet the demand of the local people. Qualitatively, the existing field offices lack technical manpower, equipments and medicine to provide prompt and quality service.

(k) Insurance Limited to Bank Loan

The Livestock Insurance Program is mainly based on the livestock purchased by bank

loan only and this has restricted the insurance of those livestock which are not involved in bank loan. With this program, those people who are interested in insuring their livestock purchased by their own fund or those which are born in their own shed are deprived of the benefit or opportunity of the livestock insurance program.

(l) Lack of Uniformity

There is lack of uniformity among the livestock insuring institutions in their Livestock Insurance Program. This has created confusion in the insurance program itself. The livestock rearing farmer, majority of who are illiterate are still more confused and hesitate to accept the program itself.

(m) Lack of Field Offices

The institutions which are involved in livestock insurance activities are based on central level whereas the livestock insurance program has to reach the interior parts of the country. Because of lack of field offices of the insurance institutions, the operation of livestock insurance program is restricted.

(n) Lack of Expert

Livestock insurance as a new concept needs more attention and knowledge for its smooth functioning and development. The insuring institutions lack skilled manpower and trained hands which have affected the development of Livestock Insurance Program in the country.

(o) Lack of Re-Insurance System

As there is no provision of re-insurance of livestock insurance system in Nepal the total burden of risk has to be borne by the concerned insurance institutions wholly on their own. This will give the insurance institutions a second thought as to how much volume of risk it can bear without sharing its risk through reinsurance facilities.

(p) Policy in Livestock Insurance

The Government policy and guidelines is necessary for the effective implementation of the livestock insurance program at least in the initial stage of its operation. Since there are no definite policy guidelines in this area, the insuring institutions have not been able to take encouraging steps for the development of livestock insurance in the country.

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