IFAD
INTERNATIONAL FUND FOR AGRICULTURAL DEVELPMENT

Agrihub NIGERIA

Rural Youth Employment Opportunities:
Support to integrated agribusiness hubs in Nigeria

Sheep and Goat Production Training Manual

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Oyo Hub

Sheep and Goat Production Training Manual

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This training was developed and prepared by ILRI Nigeria Office adapted for the Rural Youth Employment Opportunities: Support to integrated agribusiness hubs in Nigeria (IFAD-Agrihub Nigeria project) and IITA Youth in Agribusiness office.

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IITA Transforming African Agriculture CGIAR

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MODULE 1

Introduction

Sheep and Goat are small ruminant and a multi-use animal which are commonly reared for the meat (chevon and mutton). In the different parts of the world, they are raised for the meat, milk, wool and leather. Recently, in Nigeria, farmers are adopting Sheep and Goat farming as main business enterprise in different ecological zones. Sheep and Goats play an important role in food production and micro-economy systems in developing countries. Their great popularity can be explained by their good adaptation to many different climates (ecological adaptation) and the many uses for which they can be kept.

1.1. The importance of Sheep and Goats

Sheep and Goats are of high importance to people because of the many functions they provide which include:

- Employment opportunity - Sheep and Goat creates opportunity of self-employment for small holder farmers, youths and women. This will reduce unemployment rate and increase living standard.
- Increase income generation through the sales of meat, grower and mature Sheep and Goat for scientific research, and other uses.
- Safety during cash failure - Sheep and Goats serve as an inflation-proof bank account which can be used when cash is required
- Can be operated in low investment - in comparison of starting other livestock farming, interested small farmers can start with Sheep and Goats. Sheep and Goats farming can bring opportunity of income generation at home for the small farmers with low investment at small space.
- Compost fertilizers for crops - Sheep and Goat farming has a major contribution in providing fertilizers to crop production. It has reduced the dependency to chemical fertilizers and enhanced the production capacity of the land.

Comparative advantage of Sheep and Goat farming

- Sheep and Goat are small body-sized animal – when compared to the big animals as cows its value is not very high. This makes the starting capital low and makes it's keeping not too risky.
- Easy-to-feed ability – can be fed on wide range of feedstuff including household waste, can maintained in dry areas, where other ruminants do not succeed.
- Easy-to-handle ability - even by small children

• Quick return on investment – Sheep and Goat matures quickly.
• Multi-purpose usage – Sheep and Goat can be used across many facets of life: religion, business, academic, research, traditional, domestic.
• Non-religion/cultural discrimination - no religious taboos.
• Herd size easy-to-restore ability

1.2 Breeds of Sheep and Goat in Nigeria and their features

1.2.1 Indigenous (Goat)

a. West African Dwarf (WAD)

Found in southern country.
• They have a small size of body and short legs. Such characteristics allow them to move easily through thick vegetation of the forest.
• Their coat colors can be different from black to white or gray or even multicolored.
• Matured WAD goat weighs 20 – 25kg.
• They are resistant to trypanosome and very hardy.
• WAD is used mainly for meat but also has dairy potentials.

b. Red Sokoto or Maradi

• This breed is spread mostly in the north-western of Nigeria, though has spread to the savannah belt of Nigeria
• The coat colour is dark red
• Has long legs which help in long trekking
• Highly valued for meat and leather production.
• Mature animals have 20- 30 kg of weight.

c. Sahelian Goat

• Found more abundantly in the Sahel of the country.
• They have varying coat colour but usually mixed black, white and brown.
• They possess fine hair coat, short ears and long legs. Mature weight ranges from 25 – 35kg.
• The breed is adapted to nomadic and wide range grazing. They are meat animals although they could be used for milk and leather production.

1.2.2. Foreign (Goat)

a. Boer Goat

- Boer goat is South-African origin Goat
- This breed has white color usually with brown neck and head.
- Mature Boer goat can weigh 30 -50 kg
- Kept mostly for meat production.
- They are horned and have lop ears.

b. Kalahari Goat

- Like Boer, Kalahari Red is a breed of goat originating from South Africa
- Has dark red coat color
- Mature doe can weigh 75 kg; mature buck 115 kg; kids at six months average 30 kg

1.2.3. Breeds of sheep

a. West African dwarf sheep (WAD)

- This breed of sheep is found in the coastal forest areas of
the country from the South-West to the South-East.
- They have small size and usually with an average weight of about 30 kg when fully mature.
- The sheep have varying colour ranging from all black to all brown or mix colour of white and black.

b. Yankasa

- This breed has a typical white coat colour with black patches around the eyes, ears, muzzle and sometimes the feet.
- The rams carry curved horn and a heavy hairy white mane. Mature weights vary from 25 to 35 kg for ewes and 30 to 40 kg for rams.
- It is perhaps the commonest breed of sheep in Nigeria as it is found in all areas.

c. Balami

• Mostly found in the north, they usually have white-coated colored with a convex facial profile with large and drooping ears, and long thin tails.
• The males weight between 45 – 65 kg on maturity while females weigh 35-45kg.

d. Ouda/Uda

• This breed is also mostly fund in the north, it is usually color-coated with the mixture of black or brown and white.
• They have a convex face with large, long and pendulous ears. Matured weight ranges from 30 to 45 kg for ewes and 35 to 60 for ram.

BASIC TERMS

Ewe: This is the female of a sheep especially when matured.
Doe: This is a matured female goat
Buck: This is a matured male goat
Ram: This is a matured male sheep
Kid: A young goat
Lamb: A young sheep
Kidding: This is the act of goat giving birth
Lambing: This is the act of a sheep giving birth
Wether: This is a castrated sheep/goat
Chevon: Goat meat
Mutton: Sheep meat
Gestation: Gestation can be defined as the time between conception and birth.
Chevon: This is the flesh of goat used as food.
Mutton: This is the flesh of sheep used as food.
Heat period (estrus): This is a period during the reproductive cycle when female animals become sexually receptive, signaling they are ready for mating

MODULE 2

Management System

Management system practices

Intensive system: This is a system of production where the animals are confined and not allowed to search for food by themselves. Good housing and veterinary service are usually provided for them and are fed cut grasses and legumes.

Semi-intensive system: This is a system of production whereby the animals are released for grazing or scavenging on rubbish dumps, unguarded gardens, and when they return in the evening to their owner's homes. They are kept in an enclosure (corrals) or tethered to a tree or peg and fed on cut – and – carry basis with cut grasses and browse supplemented with household wastes.

Extensive system: This is a system of production where animals are allowed to graze or browse on large areas of land, in this type of system, houses are not provided for the animals and they sleep in the open night.

2.1. Housing

Next to feeding, housing plays a significant role for a sustainable production Sheep and Goat, and like every other livestock, proper housing system is needed during both cold and hot climates. The house can be built with materials ranging from low to high cost but must be with durable materials.

2.2. Importance of Housing in Sheep and Goat Production

i. Protection – a good housing system protects Sheep and Goat from rain and adverse/harsh weather conditions (just like houses protect humans). A housing system provides shade, predators, and prevent the animals from damaging other people farm crops. With good housing, a water-proof roof and drought-proof walls to keep out wet and droughts, will reduce the incidence of regular sickness.

ii. For easy observation: Good housing makes it easier to keep an eye on your sheep and goats. You can easily detect sick animals, notice commencement of heat period, pregnancy and kidding.

iii. For collection of manure: Chousing makes collection of dungs more easier for organic fertilizer.

iv. For easy restrain during treatments - With a good housing it is easier to restrain the animals when need to be treated and/or to observe them.

v. Promotes a clean farm environment

vi. Promotes easy taking of the stock size

2.3. Factors to be considered in Sheep and Goat housing system

1. Location: Should be located not far from farm residence for easy monitoring
2. Positioning: The house should be built in the east-west orientation; this prevents the house from excessive rays of sun
3. Ventilation: The house should be well ventilated this is essential to prevent respiratory diseases and body overheating to which Sheep and Goats are very susceptible. It is advisable that the pen should be raised (up to 1m) and ensure openings in the roof for ventilation in the roof or walls.
4. The floor: The floor of the stall must be easy to keep clean and should remain dry. A damp and dirty floor stimulates the development of all kinds of germs and worms leading to diseases. (In an unraised Sheep and Goat pen, bedding or litter materials should be put on the floor in order to keep the animals clean and to provide good insulation in a cold climate or season).
5. Space requirements: provide adequate spacing depending on the breed.

2.4. Types of Housing Systems in Sheep and Goat Farming

Basically, there are two housing systems in Sheep and Goat production:

- The ground level (or deep litter) shed
- Elevated level (Stilted) shed

The ground level shed

Here the house is built with the floor directly on the ground level, the floor can be concreted with or without bedding materials.

The elevated Sheep and Goat shed

In this housing system, the floor is raised from the ground (1m above the ground) in such a way that both faeces and urine can drop easily. This housing system prevent Sheep and Goat both from excessive cold and heat, hence fits for both humid and arid regions. The wall is slated at space of 5cm and floor at 5'', with a staircase that allow the animals to go in and out. The house can be enclosed with a holding yard adjoin to a pasture for exercise and grazing, respectively. The shed is easy to clean, and manure can be efficiently collected. Daily cleaning or a system of piling up the bedding is necessary.

2.5. Equipment for Sheep and Goat production

- Feeder
- Drinker – manual or automated
- Broom
- Packer
- Wheelbarrow
- Spade/shovel
- Ear tag identification and applicator
- Bowl/bucket
- Weighing scale
- Record book

MODULE 3

Health and management

Next to proper feeding and suitable housing managements is health. These three are the core management practices that determine the overall productivity and profitability of Sheep and Goat farming. Good health practices also help in reduction of mortality rate of newborn kids, and it provides knowledge, skill, and practice of control of infectious diseases. Health management includes parasite control, vaccine management, environment management and proper record keeping as well as taking care of pregnant doe, newborn kids, youth and adults. However, the saying that 'prevention is better than cure', is still valid. As it may be impossible to remain completely disease and parasite free, thence if any animal fall sick, farmer must treat such as quick as possible. Disease can be caused by poor nutrition and/or disease-causing organisms.

Preventing Sheep and Goat from sickness

Preventing diseases saves a lot of money and help in well-being of the animal. Below are some means of disease prevention in Sheep and Goat farming:

- Avoid a damp and windy stall this will weaken the animals and make them susceptible to diseases such as lung infections.
- Avoid a filthy stall, this promotes the spread of causing bacteria and parasites (worms).
- Ensure animals are well fed. Insufficient feeding weakens animals and can cause serious disorders (for example bloat).
- Practicing of rotation grazing prevent growth of parasites (worms, ticks) and thereby prevent infectious diseases
- Serve clean water ad lib
- Vaccination
- Control of internal and external parasites
- Isolate sick animal from ailing Sheep and Goats
- Thoroughly screen and quarantine when bringing in new Sheep and Goat

How to recognize a sick Sheep and Goats

- Droopy/tired and poor or no appetite
- Stays aloof from herd
- Loss of smartness and hair get risen, standing hunch
- Coarse and dull skin
- Mouth sore
- Low physical growth rate
- Red eye, runny and watery eyes
- Abnormal pulse speed/ breathing
- Loose faeces, mixed with blood or mucus
- Abnormal body temperature
- Dark yellow pee and sometime blockage of urine,
- Floating saliva from mouth etc.

Diseases	Causes	Clinical Symptoms	Prevention/Treatments
Bloat	• Overeating of damp and very old fodder • Overeating of legume pastures or crops • Overfeeding with concentrate feeds	• Depression • Loss of appetite • Bulging starts from left flank of belly • Difficulty in breathing • Leg tricking and bleating • In some cases, sudden dead Sheep and Goat is found in pasture	• Hold frontal legs of Sheep and Goat and massage in left flank of belly • Drench oil or feed paraffin liquid to Sheep and Goat • Contact to technician if these treatments do not heal • Reduce the inclusion of legume/pods
Diarrhea	• Consumption of contaminated milk (in kids) • Consumption of too much milk or colostrum. • Changes in environment • Virus and internal parasites	• Belly pain • Not eating • Watery faeces • Dehydration in prolong cases • Inability to stand • Sunken eyes • Weakness • Death	• Diagnose the real causes • Give enough water and liquid • Give intravenous treatment (saline water) • Use suitable antibiotic
Pneumonia	• Virus • Bacteria • parasites • Environmental effects	• Sheep and Goats looks tired at the early stage • High body temperature/ fever • coughing • Dark discharge from nose • Difficulty in breathing and fast breathing	• Use appropriate antibiotic • Isolate the sick animals • Manage transportation of Sheep and Goats with less stress • Keep shed dry and cover with jute sacks in cold • Sudden death
Hoof rot	• Bacterial	• Painful hoof and limping • Poor growth • Difficulty during mating (in buck) • Appearance of wound inside hooves • In ability to stand.	• Separate the affected Sheep and Goat and treat accordingly • Use soap, disinfectant or iodine to clean the infected hooves. • Use appropriate antibiotic
Peste des petits ruminants (PPR; Small ruminants pest)	• Virus	• High fever after 4-8 days incubation period • Decomposition of tissue in the mouth inflammation of the mucous membranes with excessive nasal mucus production, diarrhoea. • High death rate within one-week Secondary lung infections.	• Vaccination is best • Too expensive to treat • Cull the infested animal • Limit the mobility of the animals to prevent the spreading of the disease • Secondary lung infection can be treated with appropriate medications

Diseases	Causes	Clinical Symptoms	Prevention/Treatments
Contagious caprine pleuro-pneumonia (CCPP)	• Bacterial - Mycoplasma mycoides	• Rapid breathing with coughing • The animal groans when • breathing out • The animal usually secretes much nasal fluid • High fever	• Vaccination • Arsenic preparations • Use appropriate antibiotic
Pasteurellosis	• Bacterial - Pasteurella bacteria	• As in CCPP	• Use appropriate antibiotic • Vaccination
Haemorrhagic septicaemia	• Pasteurella bacteria (P. multocida)	• High fever • No appetite, • Rapid breathing • strong saliva production • rapidly developing eye infection • mucus membranes red and swollen • Infection of throat and tongue (in acute stage) • Possibility of suffocation • Bloody diarrhoea in later phase	• Vaccination • Use appropriate antibiotic
Foot-and-mouth disease	Virus	• Excessive saliva production and frothing at the mouth. • Small blisters are formed in the mouth, on the legs and on the liver. Difficulty in walking and limits its own movements • Usually, no mortality	• Preventive vaccination • Isolated the affected Sheep and Goats • Slaughter affected animals • Quarantine sick animals • Disinfection of all animals (foot baths)
Anthrax	Bacterial - Bacillus antracis	• Very high fever and sudden death. After death, blood flows from the body's openings	• Annual vaccination against the disease • Use appropriate antibiotic • Completely the burn carcasses of dead (or buried in unslaked lime (quicklime)) to avoid spreading to other animals
Ecthyma		• Sores in and around the lips leading to eating difficulty, and emaciation	• Isolation of contaminated animals and frequent disinfection of the sores.

Diseases	Causes	Clinical Symptoms	Prevention/Treatments
Brucellosis	Bacteria – Brucella melitensis	• Abortion	• Vaccination
Mastitis	Bacteria - Staphylococcus	• Abnormal and swollen udder • Milk can become lumpy and stinking • Painful udder leading to does not allowing its kid to suck and is unwilling during milking	• Milk the infected udder empty as often as possible and massage it, at least seven times a day • Inject antibiotics into the udder via the teat opening and canal after milking it empty. • To avoid passing on the disease, disinfect hands after milking each Sheep and Goat, before milking the next.

Internal parasites: Worms

Worm infection is a common occurrence, though farmer should be less worry about it, but too many of parasites can weaken a Sheep and Goat. Sheep and Goat is more susceptible to diseases and can even die. Some parasites also transmit diseases. Production and growth decline even while no symptoms of disease show. Well-fed and cared for animals suffer less from parasites infection. Worms are usually found in the lungs, stomach, intestines and liver, and possibly other places. Common worms are: Flatworms (e.g. tapeworm) and roundworms

How to avoid worm infection

Practice rotational grazing and avoid long and continual grazing by many animals on a pasture. Otherwise, a high level of contamination of grazing areas will occur due to larva in the excrement. Many parasitic worms are host specific, alternating the grazing with different livestock can lower the extent of contamination of a pasture. For instance, horse can eat the larva of the species which have the sheep as host, but which cannot harm the horse and vice versa. De-worm both mother and kids when weaning and keep the weaned kids separate from the rest of herd on as clean as possible pasture.

External parasites

Some insects like flies, mosquitoes, fleas, lice, mites and ticks can, at some point of their life cycle, parasitize on Sheep and Goats causing irritation. General hygiene in the stall is the most important measure to avoid problems. To reduce insect attack, keep the immediate surroundings of the stall free of manure and other organic waste.

MODULE 4

Feed and nutrition

Feed costs typically account for about 70% of the total production cost in Sheep and Goat farming either for meat or milk enterprise. Feeding program has a large effect on profitability and herd productivity. The nutritional needs of Sheep and Goats vary according to weight, age and stage of growth and/or breeding cycle. There is no perfect feed or feeding program. Sheep and Goat can be fed on varying feed ingredients such as forage, hay, grains, household and kitchen waste, crop residue and crop by-products as well as concentrate diets well balanced. The objective of feeding Sheep and Goat is to provide them with required nutrients both for growth and production, also green plant is very important to Sheep and Goat as with other ruminants. The availability of forage does not always meet the nutrient requirements of the animals due to seasonal availability of feed resources, poor management, inappropriate grazing management, rangelands fires and droughts.

Least feed cost: It is the ration containing all essential nutrients which are required to meet requirements of animal (growth, maintenance, production, reproduction, work, etc.) without affecting quality at the possible least cost. A least cost ration incorporates all the available feed stuffs having good nutritive value and available at reasonably low cost. Therefore, it may be defined as an economic ration for animal which provides nutrients in balanced proportion with lowest possible cost.

Feed component

Water

- Water is extremely important, irrespective of the feed materials fed to Sheep and Goat
- Water is the cheapest feed ingredient.
- Although Sheep and Goats are probably among the domestic animals that can survive longest without water, but prolong periods without drinking water may cause their death
- Water consumption depends on the climatic condition, form and nature of the feed and the physiological state
- Sheep and Goat needs about 3-4 (or 10% body weight) litres per day
- Low water consumption will affect feed utilization and hence reduce the productivity
- The use of automated drinker, the problem of water supply to Sheep and Goat will drastically reduce
- Water sources must be free from any chemical and other contaminants
- Do not give your animals the water you cannot drink
- With the use of automated drinker, the problem of water supply to Sheep and Goat will drastically reduce.

Protein

- Usually, the most expensive component of the Sheep and Goat diet
- Required for maintenance, growth, reproduction, lactation, and hair production
- Forms a major component of blood, anti-bodies, muscle and milk
- Required both as a source of nitrogen for the ruminal bacteria and to supply amino acids for protein synthesis in the animal's body
- If low in the diet, digestion of carbohydrates in the rumen will slow and intake of feed will decrease.
- Essential for fattening program
- Deficiency can lead to poor growth, susceptible to disease and death in the long run
- Unlike energy, excess of protein is not stored in the body of the Sheep and Goat
- Protein sources can be
    a. Plant: groundnut haulm, beans, cowpeas, cowpea husk, browse tree, soybean meal, green pastures and high protein concentrates
    b. Animal: fish meal, blood meal, feather meal

Energy

- Usually required in large quantity for growth and building of weight
- Comes primarily from carbohydrates (sugars, starch and fiber) and fats in the diet
- Sheep and Goats also need sufficient energy in their diet to allow them to grow, reproduce and make milk
- Body condition scoring and weight gain can be used to see whether the Sheep and Goats are getting enough or low energy
- Varies with age, developmental and physiological stages
- Energy sources include
    1. Maize grain, sorghum and molasses, cassava, Cassava peel, est
    2. Lush leafy forage and browse, and tree leaves

Minerals

- Sheep and Goats require many minerals for major body function and best production
- Major minerals likely to be deficient in the diet are salt (sodium chloride), calcium, phosphorous and magnesium.
- Trace minerals likely to be low in the diet are selenium copper, and zinc.
- Low quality forages will be low in phosphorous
- Provide a mineral lick (available commercially) to meet up with the mineral needs

Mineral deficiencies

- Minerals such as salt, calcium and phosphorus are important in Sheep and Goat production. In fact, Sheep and Goats cannot live without minerals. Salt, calcium, phosphorus, and trace elements like iron, copper and iodine are very important. They not only help to maintain and regulate the bodily functions, but they also

strengthen the teeth and bones. They are also especially important for young kids, and for pregnant and milking nannies.

- A lack of minerals will lead to a poor appetite, a dull coat, poor growth and reduced fertility. An animal will lick all kinds of objects and even try to eat them in the search for extra minerals. Note that a Sheep and Goat will first draw on its own body reserves to compensate for any deficiency. This means that you may only notice the problem long after it has set in. The best way to avoid mineral deficiencies is to supply as varied a diet as possible. Do not give too much of mineral as an excess of minerals can be harmful.

Vitamins

- Needed in very small quantities
- The vitamins most likely to be deficient in the diet are A and D
- All B and K vitamins are synthesis by bacteria found in the rumen of the Sheep and Goat
- Vitamin C is synthesized in the body tissues
- Vitamin A is not contained in forages, but carotene found in green, leafy forages is converted into vitamin A in the body.
- Vitamin A is stored in the liver and fat of Sheep and Goats during times when intake exceeds requirements
- Sheep and Goats consuming weathered forages or forages that have undergone long-term storage should be fed a mineral mix containing vitamin A or should receive vitamin A injections.
- Animals should be exposed to sunlight for vitamin D to be synthesized under their skin, or they should receive supplemental vitamin D
- Good quality sun-cured hays are excellent sources of vitamin D
- A deficiency in vitamin D results in poor calcium absorption, leading to rickets, a condition where the bones and joints of young animals grow abnormally
- Vitamin needs can be met by administered orally or via injection

Pasture

Pasture is a land covered with grass and other low plants suitable for grazing animals, especially cattle sheep, and Sheep and Goat. A pasture can be existing naturally (i.e. rangeland) or established. Established pasture is more productive that the naturally occurring one, because it contains high producing forage/ fodder species (grass and legumes).

Forage/fodder is any green plant eating by the animals either planted or naturally existing while browse tree are multipurpose tree species which serve as feed to Sheep and Goat.

A forage species can be grass or legume. Grasses supply majorly energy, while legume provides majorly protein. Both grass and legume can be annual, biennial or perennial.

Grasses: *Panicum maximum, Brachiaria, Cencurus, Cynodon, est.*
Legumes: *Sylo, Lablab, Centrocema, Arachi, Mucuna*
Browse species: *Leucaena leucocephala, Moringa, Gliricidia est*

Pasture establishment and management

- Choose the forage species to plant
- Select a good site
- Tillage operations
- Planting
- Weeding
- Fertilization
- Irrigation
- Harvesting

Importance of pasture establishment in Sheep and Goat nutrition

- Sheep and Goats can effectively convert pasture nutrients to animal products as milk and meat
- Sheep and Goats can selectively graze unwanted vegetation in pastures and forests, thus providing biological control which will reduce dependence on certain pesticides.
- Sheep and Goats consume only the most nutritious parts of a wide range of grasses, legumes, and browse plants. Browse plants include brambles, shrubs, trees, and vines with woody stems
- The quality of feed on offer will depend on many things, but it is usually most directly related to the age or stage of growth at the time of grazing.

Forage conservation

Basically, there are two methods of conserving forage for future uses, these are hay and silage. But for the purpose of this training, hay will be discussed.

Hay

Hay dried grass with moisture content of 10-15%, and it can be stored for a year. Hay needs to be well dried under sun to prevent fungus attack which may destroyed the hay. Hay is best prepared during the early dry season. Hay can be fed just like fresh forage to Sheep and Goat and avoid feeding spoilt hay to Sheep and Goat as this can cause stomach disorderliness to Sheep and Goat.

The followings processes should be followed while preparing hay:

- Select the desire forage/fodder species
- Consider the growing stage of grass (best at the peak of vegetative growing stage)
- Cut and collect grass
- Properly dried (time to time moving grasses upwards/downwards) under the Sun
- Bundle (bale) and keep in store

Note: It may take up to 4-5 days for grass to dry out properly (depending on the weather condition). Also, avoid over-mature forage, as this will be less nutritious.

Importance hay in Sheep and Goat farming

- Availability of feed during off-season (dry season)
- Saves cost for purchasing additional feeds
- Saves cost in producing forage during off-season
- Time and labor will be reduced for forage collection in the off-season

MODULE 5

Breeding and reproduction

Good reproduction is the capability of a Sheep and Goats to produce in a year or over a period.

The buck

Male Sheep is known as "Ram" and Goat is as "buck" or "billy." If castrated, it is called a "wether." Ram and buck up to 12 months of age are sometimes referred to as "bucklings." Ram and buck can come into puberty and breed ewe/does as early at 8 months of age, but it is advisable to wait until the animal is a year of age before start using him for breeding. Male to female ratio should be 1:10–15 at a time. The number of ewe/does a ram/buck can service at one time also depends on individual sex drive of the ram/buck, the terrain of the land and if he is managed by a hand- or pasture- mating system. The ram/buck has the greatest genetic impact on the herd and should be well always taken care of. Day length influences reproduction in the buck and the doe.

The doe

A doe (mature ewe/doe) can be sexually matured at 3-4 months of age and usually are in estrous cycle before 7 months, but not advisable to breed at age below 8-9 months because this can lower have physical growth thence it is not good for mating. The estrous cycle for doe is 21 days; in 21 days doe comes on heat, and searches buck for mating. In 5 months, Doe/Ewe do get on heat but considering its maturity, mating with buck is prevented. After mating, doe gets pregnancy for 5 months or 150 $\pm$5 days, and 142 to 152 days for ewe. Ewes lamb every 7.2 months instead of every 8 months. This means an ewe can lamb five times in 3 years. During this period doe/Ewe must be less disturbed as much as possible to avoid abortion. Particularly during the last six weeks of the pregnancy, extra attention must be paid to the feeding of the pregnant doe as well as giving mineral and vitamin supplements.

Disadvantages of immature mating

- Low pregnancy rate
- Difficulty during labour
- Fear of abortion
- Premature birth
- Inadequate milk production and no growth of kids

Major signs of does and ewes on heat

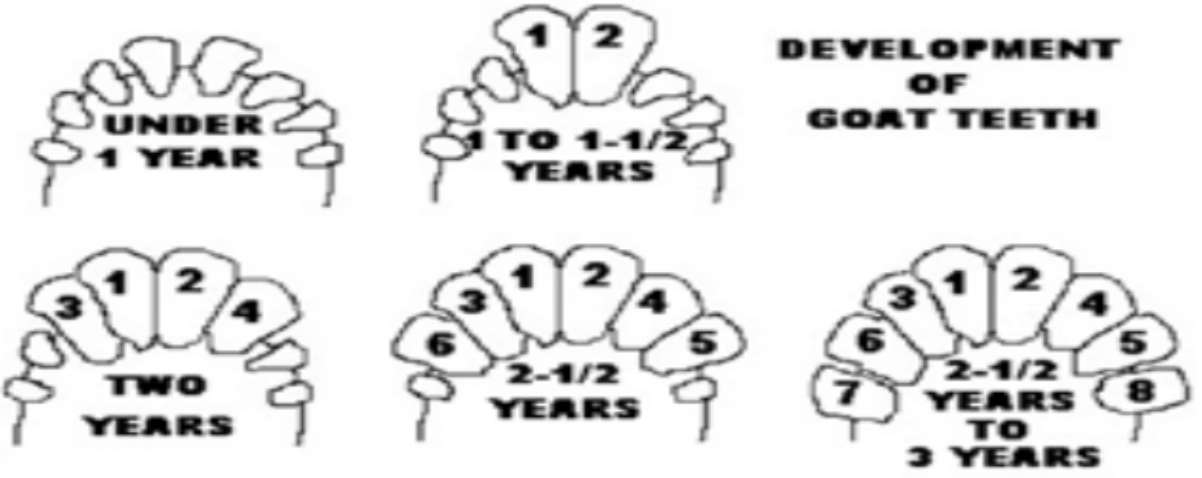
- Wagging her tail
- Less willing to take feeding, forage and fodder
- Suddenly reduced milk production
- Continuous bleating
- Mucus seen in the vagina
- Reddish and swollen valve
- Mounting to buck and Sheep and Goat whatever comes in front

For reproduction

- Does/Ewe age must reach 8-month-old and can be in reproduction service for 5 years or more depending on the management practices.
- Avoid in-breeding at any cost.
- Nursing doe and buck should not be kept mixed in same space, otherwise there are chances of uncontrolled mating.
- Maintain male to female ratio of 1:10-15
- Male for breeding should not be too heavy or too skinny.

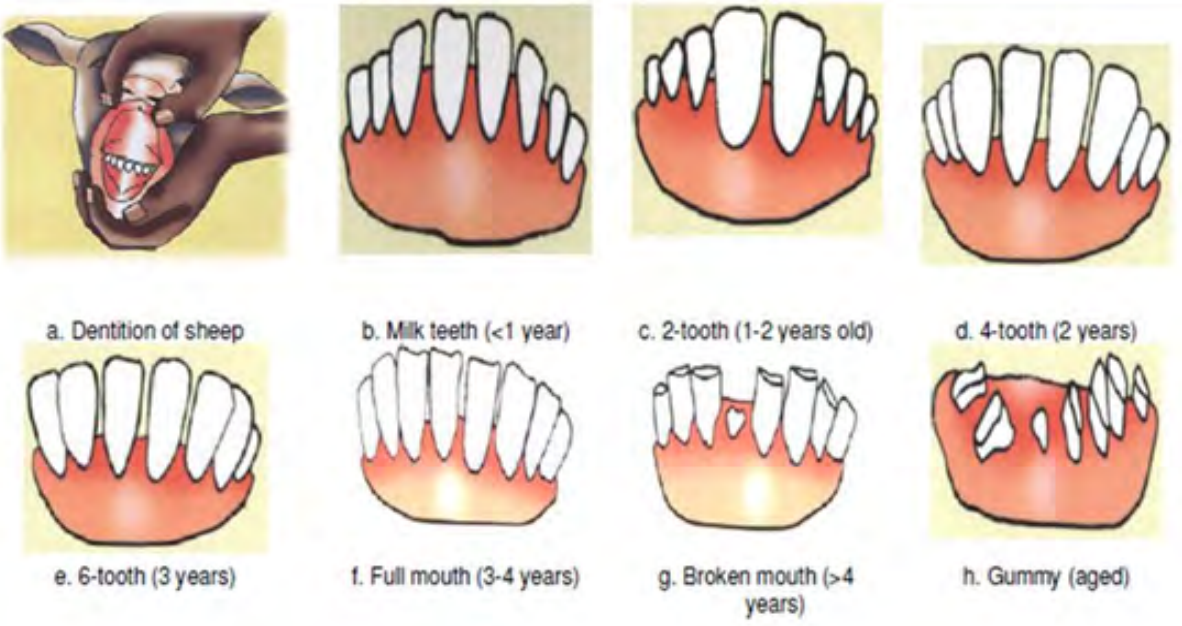
Age determination (Goat)

The age of Sheep and Goats can be determined by looking at the Sheep and Goat's teeth:



Methods of crossing

1. Natural mating: This is the mating of animals by natural means. A male and female animal coming together to expressing their innate sexual behaviour to produce their own progeny.
2. Artificial insemination: This is type of mating whereby the semen is collected artificially from the male and then inseminated into the female to produce progeny



Care for pregnant animals:

Provide good shelter from rain, sunlight and wind. The pen or shelter must have good ventilation and adequate space and prepare a dry, clean pen or room where the animals will give birth. Also, remove old, dirty beddings and disinfect the pens and their environs between births.

MODULE 6

Record Keeping

As with every livestock business, record keeping in goat is very important and it begins with individual animal identification.

Importance of record keeping

• Helps in making decision - such like animals that should be kept as replacements for breeding purpose or should be kept in or culled from the breeding herd
• Breeding - documenting pedigrees
• In marketing record keeping helps in selection of animals for a premium price
• Helps in monitoring the progress activities on the farm (profit/losses)
• Monitoring the performance of the animal – like weight gain and flock size

Types of Record

• Stocking details: Exact number of goats that you have (broken down into different age categories)
• Production records: Kidding dates and numbers of kids born
• Mortality records: Number died, and the age and the cause of death
• Medication and vaccination: The exact goats that have been treated with date
• Sales record: The number of goats sold, time when they were sold, and prices obtained.

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