

Lecture 2

SHEEP PRODUCTION



Sheep and goats are tied for second and third animals to be domesticated after dogs. Sheep were totally domesticated. The sheep of today has evolved through thousands of generations of human contact.

The average life expectancy of sheep is about 10 to 12 years. However, the length of a sheep's productive life tends to be much less. This is because a ewe's productivity usually peaks between 3 and 6 years of age and usually begins to decline after age 7. As a result, most ewes are removed from the flock before they are 10 years old. It is possible for ewes to be productive for a period of 10 years, if they are well fed and managed, and stay healthy.

The approximate age of sheep can be determined by the teeth. At birth, lambs have eight milk teeth, or temporary incisors, arranged in four pairs on the lower jaw. The central pair of temporary incisor teeth is shed and replaced by the permanent teeth at approximately 1 year of age. At 2 years, the second pair of milk teeth is replaced by a pair of permanent incisors. At 3 and 4 years, the third and fourth pairs of permanent teeth appear. At 4 years of age the sheep has a "full mouth." When a ewe loses some of her incisor teeth, she is called a "broken mouth." When she loses all of her teeth she is called a "gummer."

Sheep Breeds

There are more breeds of sheep than breeds of any other livestock species. Worldwide, there are more than a thousand distinct sheep breeds. Sheep come in all different shapes, sizes, and colors. They can be differentiated by their primary purpose (meat, wool, or milk), the color of their faces (black, white, red, or mottled), and/or various production or physical characteristics. The most appropriate sheep breed depends upon environmental conditions; the producer's desired management intensity, and personal preference. The types are divided into four basic groups: wool, meat, dairy, and hair types.

Wool sheep: The wool breeds can withstand heat, cold, and drought, and produce satisfactorily under harsh conditions and produce fleece. e.g . Cheviot, Suffolk, Blackface, Galway.

Hair sheep: Some breeds of sheep lack wool and are covered with hair instead, like their wild ancestors. Some hair sheep have pure hair coats, whereas others have coats containing a mixture of hair and wool. Hair sheep are found mostly in Africa and the Caribbean, but are also raised in temperate climates such as the U.S. and Canada. Hair sheep comprise about 10 percent of the world sheep.

The major sheep breeds in Nigeria can be classified under the hair type of sheep. They include the Yankasa, West African Dwarf, Balami and Ouda breeds.

Meat-type: They are best adapted to farm-flock production. These breeds are commonly crossed with other commercial ewes to produce market lambs. Wool from these breeds lacks the fineness compare to the wool breed. Sheep meat is called mutton.

Dairy sheep: These are type of sheep that produce milk. They could either be hair or wool sheep.

Some foreign sheep breeds



Cheviot



Blackface



Texel



Galway



Rambouillet



Merino



Suffolk

Nigerian sheep breeds



Yankasa



West African dwarf



Ouda

Feeding of Sheep

Pastures /forages are the cheapest feed sources for both sheep and goat production. Therefore, we should use them to the fullest extent. Mostly, sheep eat grass, clover, weeds, and other pasture plants. Sheep especially love to eat "weeds." Sheep prefer plants that are young and tender and will graze close to the ground. Sheep will graze for an average of seven hours per day, mostly in the hours around dawn and in the late afternoon, near sunset. This makes them different from goats that prefer to eat browse (brushy plants) and can efficiently digest coarse, fibrous feeds. Hence, goats will consume and effectively utilize a wide variety of woody and weedy plant species found on ranges.

Sheep may not need additional feed if they are grazing on land areas with a variety of brush, weeds, and grass. Additional feed, however, may be needed in periods of drought or in dry season. The types and amounts of supplemental feed are also dictated by their productive function(s).

Newborn lambs should be allowed to suckle their dams to obtain Colostrum (first milk). Colostrum contains antibodies that protect young kids against diseases. At birth, kids are able to absorb these antibodies effectively. However, the ability to absorb colostrum antibodies decreases within the first 36 to 48 hours of life. To greatly increase the chances of survival, lambs should receive colostrum immediately after birth.

Early forage consumption will lead to early rumen development. To encourage young lambs to consume solid feed at about 2 to 3 weeks of age, fine hay can be offered. Young lamb receiving adequate amounts of milk from their dams do well on good pasture or range. If pasture or range conditions are poor, however, lambs should have access to good quality hay plus about 0.75 pounds of a grain mixture daily.

Nutrient Requirements of Sheep

Energy: Age, body size, growth, level of activity, pregnancy, lactation, and environment all affect the energy requirements of sheep. Carbohydrates and fats supply most of the energy requirements of the animal body. Much of the sheep's energy comes from the breakdown of cellulose in roughages and the breakdown of starch and fat in concentrates. Energy deficiency in sheep results in reduced growth or weight loss, reduced reproductive performance, reduced milk or fiber production, and reduced resistance to infectious diseases and internal parasites.

Protein: Protein consists of amino acids that are the basic units of all body cells. The sheep's body requires protein for growth, reproduction, milk production, disease resistance, and general maintenance. Mature sheep, like other ruminant animals, rely on rumen microorganisms to synthesize essential amino acids. Rumen microbes can utilize either nitrogen (N) of feed origin or non protein nitrogen (NPN) to synthesize amino acids and protein to meet the requirements of the host animal. Microbial protein and undigested feed protein reaching the small intestine are broken down to amino acids that are absorbed and utilized by sheep. Protein deficiencies in the diet of goats result in depleted stores in muscles, retarded fetal development, low birth weights, reduced growth, and depressed milk production.

Vitamins: Vitamins are organic compounds required in small amounts by the sheep's body. Because all the B vitamins and vitamin K are synthesized by microorganisms in the rumen and vitamin C is synthesized in body tissues, mature sheep require only dietary sources of the fat-soluble vitamins A, D,

and E. During the grazing season, Sheep and goats can obtain sufficient fat-soluble vitamins from green pastures and plenty of sunlight. Goats can also store an adequate supply of these vitamins to maintain production for 3 to 4 months. Symptoms of vitamin A deficiency are associated with abnormal bone development, low resistance to infections, night blindness, and birth of abnormal lambs. Vitamin D deficiency results in bone abnormalities, such as rickets. Vitamin E, a biological antioxidant, is added to the diet of young lambs and kids to prevent nutritional muscular dystrophy. Selenium, which has a sparing effect on the vitamin E requirement, is also effective in preventing nutritional muscular dystrophy.

Minerals: Many minerals (inorganic elements) are required by the sheep. The major or macro minerals of concern are common salt (NaCl), calcium, phosphorus, magnesium, potassium, and sulfur. The trace or micro minerals of importance are cobalt, copper, molybdenum, fluorine, iodine, iron, manganese, selenium, and zinc. In sheep feeding, most minerals are usually added to mixed feeds. Some symptoms of mineral deficiencies in sheep include reduced feed intake, depressed milk production, and retarded growth and abnormal bone development in young lambs.

Water: Water is the least expensive nutrient and the largest component of live animal tissue. Environmental factors, age, growth, pregnancy, lactation, and level of activity affect the water requirements. Sheep obtain water from their feed, as well as from drinking water. Because water carries out important body functions, an adequate supply of fresh, clean water is critical to sheep during their entire life cycle.

Importance of Grazing Sheep

Ruminants can digest cellulosic substances and can convert plants to products such as milk, meat, wool, and mohair. Pastureland, therefore, is critical to the production of these ruminants and the products they provide. In order to obtain maximum profits from pasture grazing, producers must manage the land for high production per acre and must manage the animals to minimize forage waste and to ensure that they are growing sufficiently.

Grazing systems provide high-quality forage and reduce feed and veterinary costs while avoiding manure buildup. Feed costs are reduced because farmers and ranchers do not have to grow or purchase forage and grain year-round, and veterinary costs are reduced because animals on pasture have fewer

health problems than those that feed in the barnyard. In addition, pastures require few or no pesticides and allow natural recycling of manure. They also provide a continuous soil cover, thus protecting wildlife habitats and important ecosystems.

Reproduction in Sheep

In their natural state, sheep are seasonal breeders; offspring are born at the time most favorable for their survival. In some domestic sheep, the breeding season has been altered both naturally and through the use of hormones. Tropical sheep breeds throughout the year.

Age of puberty: Ewes typically reach puberty at 5 to 12 months, depending on breed, nutrition, and date of birth.

Anestrous period (reproductive inactivity): This is the period when ewes normally do not demonstrate estrus (heat). Three types of anestrous are observed in ewes: seasonal (influenced by length of day), lactation (influenced by the sucking stimulus of lambs), and postpartum.

Length between estruses, or heat periods: The normal cycle for ewes is approximately 17 days between heat periods. However, it can vary from 14 to 19 days.

Duration of estrus, or heat period: The heat period usually lasts 30 to 35 hours, with a range of 20 to 42 hours. Ovulation occurs late in the period.

Gestation period: The normal gestation period of ewes is approximately 147 days, ranging from 144 to 152 days. The medium-wool breeds and meat-type breeds ordinarily have a shorter gestation period than do the fine-wool breeds. High temperatures and high nutrition levels may shorten the gestation period two or three days. Ewes bred to white-faced, wool-breed rams may have a slightly longer gestation period than those bred to black-faced, meat-type rams.

Breeding ewe lambs: Ewe lambs that breed as yearlings generally have a greater lifetime production than ewes that have their first lamb as 2 year old. Since the onset of puberty depends largely upon body weight, ewe lambs should be provided adequate levels of nutrition to reach at least two-thirds of mature weight before breeding. Also, lambs born in winter or early spring are more likely to exhibit heat the first year than are lambs born later. Ewes that lamb as yearlings should be separated from mature ewes; manage and feed them so that the yearling ewes can grow to their maximum potential size.

Ewe lambs and yearlings are normally rather shy breeders. For best results, breed them separate from older ewes. In some cases, it may be better to use rams of smaller breeds on young ewes to minimize the chance of lambing difficulties.

Nutrition has a direct bearing upon reproductive performance. Ewes kept in acceptable condition before breeding normally produce more lambs if they are flushed, or given the chance to gain weight before and during the breeding season. They can be flushed with rested pastures or by supplementation. Begin flushing three weeks before breeding and, if possible, continue through the first cycle (approximately 17 days).

Flushing ewes are most effective when they are mated early in the breeding season. Since ovulation rate is near a maximum during the middle of the season, flushing at this time is not as beneficial. The results of flushing are quite variable. Sometimes, when farm flock ewes are already on a high nutrition level before the breeding season, flushing may not affect ovulation or lambing percentage. Nutrition affects total lifetime productivity of sheep by influencing mature size. Well-developed ewes consistently have higher lamb crop percentages than smaller ewes. Fat ewes, however, are typically less fertile, do not respond to flushing, and may experience more embryonic death loss.

Ram fighting

In some countries, sheep are used for fighting. The sheep are trained to fight from a young age. They are chosen for their size. They start fighting when they are three years old. Their career lasts for about four years. Sheep fighting is usually part of a celebratory festival such as Eid al adha (the Muslim Festival of Sacrifice). In some countries, tournaments are organized, and the victorious rams are exhibited in the main roads of towns.

Sheep Production Systems

Sheep are reared by men and women with diverse working and professional background. The production systems are as numerous as the socio-economic and varied agricultural situations in the country. However, they can be broadly classified into the following:-

Tethering: This is common in many communities, where probably because of intensive cropping, it is a convenient means of rearing goats from the stand point of control, minimum labour input and utilization of feed .It is thus a sedentary system. A variation of this method is combining tethering with grazing up to 5 sheep at a time, led by ropes held by women and children.

Extensive production: This involves low carrying capacity in situations where land is marginal and is plentiful. It is characterized by low rainfall and various browse plants. The system is used by nomadic people, usually in very low rainfall areas or during winter months when crop residues are available.

Intensive production: The sheep are fed in confinement with limited access to land. It involves high labour and cash inputs. Cultivated grasses and agro-industrial by products are fed *in situ*. This system also has the advantage of allowing control over the animals.

Semi-intensive production: This system is practiced to some degree in most of the situations, but the nature and extent of integration depend on the type of crops grown and their suitability to sheep. The advantages of this system are increased fertility of land via the return of dung and urine, control of waste herbage growth, reduced fertilizer usage, easier crop management, increased crop yields, and greater economic returns.