



Tikrit University  
College of Veterinary Medicine

Lec no. 9.

Sheep nutrition.

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Animal management.

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Nutrition

### **Sheep nutrition...**

Nutrition is the backbone of a sheep flock. Animals that are well-fed are healthy, productive, reproduce regularly, and have the ability to resist diseases.

**By nutrition, we mean the provision of sufficient amounts of,**

**A - Fodder materials,** (green, dry, roughage or bulk feed), which are low in nutritional value and at reasonable prices. Their importance lies in making the animal feel full and satiated, and they are provided to the animal freely or to the point of satiety ad libitum.

**b - Concentrated feeds,** which are high in nutritional value, low in fibre content and high in price, including (grains, meal) are provided to the animal in certain proportions based on live weight or in a specific quantity for each animal depending on its physiological condition and age.

**One of the most important supplies provided to sheep is...**

**1 - Starches (carbohydrates) (CHO).**

This type includes simple sugars and other soluble carbohydrates found in grasses, other green fodder, and the roots of some plants, as well as starch found in grains such as wheat, barley and corn, as well as cellulose found in most foods.

The digestive system of sheep, specifically the rumen, is capable of digesting these substances and converting them into volatile fatty acids, which are represented in the rumen to provide the animal with most of the energy it needs.

**These acids are: -**

- acetic acid. Its percentage and concentration increase when feeding on coarse fodder materials, and the animal's performance is poor.

- Propionic acid, butyric acid, their percentage or concentration increases when feeding on concentrated feed materials, the animal's performance is high.

It is known that during the various production stages, feed materials that produce these two acids through fermentation are very beneficial for sheep, the most important of which is green fodder that begins to grow in the spring or good hay resulting from drying green fodder with concentrated feed rich in starchy substances, such as barley grains, for example.

**2 – Proteins.**

The main source of proteins are legumes such as alfalfa, as well as other plants such as chickpeas, ragweed, cauliflower, and some types of seed meal (cotton and flax seed meal and pistachios), which can be mixed with other grains such as barley, either in crushed form or given in the form of pellets. Most of the crude protein in the food provided to sheep is digested inside the rumen by microorganisms (flora or micro flora), which include (protozoa, bacteria, fungus, yeast), which convert some of this protein into ammonia and fatty acids, as well as into amino acids. As for ammonia and amino acids, they are used by rumen bacteria to build the special protein and the bodies of those microbes, which are then digested by the animal's stomach (fourth stomach (abomasum)) and small

intestine, in addition to some of the food protein that was not digested, and all of them are transformed into amino acids.

### **3- Vitamins.**

Ruminants can make water-soluble vitamins such as (B, C), so there is no need to add them to food. For the purpose of making vitamin B12, sheep need the element cobalt to prepare the special part of the vitamin called (cyano cobalamia).

As for the group of fat-soluble vitamins, vitamin A is found in excellent quantities in green fodder, and vitamin K is synthesized in the digestive system. Either in special breeding conditions or in areas where the animal is unable to obtain a sufficient amount of sunlight, then vitamin D must be added to the diet, especially for pregnant lambs and ewes. As for vitamin E, Sheep need it rarely, and most feeds provided to sheep lack this vitamin. In cases of intensive breeding that relies mainly on concentrated feeds, it is recommended to give injections at intervals containing a group of vitamins (A, D, E).

### **4- Salts.**

Attention must be paid to the needs of sheep for various mineral salts, because the plants that these animals feed on vary greatly in their content of salts and are often deficient in some of them.

Calcium, phosphorus, magnesium, chlorine, potassium, sodium, sulphur, cobalt, copper, iron, manganese, as well as selenium and molybdenum, are of great importance to sheep, and their importance comes in...

Its usefulness for microorganisms in rumen flora.

- The skeleton needs it.

- It is involved in the composition of the secretions of some glands necessary for digestion, such as the salivary glands and others.

Cobalt deficiency, for example, affects the synthesis of vitamin B12 in the body, causing reduced digestion efficiency and the occurrence of a disease called pine in lambs. As for copper, its presence is necessary for rumen bacteria to make protein, and its deficiency causes what is called sway back disease in lambs as well. Also important salts are calcium and phosphorus, which appear important not only for the growth of the skeletal system, but also for obtaining high digestion efficiency.

### **Sheep's needs for additional fodder in natural pastures. Range Sheep.**

Sheep that graze on natural pastures, whether in semi-desert areas or even in the northern regions, need to add some types of feed called supplements, because natural grasses are few and may contain a low percentage of protein and lack the necessary salts for the animal, such as phosphorus and others.

In order for the sheep to grow naturally, reproduce, and resist harsh weather conditions, such as low temperatures, and to prevent deaths, barley, for example, must be provided at a rate of no less than 120-150 grams per day. In the case of providing concentrated feed, the percentage of crude protein must be 12-36%. In the case of extreme cold or snowy conditions, the animals must be given alfalfa hay or grass hay, and when this is not possible, the amount of concentrated feed or barley must be increased.

. Attention must also be paid to the necessity of placing specific sources of complex mineral salts in separate areas and near water sources, taking into

account the type of salts that the soil and plants in those areas lack for the purpose of adding them.

### **Needs of sheep raised in the fields Farm sheep.**

Sheep feed in the fields on cultivated fodder crops, on grains, and on crop residues produced in the field. This may mean that the sheep get their needs mainly from green fodder (as in sheep located on artificial pastures in addition to grazing on the remains of cotton fields after harvesting), as well as from grains. Such as barley (as well as sheep that graze on wheat and corn farms after harvest). If the sheep do not receive concentrated feed, attention must be paid to the necessity of providing it in the last stage of pregnancy, and this process is called steaming up, or during and after the lambing season. It is preferable to provide concentrated feed for adult animals in the form of whole or crushed grains, in addition to providing complex salts containing mainly phosphorus and calcium, or with the concentrated feed.

### **Feeding ewes before the insemination or flushing season.**

In this way, the ewes are fed well before and during the breeding season to allow the ewes to gain weight because this has a positive effect on increasing the number of eggs produced and released from the ovaries and thus increasing the percentage of twins.

Good nutrition begins two weeks before the date of releasing the rams into the herd, and the process continues during the breeding period, which lasts for a few weeks, meaning that the process of feeding the ewes before breeding may continue for 4-8 weeks. It is usual for the ewes to be fed a concentrated ration of grains or transported to good pastures.

Another benefit of this process is accelerating the onset of oestrus and increasing fertility. It has been found that an increase in body weight of 4-5 kg before the breeding season causes an increase of about 8-10% in the percentage of twins.

### **Excessive obesity of ewes before pregnancy.**

Signs of excessive obesity may appear during the breeding season in some ewes as a result of good nutrition and their ability to consume more feed. Attention must be paid to these ewes and prevent this condition from occurring because excessive obesity may lead to pregnancy failure. Therefore, these ewes must be isolated and given only 150 grams of wheat bran to provide them with protein and reduce their weight. These ewes must also be trained and made to walk longer distances or sent to relatively distant pastures.

### **Feeding ewes in the last stage of pregnancy, steaming up.**

Nutrition for ewes during the first three months of pregnancy should be normal, as the fetus grows relatively slowly. However, in the period after the first 90 days or at the beginning of the fourth month of pregnancy, the speed of fetal growth increases and doubles compared to what it was in the first three months, and a lot of food is consumed. The nutrients stored in the mother's body thus deplete a lot of its body and therefore it is necessary.

The pregnant mother is compensated for this depletion by providing it with good and balanced nutrition to prevent cases of poisoning, paralysis and death that may occur before, during or after birth.

The importance of nutrition goes beyond that, as the amount of milk produced after birth is greater in well-fed animals.

### **Type of feed provided in the last stage of pregnancy feeding ewe in late pregnancy.**

Nutrition must be very good, starting from the eleventh week of pregnancy, where an amount of fodder or grain estimated at 120-220 grams must be given daily, depending on the ewe's live weight, as well as the pasture it eats. It must also be provided with salts continuously. The amount of feed provided to pregnant ewes must be increased as the pregnancy progresses. In the last month of pregnancy and during the first stage of lactation, the ewes' need for energy and protein increases, which may reach 50%, as their need may reach 3 million calories of energy every day, assuming that The weight of the ewe is 50 kg in the last two weeks of pregnancy, so the ewe needs 2.5 million calories from absorbed energy.

In general, it can be said that it is necessary to increase the weight of adult ewes carrying a single fetus by 10% during the last two months of pregnancy. As for ewes carrying twins, the increase may reach 18%, and as for weaning's giving birth for the first time, their weight may increase up to 12%.

It is preferable to isolate ewes not only on the basis of the number of foetuses they are carrying, but also on the basis of different ages. For example, young ewes should be isolated from adult ewes, in order to make a place for young pregnant ewes to grow better. Ewes can also be isolated on the basis of the stage of pregnancy. And the date of birth.

### **Nutrition of maternal and lactating ewes.**

The growth and development of the new-born lamb in the first six weeks depends heavily on the amount of milk it receives from its mother, and this amount is affected by several factors, including:



The amount of milk actually produced by the mother, the number of lambs that the ewe is suckling, as well as the ability of the lamb to obtain its share of milk. Likewise, the amount of milk produced by the mother is also affected by several factors, including the number and weights of the lambs that one ewe is suckling, the general condition of the mother and age, nutrition. During the last period of pregnancy and during suckling, as well as genetic influence.

The number of lambs that the mother suckling has a significant impact on milk production. A well-fed ewe that gives birth to twins will produce about 40% more milk than one that gives birth and suckling a single lamb at the same level of nutrition.

Those who give birth and suckling triplets produce 10% more than those who give birth and suckling twins. Likewise, a sheep with a large weight produces more than a sheep with a smaller weight.

A mother who has twins should be fed 25% more than who gives birth to a singleton, on the basis that the first produces milk amounting between 1.9 - 2.5 kg and the second about 1.5 kg. Lack of nutrition during suckling may lead to a decrease in the mother's milk production by 10-30%, in addition to a change in the components of the milk, such as a decrease in non-fatty solids. The beginning of the lactation period is the critical period that is quickly and greatly affected, which is reflected in the pregnancy, during which it is completely dependent on the mother's milk.

On this basis, feeding lactating ewes a diet containing 16% crude protein is considered sufficient, with the addition of 6 grams of calcium magnesite/day to compensate for the salts excreted in the milk.

Vitamin E is also important, not only at this stage, but also for maintaining reproductive efficiency for the next stages. It is also necessary to adhere to the provision of copper, and it must not exceed 20 parts per million in the feed. If the breeding is done without grazing, this percentage must be reduced, as it is possible that copper will be stored in the liver and be toxic if it exceeds the prescribed percentage.

The energy requirement of lactating ewes is 2.4 million calories of absorbed energy per kilogram of dry matter. From a practical standpoint, giving concentrated feed in abundance, that is, in amounts exceeding half a kilogram per day during the first ten days after birth, leads to an increase in milk production, which the new-born cannot consume, so it requires milking it or reducing the amounts of feed provided.

After noticing that the pregnancy has begun to consume the entire amount of milk produced, then it is possible to begin increasing the amount of concentrated feed provided, and then the rate of weight gain will be 300 grams/day. How efficient will the nutritional conversion of solids in the milk be? 1:1, as the solids in the milk for that period will be 20%. As for twin lambs, the increase will be 250 grams/day during the first four or six weeks of life.

### **Feeding young lambs without their mothers (creep feeding method).**

During the lactation period, lambs are fed from special feeders in which special concentrated feed is placed. These feeders are placed either in the corner of the barn or in the middle of it. There are small openings in the fence or wall of the part designated for these feeders that allow the lambs to enter without their mothers. These feeders are called creep feeders.

The size of these openings can be controlled according to the sizes and ages of the lambs by placing wooden boards around them to facilitate the lamb's entry into them when trying to do so.

### **Benefits of using the crawl or creep method for feeding.**

- 1- Accelerating the growth and fattening rate of these lambs.
- 2- Helping twin lambs reach a similar weight to single and twin lambs and overcoming the problem of them getting a small amount of milk.
- 3- Contributing to the production of fattened lambs that can be marketed in a shorter period, even if the pasture condition is poor.
- 4- Reducing the problems of overgrazing of pastures.
- 5- Helping the mother by reducing the amount of milk suckling by the lambs.

### **Fattening lambs.**

Before starting to fatten lambs, they must be divided into groups according to their weight. Before that, it is advisable to vaccinate them against diseases, dose them against internal parasites, and immerse them or spray them against scabies and other external parasites and skin diseases. Then you start feeding it with concentrated feed gradually, using a mixture of grains such as barley with spoiled beets and salts, at an amount of 100-120 grams/head/day, in addition to good hay or alfalfa in unlimited quantities. After that, this amount of feed must be increased gradually while reducing the hay.

Most modern lamb fattening methods in the world are based on feeding sheep and lambs in the form of pellet cubes, which contain all the sheep's needs of concentrated and coarse feed and salts. These methods have

proven an increase in feed consumption by 60% over the usual method and an increase in animal weights by 23%.

There is another method that can be used to fatten lambs on good artificial pastures in which legume green fodder such as alfalfa, clover, mung, etc. is available. That is, it is possible to raise it without giving it concentrated feed except for a limited period not exceeding a few weeks, immediately after weaning, to compensate for its loss of mother's milk and give it nutritional momentum that enables it to grow well.

### **cow's nutrition...**

There are a set of basic principles in cow nutrition that must be taken into consideration.

#### **1- Determine the amount of feed materials consumed.**

The quantity of feed provided is an important and influential factor in the production process. The quantities provided vary according to the type of feed, the type of cow, and the stage of production. A cow weighing 500 kg consumes approximately 13 kg of dry matter, in contrast, it only needs 4 kg of hay.

#### **2- The maximum limit for the use of some types of feed.**

For example, excessive use of grains in cow feed can lead to health problems in the digestive system. There is an established scientific and practical fact, which is that the percentage of coarse feed provided to cows must not be less than 30% of the total amount of feed provided to them.

#### **3- Legumes and protein are among the most important materials in feeding this type of animal.**

The often available legume mixtures can meet the nutritional requirements for normal growth and advance the health of cows, but the nutritional value of legumes may decrease as they age, which requires the use of protein, energy, mineral and vitamin supplements to maintain the health and growth of cows, as protein is essential for growth and milk production. And reproduction.

#### **4- Energy is one of the basics of cow nutrition.**

Energy is necessary for growth, as it contributes to the digestion of feed, in addition to its role in carrying out basic body functions. This element (energy) must be included in large quantities in its diet.

#### **5- Water.**

Water is classified as an essential nutritional element and constitutes between 50-75% of the cow's total weight, and its deficiency causes poor performance, and many specialists consider it at the top of the pyramid of nutrition basics.

#### **6- Minerals and vitamins.**

The cow's body needs approximately 17 mineral elements. These minerals are divided into two types (large minerals and fine or small minerals). Although they are needed in small quantities, their deficiency causes a clear and tangible decline in growth. The needs for these minerals vary based on the type of cow, its age, the source of water from which it drinks, the season of the year, stress, and stage of production.

## 7- Feed.

Fodder is considered one of the most important basics of cow nutrition, and it is necessary to provide it as food for them, as it has the highest quality and nutritional value.

### **The fodder provided to cows is divided into two types.**

- Roughage or bulk feed. Including hay, herbs, weeds, and others, it is important for the integration of microbial digestion processes in the rumen, in addition to its role in obtaining an acceptable percentage of milk fat. It also fills the animal's rumen, makes it feel mechanically satiated, and stimulates it to ruminate. It is provided to the animal freely or to the point of satiety.
- Concentrated feed. It includes grains and grains in general, and its function is to provide the animal with protein and carbohydrates that are important for construction and production. Its prices are high, but it is provided in certain quantities according to the animal's body weight.

### **An important note regarding concentrated feed...**

If the percentage of protein in the concentrated feed material provided is approximately 8% and up to 12%, then the percentage of providing it to cows will be 2%.

When the protein percentage is less than 7%, the serving rate increases to reach 2.5-3%.

If there is good quality clover or alfalfa, a cow weighing 500 kg can consume a total of 15 kg.

