

Nutritional requirement of sheep and ration preparation

Feeding during different physiological stages:

Table (1) below represent the different physiological state in sheep and its relationship with the nutrient requirements

Stage	Sheep status	days	requirements
maintenance	Dry period from weaning-flushing	80-130	little
production	3 weeks after &before the mating	42	high
Early pregnancy	First 15 weeks of pregnancy	105	moderate
Late pregnancy	Last 6 weeks of pregnancy	42	high
lactation	Milk production	50-120	Very high

Maintenance period: Maintenance period started from weaning of the lambs to flushing (before the matting) and it spent about 4-8weeks, at this stage ewes do not need to the quantity or quality of feed. Usually the grazing on good pasture (The presence) could provide much of the cost of feed for these ewes.

Be careful from the ewes that had signs of obesity to reduce the concentrated feed and increase amounts of hay to be configured for the mating season.

Production stage: This period started before 2-3 weeks of matting (flushing period) and continues for about 3 weeks after matting. It aimed to elevate the ovulation and pregnancy percentage throughout improve the feed quality and quantity. Vitamins A & E supplement are very important for fertility during this period.

Tables (2&3) represent the nutrient requirement of sheep in maintenance

Item	Percent%	Energy (Mcal)	Protein%	Calcium (gm)	Phosphorus(g m)
Barley	78.5	2.2	9.34	0.31	2.6
Soybean	0.12	0.07	1.8	0.12	0.3
Wheat bran	15	0.35	2.28	0.2	2.1
Salt	1	-	-	-	-
Vit.& mineral	0.1	-	-	-	-
Hay or grass	5.28	-	-	5.52	-
Total	100	2.62	12.42	6.15	5

Animal weight	50 kg	60 kg	70 kg
Concentrated feed (Kg/head)	0.6	0.65	0.7
Hay (Kg/Head)	0.4	0.4	0.4
Energy(Mcal/head)	2.2	2.3	2.5
Protein(gm/head)	96	103	110
Calcium(gn/head)	4.8	5.1	5.4
Phosphor(gm/head)	3.3	3.5	3.8

Tables (4&5) represent the nutrition requirement and quantity of sheep in production stage.

Item	Percent%	Energy (Mcal)	Protein%	Calcium (gm)	Phosphorus(g m)
Barley	86.5	2.37	10.3	0.36	2.9
Soybean	3	0.09	1.3	0.1	0.19
Wheat bran	8	0.18	1.2	0.11	1.11
Salt	1	-	-	-	-
Vit.& mineral	0.1	-	-	-	-
Hay or grass	1.4	-	-	5.53	-
Total	100	2.64	12.8	6.1	4.2

Animal weight	50 kg	60 kg	70 kg
Concentrated feed (Kg/head)	0.9	0.95	1
Hay (Kg/Head)	0.4	0.5	0.5
Energy(Mcal/head)	3.4	3.7	3.8
Protein(gm/head)	163	174	180
Calcium(gn/head)	9.1	9.7	10.0
Phosphor(gm/head)	4.5	4.8	5

Early pregnancy stage: This period started from the beginning of mating till 40 days of pregnancy. Nutrition during this period is very important for embryo growth and fixation in the uterus and hormonal balance.

Table (6&7) represents the nutrition requirement and quantity of sheep in early pregnancy stage.

item	Percent%	Energy(M cal)	Protein%	Calcium gm	Phosphor gm
Barley	78	2.12	9.3	0.3	2.65
Soybean	8	0.23	3.5	0.24	0.5
Wheat bran	11.5	0.26	1.75	0.15	1.58
Salt	1	-	-	-	-
Vit.& mineral	0.1	-	-	-	-
Hay or grass	1.4	-	-	5.53	-
total	100	2.61	14.6	6.5	4.5

Animal weight	50kg	60kg	70kg
Concentrated feed (Kg/head)	0.75	0.75	8
Hay (Kg/Head)	0.35	0.4	0.45
Energy(Mcal/head)	2.5	2.6	2.8
Protein(gm/head)	124	126	134
Calcium(gn/head)	5.6	5.7	6.2
Phosphor(gm/head)	3.8	3.8	4.2

Late pregnancy stage:

- Nutrient requirements of animals increased suddenly in the last period of pregnancy due to the rapid development of fetus in this period (70%).
- Increases the size of the uterus at the expense of the rumen to the provision of small amounts of concentrate feed with high nutritional value with little volume.

- the lack of nutrition during this period of pregnancy has a direct impact on the weight of the lamb at birth.
- Also, 95% of the tissues contribute to milk secretion evolve in this period, which affects the production of milk and reduces productivity by 10-35 % .
- The ewes fed on concentrated feed with (14-16) % crude protein at a rate of 1-1.5 kg / head per day.

Table (8&9) represents the nutrition requirement and quantity of sheep in late pregnancy stage.

item	Percent %	Energy(Mcal)	Protein %	Calcium gm	Phosphor gm
Barley	76	2.08	9.0	0.3	2.6
Soybean	10	0.28	4.4	0.3	0.6
Wheat bran	11.5	0.26	1.75	0.15	1.6
Salt	1	-	-	-	-
Vit.& mineral	0.1	-	-	-	-
Hay or grass	1.4	-	-	5.53	-
total	100	2.62	15.2	6.3	4.8

Animal weight	50kg	60kg	70kg
Concentrated feed (Kg/head)	0.95	0.9	0.9
Hay (Kg/Head)	0.5	0.6	0.7
Energy(Mcal/head)	3.4	3.7	3.8
Protein(gm/head)	181	193	197
Calcium(gn/head)	8,6	9.8	10.0
Phosphor(gm/head)	5.1	5.1	5.2

Lactation stage:

- The quantity of milk production affected by the age of animal and maturation, the milk secretion increased gradually to the third week to become stable, and start to reduce the production after the sixth week.
- During the lactation period most ewes needs three times of its requirements before this situation (lactation.(
- must be maintained to provide 0.4 kg / head of good quality fodder plus 1 -1.5 kg / head of concentrate feed (14% crude protein) a day.

Table (10&11) represents the nutrition requirement and quantity of sheep in lactation stage.

item	Percent%	Energy(Mcal)	Protein%	Calcium gm	Phosphor gm
Barley	76	2.08	9.0	0.3	2.6
Soybean	10	0.28	4.4	0.3	0.6
Wheat bran	11.5	0.26	1.75	0.15	1.6
Salt	1	-	-	-	-
Vit.& mineral	0.1	-	-	-	-
Hay or grass	1.4	-	-	5.53	-
total	100	2.62	15.2	6.3	4.8

Animal weight	50kg	60kg	70kg
Concentrated feed (Kg/head)	1.5	1.6	1.6
Hay (Kg/Head)	0.3	0.3	0.4
Energy(Mcal/head)	5.1	5.4	5.6
Protein(gm/head)	305	320	340
Calcium(gn/head)	15.3	16	17.5
Phosphor(gm/head)	8.2	8.7	9.0

Rangeland:

- An land produces plant for grazing for the animals, it may natural or artificial pasture that useful as a source of animal feed.
- **Range Plants:** Are plants that cover lands pastures and often divided into three sections:
- النجيليات واشباهها **Grasses and Grass- like Plants .**
والأعشاب عريضة الأوراق.
- الشجيرات **Shrubs :**
- الشجيرات الرعوية **Fodder shrubs**

Desirable characteristics in shrubs

- Benefits and low economic costs
- Appropriate environmental
- Permanence under grazing
- Concentration of energy and protein
- Production age
- Ease of picking and nibbling
- Trait of harmful compounds.
- Digestibility
- Palatability
- others

Natural rangeland in Iraq divided into two parts:

- **desert rangelands**
- **Mountain and steppe rangelands**

Grazing Capacity: is the largest number of animals that can be placed in the pasture during year and after other year without damage plants pasture and estimate grazing capacity is one of the hardest things in the management of pastures and this requires the collection of data for several years for rainfall, and the productivity of pasture and diversity of vegetation, and palatable plants pastoral and seasonal growth.

Grazing System

- It is a Program or plan from which can determine the time of grazing permits or prevents ,and the place of a good grazing.

- Grazing system which helps to get high productivity of plants and increase the productivity of grazing animals.
- The most important grazing systems in natural pasture are:

Continuous Grazing:

- Is one of the easiest grazing systems applied where animals are allowed to graze for long periods of time may be a whole year and this will continue as long as grazing conditions allowed the growth of a plant or weather conditions.
- **Positive characteristics of this system:**
- Low cost because of the lack of fence needed for the application of this system
- Maintaining the selective grazing animals to plants palatable and this is reflected positively on the productivity of pastoral animal
- Full exploitation of plants.
- And negative characteristics of this system are the possibility of epidemic of animal diseases.

Rotational Grazing:

- Pasture divided into several sections where the animals are allowed to graze in the first section specified period of time and then moved to the second section , and so on a regular basis
- **Positive characteristics of this system :**
- Exploitation homogeneous pasture plants because of good distribution of animals over pasture land
- Minimize soil compaction due to the lack of animal movement and progress as they graze in relatively small areas
- control grazing level.
- Minimizing the impact of endemic diseases in grazing areas
- Relieve the pressure on the pastoral areas near drinking places
- And negative characteristics of this system to reduce selective grazing animals , which leads to low productivity per head of grazing animals and the consequent division of pasture increase in production costs

Grazing Deferred:

- This system is based on the postponement of grazing in the pasture until the maturation of the seeds of plants function in order to give these plants the period of time necessary to complete the growth and seed production in large quantities

- **Positive characteristics of this system:**
- Give the plants enough period to increase their strength and reproduction
- Cover the seeds produced by the process of grazing
- the negative characteristics of this system is low productivity of the animal because of the aging of the parish pastoral plants and low nutritional value and has a large proportion of pastoral production plants because of defoliation.

Traditional Grazing:

- this kind had years ago is the most common in the Middle East, where the move animals from pastures of the desert to mountain pastures and then return from the mountain areas to desert regions depending on the availability of plants which is known called in the management of pasture grazing vertical .
 - Grazing Vertical goal of traditional grazing is to reach the stage of subsistence (Sustenance so the relationship between animal breeders and grazing land close relationship either currently has seemed traditional grazing to be little.
 - there is no positive point for this system only exploit pasture plants and converted into animal products
 - As for the negative are:
 - - Do not give the plants long enough to seed production to ensure sustainability
- The extinction of many palatable pastoral plants as well as the growing of Desertification phenomenon decaying vegetation