



Best Practices for Managing Awassi Sheep

Mating Period

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Foreword

This booklet is part of a ten-part series of technical Guidelines describing ‘Best practices for managing Awassi sheep’ – the dominant sheep breed in several countries across the Middle East. The series is targeted at sheep farmers and milk processors, and provides practical, easy-to-follow advice on managing Awassi sheep under dryland conditions.

Efficient husbandry, feeding and milk processing are crucial in management of Awassi sheep in dry areas; but many small-scale producers are unfamiliar with simple productivity-enhancing practices. This series aims to fill this information gap, enabling farmers to increase their income from livestock while using resources more efficiently and sustainably.

The series draws on the practical experience of researchers, as well as the extensive literature, to capture scientific and local knowledge in an easily accessible format in the local language. The bulletins are organized in accordance with sheep management calendar, and describe the management of Awassi ewes during important physiological stages over the year. Supplementary guidelines provide additional information on each stage.

These booklets were produced as part of an IFAD-ICARDA project, Scaling up best practices for managing Awassi dairy sheep to small-scale sheep farmers in West Asia, implemented in Syria and Lebanon in collaboration with IFAD development projects in both countries.

We would like to thank all those involved in the preparation of these guidelines and also for IFAD’s financial support to this important project. We expect these booklets will be useful to sheep farmers, milk processors, extension staff, as well students of agricultural development and knowledge transfer.



Mahmoud Solh

Director General, ICARDA



Dr. Nadim Khori

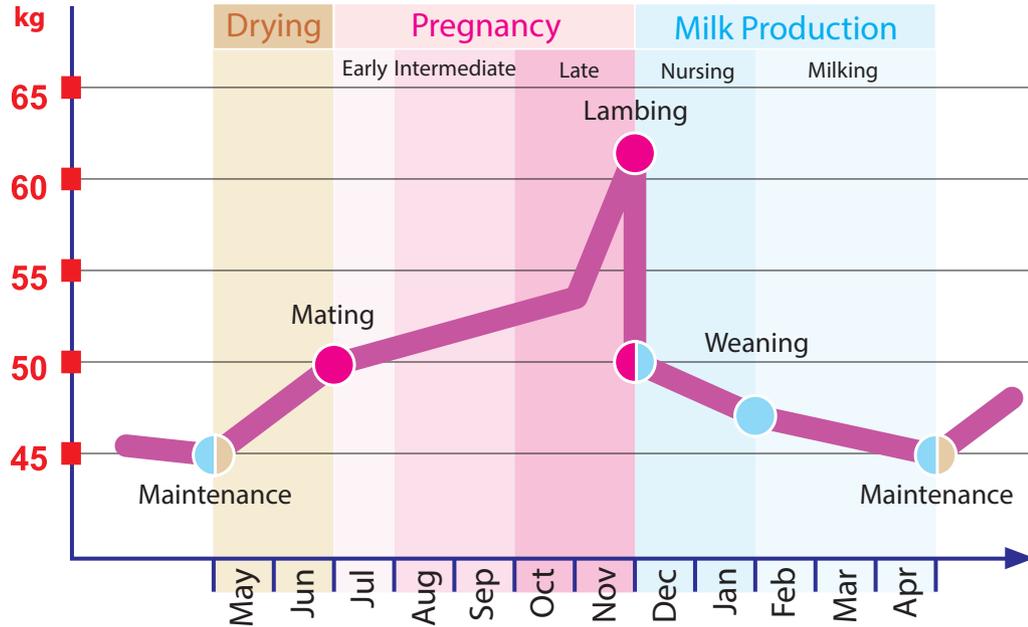
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Productive Cycle

Sheep raising project aims to produce high revenues from meat, milk and wool with a least costs. To achieve this, scientific approaches should be followed in breeding, nutrition, lactation and health care.



Ewes pass through their productive cycle several stages (mating, gestation, lambing and lactation). Each of these stages requires timely and appropriate management procedures.

The above figure illustrates these stages and the weight variations for a 50 kg ewe at mating and raising one new born lamb.

This booklet demonstrates ewes and rams management before and after mating.

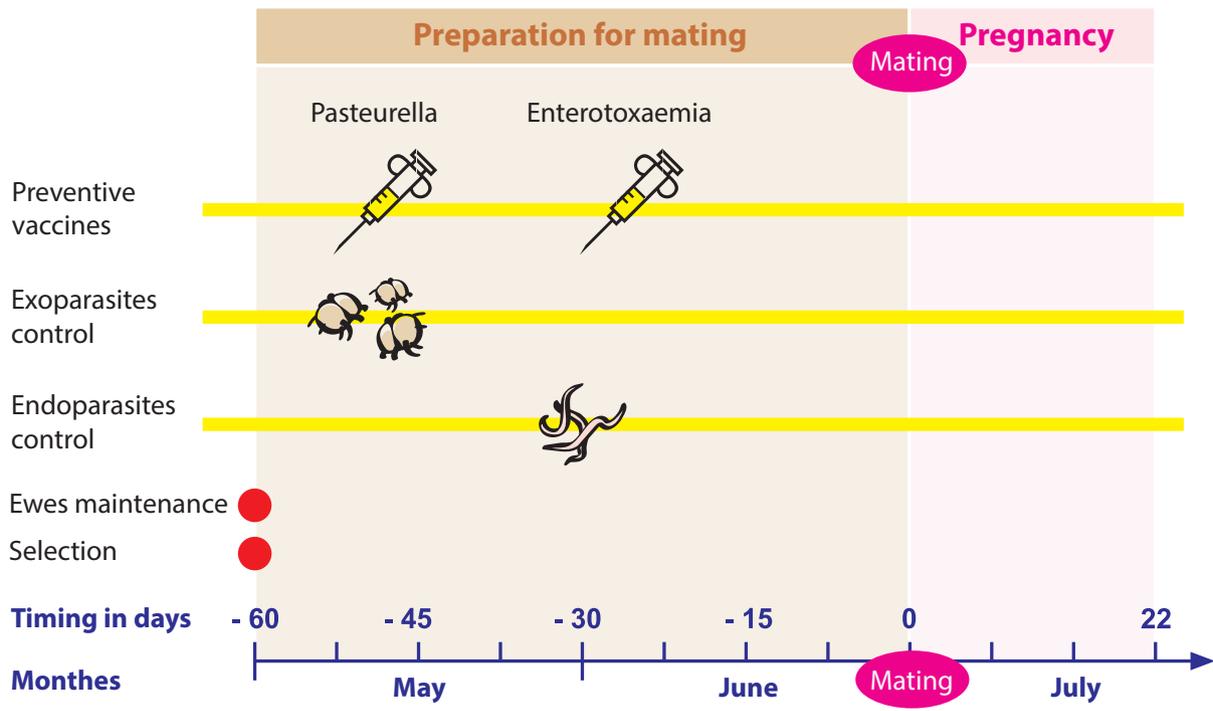
Preparing Ewes for Mating

To ensure good lambing season, needed procedures should be carefully respected



To ensure a good lambing season, the following procedures should be observed:

- Maintain (dry) ewes 6 – 8 weeks prior to mating date, as active milking inhibits ovulation and negatively interferes mating process. Also drying gives the ewe the opportunity to rebuild its body reserves and to get ready for the new season,
- Examine ewes prior to mating season and exclude old ewes with missing teeth, having dystocia and mismothering (which do not care of their newborn lambs). Also excluded are ewes infected with incurable disease, such as chronic mastitis and recurrent abortion. Other individual disease issues should be treated, if found. Only productive and healthy ewes should be allowed for mating,
- Treat ectoparasites 8 weeks prior to mating date. Treat endoparasites 5 weeks prior to mating date,
- Implement the usual preventive vaccination program in the whole area, prior to mating, to avoid the animal being stressed, and follow the animal health guidelines in the region,
- Feed ewes according to their requirements and according to body condition so as to reach optimum condition upon mating.



Preventive vaccination and preparation for mating

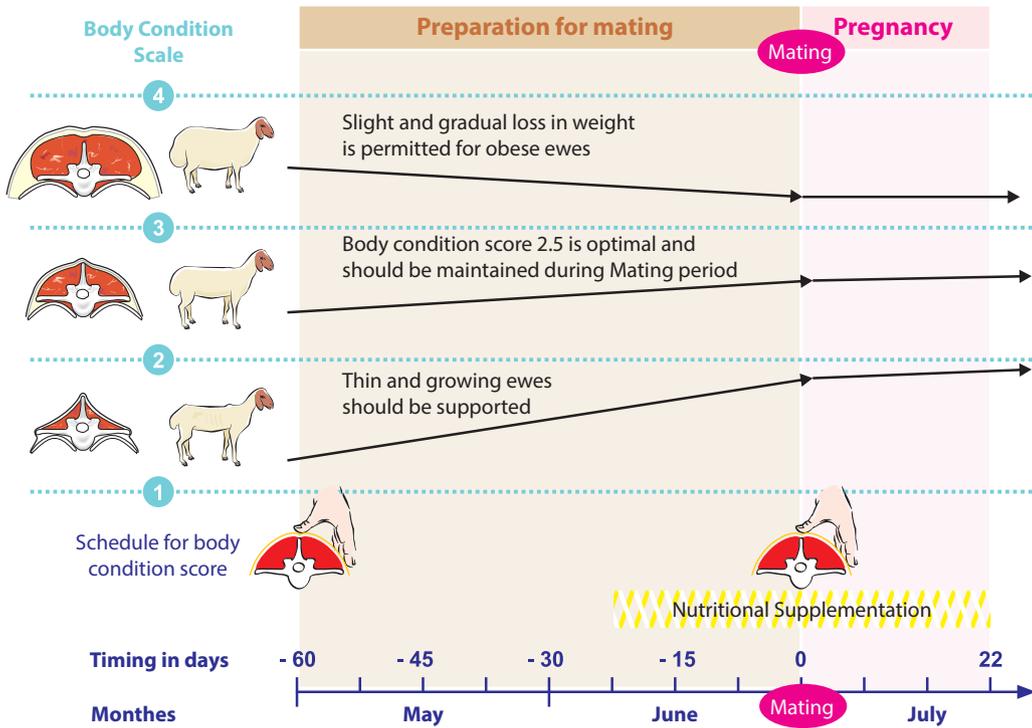
Feeding Ewes Prior to Mating

Reproductive efficiency depends to a large extent on body condition associated with nutrition efficiency prior to and during mating



- Ewes should be in a good body condition upon mating. Therefore, ewes' body condition should be evaluated 8 weeks prior to mating. Ewes should be categorized in groups according to their body condition and each group fed according to their needs in order to reach the score of 2.5 – 3.0 of body condition scale (where 1= emaciated ewe and 5= compact or obese ewe),
- Ewes' nutrition varies from a season to season and from a region to another according to the availability and quality of pastures and feed. In general, sheep flocks' nutrition in Syria depends, during this period, on grazing crop residues (wheat and barley) that can cover the ewes' needs, if well managed. However, continuous grazing on these residues for a long periods leads to a deficit in the nutrition and a supplement is then required,
- The quantity of residues available in the pasture should be determined; the period the flock will stay in this pasture calculated and plan to get the flock transferred to a new pasture. For example 20 – 30 heads can be stocked for a month on a hectare of wheat residues where productivity estimate is 1000 kg/ha. However, this varies depending on region and rainy season,
- Emaciated or stressed ewes, because of lambing and milk production in the previous season, need flushing to rebuild their bodies. Also young ewes need supplements to meet growth requirements and get ready for mating,
- A slight reduction in weight for fatty ewes is permitted to facilitate reproduction process.





Nutritional Flushing

Increasing ewes' nutritional level, prior to and during mating, leads shorter lambing time and increase number of new born lambs and this is called nutritional flushing .



Nutritional flushing can be effective for ewes with intermediate body condition which normally forms the majority of flock in most cases.

Flushing should start 3 weeks prior to mating season and should continue for at least 3 week after.

Ewe weight (kg)	40	45	50
Maintenance requirement (mega joule/day)	5.8	6.3	6.8
Flushing needs (mega joule/day)	2.9	3.15	3.4
Concentrate needed to cover nutritional push(g/day)	240	260	280



Nutritional push may be provided through:

- Grazing on high quality crop residues,
- Grazing on non-harvestable barley crop,
- Providing concentrate ration at a rate of 200 – 300 g/ewe/day in addition to grazing freely on crop residues.

Feed ingredients needed to prepare one ton of concentrate	
Feed ingredients	kg
Barley	730
Wheat bran	150
Cotton seed cake	100
Minerals and vitamins	20



Composition of Min Vit mix	g/kg
Dicalcium phosphate	600
Salt	300
Minerals and vitamins	100



The composition of concentrate ration varies depending on locally available feed and their prices. It is preferable that the ration contains 11 – 12 mega joule energy/kg and crude protein at a rate of 14%.

Salts and vitamins mix contains dicalcium phosphate, table salt and a mix of trace salts and vitamins specific to sheep. Preferably consult the extension agent when buying them.

*For more information, please refer to **Feed Reference Guide** in this Booklet series*



Ewes' nutrition in mating period



- Ewes are re-evaluated before introducing the rams to know the extent of nutrition effect during pre-mating period, and to plan the nutrition during gestation period,
- Mating should be permitted to ewes with suitable body condition, only (score 2.5 – 3), and this will reduce lambing period (shortening lambing season) and reduce problems during gestation and nursing periods,
- With continuous grazing on cereal crop residues, the quantity and quality consumed is reduced. The flock should be transferred to pasture if available or suitable feed ration should be provided. Ewes feeding at a rate of 200g/day from feed supplementation containing hulled cotton seed cake, mineral and vitamins mix will complement the ewe's needs, taking into consideration progressive transition when introducing new ration.

Feed ingredients needed to prepare 100 kg of supplement

Feed ingredients	kg
Cotton seed cake	94.5
Dicalcium phosphate	2.5
Salt	2.5
Mineral and vitamins	0.5

Remember

- Ewes with a body condition score above “3” don't need flushing
- Ectoparasites should be controlled before implementing the nutritional flushing,
- Any stress to ewes prior to mating should be avoided.



Preparing Rams for Mating

Due care should be given to rams throughout the year, especially with the advent of mating season, to ensure the production of active and fertile sperms



- Determine the number of rams needed for the flock. One adult ram services 25 – 30 ewes, and a young lamb ram of 18 month old services 10 ewe. If the ewes' estrous cycle is synchronized, then one ram is used to services 7 - 8.
- Do not maintain more rams than your flock needs, since this will increase expenses, and replace extra rams with productive ewes to increase profit. Increased ram ratio will not increase lambing ratio due to competition and pushing,
- Buy the rams 8 week prior to mating season to get them adapted to the new farm conditions, and to ensure that they are free from infectious diseases. Only healthy and fit rams from trusted source should be selected. 3 – 5 years-old rams born as co-twins are preferred,
- Treat the ecto- and endoparasites and implement preventive vaccinations if not done earlier. Also wounds and inflammations should be treated, if found,
- Shear the wool or shorten it, if long, to reduce heat stress. Trim the hooves carefully and gradually, if long, since over trimming may cause difficulties in ram's movement and when jumping.
- Do not expose rams to any stress and ensure that their barn is clean, dry and ventilated. Take them outside for training in order to maintain their fitness.



Rams' Nutrition

Over or under nutrition leads to reduced libido. Weak rams do not have sufficient energy to perform mating, their sperms may be weak, also over weight rams are lazy and more prone to stresses



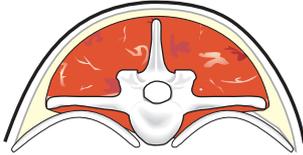
Rams should be in a good body condition at the onset of mating season (3 – 5 degree on body condition scale), in order to attain high performance. In addition to freely grazing cereal crop residues, rams need a concentrate ration containing minerals and vitamins, whose quantity depends on body condition. In general, 600 – 800g/day of balanced ration, 6 – 8 weeks prior to the onset and during mating season, can be used to maintain the body and improve testicles condition and, to produce a stock of sperms, knowing that the required period to produce sperms is 7 weeks. Care should be considered to gradually introduce this ration.

Rams' Examination

Rams' examination is important to determine their suitability for mating. Examine rams two months prior to mating season and diseased rams that do not have the specifications required. Maintaining a weak fertile ram is a certain loss. We should remember that ewe's defects appear in its own lambs, while ram's defects appear in the whole flock.



What Should be Examined?



Body condition

Rams should be healthy and free from infectious diseases, cankers and bruises and in optimal body condition 3 – 3.5 score at 1 – 5 rating scale (where 1 = very weak and 5 = obese) at the onset of mating season, knowing that rams may lose 15% of their weight during mating. Therefore, nutrition should be adjusted on time.



Testicles

Testicles should be examined to ensure their integrity and free from wounds and tumours, and it is preferable that they are balanced, compact and big sized, and are not stiff or spongy. The testicle's size is indicative of sperms quantity stored, and when they are larger, the ram's ability to have fertilized matings increases. Testicles should freely slip in the scrotum, and the epididymis tail is compact and prominent. If you have any doubt of the presence of atrophy or tumours in the testicles or epididymis or spermatic cord, consult a veterinarian and do not hesitate to examine the vitality and concentration of sperm's fluid, if this service is available in your region.



Penis and foreskin

Foreskin should be revealed to check the integrity of the penis and is being free of tumours, cankers and inflammations.



Hooves and menus

It is important that the ram has the ability to move and mount; therefore hooves should be checked to ensure their integrity and free from claudication, foot rots and inflammations, and, if necessary, carefully trim and treat them.



Eyes

Eyes should be shiny, bright and attentive and the inside of the eyelid pink (devoid of signs of anaemia).



Teeth

Teeth should be strong and healthy since their loss or corrosion lead to a weak grazing ability.

Rams should be replaced when over five years old. Rams usually reach their maximum performance at 3 – 4 years old. They are usually culled by the time they are 6 years old.





Rams' Mating Management

Awassi sheep are characterized by a long breeding season, and it may reproduce throughout the year, if appropriate environmental conditions are available

Mating date	Expected lambing date
1 June	29 October
8 June	5 November
15 June	12 November
22 June	19 November
29 June	26 November
6 July	3 December
13 July	10 December
20 July	17 December
27 July	24 December
3 August	31 December
10 August	7 January
17 August	14 January
24 August	21 January
31 August	28 January

- It is advisable to control the mating season in order to time lambing to suit farmer and make profits, taking into consideration the availability of forages and manpower, milk prices and periods of high demand for lambs,
- Rams are separated from ewes, prepare them to mating and joining them at the appropriate time, for a limited period of 51 days for example (three oestrus cycles) and re-separate them then after. This will lead to compact lambing, which facilitate the management of the flock.

What happens if rams are kept continuously with ewes?

- Ewe may give birth at any time; it may lamb at unsuitable periods,
- Mating may occur while ewes are in unsuitable body condition,
- It will be difficult to undertake preventive health and nutrition services at appropriate time,
- The flock management costs will increase, and marketing processes will be difficult and ineffective.
- Probabilities of inbreeding will increase.



Use of Harness

Rams may be equipped with a harness and marking cryone, when mounted on the ewe, it leaves a sign on the ewe's back, and thus the conception date can be determined. The success of ram in fertilization can be determined by changing the color of marking material every 17 days. If the ram re-marks many ewes, this will be an indication of a decrease in ram's efficiency.

Use of tester ram

Conception can be determined by putting mate ewes with a tester ram (a ram subjected to vasectomy), and monitor ewes. If heat (oestrus) signs do not appear within 17 days, this means that conception has likely took place.

Remember

- Mating process should be monitored, and mating date for each ewe registered, so that lambing date may be expected by adding 150 days to the mating date,
- Try to use homogenous rams as for size and age, when using more than one ram in the flock,
- Rotate (replace) rams once every two weeks if you have more than one flock,
- Rams should be provided with shade and water through out the mating season,
- In very hot days, it is preferable to shelter rams at noon time.
- Rams often mate ewes in the morning and in the evening.
- It is recommended to replace rams once every three years to avoid inbreeding.
- When two rams or more are placed with ewes. They might spend most of the time pushing or butting. Therefore, rams should be alternated, where they may be replaced every two days or in the morning and evening.

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- 11 Lamb Fattening



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