

# Management of Assisted Reproduction in the Palas Merino Sheep Breed

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## Abstract

Sheep breeding and exploitation have been and remain an important objective, because this species may use in feeding less valuable forages and the requirements for sheltering and care are less expensive as compared to other species. Assisted reproduction, the decreasing of the interval between birth and fecund mating, the deseasonalisation of heat and births as well as the birth acceleration, might successfully contribute to the obtaining of two births per year, three births in two years and finally to the sheep prolificity increasing. The realization of such objectives requires a good knowledge and the valorization of all biological particularities of sheep, by applying modern breeding technologies, amelioration and by the intensification of reproduction function. Merinos of Palas breed detain a reproduction activity easier to control as compared to the other sheep breeds from our country, so that the births can be organized on the entire year depending on market requests. The management of the sheep reproduction and the establishment of proper technologies in decreasing the interval between births, the intensification of the reproduction function in the normal mating season and in counter season are only possible when healthy female sheep are used, well fed based on zootechnical accounts from which results the mount planning on entire year as well as on decades. Considering the obtained results, can prepare, a management program of assisted reproduction might be conceived for the sheep breeders from Romania.

**Keywords:** lambing, management, mount, sheep.

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## 1. Introduction

Socio-economical test reports suggest that sheep largely contribute to a better nourishment of mankind, makes agriculture and even national economy function more intense and efficiently due to the upper exploitation of natural plant resources.

Sheep produce a large and diverse amount of products and outputs that have great significance for the human consumption and also produce raw material for the food processing industry.

To a large extent, the goals and objectives we have for our next lamb crop are determined before and during the breeding season. Increasing ewe productivity while decreasing labor, time and

facilities requirements during the lambing season can be realistic objectives [1].

In order to establish a high economical efficiency the physiology of sheep breeding and outputs must be directed and stimulated, so that all the elementary qualities of life are maintained in the physiological limits by avoiding their early degradation.

The quantity, quality and economics of the outputs produced by sheep represent the correlation between the existing genetic background and the provided environmental conditions, as well as the familiarity and administration of modern biotechnology for sheep breeding and exploitation [2].

The increase in the breeding function efficiency is closely related to the fertility achieved in the biological level potential [3].

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The impossibility of achieving the proper breeding parameters is the main cause to the financial losses that small and big sheep breeders register. Vulnerability of farm animal breeds is caused by the lack of special interest breeders for one breed [4].

The purpose of this paper is the need to implement "Assisted breeding program from sheep". These programs lead to reproductive choice period, shortening nonproductive and increase genetic progress in this species.

## 2. Materials and methods

Research has been made on the adult sheep of Merinos of Palas breed. Zootechnical, physiological, health condition and gynecological group records for each female have been analyzed. In the reproductive management of sheep breeding intensification function in normal and counter season can be achieved by using non-hormonal and hormonal methods, aiming to obtain lambs throughout the year. In this context can plan mountings and lambing in this species the decades and days.

## 3. Results and discussion

In the sheep reproduction management and choosing the technologies to shorten the lambing period the enhancement of the reproduction function in the normal season and in the off season can be made only by using healthy females in good shape, and taking into consideration the filling in and out of the zootechnical records from which the covering of the sheep planning for the whole year as well as for decades can be made (Table 1).

To make the sheep farms more efficient it is necessary to shorten the period between the lambing and the covering of the sheep and to accelerate the lambing system [5]. In order to achieve this technology it is necessary to pay increased attention to the females and males sheep so that they can be included in "The Assisted Sheep Reproduction Program".

For the Merinos of Palas breed it is essential to switch the wool production with the milk-meat production and/or meat-milk production by selecting the extra choices for milk and the extra choices for meat and fattening the lambs up to 35 kilos.

**Table 1.** The assisted reproduction management in the sheep farms

1. Increased number of lambs	1.1. Early covering of the sheep	Lowering the age from 18-20 months to 7-9 months
	1.2. Getting two births per year	- nutritional stimulation; - harmonic stimulation;
	1.3. Getting three births in two years	Shortening the period between the births up to 7-9 months.
	1.4. Getting five births in three years	Shortening the period between the births up to 7.2 months.
	1.5. High prolific sheep selection	- selection by number of lambs - prolific male sheep usage;
	1.6. Non-fecund female sheep recovery	- reducing the embryonic mortality; - shortening the period between the births; - reducing the anoestrus
2. Accelerating lambing system	2.1. Seasoning the sexual cycles	- genetic methods (selection); - organizational methods; - harmonic methods.
	2.2. Synchronizing the sexual cycles	- normal season; - off season.
	2.3. Birth echeloning	- throughout the year; - depending on the market request.
3. Efficiency	3.1. Optimizing the precocity	- female selection; - male selection.
	3.2. Reproductive longevity	- ensuring the optimal conditions for growing, exploiting and keeping
	3.3. High prolificacy	- female/male selection with the purpose of obtaining two or three lambs;

**Table 2.** The covering and lambing calendar on decades

No.	Number of transcript	Covering date/ A. I.	Estimated lambing date	Observations (Lambing date)
1.		1- Jan. – 10 – Jan.	31-May - 9-Jun	
2.		11-Jan. - 20-Jan	10-Jun – 19-Jun	
3		21-Jan. - 31-Jan	20-Jun - 30-Jun	
4		1-feb. - 10-feb	1-Jul - 10-Jul	
5		11-feb. - 20-feb	11-Jul - 20-Jul	
6		21-feb. - 28-feb	21-Jul - 28-Jul	
7		1-mar. - 10-mar	29-Jul - 7-Aug	
8		11-mar. - 20-Mar	8-Aug - 17-Aug	
9		21-mar.31-Mar	18-Aug - 27-Aug	
10		1-apr.10-Apr	28-Aug - 7-Sep	
11		11-apr.20-Apr	8-Sep - 17-Sep	
12		21-apr.30-Apr	18-Sep - 27-Sep	
13		1-May.10-May	28-Sep - 7-Oct	
14		11-May. 20-May	8-Oct - 17-Oct	
15		21-May. 31-May	18-Oct - 27-Oct	
16		1-Iun. 10-Iun	28-Oct - 7-Nov	
17		11-Iun. 20-Iun	8-Nov - 17-Nov	
18		21-Iun. 30-Iun	18-Nov. - 27-Nov	
19		1-Iul. 10-Iul	28-Nov - 7-Dec	
20		11-Iul. 20-Iul	8-dec. - 17-Dec	
21		21-Iul. 31-Iul	18-Dec27-Dec	
22		1-aug. 10-Aug	28-Dec - 7-Ian	
23		11-aug. 20-Aug	8-Ian - 17-Ian	
24		21-aug. 31-Aug	18-Ian - 27-Ian	
25		1-sep. 10-Sep	28-Ian - 7-Feb	
26		11-sep. 20-Sep	8-Feb - 17-Feb	
27		21-sep. 30-Sep	18-Feb - 27-Feb	
28		1-oct. 10-Oct	28-Feb - 9-Mar	
29		11-oct. 20-Oct	10-Mar - 19-Mar	
30		21-oct. 31-Oct	20-Mar - 29-Mar	
31		1-noi. 10-Noi	30-Mar - 9-Apr	
32		11-noi. 20-Noi	10-Apr - 19-Apr	
33		21-noi. 30-Noi	20-Apr - 29-Apr	
34		1-dec. 10-Dec	30-Apr - 9-May	
35		11-dec. 20-Dec	10-Mai - 19-May	
36		21-dec. 31-Dec	20-Mai - 30-May	

In order to do that it is necessary to change the exploiting and reproduction technology by unseasoning the covering of the sheep and lambing. This way the production of milk and lamb meat can diversify throughout the year and also an echeloned season for covering-lambing can be made.

This can be achieved by using the assisted reproduction and by filling in and out the reproduction records (The covering and lambing calendar on days, decades and months) (Table 2).

The table is exemplified how they can plan on existing zootechnical farm records, date of mating/AI and the estimated date of parturition to obtain a meat production throughout the year. It is

compulsory that the zootechnical records to be kept, as well as the additional data to be noted daily in order to have a proper data base regarding the physiological shape and gynecological group of each female sheep.

Every breeder may address to the advisory office in order to receive model projects for sheep farms or mixed farms (sheep and 50 hectares of field cultivation). These types of projects can provide the necessary feed for growing and keeping the sheep and it can establish the technological flow in the sheep farm for the next sections: covering-pregnancy; maternity; wean; breeding sheep; fattening; delivering fat lambs and sheep.

The covering-pregnancy section represents an important part in the technological flow and it

concerns the ensuring of optimal conditions for: keeping and exploiting the female and male sheep specimens, and the breeding sheep; organizing actions in order to track down the sheep that are in heat and inducing the state of heat for sheep; covering of the sheep action or artificial insemination; forming the croft of pregnant sheep and keeping them until the lambing.

Maternity is the second section of the technological flow and it concerns the taking over of the pregnant sheep, ensuring the lambing and taking care of the sheep that give suck to the lambs and of the lambs until the wean age at 35-45 days and 10-12 kilos weight.

By enhancing and synchronizing the heat of the sheep the program of lambing can be accelerated. The so-called frequent births as well as getting two births per year, or getting three births in two years and/or getting five births in three years (Figure 1).

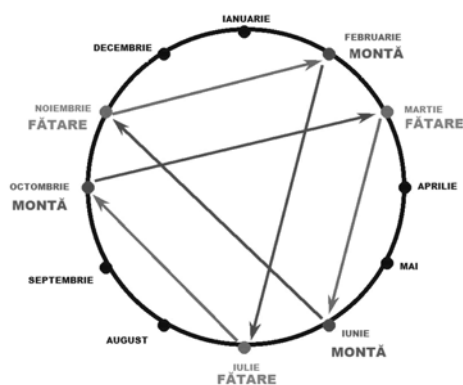


Figure 1. Graphical representation of three births in two years with the first birth in March

Applying these methods doesn't change the specific reproductive parameters especially when it is correlated with the optimization of the ratio. Although changes in the reproduction parameters haven't been found it is recommended that these methods should be used at the end of the exploitation time – 4-6 year old sheep, so that after obtaining three and/or five births the females can be reformed.

In order to accelerate the system of lambing by shortening the period between birth and covering it is necessary to apply the wean technology of the sheep at 40-45 days ( the weight of the lamb must be 10-15 kilos), and accustoming the lambs to the concentrated provender and hay after only 15 days from birth. The result of these technologies is an

increased number of lambs for a sheep, and also a rise in meat production for a sheep, for a flock, for a farm.

Specialized literature points out that there can be obtained five births in three years, so that the meat request to be ensured throughout the year and the sheep farms can become profitable.

The Cornell University in U.S.A. has developed a management program for sheep farms specialized in meat production (Figure 2) [6].



Figure 2. STAR accelerated lambing system (Cornell sheep Program)

Taking into consideration this program, as well as the zootechnical records presented above it can be established a management program for reproduction of sheep for the breeders in Romania. The purpose of this program is to supervise the number of sheep, to ensure an assisted reproduction process, to change the technologies of growing sheep for their wool and milk with the technologies of growing sheep for meat consumption, meat-milk consumption and meat-wool and to unseason the breeding function. In Romania the selling of lambs is made in spring, the highest selling being registered around the Easter period.. A number of lambs are kept and raised usually at grass until the beginning of autumn when they reach a weight of 30-40 kilos. If the methods and programs presented above are used there can be obtained lambs throughout the whole year, and the keeping costs can be reduced.

#### 4. Conclusions

Management assisted reproduction by intensification breeding sheep, the only sure way

to increase the efficiency of exploitation of this species.

Increasing the number of product obtained from a female can only be achieved by increasing fecundity and prolificacy sheep using assisted reproductive technologies.

The assisted reproduction management for sheep can't be implemented without having the zootechnical records first, covering and lambing plan on decades and days.

Management of assisted reproduction can be achieved by using the "STAR sheep system management", which can be correlated with program lambing, growth and delivering lambs.

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### References

1. Mike Neary, Reproductive Management of the Ewe Flock and the Ram. <http://ag.ansc.purdue.edu/sheep/>
2. Cretu L., Cercetari privind dirijarea ciclului sexual la ovinele din S.C.P.C.O. Rusetu. Teza de doctorat, 2005.
3. Pădeanu I., Tehnologia creșterii ovinelor și caprinelor. Editura Mirton – Timișoara, 2001
4. Ipate, I., Banateanu, F., Sonea, C., Bogdan, A. T., Purcarea, C., Petrus, A., Parvu, M., Ivana, S., Toba, G.F., Biotechnology reproduction and biodiversity indicators in buffalo breeding, Animal Science and Biotechnologies, 2011 44 (1)
5. Moise L., Șonea C., Moise V., Ivănuș M. M., The investigations for misleading and synchronization heats of meals. Second Joint Meeting of the Balkan Countries "BALNIMALCON - 2003", 2003
6. Cornell University - Sheep Program. <http://www.sheep.cornell.edu/>