International Journal of Sciences: Basic and Applied Research (IJSBAR)

ISSN 2307-4531
(Print & Online)

http://gssrr.org/index.php?journal=JournalOfBasicAndApplied

Sexual Activity of the Ram Ouled Djellal Bred Raised in the Region of Chlef

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Abstract

The seasonal variations of the blood testosterone, the antero-posterior testicular diameter than the sperm characteristics (volume and concentration) were studied on ten rams of Ouled Djellal breed raised in the region of Chlef. The measures were realized once a week during one year. The monthly blood testosterone is important during all year (3.20 ng/ml), increasing in spring with its maximum in the beginning of summer and becoming low in autumn / winter. The testicular diameter, the volume of the ejaculum and the spermatic concentration undergoes variations parallel to the blood testosterone, characterized by high levels in summer spring/and fall in autumn/winter. These results reflect existence of a particular seasonal rhythm of functioning of the pituitary gland of the Ouled Djellal breed ram. The theory according to which ovine races are breeders in the short days is not necessarily applicable to all the breeds or to all biotopes.

Keywords: Ram; reproduction; season; ouled Djellal; activity.

1. Introduction

The ram reproduction capacity is considered unfortunately too often acquired. Nevertheless, numerous field observations demonstrate that males could have a role in the explanation of the weak results of fertility. Indeed, rams present just like ewes, seasonal variations in their sexual activity. Several authors related that this variation is subjected to the influence of photoperiod [1, 2, 3, 4].

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In this context, this study was conducted in order it to highlight possible variations of the sexual activity of the ram of Ouled Djellal breed raised in the region of Chlef and there, to determine the periods of high reproductive potentialities of local breeds.

2. Material and methods

The study was conducted at the experimental station of the institute of agronomy, located 10 km from the Chlef city. The province of Chlef is located in the north of Algeria, 200 kilometres (120 mi) west of the capital Algiers

Animals: 10 sexually mature rams of Ouled Djellal race were chosen for the study. Their age varies between 3 and 4 years and the weight between 50 and 55 kg. During the experimental period animals are accommodated in semi-open sheepfold and receive the same food compound of hay of vetch at will oat and approximately 600 g of concentrated barley / head/day.

In order to characterize the sexual activity, the following measures were carried:
- once week during the same year, the antero-posterior diameter of the left testicle was measured [5].

- the blood testosterone is measured in the blood serum, taken every week during the year 2011 (from January to December) by draining the jugular vein. The concentration of the testosterone is measured according to the technique ELISA (testosterone kit) [6]. The testosterone plasmatic concentrations are expressed in nanograms per milliliter of blood (ng / ml).

The semen collect was realized using an artificial vagina in the presence of an ewe having received oestrogens (injection of 5mg of Benzoate of œstradiol). The ejaculum volume and the concentration were measured. The reading of the volume is directly made on the gradual tube of the artificial vagina. The concentration is measured by a spectrophotometer [7; 8; 9].

3- Results

Table 1: Seasonal variations in the blood testosterone

Month	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Testosterone (ng/ml) mean±S.D.	1,75 ± 0,24	2,89 ± 0,26	3,20 ± 0,4O	3,27 ± 0,42	3,30 ± 0,55	4,10 ± 0,62	4,50 ± 0,38	3,45 ± 0,71	3,30 ± 0,63	2,40 ± 0,28	2,35 ± 0,35	2,32 ± 0,52

The blood testosterone average of 10 rams is lower from October till January around 2,20 ng/ml. it significantly increases 45 % ($P<0,01$) in February-March to stabilize in April-May before rising again of 31 % ($P<0,05$) and

reaching its maximum in June-July, with an average of 4,30±0,50 ng / ml. This variation profile is similar to that described by Darbeida [10] on the ram of the same race raised in the region of Algiers.

The values of the testicular diameter also present seasonal variations similar to those of the blood testosterone (Table 2). They are more lower from September till January (5,40±0,14) and increase from February (6,10±0,19) to reach the peak in July (6,80±0,12).

The with-season variation observed in Ouled Djellal ram is comparable to those observed to the ram Texel (3) and to the Ile-de-France ram [11].

Table 2: Seasonal variations of the testicular diameter

Month	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Testicular diameter (cm) mean±S.D.	5,32 ± 0,15	6,10 ± 0,19	6,30 ± 0,18	6,32 ± 0,10	6,33 ± 0,12	6,75 ± 0,14	6,80 ± 0,12	6,50 ± 0,17	5,58 ± 0,18	5,40 ± 0,14	5,36 ± 0,13	5,32 ± 0,15

The results show that the volume and the spermatic concentration grow with photoperiod (table 3). Indeed, the highest volumes and concentrations were recorded in spring (1,40±0,43 and 3,73±0,31 respectively) and most low at the end of summer/ winter (0,8±0,31 and 3,11±0,52). These results were also reported to the ram Ile-de-France [12], to the ram Barbarine [13], and to the ram Ouled Djellal [14].

Table 3: Seasonal variations of the volume and the spermatic concentration

Month	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Volume (ml)	0.8 ± 0.31	1.03 ± 0.20	1.16 ± 0.44	1.23 ± 0.50	1.35 ± 0.27	1.40 ± 0.43	1.25 ± 0.29	1.22 ± 0.35	1.20 ± 0.30	1.15 ± 0.26	1.10 ± 0.15	1.01 ± 0.60
Concentration (x 10^9)	3.11 ± 0.52	3.19 ± 0.73	3.66 ± 0.52	3.69 ± 0.58	3.70 ± 0.42	3.73 ± 0.30	3.30 ± 0.33	3.10 ± 0.27	3.00 ± 0.29	3.34 ± 0.26	3.38 ± 0.15	3.32 ± 0.29

4- Discussion

The blood testostosterone, the testicular diameter and the volume of ejaculum to the Ouled Djellal race ram, are subjected to seasonal variations, they vary together in the same sense. This is highlighted by the strong correlation between these parameters (table 4).

Tableau 4 : Correlation between les parameters

	Testicular diameter	Volume
Blood testostosterone	0.89	0.81
Testicular diameter		0.71

The values the highest of the studied parameters were recorded in spring/summer and the weakest in autumn/winter. Similar observations were observed on rams of the other regions such as: Barbarine in Tunisia [15], Suffok in the USA [16] and the Soay in the Scotland [17]. The Ouled Djellal ram shows a particular behavior: a decrease of its sexual activity in autumn, in spite of favorable photoperiod and an increase in spring. This, shows that the Ouled Djellal ram is little sensitive to the changes of photoperiod and does not correspond to the generally admitted performance of "short days" specie.

On the contrary, we observe a close parallelism between the seasonal evolution of the day length and the testicular endocrine activity. The testicle of this ram is active in spring and early summer, becomes less productive in autumn and winter.

5- Conclusion

In spite of the existence of the seasonal variations of the analyzed parameters, the study also allowed to highlight the little seasonal character of the ram of the Ouled Djellal race raised in a region of low latitude. This interesting peculiarity will owe exploited to produce of the seed all year round with a better profitability during March in June. This explains the success of the spring wrestling and early summer practiced by the breeders of the region in spite of in theory unfavorable photoperiod.

References

[1] R. Albério. "Rôle de la photopériode dans le développement de la fonction de reproduction chez l'agneau Ile de France de la naissance à 21 mois." Th. Doct. Uni. Paris, France. 1976

[2] G. Colas. **"**Fertility in the ewe after al with fresh and frozen semen at the inducted oestrus and influence of semen quality of the ram." *Livestock Production Science*. 6, pp: 153-166. 1979.

[3] G. Colas, Y. Guerin, Y. Lemaire, Y. Montassier, J. Despierres. "Variations saisonnières du diamètre testiculaire et de la morphologie des spermatozoïdes chez bélier Vendéen et chez le bélier Texel." *Reproduction Nutrition Développement*. 26, pp : 863-875.1986.

[4] R. Ortavant. "Photoperiodic regulation of reproduction in the sheep." Proceeding Symposium Management of reproduction in sheep and goats". University of Winsconsin Madison. 1977.

[5] M Gündogan, E Demirci. "The effects of scrotal heating en spermatogenesis and other semen characteristics in the rams." Firat Univesity Jouranl Health Science. 13, pp 193-200. 1999

[6] C. E. Boulianne. "Influence d'un programme photopériodique alternant les jours longs et les jours courts sur la capacité de reproduction chez le bélier." Mémoire M Sc. Université Laval, Québec, Canada. 144p, 2012.

[7] M Gündogan, D Baki, D Yeni. “Reproductive seasonality in sheep (review).” Acta Agriculturae Scandinavica, Section A., 53. pp:175-179.2003.

[8] Kaya A, C Yıldız, NC Lehimcioğlu, A Ergin, M Aksoy. “Seasonal variation in sperm quality, testicular size and plasma testosterone concentrations in Konya merinos ram.” Journal Central Animal Research International. 9. p: 1-5.1999.

[9] R. Perez-Clariget, A. Lopez, A. Castrillejo, A. Bielli, D. Laborde, T. Gastel, R. Tagle, D. Queirolo, J. Franco, M. Forsberg, H. Rodriguez-Martinez. Reproductive seasonality of corriedale rams under extensive reaning conditions. Acta Veterianraie Scandianvia. 38.109, pp:117. 1997

[10] H. Darbeida**.** "Variations saisonnières de la testostéronémie et de la Dihydrotestostéronémie et le métabolisme périphérique de la testostérone chez le bélier de race Ouled Djellal en Algérie." These doctorat, USTHB, Alger, Algérie. 1980

[11] J. Pelletier. "Influence du photopériodisme et des androgènes sur la synthèse et la libération de la LH chez le bélier." Thèse doctorat ès-sciences Naturelles. 243 p. 1971.

[12] G. Colas. (1980). "Variations saisonnières de la qualité du sperme chez bélier Ile de France.I. Etude de la morphologie cellulaire et de la motilité massale." *Reproduction Nutrition Développement*. 20, pp: 1789-1799.

[13] M Mehouachi, G Khaldi**.** "Variations saisonnières de la production spermatique chez les béliers de la race Barbarine et Noire de Thibar." Annales de l’INRAT. 60(11), pp :3-27. 1987

[14] F Ghozlane B. Ziki, H. Yakhlef**.** "Variations saisonnières des caractères quantitatifs du sperme de bélier de race Ouled Djellal." Rencontres Recherches Ruminants. 12, p 164. 2005

[15] M. Mehouachi. "Caractéristiques de reproduction chez les béliers de race barabarine et Noire de Thibar." CIHEAM, options méditerranéennes. 1995.

[16] B. D. Schanbacher, D.D. Lunstra. “Seasonal changes in sexual activity and serum levels of LH and testosterone in Finish Landrace and Suffolk rams.” *Journal of Animal Sciences*. 43(3), pp: 644-650. 1976.

[17] F J P Ebling, G A Lincolin**.** “Endogenous opioids and the control of seasonal LH secretion in Soays rams.” Journal of Endocrinology. 107(3), pp: 341-353. 1985