Session 15

Seasonal Variation of Semen Characteristics in Damascus Goat Bucks

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INTRODUCTION

Reproduction occurs in most species on a seasonal basis. Breeds of sheep and goats from temperate latitudes exhibit seasonal variations of breeding activity which are controlled by annual photoperiodic changes. Seasonal variations in both semen quality and quantity are mainly due to changes in day length throughout the year (Chemineau et al., 1992). This variation in semen quality and quantity is then one of the limiting factors in goat reproduction (Perez and Mateos, 1996). The success of an AI program depends on the proper management of semen collection, storage and use (Leboeuf et al., 2000). The aim of this study was to evaluate seasonal variations in ejaculate volume, sperm concentration, total number of spermatozoa per ejaculation, semen's mass and progressive motility, viability of spermatozoa and the percentage of abnormal spermatozoa in Damascus bucks.

MATERIALS AND METHODS

Semen characteristics were assessed in 10 mature bucks, raised on the same farm and under the same conditions, aged 8 months old and weight 43±3,8 kg at the beginning of the experiment. Semen collection and evaluation conducted once a week for a period of 12 months. The influence of seasonality was analyzed by Analysis of Variance, using General Linear Models.

RESULTS

All bucks examined showed a similar pattern in all the reproductive parameters studied. Seasonal differences (P<0.05) were noted for all study parameters. As illustrated in fig. 1 semen volume presented the highest value (1,02±0.018 ml) during the breeding season (autumn) and the lowest (0,7±0.017 ml) during the non-breeding season (spring). As illustrated in fig.3 Mass and progressive motility as well as the viability of the semen (fig. 2) also presented higher values (4,83±0,02 and 90±0,39%, respectively) during the breeding season and lower values (3,55±0,04 and 65,33±0,71%, respectively) during the non breeding season. In addition, semen concentration presented higher values during summer ((5,43±0,06)x109 spermatozoa/ml) and a decrease in values ((4,22±0,014)x109 spermatozoa/ml) during autumn (fig.1). The total number of spermatozoa per ejaculation was also significantly higher during autumn ((5,08±0,07)x109) than in spring ((3,7±0,07)x109) (fig1). The percentage of abnormal spermatozoa presented higher values outside of the natural breeding season (7,61±0,18%) and the lowest values during the breeding season (5,41±0,1%) (fig. 4).

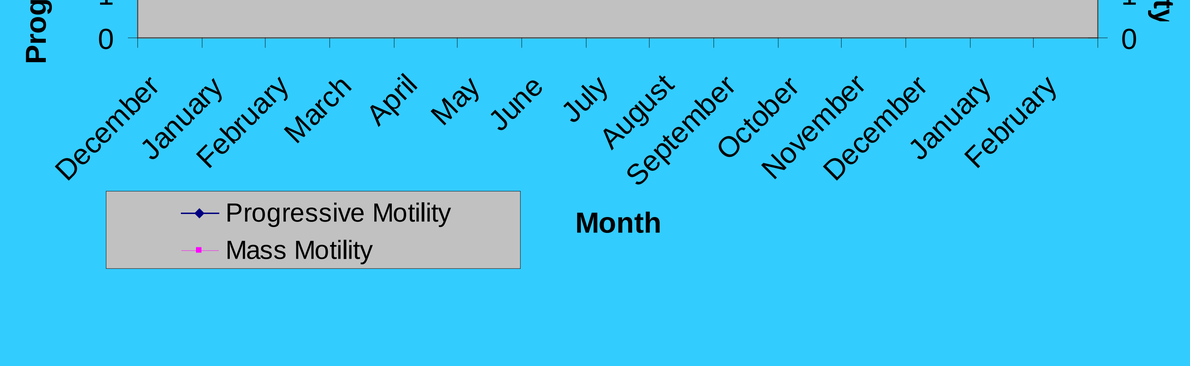


Figure 3. Monthly Variation of Progressive and Mass Motility

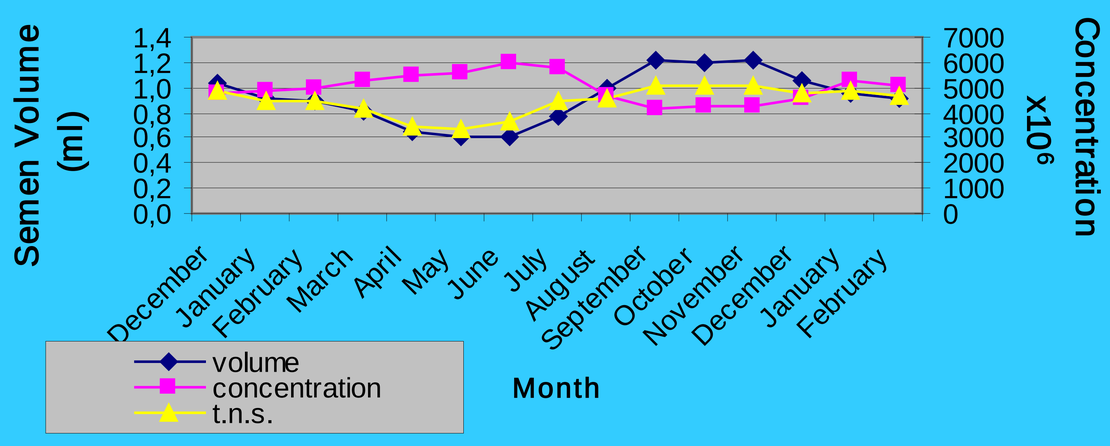


Figure 1. Monthly Variation of Semen Volume/Semen Concentration/Total Number of Spermatozoa.

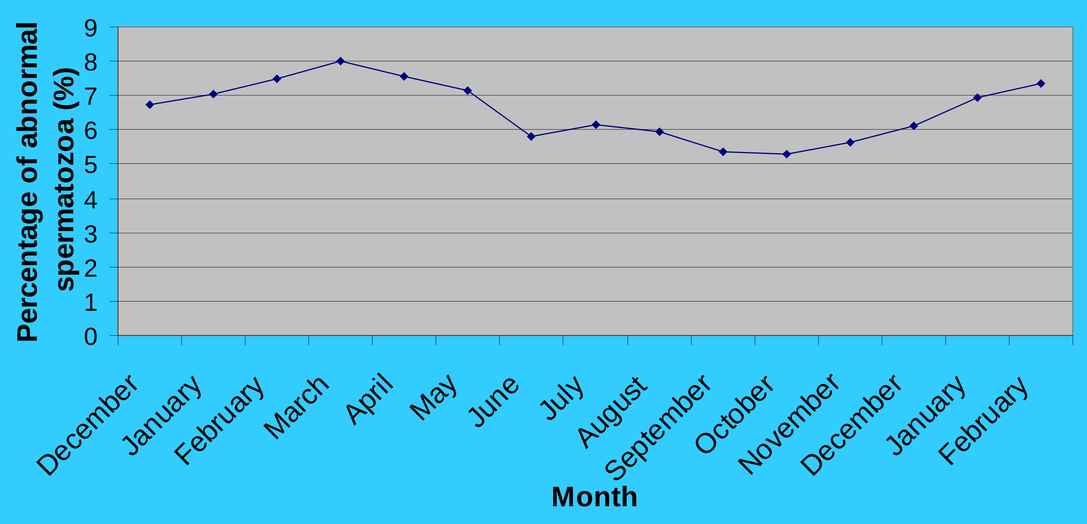
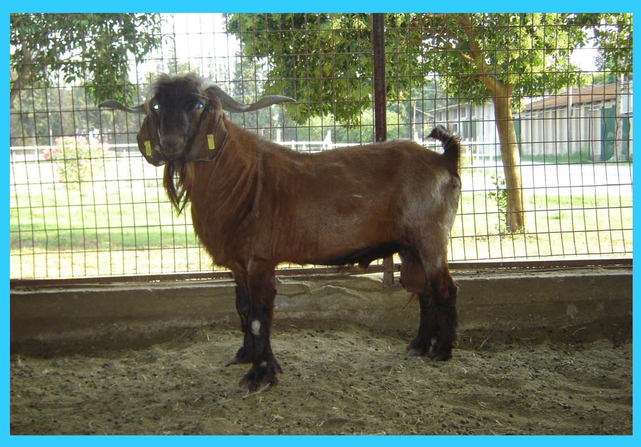


Figure 4. Monthly Variation of Percentage of Abnormal Spermatozoa



DISCUSSION

The data presented in this study suggests that Damascus bucks semen quantity and quality exhibit a significant seasonal variation, with the best parameters obtained during the natural breeding season.