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SEXUAL BEHAVIOR OF WHITE KARAMAN, RED KARAMAN AND AWASSI RAMS EXPOSED TO FAT-TAILED ESTROUS EWES

ABSTRACT

The present study was undertaken to investigate the sexual behaviours of White Karaman, Red Karaman, and Awassi rams in Research the Farm of the Fırat University. Sexual performance tests were carried out when the rams were held for 30 min together with the ewes that were between the two estrous periods. Bouts of leg kicking and anogenital sniffing values were found similar among breed groups. Mounting frequency was greater (P<0.05) in Awassi than in White Karaman and Red Karaman rams. Tail-raising (P<0.05) and mating frequency were significantly higher(P<0.01) in White Karaman than in Awassi and Red Karaman rams. The number of mounts per tail-raising (efficiency) was influenced by the breed (P<0.05). White Karaman rams maintained the best efficiency throughout the trial. Results of the present study indicated that White Karaman rams were more suitable in mating with fat-tailed ewes than the Red Karaman and Awassi rams.

Keywords: Ram, Sexual Behavior, Awassi, White Karaman, Red Karaman

YAĞLI KUYRUKLU ÖSTRUSTAKİ KOYUNLARLA BIR ARADA BULUNAN AKKARAMAN, MORKARAMAN VE İVESI KOÇLARINDA SEKSÜEL DAVRANIŞLAR

ÖZET

Bu çalışma Fırat Üniversitesi Araştırma Çiftliğinde Akkaraman, Morkaraman ve İvesi koçlarının seksüel davranışlarını değerlendirmek amacıyla yapılmıştır. İki östrus süresi arasında bulunan ve herbiri 30 dakika süren koyunlarla bir arada bulunan Akkaraman, Morkaraman ve İvesi koçlarının seksüel performans testleri yapılmıştır. Ayak vurma ve anogenital koklama değerleri ırklar arasında benzer bulunmuştur. Atlama davranış İvesi ırkında Akkaraman ve Morkaraman ırklarından daha yüksek oranda (P<0.05) saptanmıştır. Kuyruk kaldırma oranı Akkarman ırkında, İvesi ve Morkaraman ırklarına göre daha yüksek değere (P<0.05) sahipken, çiftleşme frekansı oranı Akkaraman ırkında, İvesi ve Morkaraman ırklarına göre yüksek (P<0.01) bulunmuştur. Her bir kuyruk kaldırmadaki aşım (atlama) sayısı üzerine ırk grupları etkili olmuştur (P<0.05). Çalışma süresince Akkaraman koçları en iyi performansı sağlamıştır. Elde edilen sonuçlara göre Akkaraman koçlarının, Morkaraman ve İves ırkına kıyasla yağlı kuyruklu koyunlarla çiftleşmeye en uygun ırk olduğu bulunmuştur.

Anahtar Kelimeler: Koç, Seksüel Davranış, İvesi, Akkaraman, Morkaraman

1. INTRODUCTION (GİRİŞ)

Fertility is one of the most important factors in sheep husbandary. Livestock industry depends on animal reproduction and the reproduction depends on the willingness and ability of the animals to engage in sexual behaviour even where artificial insemination is employed. To meet particular management needs, humans take advantage of knowledge of sexual behaviour by facilitating or preventing its occurrence. An additional reason for studying in farm animals arises from an interest in understanding evolutionary and ecological influences on expression of behaviour. Sexual performance of rams is highly variable. Most mature rams readily court, mount, and mate estrual ewes, whereas the intensity of sexual behavior varies from asexuality to high sexual activity [1 and 2]. The inability of young rams to mate when first introduced to cycling females may be a problem to many sheep breeders who prefer to use rams by the time they reach 18 months of age [3]. Katz et al. [4] reported that about 30% of the 10-month old rams were sexually inactive during their first exposure to estrous ewes. Sexual performance tests have been used as a tool to predict ram-performance in pasture mating [5]. White Karaman which is one of the native sheep breeds of Turkey is a fat-tailed and white coloured sheep species with rough-mixed wool which produces 60 kg milk per 140-160 days of lactation period and has 20-30% twin rate. Red Karaman is a fat-tailed and brown-purple coloured sheep species with rough-mixed wool, which produces 80-90 kg milk per 150-160 days of lactation period and has 20-30% twin rate. Awassi is a fat-tailed and white coloured (with the exception of head and feet being brown) sheep species with rough-mixed wool, which produces 120-160 kg milk per 170-200 days of lactation period and has 10-20% twin rate. This species bred in Turkey, Arabic countries and North Africa [6].

2. RESEARCH SIGNIFICANCE (ÇALIŞMANIN ÖNEMİ)

The objective of the present study was to investigate the sexual performance of White Karaman, Awassi and Red Karaman rams which are the commonly raised sheep breeds in Turkey

3. MATERIAL AND METHODS (MALZEME VE YÖNTEM)

The study was undertaken at the Fırat University Research farm during the late summer to mid-autumn (September to November). The animals were kept in an open-front barn having free access to water and ad libitum feeding. The natural breeding season occurs during September through December for those breeds. Sexually native, 16-months-old rams of three different breed groups were used in this study. Eight rams in each of White Karaman, Red Karaman or Awassi breeds were subjected to sexual performance tests. Each ram was individually exposed to two estrous ewes (fat-tailed) during four 30-min periods, at two day-interval. Body weight and scrotal circumference were recorded in every two weeks for two months before the sexual performance was evaluated. Scrotal circumference was measured using a flexible tape at the widest scrotal diameter. Twenty four ewes (16 months of age) were synchronized to exhibit oestrus on four trials each two days apart. Eight ewes were used on each trial. Vaginal progestagen sponges containing 40 mg fluorogestone acetate were inserted for 14 days and 600 IU of eCG (PMSG, Sanofi, France) were administered intramuscularly at the time of sponge removal. Only four of the eight ewes were used on each test day. Estrous ewes were identified by rams.

Sexual performance tests were conducted between 08:00 and 12:00. Four estrous ewes were placed in two 6 m × 6 m pens. A third similar pen, where the observers stood, separated the two test pens. Ewes were kept unrestrained in the pens. Each ram was evaluated individually by exposing it to the two estrous ewes for 30 min on each test day. The rams were selected randomly for testing whereby each pen was used to test rams of all breed groups on each test day. Observations were recorded for each ram throughout the 30-min period. Behavioural parameters [7, 8 and 9] including bouts of leg kicking, anogenital sniffing, mounts, frequency of raising the fat tail of ewes, and mating (mounts with ejaculation) frequency were recorded. Data were analyzed by analysis of variance for a completely randomized design. All analyses were conducted using the General Linear Model procedure of SAS [10].

4. RESULTS (SONUÇ)

Sexual performance parameters are presented in Table 1. Average Scrotal circumference values were 28.7, 34.1, and 31.5 cm in White Karaman, Red Karaman, and Awassi rams, respectively. Mount values were 15.9, 14.7, and 21.9 and tail raising values were 4.9, 3.2. and 0.8 in White Karaman, Red Karaman, and Awassi rams, respectively. Mating values were found as 0.7, 0.3, and 0.3. The pre-copulatory sexual behaviour (leg kicking and anogenital sniffing) was similar among breed groups. Awassi rams had greater ($P<0.05$) mounting frequency than either White Karaman or Red Karaman rams. White Karaman rams, however, had greater ($P<0.05$) tail-raising frequency and a tendency ($P<0.01$) to have greater mating rate than Awassi and Red Karaman rams.

Table 1. Values of scrotal circumference and sexual performance (means±standard error) of White Karaman, Red Karaman and Awassi rams (Tablo 1. Akkaraman, Morkaraman ve İvesi koçlarına ait seksüel performans (ortalama±standart hata) ve skrotum çevresi değerleri)

	Ram Breed		
Sexual performance[1]	White Karaman breed(n=8)	Red Karaman breed(n=8)	Awassi breed (n=8)
Scrotal circumference (cm)	28.7^{c}±0.2	34.1^{a}±0.3	31.5^{b}±0.2
Leg kicking (no./30 min)	11.8±2.1	10.2±1.8	15.5±2.1
Anogenital sniffing (no./30min)	10.8±1.3	11.6±1.4	13.9±1.5
Mounts (no./30 min)	15.9^{b}±2.4	14.7^{b}±2.8	21.9^{a}±1.8
Tail raising (no./30 min)	4.9^{a}±0.6	3.2^{b}±0.5	0.8^{b}±0.4
Mating (no./30 min)	0.7^{c}±0.2	0.3^{d}±0.1	0.3^{d}±0.1
Mounts/tail-raising (first test day)	5.4±0.9	4.10±1.2	5.61±1.2
Mounts/ tail-raising (last test day)	5.9±0.9	7.9±2.4	9.8±2.4

[1]Sexual performance testing was performed on 4 test days (30 min per ram per day).
[ab] Means within the same row with different superscript letters differ significantly ($P<0.05$).
[cd] Means within the same row with different superscript letters differ at ($P<0.01$).

5. DISCUSSION (TARTIŞMA)

There were significant differences in scrotal circumferences between the groups. It was highest in Red Karaman rams whereas lowest in White Karaman rams, and Awassi rams were intermediate. Scrotal circumference is known to differ among breeds of sheep [11]. It is also influenced by nutrition [12] and body growth [13]. Scrotal circumference is a good index of sperm production in the ram [14]. Mating behaviour includes the desire to libido and the ability to copulation, both of which are under genetic influence [15]. Many factors affect sex drive and sexual performance, including season of year, genetics, breed differences, hormonal influence, post weaning management, temperature and nutrition [16]. In the present study, the frequency of pre-copulatory sexual behaviour was similar among breed groups. The frequency of anogenital sniffing was similar, while the frequency of leg kicking was lower than in previous reports [17]. Pre-copulatory behaviour was moderately correlated with mating. Pre-copulatory behaviour in rams reflects their underlying sexual motivation [18]. This means that the higher the frequency of pre-copulatory behaviour, the greater the frequency of other sexual activities examples mounting and mating. Mounting frequency was greater in Awassi than in Red Karaman and White Karaman rams while tail-raising and mating frequencies were greater in White Karaman than in Awassi and Red Karaman rams.

This contradiction may be related to differences in ram age between the studies and to the greater mating rate observed in the present study in favour of White Karaman rams. Unexperienced rams have lower mating efficiency than experienced rams [19], while rams allowed to mate with ewes have lower mounting frequency than rams prevented from copulating [18]. The lower copulation in Awassi and Red Karaman rams probably resulted in the aggressive behaviour of females in response to frustrated sex drive. A similar incidence of aggression was reported by Price and colleagues [20] when rams were prevented from copulating by covering the perineal area of females. Mating efficiency was better in White Karaman than in Awassi and Red Karaman rams in all of the four test days. Performance of the White Karaman rams was significantly higher than those of Awassi and Red Karaman rams. Performance of Awassi and Red Karaman rams was higher on the second exposure day compared to the initial exposure. In conclusion, our results shown that White Karaman rams were able to raise the fat tail of ewes more efficiently and this suggests a greater advantage use of White Karaman rams in natural mating over Awassi and Red Karaman rams.

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