

SEXUAL BEHAVIOUR OF MALE LAMBS AS
AFFECTED BY THE PLANE OF NUTRITION

By

M. T. RAGAB, M. A. SHARAFELDIN AND I. A. KHALIL

*Department of Animal Production, Faculty of Agriculture University
of Cairo*

SUMMARY

The study comprised Rahmani purebred lambs and Fleisch Merino × Rahmani crossbred lambs which were randomly divided into a creep-fed and a control group. Creep feeding started at the age of 3 to 4 weeks till weaning, thereafter the experimental group of lambs was put under a relatively high plane of nutrition till the age of 10 months. Meanwhile, the control lambs were put under the conventional system of feeding throughout the experiment.

Observations on the development of the sexual behaviour started from the age of 21 days till puberty with the object of investigating the effect of plane of nutrition on some aspects of sexual behaviour of lambs.

Male-lambs proved to pass through two main stages in their sexual behaviour, *i.e.*, the infantile stage and the pubertal stage.

The creep-fed lambs reached both the infantile and pubertal stages of sexual behaviour at earlier ages and at relatively heavier weights than the controls. Creep feeding proved to shorten the time period needed for reaching the threshold weight necessary for puberty.

With the creep-fed groups, the Rahmani lambs were the first to reach the pubertal stage followed by the crossbreds. However, the reverse occurred with the control group as the crossbreds reached the pubertal stage at an earlier age than the Rahmani lambs.

INTRODUCTION

With advance of age, animals undergo developmental changes in their reproductive efficiency which includes physiological anatomical and behavioural aspects.

At the different stages of life, developing animals show different patterns of sexual behaviour stages. The nature and intensity of these behavioural patterns differ with species, breeds and individuals Hafez (1951). Moreover, the environmental factors such as the plane of nutrition affects the sexual behaviour of animals through changing the rate of their somatic and sexual development.

Several investigators found out that the plane of nutrition could alter the sexual behaviour of ram-lambs as regards the particular ages and weights at which the different patterns of sexual behaviour take place. (Mackenzie and Terril, 1937; Marshall and Hammond, 1952 and Symington, 1961).

The objective of this experiment was to study the effect of creep feeding on the development of male sexual behaviour of Rahmani and crossbred Fleisch Merino X Rahmani lambs from the age of 21 days till puberty.

MATERIALS AND METHODS

This study was carried out on the farm of the Animal Production Department, Faculty of Agriculture, University of Cairo. The experiment comprised 15 Rahmani purebred lambs and 18 Fleisch Merino X Rahmani crossbred lambs. The Rahmani lambs belong to the Rahmani breed described by Mason (1951) as carpet wool fat-tailed sheep indigenous to Egypt whereas, the crossbred lambs are obtained through crossing the Rahmani ewes with the imported German Fleisch Merino rams. All lambs were born in October and November 1963.

Lambs of both sexes from each breed were put together in a pen and their sexual behaviour was closely observed. The observations started when the lambs were at the age of 21 days and took place during three days weekly and for 8 hrs. daily. Creep feeding started at the age of 3-4 weeks till weaning at the age of four months. After weaning, creep-fed lambs were put under a high plane of nutrition till the age of 10 months. On the other hand, the control lambs were put under the conventional system of feeding (Table 1.). The food mixture used for creep feeding consisted of 30% coarse ground barley, 40% cracked corn, 15% wheat bran, 15% linseed cakes, also 2% mineral salts per total weight of the concentrate mixture was added to the ration. During the suckling period which extended from birth till the age of four months, all lambs were freely allowed to suckle their dams.

The study comprised the following behavioural items :

TABLE 1.—DAILY SYSTEM OF FEEDING OF THE CREEP-FED AND CONTROL LAMBS

Age (week)	Creep — fed lambs				Control lambs			
	Conc. (g.)	Glover (g.)	Starch value	Digestive protein	Conc. (gm.)	Glover (gm.)	Starch value	Digestive protein
3	Training to eat	100	49	7	—	100	10	2
4 - 5	50	100	49	7	—	100	10	2
6 - 7	100	200	98	15	—	200	20	4
8 - 9	150	300	147	22	—	300	30	6
10 - 11	250	500	245	36	—	500	50	10
12 - 13	350	750	347	52	—	750	75	15
14 - 18	450	900	440	65	—	900	90	18
19 - 25	550	900	518	75	250	900	277	40
26 - 30	650	900	596	85	300	900	314	44
31 - 35	750	900	674	96	370	900	366	51
36 - 40	800	1000	722	104	400	1000	400	55

1. The infantile stage which was characterized by the recognition of lambs to each other and also by playing and jumping.
2. The pubertal stage which was characterized by sniffing female's urine, nosing her genital organs, grumbling, extending neck with upcurled lips, refraining from consuming food, lifting legs and thereafter attempting to mount females and finally protrusion of penis which was considered as an indication to puberty.

These different patterns of sexual behaviour were observed and recorded together with the ages and live-weights of lambs.

RESULTS AND DISCUSSION

The different groups of lambs reached the infantile stage of sexual behaviour at different ages and live-weights. Among the creep fed animals, the crossbreds were the earliest to reach the infantile stage at an average age of 32 days and a live-weight of 10.8 kgs, followed by Rahmani at an average age of 90 days and a live-weight of 16 kgs. Whereas, in the case of the non creep-fed lambs, the crossbreds reached the infantile stage at an average age of 62 days and an average liveweight of 11.9 kgs. The Rahmani lambs reached this stage at an average age of 114 days and average live-weight of 14.7 kgs. (Table 2).

In the infantile stage, lambs did not show any sign of sex differentiation and their activities were randomly directed towards other lambs irrespective of sex. They were attracted to each other by motives other than sex such as body weight, activity and colour. This is most probably due to that at this stage the physiological activity of the gonads were rather low and hence the development of sexual desire was not yet completely established.

With advance of age, the sense of sexual differentiation became acquired as ram-lambs gave more attention to females, indicating the full establishment of sexual desire. Signs of courtship became apparent which included nosing the genital region of the female, sniffing female's urine, extending neck with up-curved lips, rubbing along the side of the female, biting her wool, grumbling, attempting to mount the female and showing persistancy in following them and finally protrusion of penis.

The creep-fed Rahmani lambs were the first to reach the pubertal stage of sexual behaviour at an average age of 216 days and an average live-weight of 33.1 kgs, followed by the crossbreds at an average age of 255 days and a live-weight of 47.9 kgs. (Table 2). The non-creepfed crossbred lambs reached the pubertal stage at an average age of 304 days and an average live-weight of 33.8 kgs, whereas the non-creepfed Rahmani lambs reached this stage at an average age of 394 days and average live-weight of 33.8 kgs. This indicates that the fast growing crossbred lambs reached the pubertal stage at heavier weights than the slow growing indigenous breeds. This agrees with the conclusions drawn by Hafez (1952) and Symington (1961) and could be due to that the onset of the testicular activity responsible for the manifestations of the various signs of puberty showed distinct variation in both age and weight owing to breed and nutritional differences.

TABLE 2.—AVERAGE AGES (DAYS) AND WEIGHTS (KGS) OF MALE LAMBS AT DIFFERENT STAGES OF SEXUAL DEVELOPMENT

Stage of sexual development	Treatment		Creep-fed						Control					
	Breed		Rahmani			Crossbred			Rahmani			Crossbred		
	Age & Weight		Age	Weight	Age	Weight	Age	Weight	Age	Weight	Age	Weight		
Infantile stage	Range . . .		67-133	12.9-17.9	15-40	9-12.1	79-122	11-17.4	37-73	9-15.9				
	Mean . . .		90	16	32	10.8	114	14.7	62	11.9				
	Standard error		±23.9	±2.3	±7.8	±1.2	±40.1	±2.6	±16.6	±3.1				
Pubertal stage	Range . . .		177-248	27-40.2	183-322	36.2-62.2	320-456	26-41	248-431	30-40				
	Mean . . .		216	33.1	255	47.9	394	33.8	304	33.8				
	Standard error		±31.5	±5.6	±47.9	±7.4	±67.7	±6.9	±85.4	±4.4				

Creep feeding proved to shorten the time period needed for reaching the threshold weight necessary for puberty, through providing the lambs with extra sources of energy and protein beside their dam's milk.

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تأثير الدفع الغذائي على تطور السلوك الجنسي لذكور الحملان

الملخص

أجريت هذه الدراسة في محطة تجارب كلية الزراعة بالجيزة عام ١٩٦٣ كما تضمنت هذه التجربة ١٥ حملا من النوع الرحمانى ١٨٦ حملا من خليط المرينو والرحمانى قسمت عشوائيا من الميلاد الى مجموعتين المجموعة الأولى دفعت غذائيا بجانب تغذيتها على ألبان أمهاتها ابتداء من الاسبوع الثالث من عمرها بينما وضعت المجموعة الأخرى وهى مجموعة المقارنة تحت ظروف التغذية والرعاية التقليدية .

وكان الهدف من اجراء هذا البحث هو معرفة تأثير الدفع الغذائي للحملان من عمر ٣ أسابيع الى مرحلة البلوغ على تطور سلوكها الجنسي .

هذا وقد دلت هذه التجربة على الآتى :

١ - أن جميع الحملان يمر تطور سلوكها الجنسي بالمرحلة الطفيلية والتي تتميز باللعب والقفز دون اتجاه الى الجنس بوجه خاص وبمرحلة البلوغ والتي تتميز بتعرف الذكور على الإناث وتوجيه اهتمام أكثر الى الجنس المضاد والى التعرف عليه والمداعبة والشم في منطقة الجهاز التناسلى الخارجى ثم التتبع المستمر ومحاولة الاعتلاء وفي النهاية خروج القضيب من الجراب .

٢ - أن الحملان التي دفعت غذائيا وصلت الى كلا المرحلتين عند عمر أقل وأوزان أثقل .

٣ - وصلت حملان الرحمانى التي دفعت غذائيا الى مرحلة البلوغ قبل الحملان الخليطة من نفس المجموعة بينما حدث العكس في حملان المقارنة .

مما سبق يتبين ما لأثر الدفع الغذائي للحملان من الإسراع في تطور الحملان مما انعكس أيضا على تطورها وسلوكها الجنسي .