MALE–FEMALE INTERACTIONS ON PUBERTAL EVENTS IN FEMALE GOATS

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INTRODUCTION

In Cyprus, the main pure goat breeds used for production are the native Machaeras and the locally adapted Damascus. Both breeds are characterized by seasonality in their reproduction, adult females having a six-month period of cyclicity that starts at the end of September. Out of season breeding (May–July) of females induced by the "male effect", results in early kiddings (October–December). In the absence of males, females born either during this period ("Autumn" group) or in the February–March normal season ("Spring" group), attain puberty at the same time towards the end of the following October, though pubertal weight and age are higher in the former group ("delayed" puberty).

Reproductive season (shaded area) of adult and young goats

	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY
Adults												
Young												

OBJECTIVE

The main objective of the work presented here was to examine the possibility of advancing by the male stimulus, the onset of pubertal events in prepubertal female kids, the main target group being the autumn-born Damascus females.

EXPERIMENTAL METHODS AND RESULTS

Four trials were conducted and these are briefly described here.

TRIAL 1

Methods

In Autumn and Spring Damascus and Machaeras females, males were introduced in the first week of September, about 7 to 8 weeks earlier than the normal time of puberty.

Results

Breed		Damascus		Machaeras	
Time born		Autumn	Spring	Autumn	Spring
Total number		148	58	25	18
Mated	N	137	45	25	17
	%	92.6a	77.6b	100a	94.4a
Mean mating date		20/9	24/9	2/9	2/9

a>b at p<0.01, within breed comparisons.

In response to the male indroduction, a high proportion of young Damascus and Machaeras females showed oestrus and were mated. The response was better in Autumn than in Spring Damascus.
The respective periods of mating in the two breeds were temporally associated with those of adult goats.

TRIAL 2

Methods

Each of treatments 2A, 2B and 2C had ten Autumn Damascus females. From May onwards:

2A → 3 young males kept continuously with females
2B → the 3 males of 2A were introduced daily for one hour
2C → 3 young males from an all-male group were introduced daily for one hour

Results

	Treatments		
	2A	2B	2C
Total number	10	10	10
Mated early[1] (N)	7(4)[2]	2(2)[2]	0
Mated in September[3] (N)	6	7	9

[1] From June 25 to July 15, which was the period of induced (by males) sexual activity of adult goats
[2] Conceived
[3] From 14 to 26 September

The best early response was observed in the group with continuous male presence (2A).

TRIAL 3

Methods

From May onwards, 10 Autumn and 10 Spring Damascus females were kept continuously with 5 Autumn males (treatment 3A) or with 5 Spring males (treatment 3B).

Results

No oestrus/mating before September in the 3A and 3B treatments or in adult goats in the same farm.
From 2 to 29 September, 18 and 16 females from 3A and 3B respectively, were mated (mean date September 12). This mating period coincided with that of adult goats. More Autumn (20 of 20 or 100%) than Spring goats (14 of 20 or 70%) were mated.

TRIAL 4

Methods

From May onwards, 12 Autumn Damascus females were kept continuously with 2 experienced adult males (treatment 4A) while in a group of 10 adult females (treatment 4B), 2 adult males were introduced daily for one hour.

Results

Treatment 4A → 5 goats mated (41.2%) from July 3 to July 5
Treatment 4B → 9 goats mated (90%) from June 25 to July 3

CONCLUSIONS

∞ The presence of males towards late anoestrus advanced the initiation of pubertal sexual activity in females by about 4 to 6 weeks, regardless of season of birth (autumn, spring) or breed (Damascus, Machaeras).

∞ A higher proportion of autumn–born compared to spring–born Damascus goat kids, responded to the male effect. All Machaeras goat kids responded very well regardless of season of birth.

∞ Attempts using the male effect in mid anoestrus to further advance onset of puberty in autumn–born Damascus females, produced positive results in a relatively low proportion of animals and only during periods of adult oestrous activity (induced by males).

∞ The advancement of puberty in female goats required the synergistic effects of males and of oestrous females.

Damascus goat-kids

Machaeras goat-kids