

OVULATORY ACTIVITY IN NATIVE THAI GOATS

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ABSTRACT

Ovarian activity was observed in native Thai goats run either alone, continuously with males, or intermittently with males at 56-day intervals between June 1985 and July 1986. Overall, the incidence of ovulation was highest in October and December (78.8%) and lowest in June (54.3%), with some does ovulating at every observation. The presence of males, either continually or intermittently, significantly increased the proportion of does ovulating throughout the year. The ovulation rate varied throughout the year, with the highest rate occurring in October 1985 (1.9) and the lowest rate in May and July 1986 (1.3). The implications of the study are discussed.

Key words: ovulation, goat, season, Thailand

INTRODUCTION

The native Thai goat, as described by Saithanoo et al. (1), is similar in appearance to the Malaysian Kambing Katjang goat. Sutherland and Jainudeen (2) reported that the latter is an aseasonal breeder showing estrus with ovulation in all months of the year. Apart from the reports of Jansakul et al. (3), there is no information on the reproductive physiology of the native Thai goat.

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Our study was undertaken to determine the annual pattern of reproductive activity in the female native Thai goat and the influence of the male on goat reproductive activity.

MATERIALS AND METHODS

Observations were carried out on 36 indigenous Thai female goats selected from a flock of 110 purchased from four provinces in southern Thailand, and kept at the goat research facility at the Prince of Songkla University at Hatyai. All animals were fed daily fresh Pennisetum purpureum (2 to 2.5 kg/head) and concentrate (150 to 200 g/head) and maintained in good health. Features of the environment, housing, husbandry practices and the composition of concentrates fed have been described previously (4).

The 36 does were assigned to three groups (n=12 each) on a stratified age basis (number of permanent incisor teeth) and were treated as follows: Group 1 does were maintained separately from all male contact 4 months prior to and during the entire treatment period. Group 2 does were exposed to two vasectomized male goats introduced to the does at 56-day intervals, remaining with them for 14 days before removal at endoscopy. Group 3 does were run with two vasectomized male goats continuously for 3 weeks prior to and during the entire treatment period.

To facilitate management, Group-2 does were placed with the Group-3 does for their two week exposure to males before being returned to separate housing. The Group-3 does were housed more than 500 m away from the other two groups.

Ovarian examinations of all animals were conducted by endoscopy at 56-day intervals using Xylazine (Rompun, Bayer) as a sedative. Data were analyzed by a test of independence (Chi-square).

RESULTS

The incidence of ovulation observed in the treatment groups is shown in Figure 1. At least 30% of Group-1 does were ovulating at any time throughout the year, with a peak incidence between August and December. There was no significant difference in the incidence of ovulation for the groups receiving either intermittent or continuous exposure to males (Group 2 and Group 3), and the incidence of ovulation exceeded 70% in most months. However, considerable variability was evident throughout the year.

The number of ova shed per doe (ovulation rate) for the does ovulating in each group is shown in Table 1. The ovulation rates were highest in October and December for Group-1 and Group-2 does. In contrast Group-3 does showed high ovulation rates from October to March.

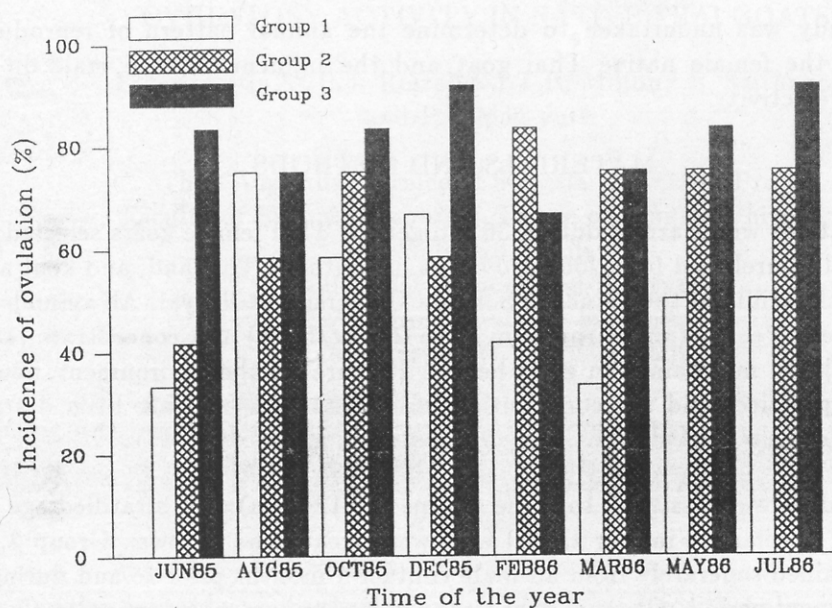


Figure 1. The incidence of ovulation in native Thai does isolated from (Group 1) or intermittently (Group 2) or continuously (Group 3) exposed to males in various months of the year.

Table 1. The ovulation rate (number of ova shed per doe) for native Thai goats ovulating in various months of the year: isolated from (Group 1), or intermittently (Group 2) or continuously (Group 3) exposed to males

	Group 1		Group 2		Group 3	
	OV ^a	OR	OV	OR	OV	OR
JUN85	4	1.3	5	1.8	10	1.4
AUG85	9	1.4	7	1.7	9	1.4
OCT85	7	1.7	9	2.1	10	1.9
DEC85	8	1.5	7	1.6	11	2.0
FEB86	5	1.2	10	1.2	8	2.0
MAR86	4	1.3	9	1.4	9	1.7
MAY86	6	1.5	9	1.2	10	1.2
JUL86	6	1.5	9	1.8	11	1.1

^a OV = number of ovulating does/group (12 does),
OR = ovulation rate (number of ova shed/doe)

DISCUSSION

The results of this study indicate that the native Thai goat is an aseasonal breeder, with some animals showing spontaneous ovulation at any time of the year. The absence of a well-defined seasonal pattern of reproductive activity is similar to the observations of other workers on goats native to tropical environments (5-7), and contrasts markedly with the distinct seasonality of goats in temperate regions (8-10). Annual variation in daylength at the Prince of Songkla University is only 50 minutes, and such a small photoperiodic change is unlikely to influence reproductive phenomena. The periodic changes observed in reproductive activity in our study may be due to endogenous changes or other environmental stimuli.

The level of reproductive activity was influenced by the presence of males, an observation similar to that for Australian goats (10) and Creole meat goat (11). This buck effect may be useful for enhancing natural mating programs, particularly in the tropics where there are marked seasonal changes in available nutrients. The introduction of bucks can be used as a management tool to control reproductive function, so that kiddings occur when good pastures are available.

The results suggest that the optimum time of mating to maximize the reproductive rate in native Thai goats is October to December. In support of this, we have observed that multiple births occurred in 37% of does joining in October/November, compared to 18% for does joining in March, in The Prince of Songkla University goat herd. The normal joining time for this herd is October/November and for the period 1986 to 1989 multiple births have exceeded 50% (J.T.B. Milton, personal communication). Field observations (12) that a greater proportion of does in villages in southern Thailand kid from February to May also supports this view. However, further studies are needed to clarify the factors that control reproductive activity in native Thai goats of southern Thailand.

REFERENCES

1. Saithanoo, S., Suttiyotin, P. and Kuprasert, S. Distribution and some characteristics of the native goats in southern Thailand. Proc. 23rd Ann. Conf. Anim. Sci. (Bangkok, Thailand) p. 10 abstr. (1985).
2. Sutherland, S.R.D. and Jainudeen, M.R. Absence of seasonal breeding in the local goats of Malaysia. 4th AAAP Anim. Sci. Congr. (Hamilton, New Zealand) p. 259 abstr. (1987).
3. Jansakul, C., Pansin, C. and Kamonpatana, M. Oestrous behavior and plasma progesterone levels during the oestrous cycle in Thai native goat (*Capra*) by radioimmunoassay. Songklanakarin J. Sci. Tech. 5:1-6 (1983).

4. Milton, J.T.B., Kochapakdee, S., Saithanoo, S., Pralomkarn, W., Rakswong, W. and Suttiyotin, P. Features of the goat research facility at Prince of Songkla University. Proc. 25th Ann. Conf. Anim. Sci. (Bangkok, Thailand) pp. 14-21 (1987).
5. Devendra, C. and Burns, M. Goat production in the tropics. Commonwealth Agricultural Bureaux, Slouth, pp. 74-89 (1983).
6. Chemineau, P. Sexual behavior and gonadal activity during the year in the tropical Creole meat goat. I. Female oestrous behavior and ovarian activity. Reprod. Nutr. Develop. 26:441-452 (1986).
7. Thimonier, J. and Chemineau, P. Seasonality of reproduction in female farm animals under a tropical environment (Cattle, sheep and goats). Proc. 11th Inter. Congr. Anim. Reprod. Artif. Insem., 5:230-237 (1988).
8. Shelton, M. Influence of the presence of a male goat on the initiation of oestrus cycles and ovulation of Angora goats. J. Anim. Sci. 19:368-375 (1960).
9. Ritar, A.J. Aspects of Reproduction, Storage of Semen and Controlled Breeding of the Goat. Ph.D. Thesis, University of Sydney, Australia, 1983.
10. Restall, B.J. Reproduction in Australian goats. In: The Role of Non-Milch Goats in Agricultural Production in Australia. Queensland Department of Primary Industries Information Series Q.I. 89102, Section 4. pp. 1-28 (1987).
11. Chemineau, P. Effect on oestrus and ovulation of exposing Creole goats to the male at three times of the year. J. Reprod. Fert. 67:65-72 (1983).
12. Saithanoo, S. and Milton, J.T.B. Goat meat production in Thailand. In: Devendra, C. (ed.), Goat Meat Production in Asia. Proceedings of a workshop held in Tando Jam, Pakistan, 13-18 March 1988. International Development Research Centre, Ottawa, Ontario, Canada, pp. 188-196 (1988).