

Reproductive performance of local goats in Municipality of Liquica

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Authors' Contribution

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ABSTRACT

Review Process: Peer review

One of the small ruminants with a lot of promise and popularity in the Municipality of Liquica are kacang goats. The purpose of this study is to determine how well the local goats in Liquica Municipality reproduce. In this study, a quantitative approach was taken. The research location was chosen using the purposive sampling method. The criterion of having at least three goats and five years of experience with them were used to choose the responders for this study. Solvin's formula was employed to ascertain the sample size. The variables that were observed were the kidding interval, size of the litter, length of pregnancy, and age at puberty. The findings demonstrated that the local goats in Tibar Village had good reproductive performance. Of the 71 respondents, they reported that the average age at puberty was 6.51 ± 0.65 , the average gestation period was 5.08 ± 0.28 , the average litter size was 1.08 ± 0.36 , and the average calving interval was 8.86 ± 0.59 . Ulmera Village respondents, numbering seventy, stated that the local goats' puberty age was 7.84 ± 0.93 , their gestation period was 5.09 ± 0.28 , their litter size was 1.6 ± 0.48 , and their calving interval was 8.56 ± 0.53 . In Liquisa Municipality, the reproductive performance of Javanese goats is deemed satisfactory despite farmers' continued adherence to customary rearing practices.

Keywords: Performance reproductive, local goat, Liquica.

INTRODUCTION: Timor Leste is an agricultural nation since the majority of its citizens are farmers. Timor Leste's agriculture is divided into four subsectors: cattle, forestry, fisheries, and horticulture. The livestock industry has not yet reached its full potential in order to supply livestock in the future. Poultry and pigs have the largest number of any livestock, followed by cattle and buffalo. Sheep and horses, on the other hand, are the least common. Additionally, there is the chance to grow goat cattle. Goats are small ruminants that farmers raise for meat production, as well as for other purposes like side gigs, social status enhancement, life savings, and cultural event preparation. Local goats have a poor rate of live weight increase and a tiny body structure (figure 1). They may generate offspring at the age of 15 to 18 months, which accounts for their good growth rates. This type of goat produces meat, skin, and faeces (Susilorini et al., 2008). Additionally, they have strong tolerance to tropical temperatures, can survive in tropical regions, and can be raised in basic settings with low-quality feed (Darcan and Silanikove, 2018) and prolific. The ability of goats to produce multiple kids per kidding is an attractive attribute for breeders (Abuzahra et al., 2023). Livestock development and growth rates are contingent upon their reproductive capacity. An rising population is the result of a higher reproductive rate. Reproductive management is therefore essential to the livestock industry since high reproductive levels in cattle, when combined with effective reproductive control, translate into high livestock productivity. This is also due to the fact that optimal mating management will result in excellent reproductive outcomes. Accordingly, animal reproduction is essential to the production of livestock in a sustainable manner (Hufana-Duran and Duran, 2020). Data regarding local goat production and reproduction in Timor Leste are still scarce. There are broad systems for raising goat, and feed from the local area is eaten when it is available. These concerns bring up challenges with reproductive performance. Long kidding intervals, small litter sizes, and delayed puberty are a few issues. The purpose of this study is to assess the reproductive health of local goats in the Municipality of Liquica, specifically the age at puberty, length of gestation, size of litter, and interval between kidding.

OBJECTIVES: This study aimed to determine the local goats' reproductive performance in the Liquica Municipality.**MATERIAL AND METHODS:** Data was gathered using surveys, questionnaires were used in-person interviews with farmers (respondents) (figure 2) and in-person observations of goat were also conducted. The method of stratified random sampling was employed in the selection of the research site. Ultimately, two villages Ulmera and Tibar in the West section of Liquica Municipality's sub-district Bazartete were chosen. According to Saha and Paul (2023), the Slovin formula with a 0.1 error rate can be used to determine the sample size (number of samples) as

$$\text{Tibar Village: } n = \frac{N}{1+N(d)^2}, \quad n = \frac{242}{1+242(0,1)^2} \quad n = 71 \text{ respondents}$$

$$\text{Ulmera Village: } n = \frac{233}{1+233(0,1)^2} \quad n = 70 \text{ respondents}$$

Descriptive analysis of the data is performed by computing the mean and standard deviation (Sugiyono, 2019)

RESULTS AND DISCUSSION: The reproductive performance of the local goats in Ulmera Village (70 respondents) and Tibar Village (71 respondents) is displayed in table 1 of the data analysis results.

Village	Performance reproduction	N	Minim (month)	Max (month)	Mean	Std. Deviation
Tibar	Age of Puberty	71	6,00	8,00	6,51	0,65
	Length of Gestation	71	5,00	6,00	5,08	0,28
	Litter Size	71	1,00	3,00	1,08	0,31
	Calving Interval	71	8,00	10,00	8,86	0,59
	Valid N (listwise)	71				
Ulmera	Age of Puberty	70	6,00	10,00	7,84	0,93
	Length of Gestation	70	5,00	6,00	5,09	0,28
	Litter Size	70	1,00	2,00	1,64	0,48
	Calving Interval	70	8,00	10,00	8,56	0,53
	Valid N (listwise)	70				

Table 1: Performance reproductive local goat in Tibar and Ulmera Villages.

Goats in Liquisa Municipality, Bazartete District typically reach puberty between six and ten months of age. Tibar Village's average puberty age is 6.51 ± 0.52 months, while Ulmera Village's average puberty age is 7.84 ± 0.93 months. In the meantime, the calving intervals in the villages of Tibar and Ulmera are nearly identical, at 8.86 ± 0.59 months and 8.56 ± 0.53 months, respectively. Five months is the gestation period, and the average litter size is one to three kids (tabel 1). Its ability to reproduce is reflected in its reproductive performance, particularly in its capacity to give birth to a specific number of offspring and to nurse them through the pre-weaning stage. The litter size, or number of kids born each birth, affects the rate at which the goat population is growing. The reason for this is that a high birth rate and the likelihood of a child living to weaning will affect population growth. Greyling (2000) states that a number of factors, including the length of the mating season, the calving cycle, the ovulation level, the fertility level, the postnatal period, the heat period, and the growth and survival of the offspring, determine how efficiently a female goat reproduces. The age at first puberty, gestation length, litter size, and calving interval are indicators of reproductive performance.

Age of puberty: The period of a female's life known as puberty marks the appearance of the first oestrus symptoms, which in non-pregnant animals indicate the start of cyclic ovarian activity (Greyling, 2000; García et al., 2023). Goats begin to go through puberty at the age of five months (Dávila et al., 2017). Both internal and external variables can affect a goat's age during puberty (Lestari and Ismudiono 2014). The farmers in these two villages employ an extensive system for raising livestock, but the animals are closely observed to ensure that the development and growth of the animals

are anticipated. The best age for local goats to develop is between five and nine months. Kacang goats typically reach puberty between the ages of five and nine months, according to Khalil *et al.* (2019). Aprilinda *et al.* (2016) demonstrated that male Kacang goats mate for the first time at 8.76 months, whereas female goats mate at 10.25 months. When a female goat goes through her first estrous cycle, she is considered mature. Usually, this happens when the kid is eight to twelve months old.



Figure 1: Local goat and interview with respondent.

Length of gestation: The period of time from fertilization to delivery is known as gestation (Hafez and Hafez, 2000). With a gestation period of 5.08 ± 0.28 , Javanese goats in Tibar Village perform well reproductively. The gestation duration in Ulmera Village is 5.09 ± 0.28 . According to Loliwu (2002) Javanese goats take about five months (150 days) to gestate. The findings align with those of Gomes *et al.* (2022), which indicate that the gestation period of Javanese goats in the Municipality of Covalima is five months. Goats' gestation duration is influenced by a number of parameters, such as birth weight, sex and number of fetuses (Adhianto *et al.*, 2019), nutrition (Duittoz and Kenny, 2023), and foetus size (Hafez and Hafez, 2013). The length of the goats' gestation cycle may also be influenced by good management (Heluth *et al.*, 2021).

Litter Size: Number of kids born per birth is known as litter size. The research's findings indicate that Javanese goats typically have one or two kids every litter. The Wakatobi Regency's Javanese goat litter size was investigated by Nuriadin *et al.* (2017), and the results showed 1.59 ± 0.06 . Compared to Doloksaribu *et al.* (2005), it had a smaller litter size of 1.23. Heluth *et al.* (2021) and Gomes *et al.* (2022) discovered larger litter sizes, 1.88 and 1.85, respectively. Additional studies on the reproductive capabilities of Javanese goat dams conducted by (Sodiq and Sumaryadi, 2002) revealed a litter size of 1-3 with an average of 2.06. The number of kids is influenced by internal and external factors as well as maternal and intrauterine age (De Lima *et al.*, 2020).

Kidding Interval: Kidding interval refers to the period of time between two kidding of the same doe (Hasan *et al.*, 2015). Shorter calving intervals suggest higher fertility, while faster postpartum estrus implies good reproductive features in goats (Devendra and Burns, 1994). The results of (Suyadi *et al.*, 2019) reported that the calving interval for the Kacang goats is one month faster, namely 7.41 ± 0.99 months compared with Nuriadin *et al.*, (2017) and Heluth *et al.* (2021) they found the average calving intervals for Kacang goats were 8.05 ± 0.38 months and 8.95 ± 2.23 months. According to Sudewo *et al.* (2012), a variety of factors, including genetics, environment, and rearing management, may have an impact on the kidding interval.

CONCLUSION: The present investigation discerned noteworthy differentials in reproductive attributes between the villages of Tibar and Ulmera. Despite the persistence of traditional husbandry practices among farmers in Liquisa Municipality, the reproductive efficacy of Kacang goats is considered commendable vis-à-vis extant literature. Consequently, it is recommended that further research be undertaken to scrutinize additional intrinsic and extrinsic factors influencing the reproductive dynamics of Kacang goats in Liquisa Municipality. A comprehensive strategy is imperative to augment the reproductive prowess of Kacang goats in this locale. Tangible measures that can be implemented encompass the judicious selection of high-genetic-quality parentage, adept management practices, optimal nutritional provisioning, meticulous recordkeeping, elevation of farmers' knowledge and awareness, and systematic monitoring and evaluation of reproductive performance. The implementation of such measures is anticipated to yield positive outcomes for the population and productivity of Kacang goats in the Municipality of Liquisa, thereby fortifying their reproductive capabilities.

CONFLICT OF INTEREST: The authors declared no conflict of interest.

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