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## Reproductive characters of senduro goat at lumajang district east java

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**Abstract.** Senduro goat is native local animals of Lumajang District East Java, Indonesia. These goats are considered as a potential new genetic resource for both milk and meat that has been declared as new breed Indonesia goat at 2014. The character of Senduro goat was identic with Etawah crossbreed (PE), because it was selected from PE by the farmer group and Senduro breeding association. The aims of this research were characterized reproductive characters of adult female Senduro goat existing in smallholder farm. The location of the study was carried out purposively in 6 villages in Senduro sub-district, Lumajang. It used 155 adult Senduro goats. The results showed that the average litter size was  $1.83 + 0.69$  per parent, while the kidding interval was  $281.87 + 37.66$  days. The mortality rate of Senduro goats was considered low, at 4.93%. So, the reproductive performance is deemed to be low. The incidence of single births was 32.45%, while multiple births reached 67.55%, where the twin births type were the highest achieving 55.62%. Reproduction character or performance based on litter size and kidding interval is categorized as a low category, it needs to be improved so that it has better reproductive performance and productivity.

### 1. Introduction

Senduro goat is native local animals which raised many in the area of Lumajang District East Java. This goat is considered as a potential new genetic resource for both milk and meat production. Senduro goat has been declared as new breed Indonesia goat at 2014. In general, the character of Senduro goat was identic with Peranakan Etawah (PE), because it was selected from PE by the farmer group and goat Senduro breeding association for many years. The aims of this research are characterized reproductive characters of adult female Senduro goat existing in smallholder farm.

Senduro goat is considered as important genetic resources of Indonesia animal livestock which need to be conserved and developed through the breeding programme and good management of mating. Senduro goat is a genetic resource of local Indonesian livestock that still needs to be developed through appropriate and efficient breeding and mating management programs. According to [1], based on the Minister of Agriculture's decree, in 2014 the Senduro goat which is a dual-purpose type of milk and superior meat goat has been designated as a local Indonesian goat line, which must be conserved and developed. Reproductive properties of Senduro goats include puberty  $242 + 62$  days, Age of first birth  $394 + 58$  days, pregnancy duration  $5 + 0.3$  months, duration time after giving birth  $63 + 6.0$  days and kidding interval  $220 + 17$  days [2].

Data on population development in 2015, showed that in Senduro sub-district, as a goat production center in this region, explained that the population was around 22,922, of which 7,932 males and 14,990 females were in the tail [3]. Male and female ratios were 34.60% males and 63.40% females or



approximately 1: 2 respectively. This ratio is quite beneficial as a source of seeds to increase the population based on the higher number of females for the parent.

Field and laboratory research is still very needed for this type of goat or new goat race of breed. The condition in the area shows that the phenotypic characteristics of Senduro goat qualitatively are still quite varied. However, the group of breeders had agreed to create Senduro goat seedlings as determined by the Ministry of Agriculture in 2014 with the main characteristics of white feather color, convex head shape, long ears hanging and twisted, not horned, straight back shape, male long-haired parse and udder shape hang like a jug [1]. Implementation research to find out the actual conditions in the field, especially Senduro sub-district needs to be done to determine the genetic potential, reproduction, and productivity of livestock [1]. One important parameter is the identification of reproductive characters related to the development of the quality and quantity of animals. Necessary information about goat reproducibility is still limited.

## 2. Materials and Methods

Determination of the location of the research was carried out purposively in 6 villages in Senduro sub-district, Lumajang. The animal material used is 155 female adult goats. The method used is a case study. Data observation was carried out in depth to identify reproductive characters related to population development and livestock productivity, namely the number of offsprings per birth (offsprings/ head/birth), the incidence of multiple births, young goat mortality. The data obtained in this field were analyzed descriptively by comparing the standard seedlings of Senduro goats that had been determined by the Indonesian government, the Ministry of Agriculture in 2014 [1]. The data taken in the form of primary data by conducting observations and direct and secondary measurements were obtained from the recording of the agriculture service in the livestock sub-sector of Lumajang district, East Java.

The research used survey method. Through obtaining primary and secondary data, primary data were performed by collected from farmer interview using open quisioner type. Meanwhile, the secondary data were obtained from farmers recording available in traditional smallholder farm. The primary objective of this research is to identify and analyze several characters related to reproductive aspects and livestock production so that a program to improve the quality and quantity of Senduro goats can be carried out. The observed variables about reproductive characters are liter size, the interval of kidding, twin birth events, male availability, female-male ratio, child mortality before weaning age. Data is recapitulated in the form of a table of mean values and standard deviation, and analysis descriptively.

## 3. Result and Discussion

Overall observations on the reproductive character of PE goats and Senduro goats from observations and their comparison with the results of previous studies are presented in Tables 1. In general, the results showed that the average litter size was  $1.83 + 0.69$  per parent, while the kidding interval was  $281.87 \pm 37.66$  days. Mortality of Senduro goats is low, at 4.93%. The reproductive performance is considered low [4,5]. The incidence of single births was 32.45%, while multiple births reached 67.55, where the two deliveries were the highest achieving 55.62%. Based on this reproductive data, it can illustrate that senduro goats are reproductive enough, but their performance can still be improved.

In general, the reproductive character of the Senduro goat that has been determined by the Ministry of Agriculture includes a reasonably low category, mainly when associated with kidding intervals. Based on the data obtained, the male and female ratios were 34.60% males and 63.40% females or approximately 1: 2 respectively. This ratio is quite beneficial as a source of seeds to increase the population based on the higher number of females for the parent. However, the female-male ratio becomes smaller, considering that some of these males are not used as a buck, especially those prepared explicitly as livestock for candidates for superior male contestants. The implementation of Artificial Insemination (AI) is time to be carried out in this region, considering that at this time Singosari's Center for Artificial Insemination has produced selected excellent quality Senduro Excellent Goat Semen. The quite important reproduction character of Senduro goats is related to both production and production performance, especially to increase the number of populations including kidding interval, litter size and child mortality rate.

**Table 1.** Description of the diversity of the reproductive characters of Senduro goats

Reproduction Character	Average Value ±Standard Deviation
Puberty ages (days)	242 ± 62
1 st Age of birth (days)	394 ± 58
Length of time to pregnant (months)	5.0 ± 0.3
Estrus time after birth (days)	63 ± 6.0
Kidding interval (days)	220 ± 17

**Table 2.** Senduro goat characters that are directly related to production and reproduction

Characters	Avarage ± SD	References	Average ± SD (Observed)
<b>Kidding interval</b> (days)	220 ± 17	Minister of Agriculture, 2014 [2]	281 ± 37
Senduro PE	240 [1]		
Litter size (heads)	1 - 2	Minister of Agriculture, 2014 [2]	1.83± 0.69
Senduro PE	1.15	Sudewo dkk, 2012 [6]	
<b>Mortality after birth (%)</b>	13.48	Sudewo dkk, 2012 [6].	4.93 %

The interval kidding of Senduro goats in this study was  $281 \pm 37$  days, and this was higher compared to the national performance standards set by the Ministry of Agriculture of  $220 + 17$  days [1]. The performance of the Senduro goat's reproduction is not different from the results of previous studies [7]. In Saanen dairy goats who reported a  $387 \pm 2.5$ -day interval of giving birth. When viewed from the diversity based on the standard mean and standard deviation, the variety can be said to be quite high at 13.16. According to [8], the Senduro goat productivity index is  $50.87 \pm 23.43$  kg/year. It was further stated that the high litter size and weaning weight of young goat had a very positive effect on parent productivity. This productivity index value will be even higher if the mortality rate of goats to weaning and interval kidding can be lowered the reproductive character of Senduro goats can still be improved, especially those related to reproduction. Senduro goat which is a dual-use type of milk and meat producer currently has the primary function of supplying candidate breeding animals for its spread throughout Indonesia and increasing commercial milk production. Reproductive success is notable because the availability of seeds and milk production are strongly influenced by reproductive success. When compared with other studies in traditional conditions at the farmer level [9], this result is still better, because it is reported that under the circumstances in rural interval kidding goats range from 9-15 months. In the case of Senduro goats, kidding interval is indeed still high, but this is mainly because usually a common repeat mating is only done after 6-8 months when milk production has begun to decline.

#### 4. Conclusion

Reproduction character or performance of Senduro female adult goat based on litter size and kidding interval is categorized as a low, so it needs to be improved so that it has better reproductive and production value. Further research should be carried out that is implemented in the field of reproduction and genetic quality improvement, for example with artificial insemination (AI) and estrus synchronization programs

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collaboration. It should be identified factors which influencing in the reproductive and productive performance of Senduro goat.

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