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# Doe Productivity Index And Sperm Quality Of Senduro Goats

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## ABSTRACT

*The purpose of this research was to examine the quality of Senduro buck and evaluate of Senduro goat doe Productivity Index doe. The first material used in this research was 155 of doe and 284 kid of Senduro goats. The method used in this research is a case study. Primary data was taken on the terms of a direct observation questionnaire was used as a tool concerning reproduction and weighing in body weight of kids of Senduro goat. The variables measured were litter size, kidding interval, mortality, and weaning weight. The second material used data Senduro male goat sperm 2 years old, were frozen. Frozen semen produced by adding glycerol at various levels. The results of the research in the Senduro subdistrict showed that the average litter size is 1.83 ± 0.69 tail, average kidding interval is 281.87±37.66 days, the percentage of mortality is 4.93% of kid, the average weaning weight is 22.14±4.19 and Senduro goat doe productivity index is 50.87±23. 43 kg/year. The addition of glycerol was significantly different (p< 0.01) on the percentage of post-thawing motility, viability, abnormalities and a total number of motile spermatozoa. The conclusion of this research is the Senduro goat doe productivity index in the Senduro subdistrict amounted to 50.87±23,43kg/year. Value Senduro goats doe productivity index can reach a maximum when the number of litter size high, kidding interval short, mortality percentage of kid pre-weaning of Senduro goat low and weaning weight high. Selection of male goats Senduro, sheep based on body size and the size of their testes according to standard ISO. The process of sperm production in the form of frozen semen meets the quality standards ISO (PTM 40 percent).*

## KEYWORDS

**litter size, kidding interval, weaning weight and mortality, sperm quality**

## INTRODUCTION

Senduro goat is one of the local goat designated as strain and genetic resources of local goat Indonesia in 2014 by the Ministry of Agriculture of the Republic of Indonesia number 1055 /kpts/SR120/10/2014 on Stipulation of strain goat Senduro in Lumajang and Bondowoso.

Senduro goat is the goat of crossbred goats with goats Jamnapari India "Peanuts" and goat Jawarandu. Characteristics of good qualitative nature can be seen from outer appearance goats are as follows: long ears, drooping down and twisted 30-40 cm, **the dominant white coat colo**r, profile convex face, not horned.

Efforts should be made to increase the population and goat livestock productivity is through the management of breeding stock, cattle reproductive efficiency and improvement of genetic quality. One of the technologies in an effort to increase productivity and quality as well as the livestock population is artificial

insemination (AI). AI really been affected by the success of the quality of cement, so it calls frozen semen can be used anytime and anywhere during the implementation of AI implemented. Improvement genetic quality of livestock can be done through individual selection. Individual selection of which is based on the value of the Parent Productivity Index [4]. The index value productivity parent is affected by several variables including birth weight, weaning weight, mortality, litter size and kidding interval. According [3] value of the IPI is a production capability of a mother goat is based on the ability to produce children young goats within one year. IPI also be used as the basis for the selection of the parent animals to find the seeds of a superior.

## MATERIAL AND METHOD

This research has been conducted on the farm people Senduro Subdistrict Lumajang Regency East Java province which is breeding center and development the goat Senduro. The material used in this study was 155 breeding goats and 284 head kid Senduro goats. The method used in this research is a case study and experimental laboratory. Determination of the sample using purposive sampling.

Observed variables and data were analyzed: Weight weaning corrected (WW); Parent Reproduction Index (PRI); Parent Productivity index (PPI) and Sperm quality by macroscopic and microscopic observation. Senduro male goat sperm accommodated using sperm vagina buatan. Evaluasi doos macroscopically and microscopically, with the requirements at least mass motility positive three (+++) and individual motility larger 70 % (≥ 70%). The diluent used is Tri Aminomethane yolk added with glycerol.

Formulation:

1. $WW = \left(BW + \frac{Ww-BW}{age} x120\right)$ FCBxFCAxFCS

*Information.*

*WW = Weighted Weighted*
*BW = Birth Weight*
*FCB = Factor Correction Birth.*
*FCA = Factor Correction Age Parent.*
*FCS =Factor Correction Sex.*

2. $\text{PRI} = \frac{\text{LS}\ (1-\text{M}\%)}{\text{KI/Years}}$

*Information*

*LS = Litter Size*
*M = Mortality*
*KI = Kidding Interval (years)*

3. $\text{PPI} = \text{PRI x WW}$

## RESULTS AND DISCUSSION

According to research [5] on the Nubian and Saanen goats with variations in the age of 1-10 years a decline in the value of its litter size. While in this study stem Senduro goat aged 1-5 years have a value higher litter size. Research results Senduro goat litter size in the district Lumajang Senduro which can be seen in Table 1.

***Table 1. Litter Size goat Senduro***

| Type birth | n | (%) |
|---|---|---|
| Single | 49 | (31,61) |
| Twins | 86 | (55,48) |
| Triplets | 17 | (10,97) |
| Four Twins | 3 | (1,94) |

*Mean and standard deviation of 1.83 ± 0.69 head/births*

The average litter size can research results in Table 1, was 1.83 ± 0.69 head. This is much higher than in litter size Etawah crossbred goats on research Sudewo et al (2012) of 1.51 ± 0.43 tail in Village Breeding Centre Banyumas [8] that litter size Etawah Crossbred goats 1.71 head per birth, further stated that goats aged 5-7 years and includes goat old age, so as to be affecting the reproductive efficiency at the mains and lead to a decrease in litter size. While the results of research on the Nubian and Saanen goats [5] showed the value of sequential litter size is: 1.77 ± 0.01 and 1.57 ± 0.01 tail in Northern Mexico. Differences in litter size in this study is suspected due to the aging parent Etawah Crossbred goats were used in the study.

"Kidding interval" is the period between the birth and subsequent births [1]. Distance lambing is the most important characters to assess the

productivity and the best index to evaluate the reproductive efficiency in a flock in a particular area. Based on the research results kidding interval Senduro goats in the district Lumajang Senduro which can be seen in Table 2.

***Table 2. Kidding interval Senduro Goat***

| Kidding Inteval (days) | n | (%) |
|---|---|---|
| 240-300 | 123 | (79,35) |
| 301-360 | 27 | (17,41) |
| 361-410 | 5 | (3,22) |

***average 281.87 ± 37.66 days***

Based on research data in Table 2 shows that within the ultimate birth is 410 days and the lowest distance is 240 days. Furthermore, the majority of livestock farmers in the location study began mating 3-8 months after birth, so the distance of the lowest birth eight months and the highest birth within 14 months. This is in contrast with statements by [6] that the goat kidding interval average is 8-10 months. The difference is apparently due to the location of research in the District Senduro, milking goats mated for 6-8 months after birth to productivity drops

Percentage Mortality results showed the mortality rate kid Senduro research location is 4.93% of the total number of children born. Vitality and mortality kid Senduro goats were grouped by type of birth and sex are presented in Table 3.

***Table 3. Power of life and mortality kid Senduro goat***

| Creteria Sex | *Little size (head)* | *(%)* | *Life (head)* | *(%)* | *Dead (head)* | *(%)* |
|---|---|---|---|---|---|---|
| Male | 148 | 52.1 | 143 | 50,4 | 5 | 1,8 |
| Female | 136 | 47.9 | 127 | 45,2 | 9 | 3,1 |
| Total | 284 | 100 | 270 | 95,6 | 14 | 4,9 |

Based on the results of the study showed the average value of productivity mother goat Senduro of 50.87 ± 23.43 kg/year. These results are higher than the results of the study [2] showed an average productivity index holding at goats "local" per the birth of 21.18 ± 5.05 kg/year. Productivity parent on types of single births, twins, triplets, and four are 27.22 ± 10.51 kg, 57.80 ± 14.67 kg, 74.82 ± 25.19 kg and 102.68 ± 27.33 kg. This shows that the number of children per the birth greatly affect the productivity mother goat, the more the number of children born to a mother, the greater the productivity of the parent annually. Productivity parent is a parent's ability to produce children which are calculated in kg per year.

The quality of fresh semen a reference first and foremost in the production of frozen semen that has good quality. The quality of fresh semen as the following table 4:

***Table 4: The average quality of fresh semen, goats Senduro used.***

| Parameter | Avg ± st.dev |
|---|---|
| ***Macroscopic observation :*** | |
| Smell | typical cement |
| Volume/ejaculation (ml) | 0.68 ± 0.28 |
| Color | white milk |
| pH | 6.67 ± 0.50 |
| Consistency | viscous |
| ***Microscopic observation*** | |
| mootilitas mass | + + + |
| individual motility (%) | 73.89 ± 5.46 |
| Viability (%) | 98.68 ± 1.93 |
| abnormality (%) | 3.05 ± 0.76 |
| concentration (million / ml) | 3208.89 ±825.93 |

Quality macroscopic and microscopic obtained are in accordance with the criteria of superior goat semen quality.

Varying the volume of sperm storage in addition affected breed differences, can also be influenced by the methods and frequency of collecting semen and aged goat.

Cement healthy goats are generally grayish, white milk with a slightly thick consistency. The degree of acidity which shows the results obtained 6.67 ± 0:50. The degree of acidity (pH) greatly determines the life status of spermatozoa in the semen. The lower or higher pH than normal, will make spermatozoa die sooner. [7] pH is relatively acids goat semen ranged between 6.5-7.0.

Percentage survival of fresh semen spermatozoa observations of 98.68 ± 1.93%. Semen results of these studies are included in both damn decent quality for processing into frozen semen. In relation to this motility is a measure used as a guideline to fertilize the ovum.

Viability live sperm is absolutely necessary for fertilization. From the results of the research results range viabilty Senduro goat spermatozoa post-thawing of 25.3±3.0 % up to 41.0 ± 7.1%. Statistical tests after cooling and freezing showed that the diluter with the addition of glycerol gives a significant influence ($p < 0.1$) to test the viability of individual sperm.

## CONCLUSION

1. The Senduro goat doe productivity index amounted to 50.87 ± 23,43kg/year. Value Senduro goats doe productivity index can reach a maximum when the number of litter size high, kidding interval short, mortality percentage of kid pre-weaning of Senduro goat low and weaning weight high.
2. The process of sperm production in the form of frozen semen meets the quality standards (PTM 40 percent)
3. Socialization frozen semen products made through the website, contest

## SUGGESTION

1. Test the quality of the product need to be carried out by independent institutions.
2. Keep recruitment quality testing laboratory with expertise and experience in handling of frozen semen, as well as the dissemination and promotion of the product need to be intensified.

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## REFERENCE

[1] Devendra, C dan M. Burns. 1994. Produksi Kambing di Daerah Tropis. Institut Teknologi Bandung. Bandung.

[2] Erlangga, B, A. M, Nasich. H, Nugroho dan Kuswati. 2014. Produktivitas induk kambing kacang di kecamatan kedungadem kabupaten bojonegoro. Jurnal Ilmiah ilmu ilmu Peternaka. 3(2) : 4-13.

[3] Hardjosubroto, W. 1994. Aplikasi Pem-uliabiakan Ternak di Lapangan. PT. Gramedia. Jakarta.

[4] Noviar,K.N., Idalina,H dan Novirzal. 2013. Seleksi induk kambing Peranakan Etawah berdasarkan nilai indeks Produktivitas induk pada bobot sapih di desa dadapan Kecamatan Sumberejo kabupaten Tanggamus. 6(4):37-42.

[5] Herrera, C. A., J.M. Serradilla, M. E. Munoz and F. Baena. 2014. Effect of breed and some environmental factors on body weights till weaning and litter size in five goat breeds inMexico. Small Ruminant Research 121:215-219

[6] Garantjang, S. 2004. Pertumbuhan anak kambing kacang pada berbagai umur induk yang dipelihara secara tradisional. P Sains dan Teknologi. 4(1):40-45.

[7] Suyadi, Susilowati T dan Isnaini,N. 2004. Uji Coba Produksi semen beku Kambing Boer. Laporan penelitian kerjasama Dirjen Peternakan. Fakultas Peternakan UB Malang.

[8] Usman,B. 2005. Pengaruh Interval Pemerahan Terhadap Aktivitas Seksual Setalah Beranak Pada Kambing Peranakan Etawah. Jurnal Agribisnis Peternakan, 1(2):55-61.

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