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**THE PRODUCTIVITY OF FAT-TAILED SHEEP IN SINGLE AND TWIN LAMBING**

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<https://doi.org/10.35410/IJAEB.2022.5741>

**ABSTRACT**

The purpose of this study was to compare the productivity of Fat-Tailed Sheep in single and twin lambing. The research method was a field study based on data recording of ewes that gave lambing three times or more. The variables observed were livestock productivity seen from the interval between giving birth and the reproduction rate of livestock. Data analysis used unpaired t-test with excel program. The results showed that twins had a very significantly higher reproductive rate ( $P < 0.01$ ) and no significant difference between lambing intervals ( $P > 0.05$ ) compared to single lambing ewes. This study concluded that the productivity of Fat-Tailed sheep was 88.19 % higher ewes of twin lambing than that of single lambing ewes. One of the criteria for choosing a ewe is the potential for twin lambing.

**Keywords:** Reproductive Rate, Calving Interval, Local Sheep.

**1. INTRODUCTION**

A local ruminant genetic resource for Indonesia is Fat-tail sheep (local name is Sapudi sheep), which is recognized for its adaptability to a suitable environment (Udo and Budisatria, 2011; Henry et al., 2018) and feeding stress (Alves et al., 2013). Adaptability to the environment is essential in today's extreme world climate change (Downing et al., 2017).

Fat-tail sheep is Indonesian germplasm originally developed on Sapudi Island, East Java Province so that is known as Sapudi sheep. The main characteristics of body and face colour are white, slightly convex front line, no horns, concave curved backline with a raised back, calm temperament and not aggressive. Ears are wide large, long, wide, and erect to the side at an angle of 45-90 degrees. In addition, the tail is triangular to sigmoid, thick, long and wide. The base of the tail is wide and often winding (sigmoid) and tapered at the ends (Minister of Agriculture, 2012). Fat-tail sheep have the potential to have more than one lamb as the other non-ruminant, namely Indonesian Local Ettawah Goats (Mudawamah et al., 2021). In addition, several studies have shown Fat-tail sheep have enormous potential as a meat producer (Abdurrahman and Setiasih, 2017; Alkass et al., 2014), the potential to be developed in rural areas using agricultural waste feed (Nasich et al., 2021).

Based on the above background, it is necessary to research the productivity of ewes born with twins and singletons in terms of reproduction rate as the basis for considering the selection of mothers who give birth to twins.

**2.EXPERIMENTAL DETAILS**

The research location was at the Technical Implementation Unit for Livestock Breeding and Forage Feeding (UPT PT HMT) Jember with the same housing and feeding. The breed of sheep used 28 heads of Fat-tail sheep, following Nasich et al. (2021).

The variables observed were the rate of livestock reproduction and lambing interval (distance from the first lambing to the last lambing). The formula of livestock reproduction rate, as below:

$$\text{Ewes reproduction rate} = \frac{[\text{litter size}\{1-\text{mortality}\}]}{\text{lambing interval}}$$

Data analysis was carried out in the following stages: recapitulation and tabulation of the data obtained, descriptive analysis, which included the mean and standard deviation, unpaired t-test with the excel program.

**3.RESULTS AND DISCUSSION**

The average productivity based on the lambing interval between single and twin ewes and the results of the unpaired t-test can be seen in Table 1.

**Table 1. Lambing Interval of Fat-tail Ewes between single and twin lambing**

No	Items	Twin	Single
1	Mean (year) <sup>ns</sup>	0.63 ± 0.05	0.67 ± 0.09
2	VP (%)	0	1.00

<sup>ns</sup> No significant difference (P > 0.05) between single and twinning

Table 1 showed that the symbol interval between mothers giving birth to twins and singletons was not significantly different (P > 0.05) with a range of 0.63-0.67 months. It meant that the interval symbol was not affected by the number of offspring born to a single lamb. The symbol interval of the results of this study is lower than the study of Ashebir et al. (2016) on Begayt sheep which has an interval symbol (0.71 years). Based on the phenotype variation (%), there was a tendency for ewes who give lamb to single had more phenotype variation of lambing interval than ewes who give lamb to twins. The lambing interval affected the productivity of sheep (Assan, 2020), meaning that the shorter the lambing interval, the higher the productivity of sheep.

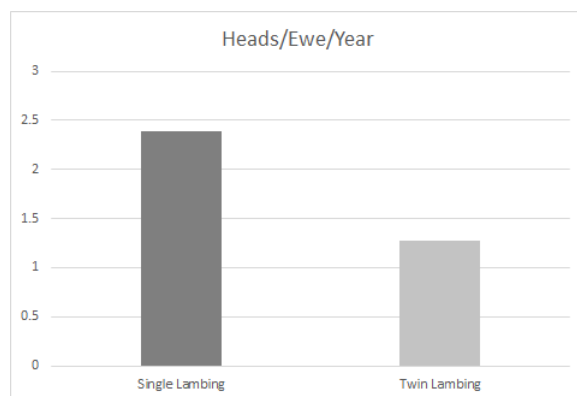
The average productivity based on the reproduction rate between ewes giving a lamb to twins and single and the unpaired t-test can be seen in Table 2.

**Table 2. The reproduction rate of Fat-tail Ewes between single and twin lambing**

No	Items	Twin	Single
1	Mean (heads/ewe/year)	2.39 <sup>b</sup> ± 0.38	1.27 <sup>a</sup> ± 0.25
2	VP (%)	14	6.00

<sup>a,b</sup> very significant difference (P > 0.01) between single and twinning

Table 2 showed that ewes' reproduction rate with twin lambing was significantly higher than that of single lambing (2.39 heads/ewe/year vs. 1.27 heads/ewe/year). It indicated that the higher the reproduction rate, the higher the productivity (Figure 2).



**Figure 1.** The Reproduction rate of Ewes with single and twin lanmbing

Figure 1, the reproduction rate of twins lambing was 88.19% higher than that of single-lamb ewes. Following Assan's opinion (2020), one of the factors that affect the productivity of sheep was the trait of having more than one offspring (prolificacy), which is closely related to the reproduction rate.

#### 4.CONCLUSIONS

The productivity of Fat-Tailed sheep was 88.19 % higher ewes of twin lambing than that of single lambing ewes. es. One of the criteria for choosing a ewe is the potential for twin lambing.

#### Acknowledgments

The preliminary research was funded by the Ministry of Research and Technology and Higher Education, the Republic of Indonesia. We would also like to thank for the Technical Implementation Unit for Livestock Breeding and Forage Feeding (UPT PT HMT) Jember.

**REFERENCES**

1. H.M.J. Udo, and I.G.S. Budiarta. Fat-tailed sheep in Indonesia; an essential resource of smallholders. *Trop Anima Health Prod.* 43: 1411-1418, (2011).
2. R. Henry, J. Eckard, K. A. Beauchemin. Review: Adaptation of ruminant livestock production systems to climate changes. *Animal.* 2(supplemnt 2):s445-s456, (2018).
3. S.P. Alves, R.J.B. Bessa, M.A.G. Quaresma, T. Kilminster, T. Scanlon, C. Oldham, J. Milton, J. Greeff, A.M. Almeida. Does the Fat Tailed Damara Ovine Breed have a distict lipid metabolism leading to a high concentration of branched chain fatty acids in tissue? *Plos One* 8 (10) e7731: 1-10, (2017)
4. R.M.M. Downing, A.P. Nedjathashemi, T. Harrigan, and S.A. Woznicki. Climate change and livestock: impacts, adaptation, and mitigation. *Climate Risk Management.* 16: 145-163, (2017).
5. Minister of Agriculture. 2012. Determination of Sapudi Sheep Herd. Decision of Agriculture Minister. Republic of Indonesia, No. 2389/Kpts/LB.430/8/2012. Pp. 1-5, (2012).
6. M Mudawamah, G. Ciptadi, and I.D. Retnaningtyas. The Prolific Variation, Body Morphometrics, and Breeding Value of Indonesian Local Etawah Goat Based in East Java. *ANIMAL PRODUCTION*, 23(1), 54-61. <https://doi.org/10.20884/1.jap.2021.23.1.85>, (2021).
7. A.M. Abdurrahman and Setiasih. Application of morphological index in the assessment of type and function of fat tail sheep in Sapudi island. *Jurnal Biotropika.* 5(3): 110-113, (2017).
8. J.E. Alkass, K.A. Darwesh and K.Y. Merkhan. Performance of Docked vs. Undocked fat tailed Sheep: A review. *Advanced Journal of Agricultural Research.* 2 (003): 029-037, (2014).
9. M. Nasich, G. Ciptadi, A. Budiarto, S.B. Siswijono, Hermanto, A. Ridhowi, Mudawamah, D.K.H. Widjaja, A.R.I. Putri, H.N. Karima, S. Septian and A.M. Ramadha. 2021. Growth respon and vital statistics of fat and thin tailed sheep with soybean husk supplements in Malang Distrik. *IOP Conf. Series: Earth and Environmental Science* 743 012006: 1-7.
10. G. Ashebir, G.N. Haile, and K.Weldu. Reproductive Performance of begayt sheep under different management systems in Western Zone of Tigray. *J. Dairy Vet. Anim. Res.* 3 (3): 85-89, (2016).
11. N. Assan. 2020. Indicators of reproductive performance in goats and sheep meat production. *Scientific Journal of Animal Science.* 9 (5): 608-619, (2020).