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The productivity of kacang goat pre-weaning period in low-land and high-land in West Timor, Timor Island Indonesia

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Abstract. This experiment aimed to determine and analyze the productivity of pre-weaning Kacang goats in the lowlands and highlands area of West Timor province, Indonesia. The results of this study were expected to be used as a reference for maintaining Kacang goats in Indonesia. This research was conducted in West Timor province, Timor Island. The material used in this study was 245 Kacang goats consisting of 96 does, and 149 kids. The research method used was the survey. The result showed that the average of litter size to Kacang goats in the lowlands were 1.6 ± 0.63 heads and highlands 1.5 ± 0.55 . The average male birth weight in the lowlands was 1.7 ± 0.32 kg, females 1.55 ± 0.22 kg, while in the highlands, males were 1.62 ± 0.15 kg, females 1.47 ± 0.18 kg. The average weaning weight of males was 9.21 ± 0.59 kg, females 8.65 ± 0.65 kg in the lowlands and in the highlands, males 8.62 ± 0.46 kg and females 8.27 ± 0.38 kg. From the results, it can be concluded that Kacang goats were considered more suitable to be maintained in the lowlands, however, even in the highlands it is also still considered good.

1. Introduction

Kacang goat is a native Indonesian goat. Thus the goat nation has the best adaptability in its native place. In addition to its good adaptability, the Kacang goat according to some research results has a high litter size. In general, these goats are kept by smallholder farmers in villages and used as savings. West Timor is one of the provinces of Nusa Tenggara Timur. In this province, the breed of goats that are mostly kept are the Kacang goats, with a semi-intensive maintenance system that is livestock released in the fields feeds available (grazed) and back to the house in the afternoon so that the feed consumed is mostly obtained from the surrounding pasture fields. What is used by farmers is also very simple. This situation is supported by the availability of important savannah grasslands covering an area of 1,399,980 ha and those used as pasture fields of 7,63,981 ha [1] in this province, North Central Timor District (NCT) is one of the 6 (six) Regencies/ Cities in the Province of West Timor. The NCT Regency has the highest population of Goat, namely 44,655 heads with an area of grazing 86,339 ha [2]. Kacang goats in NCT District are separated in the lowlands and the highlands. Dry climate conditions positively affect the productivity of goats. Production performance is related to aspects of birth weight, weaning weight and kid mortality in this period. Information about on the performance of Kacang goat production in North Central Timor District is considered necessary, including those in the lowlands and highlands.



2. Materials and methods

The material used in this study was 245 Kacang goats consisting of 96 does with 149 kids (77 male and 72 female), to observe litter size, birth weight, mortality and weaning weight. The instruments used are "portable electronic scale" digital scales with a capacity of 40 kg with an accuracy of 0.01 kg. The method used in the study was the survey, specifically direct observation of goats, owned by 120 farmers. The area used consisted of 4 sub-districts taken by purposive sampling, with the highest population in the lowlands and highlands, namely 2 Sub-districts in the lowlands (Biboki Anleu and North Insana Sub-districts), Highlands (South Biboki and East Miomaffo Sub-districts), 2 Sub-districts in the plains of each Sub-district were taken by 2 Villages, namely South Biboki Sub-district (Tunbaen and Pantae Village), East Miomaffo Sub-district (Tun-tun and Femnasi Village), Biboki Anleu Sub-district (Ponu and Nonotbatan Village), North Insana Sub-district (Oekolo Village and Humusu C Village). Data obtained then tabulated in the value of average + standard deviation and was analyzed by t-test and descriptively [18].

3. Result and discussion

The location of this research was the low-lands and high-lands of North Central Timor District (NCT), the condition of the two regions broadly can be seen in table 1.

Table 1. Land used of forages and ruminant populations in 2 lowland Sub-districts and 2 highland Sub-districts, North Central Timor District.

Land Used	Low-land		High-land	
	Biboki Anleu (Ha)	North Insana (Ha)	East Miomaffo (Ha)	South Biboki (Ha)
Large	20640	5384	10145	16417
Rice field	2779	505	88	20
Yard	1427	985	-	1319
Plantation	1051	783	-	3085
Community	600	721	-	4505
Forest				
Pasture	2900	1967	6170	2389
Ruminant				
Population	(Head)	(Head)	(Head)	(Head)
Cattle	8866	4297	5124	5814
Buffalo	388	10	-	24
Horse	13	54	-	177
Goat	7955	4396	2371	3421

Source: - [3][4][5][6]

- [2]

From table 1 above, it can be seen that the population of goats in the lowlands is much higher than in the highlands, as well as the capacity of the valleys, higher than the highlands, this is possible considering that in the lowlands many flat land locations and productive in the form of rice fields and yards. This fertile soil will indeed produce agriculture by-product to be used for animal feed, allowing farmers to maintain ruminant livestock. Table 1 also shows the area of rice fields in the lowlands is 3284 Ha, while in the highlands only 108 Ha. The percentage of ownership of goat above ten head, in the valleys, is 70.83%, while in the highlands the portion of the highest goat livestock ownership is between 6-10 head, namely 56.67%. This shows that the property of goats in both regions is in the category of large and medium. [7] states that the classification of ownership of goats is divided into 3 (three) groups, namely small-scale (<5 heads), medium scale 6-10 tails and large scale > 10 head. From

the results of this study, the data obtained on average litter size, birth weight, weaning weight, and kids mortality in the pre-weaning period in the lowlands and highlands can be seen in table 2.

Table 2. Average litter size, birth weight, weaning weight and pre-weaned mortality of kid in lowland and highlands North Central Timor (TTU)

Variable	Low-land		High-land	
	Male	Female	Male	Female
Litter size (Head)	1.59 ± 0.63		1.48 ± 0.55	
Birth Weight (kg)	1.7 ± 0.32	1.55 ± 0.22	1.62 ± 0.15	1.47 ± 0.18
Weaning Weight (kg)	9.21 ± 0.59	8.65 ± 0.65	8.62 ± 0.46	8.27 ± 0.38
Mortality (%)	6		1	
N (Number of animals)	83		66	

From table 2 shows that the average number of the kid per birth (litter size) of Kacang goats in the lowlands are higher in numbers than the highlands, namely 1.59 ± 0.63 heads with 1.48 ± 0.55 heads. This difference is probably caused by the availability of feed (as shown in table 1) and the drier conditions in the lowlands, this is as a result of a study from [8] that the performance of Bligon goats in different seasons shows average litter size in the rainy season is 1.38 head, at the beginning of the dry season is 1.43 head and at the end of the dry season is 1.58 head. Overall, the average number of kids is higher when compared to the results of [9] who reported that the average number of a kid born to a mother of a goat was mated with a Kacang buck with 1.31 ± 0.46 heads. Likewise with the results of [10] which showed that the average litter size Kacang goats was 1.36 heads. The results of [11], the average of litter size smaller is only 1.23 heads. Table 2 also shows that the birth weight of Kacang goats from this study is lower compared to the birth weight of Kacang goats at the Sei Putih Research Station, North Sumatra, which is 1.78 kg [11]. This difference is indeed more due to differences in maintenance management, especially feeding management, this situation is consistent with [12] statement that the birth season does not have a significant impact on the weight of Somali goats due to the availability of straw and concentrate during pregnancy. The birth weight of goats in the lowlands is slightly higher than the highlands but statistically not significantly different, and this is probably because the two maintenance systems are equally semi-intensive, the only difference is the availability of better feed in the lowlands. The average weaning weight of Kacang goats in NCT District was slightly lower compared to the results of [13] study which showed that the average weaning weight of goat at the age of 90 days, in males was 9.7 kg, whereas in females is 8.8 kg. The high and low weaning weight of these goats is influenced by the parent's age, type of birth, sex and maintenance management. When viewed from the herding management, the average weaning weight of Kacang goats in NCT Regency is quite high and has high economic value as well, this condition as stated by [14] which says that body weight is an important measurement criterion for livestock and can be used as a basis for measuring production produced in determining its economic value. Kids mortality in the preweaning period in Kabupaten NCT was low or very good; this situation is as stated by [15] which indicates that the mortality rate of a kid between 5-10% is still considered very good for the size of goat production enterprises. Many research results mention a higher percentage of kid deaths, including [16] mortality was 13.01%, then [17] had a mortality of 20.36%.

4. Conclusion

It can be concluded that, generally, the productivity of Kacang goats in North Central Timor Regency is high, seen from the parameters of birth weight, weaning weight and percentage of deaths. The productivity of Kacang goats that are herd in the lowlands are slightly higher than those maintained in the highlands.

From the results of this study, it can be suggested that the maintenance of Kacang goats by grazing is quite efficient Acknowledgment This field research is supported by the government of West Timor

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Reference

- [1] Riwu Kaho L M 2003 Integrated Livestock Pattern Verification Study (Agrosilvopastoral) with Emphasis on Improving Management of Provision of Cattle Feed in Cages *Journal of Dry Land Agriculture Information* **19** 67-83
- [2] Anonymous 2015 Data on the District Livestock Population of North Central Timor in 2015. Livestock Services of North Central Timor Regency
- [3] Anonymous 2015 *Biboki Anleu Sub-District in Figures* (North Central Timor Regency Statistics Center)
- [3] Anonymous 2015 *South Biboki Sub-District in Figures* (North Central Timor Regency Statistics Centre)
- [4] Anonymous 2015 *North Insana Sub-District in Figures* (North Central Timor Regency Statistics Center)
- [5] Anonymous 2015 *East Miomaffo Sub-District in Figures* (North Central Timor Regency Statistics Center)
- [6] Devendra C and M Burns 1994 *Goat Production in the Tropical Region* Translator: IDK Harya Putra (Bandung: Bandung Institute of Technology)
- [7] Manu A E, E Balaitri, S Keman and F U Datta 2007 The performance of Bligon Goat Kids who are grazed in Timor Sabana in different seasons *Anim. Husbandry Bull.* **31** 1
- [8] Mahmilia, F 2007 The appearance of Reproduction of Doe: Boers, Kacang and Kacangs Crossed with Boer *National Seminar on Animal and Veterinary Technology*
- [9] Wati L, R Aka and T Saili 2014 Kid Crop of Kacang Goat (*Capra Hircus*) in North Konawe District *JITRO* **1**
- [10] Doloksaribu M, S Elieser, F Mahmalia and F A Pamungkas. 2005 The productivity of Kacang goats on cage conditions: Birth weight, weaning weight, number of a kid born and pre-weaning mortality (Bogor: National Seminar on Animal and Veterinary Technology) *Research Center for Animal Husbandry* 581-585
- [11] Zakele Z M 2007 Environmental Influence on Pre-weaning Growth Performances and Mortality Rates of Extensively Managed Somali Goat in Eastern Ethiopia *Livestock Res. Rural Dev.* **19** 12
- [12] Abdulgani I K 1981 *Some of the characteristics of Goats in Ciburuy and Cigombong Villages and their use for Productivity Increase.* (Bogor: Dissertation of the Postgraduate Faculty, Bogor Agricultural Institute)
- [13] Wandito D S 2011 *Performance and Morphometrics of Fat-Tailed Sheep by Providing Bean Sprouts Concentrate and Waste at Different Levels of Giving* (Bogor :Thesis, Faculty of Animal Husbandry, Bogor Agricultural Institute)
- [14] Utama I K 2007 *Challenges and Opportunities for Increasing Goat Productivity through Reproductive Technology Innovation* (Bogor: Proc National Goat Meat Workshop)
- [15] Masrah H, Hafid and T Saili 2016 Study of Goat Productivity in Different Maintenance Systems in West Andolo District, South Konawe Regency *JITRO* **11**
- [16] Sulaksana, I and Farizal 2014 The productivity of Etawah Cross Goats in Pitaling Village, Muaro Jambi Regency Faculty of Animal Husbandry Jambi University Jambi ISSN: 0852-8349 **16** 2
- [17] Sudjana. 2002. *Statistical Method.* (Bandung: Tarsito)