Studies on Indigenous Sheep Productivity Under The Tropical Rain Forest Area

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Abstract

Integrated Farming System is being introduced to the forest system. There is a problem about animal in the forest which will destroy the ecosystem. But actually, animal will give manure as an organic fertilizer to the trees while on the other hand forest also produce leaves which can be fed by animal as a roughage and naturally forest can change the environment condition such as temperature and humidity to the comfortable animal living. Good management to take care the animal will solve the problem above. One of them is animal has to kept in semi intensive system. Gunung Walat Education Forest of IPB is stand near by Sukabumi, West Java, which surrounding by Damar, Agathis and Pinus trees dominantly while Kaliandra, King grass, mix grass and Leucaena are in between as an animal feeding plant. The average daily temperature and humidity there is 25 ^{o}C and 80 % rel, respectively. This research was aimed to evaluate productivity of indigenous sheep which kept on postal cage in Gunung Walat Education Forest area. Two activities were designed using 50 head of growing sheep for 45 days of fattening and 24 head of pregnant ewes for breeding observation. Animal were fed with 60% of mix grass and 40 % of soy bean curd waste in different amount depend on BW. After 45 day monitoring, the average body weight gain of fattening sheep were around 62 g/d, from 20,31 kg early BW became 23,10 kg in the final observation. Breeding studies showed that they had single, twin and triplet, while percentage of died lamb was 18 % from total 32 head. After two months lactation, ewes were super ovulated (SO) with hormone Prosulvine in order to the next pregnancy. Percentage of pregnancy using SO technique was found 75 %. It is concluded that animal under the tropical rain forest could survive although the productivities were not optimum.

Key word : *, Indigenous, Fertilizer, Soy bean curd waste and Super ovulation*

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Introduction

In the tropical country we can find a wide range of agricultural production systems. However, the majority of the farmers can be found in resource poor and low external input production environment, so that traditional grazing systems are being or have been replaced by mixed farming systems.

Changes in economic condition are the major driving force for change in animal production systems. A systems approach is needed to assess disciplinary research focused on production level of individual animals and sustainability prospects of new technologies within the context of farming systems (Udo, H. 2002). Farming systems have to intensify due to population growth and economic development. In smallholder systems livestock technologies have had good impact on production and productivity at farm level. The other important aspect is good environment such as feeding, climate and management. Villarreal (2001) classifies chickens as short-term capital. They provide only a small saving account, but can be fast available. Pigs and small ruminants are more mid-term capital, while cattle are a long-term security.

In Indonesia a lot of model mix farming system has been developed, like paddy mix with fish, broiler under the fish system, ruminant under the coconut plantation and cow surrounding bananas plantation. There is no information about small ruminant production under the tropical forest area. This research was aimed to evaluate productivity of indigenous sheep which kept on postal cage in Gunung Walat Education Forest area.

Material and Method

This study was done in Gunung Walat Education Forest, is about 70 km from Bogor, which maintained by IPB. The climate show that average room temperature in door of pens is around 22 o C with humidity is about 98% rel, while out of door average temperature is around 25 oC with humidity is about 80%. Individual pen has 2 x 2 m square was cleaned everyday while animals were fed twice a day with mix grass (3 kg/head) plus soybean curd waste and water was given *ad libitum*. Each farmer has four ewes for breeding while for fattening they got ten kids. During the study, animals were measured of heart rate, respiration rate and body temperature before, during and after data collection for knowing the physiological status.

1. *Fattening Program*
Fifty local sheep in weaning age with average 20.31 kg of BW were used for fattening. They divided into 5 groups where each farmer has ten sheep. In the beginning of this study, animal were weighted and gave albendasol as an antiparasite. Mix grass and soybean curd waste was given 10 % of BW with ratio of 60 : 40 %. The room temperature and humidity were measured everyday. After 45 days, the animals were weighted again to find the final bodyweight.

2. *Breeding Program*
Twenty four of local pregnant ewes (25 kg) were used in this program and they divided into six groups (farmer). Each farmer with four pregnant ewes has same feeding program with fattening group but different amount of DM feed depend on BW. The parameter were litter size, number of kids and number of death.

After two months of lactation, twelve ewes were synchronized with prosulvin in order to get same estrus. Slime detector was used for detection of fertile status and get ready to mate. After one month from mating, animals were palpation manually to make sure that they had already pregnant. Presentations of pregnancy was calculated from ratio total pregnant ewes with total synchronized ewes.

Result and Discussion

Data of fattening program showed that there were no significant different between groups and they had average gain around 2.79 kg while ADG were around 61.99 g/head/d. Detail data is showed in Table 1.

Table 1. Average of BW and gain of growing sheep during 45 days in HPGW

Group	Init.BW	Final BW	Gain (kg)	ADG (g/d)
1	20.15	22.0	1.85	41.11
2	19.40	24.35	4.95	110
3	20.55	23.60	3.05	67.77
4	20.75	22.95	2.20	48.88
5	20.70	22.60	1.90	42.22
Average	20.31 ± 0.56	23.10 ± 0.91	2.79 ± 1.29	61.99 ± 28.88

The low performance of those sheep caused by high of humidity and limited of sunlight so that they were deficiency of vitamin D. Another problem was low quality of forages or mix grass which grow surrounding the Gunung Walat Education forest. Climate and feeding are important environment which is effect to the performance.

Astuti (1988) reported that sheep under the semi intensive farming system using concentrate and monensin as a feedstuff could have ADG around 100 – 150 g/d. While Ristianto (1991) showed that sheep fed with paddy straw plus concentrate can grow with 52 g/d. The zone humidity optimum for living sheep is 60 – 80 % rel with environmental temperature around 25 – 30 ^{o}C. Rees *et al*. (1986) reported that thin tail of Sumatra sheep under the rubber trees environment and fed with level of concentrate (0; 0,6; 1 and 1,4 of BW) could grow with 37, 48, 57 and 64 g/d while the puberty happened in 10, 9, 8 and 7 month.

Table 2. Number of Kids and percentage of death Kid in HPGW

Farmer	Numb. of ewes (head)	Numb of Kid (head)	Litter size			No. of death (head)
			1	2	3	
1	4	7	1	3	-	1
2	4	6	2	2	-	-
3	4	5	3	1	-	-
4	4	6	1	1	1	3
5	4	5	3	1	-	2
6	4	3	1	1	-	-
Total	24		11	9	1	6

Tabel 2 showed that genetic of those local sheep was quite good because there were a lot of ewes which has twin litter size (43%) and triplet was 5%. Nevertheless the low quality of ration caused the low nutritional status of pregnant ewes and high number of death weaning kids (18,75 %). Abortion cases also happened and caused number of ewes died.

Table 3 showed that percentage of pregnancy around 75 %, that means local ewes could receive hormone treatment easily.

Table 3. Persentage of pregnancy through Synchronization technique

Farmer	Numb. of Ewes	Numb of Pregnancy	% of Pregnancy
1	4	3	75
2	4	2	50
3	1	1	100
4	2	2	100
5	1	1	100
6	-	-	-
Total	12	9	75

Feed supplement should be given to increase reproduction performance. In the initial pregnancy, quality of feed was not so affected to the fetus development, but in the last three semester of pregnancy, lactation period and weaning period supplementation of protein should be given in order to reduce mortality (Leng, 1990). Protein metabolized requirement for growing sheep (20 – 25 kg BW) with average of ADG 100 g/d is 24 g/d. Supplementation of Protein metabolized for pregnant ewes in the last three weeks of partus was 19,2 g/d (for singlet), 32,2 g/d for twins and 43,2 g/d for triplet (AFRC, 1998). Total protein requirement will be twice following the pregnant status and in order to support of developing fetus.

Conclusion

The data of sheep during six months fattening and breeding in tropical rain forest area with high humidity showed that :

1. Sheep fed with mix grass plus soybean curd waste has ADG around 61 g/d Kingggrass should be planted sorounding of the forest
2. High humidity and indoor system with high concentration of ammonia caused high percentage of death (18 %), so it is suggested that sheep should be grassed in the open area
3. Percentage of pregnancy using synchronization program was 75 %

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References

AFRC (1998). The Nutrition of goats. AFRC (Agricultural and Food Research Council) Technical Committee on Responses to Nutrients, Report no. 10, CAB International.

D.A. Astuti, D. Sastradipradja and A. Djajanegara. (1988). Penggunaan monensin pada ransum tunggal untuk penggemukan domba . Seminar National Ruminansia , Cisarua, Bogor, Indonesia, November 1988

Leng, R.A. (1990). Recent advances in applied aspects of ruminant physiology. 7 th satellite conference on ruminant digestion , Tokyo Japan

Rees, AA, Taryo-Adiwiganda, Y Handayani, S.W. Ginting and Reese, G.R. (1986). Integrating sheep with rubber plantations. Working paper no. 77, Balai Penelitian Ternak,- Small Ruminant Collaborative Research Support Program, Bogor

Ristianto Utomo, (1991). Penggunaan jerami jagung dan urea sebagai pakan pada penggemukan domba. Buletin Peternakan, Edisi khusus. Gajah Mada pres. 339

Udo, Henk (2002). Livestock and Livelihoods. The 3 rd ISTAP, Faculty of Animal Science, Gadjah Mada University.

Villarreal, M. (2001). Bees, chickens, pigs, cows… and husbands: The nature of capital in women enterprises. www. Poultry.kvl.dk/seminars2001-june.htm