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Goat Productivity Kept Under a Group Management System in Yogyakarta

E. Baliarti

Department of Animal Production, Faculty of Animal Science, GMU, Yogyakarta

ABSTRACT: In Yogyakarta Province recently, the group management system of goat farming has been highly encouraged. Little information has been available on animal productivity under such a system. Therefore, this study was conducted to determine animal productivity in this system. Two hundred forty eight Ettawa Cross goats of different ages kept by the group of Ketawang Damai, Yogyakarta were used as study materials. Observation of animal production and reproduction performance was carried for one year. Data taken included mating, pregnancy, birth, body weight, body size, health and ration. Observation results showed that for the does service per conception was 1.00, litter size was 1.75, kid mortality was 2.82%. For the offspring, birth rate was 31.05%, average birth weight was 2.21 ± 0.47 kg, pre-weaning average daily gain was 113.44 ± 0.63 g, and weaning weight (90 days) was 12.42 ± 1.22 kg. The average chest circumference, withers height, and body length at weaning age (90 days) were respectively 51.68 ± 3.18 cm, 50.85 ± 2.93 cm, and 43.21 ± 4.18 cm. No illness nor death was found among young or mature animals during the observation, while among the kids, mortality rate was 2.82%. From the data taken, it was concluded that Ettawa Cross goats productivity kept under group management system demonstrate improved productivity in relation to goats raised under more conventional system.

Key Words: Yogyakarta, Goat Productivity, Group Management System

Introduction

Productivity for goats kept jointly in common housings by a group of small farmer has never been studied in Yogyakarta, whereas information on this subject is needed to evaluate group management system.

Many advantages can be gained by this system. Animal housings are arranged far enough from human dwellings to avoid the negative effects of animals housing and pollutions. Usually, goats are housed too close to the farmer's house, or even attached to the house. This is hazardous to the farmer's family health. Another advantage from this group management system is the increased communication of information. New technology application may be quicker, since there is greater communication between extension workers and farmers, and among farmers themselves. Thus, it is expected that animals in a group management system will produce a better yield compared to other animals.

However, it should be considered that apart from these advantages, group management system do pose some problems, among them the greater potential impact of contagious disease. Several diseases prevalent in goats in rural areas are skin disease (Scabies), eye disease (Conjunctivitis), anaemia by worm invasion, etc. If a contagious disease breaks out among animals in group housings, the spread of disease would probably be faster if preventive measures (precautions) were lacking.

In Yogyakarta, there have been several goat housing complexes, each having between 30 up to 50 houses, and altogether keep more than 100 goats of different ages. They have never been studied , either their management, rations, health, or productivity. In fact, information on this subject is badly needed in an attempt to evaluate if progress has been made with the implementation of group management.

The data obtained is useful as a general comparison of group management system and conventional methods. If it is proved that productivity is higher, the result of this study can further motivate the farmers in managing their animal farmings, since higher products mean higher

income. From a scientific point of view, this result of this are expected to become reference for further research.

There have been many studies on goat production in station or field conditions. Study result by Obst et al. (1980) at the Center of Animal Research Ciawi, Bogor showed that for Ettawa Cross goats from Tegal, average birth per doe/year was 3.09 heads. The number of kids weaned per doe/year was 1.66 heads. Birth frequency between 1.82 - 1.85 per doe/year, and the first birth age was 348-418 days old. Another study by Basuki et al. (1980) on Ettawa Cross, Bligon, Kacang and Saanen Cross goat performances showed that the average mature weights were respectively 23.6; 22.5; 14.8; and 18.9 kg; birth weights were 3.3; 1.6; 1.2; and 1.7 kg. The average weights of 2 months old kids ware 7.0; 4.8; 3.8; and 4.2 kg. Daily gains until weaning age was 71; 55; 43; and 42 g per head/day. Other study results presented by Abdulgani and Warganegara (1980) on goats in Lampung showed that birth percentage was 86% and kidding crop 141%. Average birth weight of male kids was 2.24 kg, whereas the female kid was 2.08 kg . 90 days old weight of male kid was 8.8 kg, and 9.7 kg for the female. The weight of 210 days old 15.1 kg and 14.3 kg. The average doe weight was 28.8 kg, and the kidding interval was 214 days. Study results by Ngadiono et al. (1984) on Ettawa Cross goat raised in conventional system found that average birth weight was was 1.71 kg and weaning weight was 9.58 kg, pre-weaning ADG was 87 g. For Ettawa Cross goats at the Animal Breeding Center Sumber Rejo, Kendal, the average birth and weaning weight were 2.67 and 11.12 kg respectively (Mulyadi, 1987). Kihe (1992) in his research at Unit Pembibitan Ternak dan Hijauan Makanan Ternak Batu, Malang obtained the average birth weight, weaning weight (90 days) and pre-weaning ADG of Ettawa Cross goats as 2.93 ± 0.59 kg, 11.63 ± 1.58 kg and 97 g respectively.

The health data for the goats in the study by Basuki et al. (1980), disease occurences for Ettawa Cross, Bligon, Kacang and Saanen were Scabies 54%; 81%; 13% 9% and Conjunctivitis was 0%; 0%; 100%; 100%, respectively.

Based on the study results above, it is clear that Ettawa Cross goat productivity in Indonesia varies considerably. This is in agreement with the opinion of Sastry and Thomas (1976), Sorensen (1979), Gall (1981), Yousef (1982) and other reseachers who mentioned that there are many factors influencing animal production and reproduction. Those factors can be classified generally into two groups, namely internal factors (genetics) and external factors (climate, feed, health and management).

Materials and Methods

The materials used in this study were Ettawa Cross goats which belonged to farmers of the group of Ketawang Damai, Yogyakarta. Observations were taken on all goats, which at the beginning of this study involved 248 heads, consisting of 5 bucks, 127 does, 35 young and 81 kids.

Before the study, a survey was carried out on location of group housings which will be included in the study. Next, identification was given to animals to be used as sample. No intervention to the animal management was given. In each house selected, a card was put to record the data of production, reproduction, and health status. The data were recorded monthly including body weight, chest circumference, withers height, and body length.

The reproduction data observed were oestrus/heat period, service/conception, litter size, birth weight, weaning age and weaning weight

The health status observed were general health conditions of animals and faecal examination. Faecal examination was done in Laboratorium of Parasitology, Faculty of Veterinary Medicine, Gadjah Mada University.

In addition, animal feeds observation was also observed weekly, including the feeds variation. Feed samples were sent to Laboratory of Biochemistry, Faculty of Animal Husbandry. Gadjah Mada University to analyse its water content. In calculating crude protein (CP) and total digestible nutrient (TDN) intake, Feed Composition Table by Hartadi et al. (1980) was used.

Results and Discussions

Number and composition of animals

During the observation, there has been changes on the number and composition of animals caused by birth, mortality and mutation. Comparison of the anomals at the beginning and end of the observation is presented in Table 1.

This table showed that during one year observation there was population increase of 50 heads or 20.16%. Seven kids (2.82)%) were dead and 20 heads (8.06%) were sold.

Table 1. Number and composition of animals at the beginning and end of observation (heads)

	Beginning observation	End observatin	During observation
Bucks	5	4	1 was sold
Does pregnant	65	72	
lactating	59	44	1 was sold
dry	3	10	
Young male	14	35	12 was sold
female	21	63	6 was sold
Kids male	33	32	3 was dead
female	48	38	4 was dead
Total	248	298	

Reproduction data

All reproduction parameters involving the does or the bucks would be observed, however, because of time limitation, not all reproduction data could be taken. The reproduction data of the does recorded were birth rate, birth type, litter size, birth weight and offsprings sex. To the bucks, the number of does being mated during observation period were also recorded.

Birth. During the observation, it was found that there were 44 deliveries consisting of single kid were 14 does, twin kids were 27 does and triplet kids were 3 does.

Based on the number of litter, the available does were considered good enough, since 68.18% of them have more than one kid. Difficulty of parturition was detected once, which was caused by pre-natal foetus death. Of 44 parturition during the observation, 77 kids were obtained. Thus the average litter size in this goat herd was 1.75.

Birth weight. The lowest birth weight was 1.0 kg and the heaviest was 4.0 kg. Totally, the average birth weight was 2.59 ± 0.57 kg. The kid with 1.0 kg birth weight died one day after birth, probably its physical condition was too weak to suckle the doe immediately. The kid was born from the doe with triplet kids.

Birth weight of Ettawa Cross kids in this study was lower than those of Basuki et al. (1980), Mulyadi (1987) and Kihe (1992), who found in their study that the birth weight was respectively 3.3 kg, 2.67 kg and 2.93 kg. This was probably caused the does rations were elephant grass (*Pennisetum purpureum*) and concentrate (Basuki et al., 1980). Likewise the goats in Mulyadi's and Kihe's studies which belong to the state animal breeding centre. In contrast to the birth weight of goats in traditional farming conditions, studied by Ngadiyono *et al.* (1984) that was 1.71 kg, birth weight of kids in this study was higher. In Table 2 is presented the birth weight of kids born during the observation.

Table 2. Kids birth weight during observation (kg)

Birth type	Sex		Average
	Male	Female	
Single	2.51 ± 0.42	2.79 ± 0.51	2.65 ± 0.49
Twin	2.53 ± 0.59	2.32 ± 0.43	2.42 ± 0.54
Triplet	1.68 ± 0.48	1.43 ± 0.45	1.55 ± 0.46
Average	2.24 ± 0.26	2.18 ± 0.46	2.21 ± 0.47

Does mating. During observation 12 does was detected showing natural heat, and then mated to the available buck. In the group, there were 5 bucks, but only one was used. The number of does was 127 heads, they seemed to be adequately served by 2 or 3 bucks. Actually in this group, there were more than enough bucks.

Table 3. Body weight and size of observed kids

	Born	Age		
		30 days	60 days	90 days
Weight, kg	2.21±0.47	6.56±1.66	8.80±4.11	12.42±1.22
Chest cir.,cm	39.12±2.42	43.23±2.45	46.53±2.32	51.68±3.18
Withers height,cm	39.46±3.96	42.97±2.26	46.82±2.09	50.85±2.93
Length, cm	31.43±2.26	34.32+2.20	39.64±3.44	43.21±4.18

Table 4. Feed intake data during observation

	Body weight kg	DM		CP[a]		TDN[a]	
		kg	%	kg	%	kg	%
Pregnant does	40	1.21	3.0	0.177	14	0.753	62
Lactating does	32	1.72	5.3	0.187	11	0.874	51
Pregnant does	40	1.21	3.0	0.129	11	0.840	69
Lactating does	30	1.53	5.1	0.139	9	0.910	59

a Calculation based on Feed Composition Table by Hartadi et al. (1980).

Mating technique was applied by joining the doe that estroes into the buck pen for about 3 days. By this technique, in one oestrus period the doe would always become pregnant. It could be inferred that service/conception value was 1.00.

Production data

Several production data observed including body weight, chest circumferens, withers height and body length of the pre- weaning kids (Table 3).

Kid's average daily gain increase until 90 days old was 113.44 ± 0.63 g. This means that pre-weaning ADG of kids in this study was higher compared to Basuki et al.(1980) (71 g), Abdulgani and Warganegara (1980)(60 g), and Ngadiyono et al. (1984)(87 g) studies. This result is also higher than the studies by Mulyadi (1987) and Kihe (1992) who obtained the ADG were 93 g and 97 g, respectively. Thus, from the view of pre-weaning growth, kid's growth in this group management system better than those at The Animal Breeding Centre.

Table 4 presented the goat rations during observations. In this farmer's group, no difficulty in find green forages like Caliandra leaves, cassava leaves, and jackfruit leaves.

Compare with nutrition requirement, the CP and TDN intake during observation were not enough. So, if there was better nutrition intake maybe make higher productivity.

Doe performance data

Results of body weight weighing and body size measurements of the does are presented in Table 5.

Table 5. Body weight and size of the does

Body weight,	kg	40.30 ± 6.92
Heart girth,	cm	77.53 ± 5.70
Withers height,	cm	72.56 ± 6.14
Body length,	cm	62.81 ± 6.07
Hip width,	cm	15.69 ± 1.35

Since there has been no data yet available previously, these parameters cannot be compared.

Health condition and mortality

During the observation, one kid had a diarrhea but he recovered automatically. Faeces inspection

showed that the kid was infected by *Stongyloides sp.* worm.

Conclusions

It was concluded that in general Ettawa Cross goats kept under a group management system demontrated improved productivity in relation to goats raised under a conventional systems.

Literature Cited

Abdulgani, I. K. dan I. Warganegara. 1980. Some Productive Traits of the Goats at the Kalianda Ranch Jaka Utama Mixed Farming at Lampung. *Proceeding The Second Ruminant Seminar*. Bogor.

Basuki, P., W. Hardjosubroto dan Ngadiono. 1980. Performance of Etawah Cros, Bligon, Kacang and Saanen Cross Goats. *Proceedings The Second Ruminant Seminar*. Bogor.

Gall. C. 1981. *Goat Production*. Academic Press. London, New York, Toronto, San Fransisco, Sydney.

Hartadi, H., S. Reksohadiprodjo, S. Lebdosukojo dan A. D. Tillman. 1980. *Tabel-tabel dari Komposisi Bahan Makanan Ternak untuk Indonesia*. Gadjah Mada University Press. Yogyakarta.

Kihe, J. N. 1992. *Analisis Potensi Genetik Sifat-sifat Pertumbuhan Ternak Kambbing Peranakan Etawah Saat Lahir sampai Sapih Di Unit Pembibitan Ternak Dan Hijauan Makanan Ternak (UPTHMT) Batu, Malang*. Tesis S2. Fakultas Pasca Sarjana, Universitas Gadjah mada, Yogyakarta.

Mulyadi, H. 1987. *Potensi Fenotipik dan Genetik Sifat-sifat Produksi Kambing Peranakan Etawah di Balai Pembibitan Ternak Sumber Rejo Kendal*. Tesis. Fakultas Pasca Sarjana Universitas Gadjah Mada. Yogyakarta.

Ngadiono, N., P. Basuki dan G. Murdjito. 1984. Beberapa Data Performans Ternak Kambing yang Dipelihara Secara Tradisional di Daerah Pedesaan Sejak Lahir Sampai dengan Disapih. *Proceedings Pertemuan Ilmiah Penelitian Ruminansia Kecil*. Pusat Penelitian dan Pengembangan Peternakan, Balai Penelitian dan Pengembangan Pertanian, Departemen Pertanian. Jakarta.

Obst, J. M., T. Boyes, T. D. Chaniago. 1980. Reproductive Potential of Indonesian Sheep and Goats. *Proceedings The Second Ruminant Seminar*. Bogor.

Sastry, N. S. R. and C. K. Thomas. 1976. *Farm Animal Management*. Vikas Publishing House Pvt. Ltd. New Delhi, Bombay, Bangalore, Calcutta, Kanpur.

Sorensen. 1979. Animal Reproduction. McGraw-Hill Book Company. Printed by Cacho Hermanos, Inc. Corner Pines, Union Sts., Mandaluyong, Metro Manila.

Yousef, M. K. 1982. Animal Production in the Tropics. Praeger Publishers. CBS Educational and Professional Publishing a Division of CBS Inc. New York.