

Performances of Pregnant-Crossbred Ettawa Goats Given Pellet Concentrate Containing “*Sesbania grandiflora*”

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ABSTRACT

The use of by-product of fried-snack industry as a main material of mash concentrate and supplemented with fresh “*sesbania grandiflora*” for crossbred Etawa goats could maintain the productivity. But the mash concentrate intakes were decreased by increasing the levels of the fresh “*sesbania grandiflora*” leaf. This study was conducted to evaluate the performances of pregnant crossbreed-Ettawa goats given pellet concentrate containing “*sesbania grandiflora*” leaf. Sixteen pregnant-crossbreed Ettawa goats with the initial body weight of $34,6 \pm 3,4$ kg were divided into 2 groups of eight does each and placed in metabolic individual cages and given one of 2 type concentrates treatments (T₁: mash + fresh *sesbania grandiflora* leaf and T₂: pellet consist of mash and dry “*sesbania grandiflora*” leaf). The goats were fed basal diets of fresh field grass and banana peel, and concentrate consisted of rice bran, by-product of fried-snack industry, urea and mineral mix with the proportions of 47,5% : 47,5% : 3% : 2%. The variables observed were concentrate, field grass, total DM and water intakes; ADG and the birth weight of kids. The results showed that there were significant increase ($P < 0.05$) on pellet concentrate intakes, total dry matter intakes, ADG of does, and water intakes, but the field grass intakes and birth weight of kids were not significantly influenced ($P > 0.05$) by feeding pellet concentrate. There were tendencies, however, the field grass intakes of the goats fed pellet concentrate and the birth weight of kids were higher than those on the goats fed mash concentrate. It is concluded that feeding of pellet concentrate containing dry “*sesbania grandiflora*” leaf to pregnant-crossbred Etawa goats is more efficient than that of feeding mash concentrate with fresh “*sesbania grandiflora*” leaf. It is suggested that if the pregnant crossbreed-Etawa goats were fed pellet concentrate containing dry *sesbania* leaf, drinking water must be available ad-libitum.

Keywords: Pregnant-crossbred-Ettawa goats, Pellet concentrate, Dry matter and water intakes, ADG and Birth weight of kids.

INTRODUCTION

Crossbred Ettawa Goats in West Nusa Tenggara, Indonesia are being developed as a dual purposes goat type (meat and milk) to enhance nutritional status of local people (Asih *et al.*, 2015). These developments continue to be encouraged by local governments as milk producers to achieve fresh milk need of local people for suppressing malnutrition. However, until now there are not all farmers milking their goats for their nutritional status and their income due to low milk production of those goats, particularly in dry season because of lack feed availability (Asih *et al.*, 2016). To increase the milk production, the goats should be fed sufficient amount of local good quality feeds to avoid high money spending by considering low-purchasing power of farmers.

An exploration of potential locally by-product available feed were done on milking Crossbred Ettawa Goats (Asih *et al.*, 2014) and on growing-female Crossbred Ettawa Goats (Asih *et al.*, 2015) fed a concentrate consisted of 1:1 by-product of traditional fried snack industry (rontokan gorengan) and rice bran with 3% urea and 2% mineral mix could increase of milk production and maintained the growth rate of the goats, although the concentrate intakes of the goats were low due to the high fat content of the by-product of fried traditional snack. To elevate milk production the study had been done on the lactating Crossbred Ettawa does by feeding them with similar concentrate and different levels of *Sesbania grandiflora* leaf (Asih *et al.*, 2016). The results showed, however, the increased levels of *Sesbania grandiflora* leaf in does' rations reduced concentrate consumptions due to the goats prefer *Sesbania grandiflora* instead of those concentrate, and vice versa the digestibility of crude fiber and fat increased. It is expected that when the concentrate intakes could be higher than the former results, the goats' productivities could be also enhanced because the total dry matter intakes would be increased. To achieve this purpose, it is therefore very important to manipulate the concentrate and those leaf to be pellet form, so the does have no chance to select both of them. This agreement with Orden *et al.* (2014) who reported that feed intake of the lactating goats increased by feeding them the concentrates in form of pellets, and resulting in the increase of milk production.

Recently the preliminary study had been conducted on pregnant Crossbred Ettawa Goats fed concentrate pellet containing dry *Sesbania grandiflora* leaf by comparing to those goats fed the former mash concentrate to evaluate the performances of pregnant crossbred-Ettawa goats.

MATERIALS AND METHODS

The study was conducted in "Gopala goat farm" located in Sengkongo Village, West Lombok, by using sixteen pregnant-crossbred Ettawah goats (2 to 3 years old with the initial body weight of 34.6 ± 3.4 kg and in two-moth pregnancy) were divided into two groups of eight does and each group was given one of 2 type concentrates treatments (T₁: mash + fresh *sesbania grandiflora* leaf and T₂: pellet concentrate consisted of mash concentrate and dry "*sesbania grandiflora*" leaf). The goats were placed in metabolic individual cages and fed basal diets of fresh field grass, banana peel, and concentrate consisted of rice bran, by-product of fried-snack industry, urea and mineral mix with the proportions of 47,5% : 47,5% : 3% : 2%. The does were given 2 weeks adjustment time for cages environment and feeding with daily feeding management as shown in Table 1.

Daily feed intakes of each feed types and total daily DM intakes; ADG of does; water intakes were measured for 10 weeks; and birth weight of kids was weighted as soon as the kids were wiped. Data were analyzed using PROC GLM (Sas, 1990) and differences between treatment means were separated with T test.

Table 1. The amount of feed implementation to each treatment on pregnant goats on dry feed basis

Types of feeds (kg/head/day)	Treatments		Frequencies and times feeding
	T1 (Mash)	T2 (Pellet)	
Field grass (kg)	3	3	3 x a day (07:00; 12:00; 17:00)
Banana peel (kg)	1	1	1 x a day (07:30)
Fresh <i>sesbania leaf</i> (kg)	0.5	0**	1 x a day (08:00)
Concentrate (kg)*	0.5	0.7***	1 x a day (08:00)

* The concentrate was made up of by-product of fried traditional snack; rice bran; urea and mineral mix in proportion of 47.5%; 47.5%; 3% and 2% respectively.

** The does were not given fresh *sesbania leaf*, but it was given in dry weight and merged to pellet concentrate (T2).

*** Pellet concentrate consist of 0.5 kg concentrat mash + 200 g dry weight *sesbania leaf* is equal to 0.5 kg fresh *sesbania leaf*.

RESULTS AND DISCUSSION

Responses of pregnant crossbred Ettawa goats fed pellet concentrate containing dry *sesbania leaf* on dry matter (DM) intakes of each feed, total DM intakes, water intakes, ADG of the does and birth weight of the offspring were presented in Table 2. Fedding of pellet concentrate containing dry weight *sesbania leaf* to pregnant goats were significantly ($P < 0.05$) increased concentrate intakes, total DM intakes, water intakes and the ADG of the does. The increase of pellet concentrate intakes were not only enhanced the total DM intakes but also significantly elevated the DM intake per body weight of the does (Table 2). This finding was higher (3.68%) than those recommended by NRC (1981) that the need of daily DM of does is 3.2% of body weight. This might cause the ADG of the does was also significant increase. Significant increase of water intakes of goats fed pellet concentrate might be the goats' response to the dry *sesbania leaf* in pellet concentrate treatment. While in mash concentrate does were given fresh *sesbania leaf* which had high water content (almost 80%), so apart of does' drinking water need already supplied. Therefore, pregnant does which given pellet concentrate should be provided drinking water ad-libitum

In contrary, the intakes of field grass of the does and birth weight of the offspring, were not influenced by the form of the concentrates. However, there was a tendency that both those measurements elevated by pelleting the mash concentrate and the *sesbania leaf*. This manipulated method did not let the goats to select their preferred feeds and it resulted in increasing the total dry matter intakes and finally it had positive responses on their productivities.

Table 2. Dry matter intakes, ADG, water consumption of pregnant-crossbred Ettawa does, and the birth weight of the offspring.

Parameter (kg/head/day)	T1 (Mash)	T2 (Pellet)	SEM	P Value
DM Intake of feed				
Field grass (kg/day).	625.72 ^a	723.95 ^a	38.28	0.0892
Banana peel (kg/day)	153.4 ^a	153.4 ^a	0.000000	-
Concentrate (kg/day)	293.87 ^a	517.61 ^b	18.321	P<0.001
Sesbania leaf (kg/day)	95.50 ^a	0.00 ^b	-	-
Total DM intakes (kg/day)	1168.49 ^a	1394.35 ^b	43.44	0.0024
DM intakes per BW (%)	3.21 ^a	3.68 ^b	0.035	0.0304
Water intakes	341.25 ^a	1696.25 ^b	105.25	P<0.001
ADG (g/day)	128.75 ^a	167.00 ^b	10.83	0.0100
Birth weight (kg)	2.95 ^a	3.15 ^a	0.210	0.0700

CONCLUSION

It is concluded that feeding pellet concentrate containing dry “*sesbania grandiflora*” leaf to pregnant-crossbred Etawa goats is more efficient than that of feeding mash concentrate with fresh “*sesbania grandiflora*” leaf, particularly on total dry matter intakes for maintaining their offspring.

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