Effect of Addition Concentrate on Boerawa Goat against Performance Production Keep by farmer in Intensive System

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ABSTRACT

The goal of this study to determine the effect of addition concentrate on boerawa goat against performance production keep by farmer in intensive about 8 months old with an average initial weight of 21 kg. The research is divided into 4 treatment groups with 1 control. Addition of concentrate given since the beginning of the study, for preliminery and treatment it's about 5 months.The results showed that the addition of different concentrate level are not significantly affected performance production, such as ADG (R0; 0,13±0,01, R1; 0,16±0,02, R2; 0,16±0,03, and R3; 0,15±0,03) and feed conversion (R0; 7,19±1,47, R1; 6,237±1,21, R2; 6,29±1,12, and R3; 6,34±1,27). IOFC showed that addition concentrate is more efisien than control (R0; 349.106±70.372, R1; 440.957 ±75.178, R2; 441.204 ±10.3734, and R3; 430.801±80.455)

Key Words: Boerawa goat, Performance production

INTRODUCTION

The majority of goat types in Indonesia are Kacanggoat (*capra aegagrus hircus*) and Etawa breed (Edey, 1983). Goat in Indonesia are mainly raised for meat production, so that the production characteristics to concern are amount of annual produced offspring from a maternal parent and weight gain (Bradford, 1993). Boer goat has characteristics to produce meat compared with other types of goats. These characteristics help Boer goat to successfully improve performance of goat production amongst local goats trough cross breeding.Some important results deserve to note include improvement of birth weight, average daily gain , weaning weight, yearling weight, calving interval, and carcass quality (Waldron *et al*., 1997; Cameron *et al*., 2001). These are main characteristics influencing meat goat production. Hadi (2006) reported that the average of Boerawa goat birth weight was 3.39 kg and 24.80 kg at weaning age. Adhianto and Sulastri (2007) suggested that Boerawa goat had 2.9 kg birth weight, 19.8 kg weight at weaning, and 40.9 kg at 1 year. There had been not much efforts conducted to find out Boerawa goat performance raised intensively, therefore this research was to be conducted to find out potentials of Boerawa goat which was raised intensively with concentrate addition to its feed.

MATERIALS AND METHODS

This research used 20 male Boer goats of 4-5 months with average initial weight of 21 kg.Instruments in this research were individual cages of 150 cm x 100 cm used to raise Boer goat during the research. Cages were equipped with vegetation feed container, plastic bucket used for concentrate feed container, and plastic bucket for drinking. Sickle and cleaver were used to chop and cut vegetation feed. Digital scale with 50 kg capacity and 10 g accuracy was used to scale feed and goat. Daily diary was used to record all activities during research. Coconut stick broom and regular broom were used to clean animal feces the cage. Some laboratory instruments were used to analyze feed proximate.

The goats were randomly located in the individual cages. Goat raising time was 5 months. Two initial months were used for adaptation and 3 other months were for treatments. Raising and feeding of experiment goats were conducted in the chin cages which was divided into

individual cage partitions of 150 cm x 100 cm. This experiment used basal feed in form of king grass (*Pennisetum purpureum*) and protein concentrate coming from fish powder, coconut oilcake, coffee skin, paddy bran, tapioca waste (*onggok*), molasses, and premix, which were formulated with 13%, 16%, and 19% protein content. Feeding was based on estimation of 3.5% body weight in forms of 60% dry material of basal feed and 40% protein concentrate. The feed composition was presented in Table 1.

Table 1. Composition of feed

Treatment	Composition of feed						
	Dry matter	Ash	Crude Protein	Extract Eter	Crude Fiber	BETN	TDN*
R0	28,78	8,62	14,89	12,91	28,50	35,08	60,55
R1	51,38	13,03	15,14	10,35	27,14	29,50	66,52
R2	52,26	10,90	15,29	11,00	26,80	31,00	71,40
R3	51,78	10,49	16,58	9,12	25,75	32,58	73,48

* TDN (total digestible nutrient) was estimated by using equation of Hartadi *et al*. (1997)

During raising period, feed sampling and recording body weight were conducted.Variables to observe in this experiments were:

Dry matter intake (DMI), crude proteint intake (CPI), and total digestible nutrient (TDN). To find out the content of DM, CP, and TDN proximate analysis was conducted on the feed sample. After content of DM, CP, and TDNwere found out, DMI, CPI, and TDN intake could be estimated.

Average daily gain (ADG),body weigth was measured once in every 2 weeks in the morning before the goat fed and drink was given. The ADG could be found by dividing the difference of weight with weighing time period.

The feed conversion was estimated based on the comparison of sum of DMI and ADG.

Feed cost per gain (Setyono, 2006):

$$\text{feed cost per gain} = \frac{\text{intake } \left(\frac{\text{kg}}{\text{day}}\right) \text{ x feed cost per kilogram}}{\text{ADG}}$$

Income over feed cost (IOFC) (Setyono, 2006):

IOFC = [ADG (kg) x price per kg body weight (kg)] –

[feed intake (kg) x feed cost (Rp)]

Collected information during experiment was used to find out and test production parameter of Boerawa goat. Analysis of variance was conducted according to one way of anova, and treatment difference average was tested by using *Duncan's New multiple Range Test* (DMRT) (Steel and Torrie, 1991).

RESULT AND DISCUSSION

In the efforts of improving Boer goat growth, the average DMI in the treatment groups was no significantly difference. The concentrate addition in the treatment R1, R2, and R3 in fact did not immediately improve DMI. The average CPI in treatment groups R1, R2, and R3 receiving concentrate addition was significant difference ($P< 0.01$) compared with R0, while the average CPI between group treatment that received concentrate addition was no significant difference. However, along increasing CP content in feed R1, R2, and R3, the CPI pattern trends were also more increasing in R1, R2, and R3. Generally, the concentrate

addition to treatment groups seemed to be able to improve CPI, even though not influential to DMI.

Table 2. DMI, CPI, CFI and TDN

Variable Observation	Feed treatment			
	R0	R1	R2	R3
Intake(g/kg $BB^{0,75}$)				
• DM ^{ns}	91,37±0,14	90,93±0,18	90,49±0,16	92,52±0,26
• CP	9,21±0,014^{a}	21,94±0,06^{b}	24,63±0,04^{b}	28,66±0,08^{b}
• CF^{ns}	16,39±0,03	16,98±0,03	16,80±0,03	17,03±0,05
• TDN ^{ns}	51,79±0,08	48,95±0,10	49,91±0,08	51,46±0,16

Annotation:^{ab}different letter in the same row indicates significant difference (P<0,01)
^{ns} non-significant, DM: Dry Matter, CP: Crude Protein, CF: Crude Fiber, TDN: *Total Digestible Nutrient*

The Crude Fiber and TDN intake in this experiment was no significant difference between treatments R0, R1, R2, and R3. Soto-Novarro et *al*. (2004) also reported that NDF intake and TDN was no significant difference between feed treatment and concentrate levels of 13% and 19% consumed by Boer and Spanish cross breed goats.

The analysis of variance was to find out the influence of main factor of feed treatment to Boerawa goat ADG and it indicated that the average of ADG between treatment groups was no significant difference between R0, R1, R2, and R3. The ADG value in treatment groups R1, R2, and R3 had higher tendencies compared with R0. This was caused by higher protein feed consumption than R0.

The average of ADG of Boer goat based on feed treatment groups is presented in Table 3.

Table 3. ADG, feed conversion, and feed cost per gain of Boerawa goat

Variable Observation	Feed Treatments			
	R0	R1	R2	R3
ADG (kg/day) ^{ns}	0,13±0,01	0,16±0,02	0,16±0,03	0,15±0,03
Feed Conversion ^{ns}	7,19±1,47	6,237±1,21	6,29±1,12	6,34±1,27
Feed cost per Gain (Rp/kg)	11.299±2.803	9.843±1.904	10.054±1.837	10.390±2.158
IOFC (Rp)	349.106±70.372	440.957 ±75.178	441.204 ±10.3734	430.801±80.455

Annotation:ns: nosignificant

The statistical analysis result of feed conversion average in treatment groups was no significant difference but the feed conversion average value in R0 was likely higher than R1, R2, and R3.The feed conversion is an indicator to determine feed use efficiency, which is influenced by feed quality, body weight increase value, and digestibility value (Anggorodi, 1980).

The goat farming productivity improvement will be better to be followed with farmer's income improvement. In the intensive Boerawa goat raising with concentrate addition based on agro-industrial waste is in fact able to improve farmer's income. This research found estimation of feed cost per gain and income over feed cost which is presented in Table 3.

The statistical analysis result showed that the average feed cost per gain valuesbetween treatment groups were no significantdifferent. The feed cost per gain value of R0 was likely higher than R1, R2, and R3. R0 was the control treatment group which was feed with forage. Giving forage feed was in fact not more economical than addition with protein concentrate. The concentrate addition improve feed cost efficiency, and

The research result showed that IOFC of R0 was lesser than R1, R2, and R3. It suggested that additional concentrate treatment could improve farmer's income than conventional feed. In

common, all research results illustrate that the Boerawa goat raising intensively by adding protein concentrate is able to provide opportunity to improve goat productivity and financial benefit for farmers. In the future, the introduction of additional protein concentrate to the feed needs to be done and socialized to Boerawa goat farmers, so that they can enjoy their cattle raising business optimally.

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