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SUSTAINABLE LIVESTOCK PRODUCTION IN THE PRESPECTIVE OF FOOD SECURITY, POLICY, GENETIC RESOURCES, AND CLIMATE CHANGE

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CONTENTS

ORAL PRESENTATION

Behavior of Garut Sheep Fed with Mung Bean Sprouts Waste and Grass Diets and Night Feeding Management

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ABSTRACT

The aim of this research was to investigate the effects of diet containing mung bean sprouts waste as grass substitution and night feeding management on behaviour of garut sheep. Twelve growing male lambs of the garut sheep were used in this experiment. The diets that formulated on dry matter (DM) basis were ration G (40% native grass + 60% concentrate) and ration W (40% of mung bean sprouts waste + 60% concentrate). The feeding management were Daylight-Feeding (DF: feeding time at 6 am) and Night-Feeding (NF: feeding time at 6 pm). This experiment used randomized block design with four combinations of diet and feeding management (G-DF, G-NF, W-DF,W-NF) as treatments. The animals were reared in individual cages and fed the diets at a daily rate of 4 % DM/kg of BW. The behavior were recorded by CCTV during experiment. Parameters of behavior included ingestive, resting, and agonistic were investigated from CCTV records with focal sampling method and one-zero time recording. Data that observed on daylight and night period were analyzed by using Anova. Ingestive behavior that observed on daylight and night period were significantly affected by treatment, but resting behavior were significant on night period observation. Meanwhile agonistic behavior that observed on daylight and night period were not significant. On daylight period, ingestive behavior frequency of the sheep with G-DF dan W-DF were higher than G-NF and W-NF, but showed the contrary result on the night period. Resting behavior frecuency of the sheep with G-DF dan W-DF were higher than G-NF and W-NF on night period and tends to be otherwise in the daylight period. It can be concluded that there were differences in ingestive and resting behavior of the garut sheep between daylight and night time feeding management, both fed with mung bean sprouts waste and grass diets.

Key Words: Behavior, Garut sheep, Mung bean sprouts waste, Feeding management

INTRODUCTION

In addition to genetic factors, environmental influence the behavior of animals. At feeding behavior, daily feeding patterns somewhat characteristic of the species involved but are also affected by environmental conditions such as characteristic of the feed supply and season (Ewing et al. 1999).

Unconventional feed utilization based market waste as a substitute for conventional forage feed is intended to increase the productivity of livestock. One of the waste market potential to be used as animal feed is mung bean sprouts waste. Mung bean sprouts waste as a feed sheep has been shown to improve growth performance (Ifafah et al., 2011 and Rahayu et al., 2011). In addition, productivity gains may also allegedly made by considering the local micro-climate phenomenon. Daily temperature fluctuations and high humidity in the tropics can be utilized in feeding management practices.

However, the use of unconventional feed (mung bean sprouts waste) and management implementation night feeding which is intended to improve the growth performance of sheep, allegedly also affect sheep behavior, especially behavior related to stress (ingestive, resting, agonistic), thus causing decreased welfare. Therefore, this study aimed to investigate the effects of diet containing mung bean sprouts waste as grass substitution and night feeding management on behavior of the garut sheep.

MATERIALS AND METHODS

General: Twelve growing male lambs (5-7 months of age and average body weight ± 15 kg) of the garut sheep, were used in this experiment for three months. The diets that formulated on dry matter (DM) basis were ration G (containing 40% native grass + 60% concentrate) and ration W (containing 40% of mung bean sprouts waste + 60% concentrate). The feeding management were Daylight-Feeding (DF: feeding time at 6 am) and Night-Feeding (NF :feeding time at 6 pm). The animals were reared in individual cages and fed the diets at a daily rate of 4 % DM/kg of BW. The behavior of the sheep were recorded by CCTV during experiment. Parameters of behavior included ingestive (In), resting (Rt), and agonistic (Ag) were investigated from CCTV records with focal sampling method and one-zero time recording (Altmann, 1974). Observation of behavior on each animal were performed for 5 minutes per hour for 24 hours during 7 days in mid-experiment.

Statistics: This experiment used randomized block design with four combinations of diet and feeding management (G-DF, G-NF, W-DF, W-NF) as treatments. Data frequency of behavior that observed on daylight and night period were analyzed by using Anova.

RESULTS AND DISCUSSION

Ingestive behavior that observed on daylight and night period were significantly affected by treatment, but resting behavior were significant on night period observation (table 1 and 2). Meanwhile agonistic behavior that observed on daylight and night period were not significant.

Table 1. Frequency of ingestive, resting, agonistic behaviour of the sheep at the daylight period

Parameter	G-DF	G-NF	W-DF	W-NF
Ingestive (%)	52.54±5.71A	20.81±6.11B	56.12±3.72A	18.41±3.73B
Resting (%)	37.16±4.73	64.03±16.28	34.71±10.01	55.54±15.16
Agonistic (%)	2.91±0.56	2.99±0.82	2.89±0.46	3.46±0.66

Note: $p<0.01$ highly significant, capitale case

Table 2. Frequency of Ingestive, resting, agonistic behaviour of the sheep at the night period

Parameter	G-DF	G-NF	W-DF	W-NF
Ingestive (%)	19.99±6.21b	43.84±6.15a	17.46±3.93b	40.21±12.25a
Resting (%)	75.57±3.41A	45.31±10.41B	80.24±4.19A	37.14±7.91B
Agonistic (%)	2.62±0.38	2.85±0.72	2.50±0.17	3.30±0.81

Note: $p<0.01$ highly significant, capitale case
$p<0.05$ significant, lower case

On daylight period, ingestive behavior frequency of the sheep with G-DF dan W-DF were higher than G-NF and W-NF, but showed the contrary result on the night period. Resting behavior frecuency of the sheep with G-DF dan W-DF were higher than G-NF and W-NF on night period and tend to be otherwise in the daylight period. Daily patterns of ingestive, resting and agonistic behavior of the sheep can be seen in pigure 1,2,3.

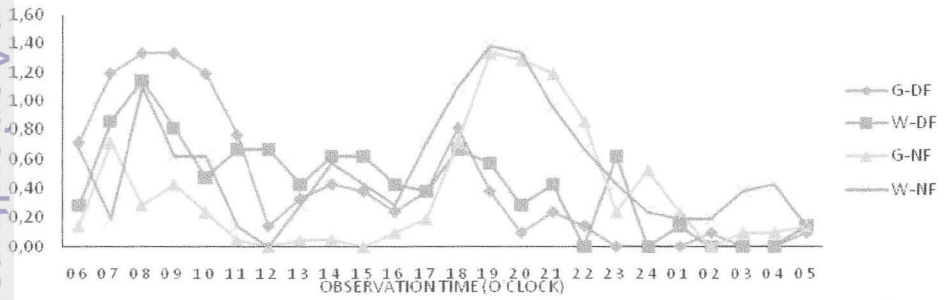

Figure 1. Pattern of ingestive behavior that observed 5 minutes per hour for 24 hours

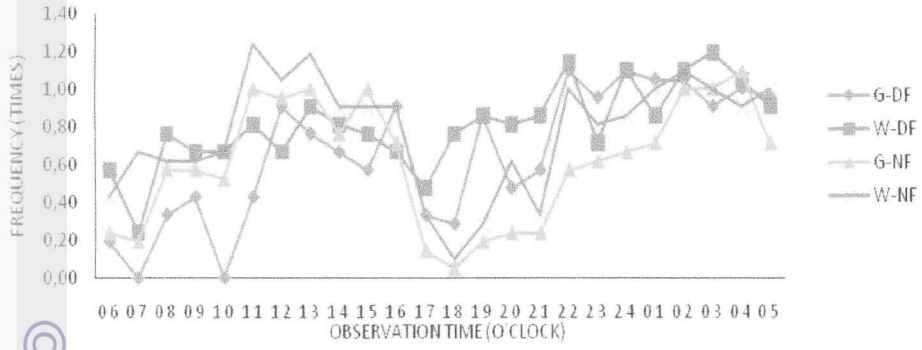

Figure 2. Pattern of resting behavior that observed 5 minutes per hour for 24 hours

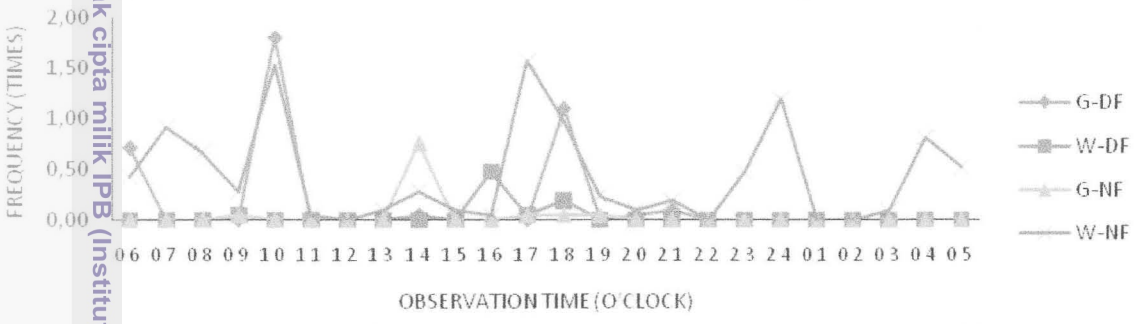

Figure 3. Pattern of agonistic behavior that observed 5 minutes per hour for 24 hours

Result showed that there was same pattern for ingestive and resting behaviour because grass and mung bean sprout waste had same nutrient which is same number of fiber in both diet (Ewing et al. 1999). But based on the different feeding, there was different in the ingestive and resting behaviour. The G-DF and W-DF had same pattern for ingestive and resting behaviour, but other wise in G-NF and W-NF pattern related with the treatment. Based on pattern agonistic, result showed that G-DF and W-NF had same pattern. It indicates that W-NF did not make the animal stress because it was same with the G-DF as control.

CONCLUSION

It can be concluded that there were differences in ingestive and resting behavior of the garut sheep between daylight and night time feeding management, both fed with mung bean sprouts waste or grass diets. Mung bean sprout waste feeding in the night (W-NF) did not cause stress in the garut sheep.

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