The Effect of Different Land and Chicken Manure Mollases Block (KAMBLOK) As Feed Supplement on the Heat Tolerance Coefficiant and Body Weight Gain of Fat Tail Sheep

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ABSTRACT

Using manure laying hens as feed supplement was Chicken Manure Mollases Block (KAMBLOK). Laying hen manure contains 28% crude fiber and protein 11.3%. Results of this study were expected to be used as farmers' guidelines and consideration in Fat-Tailed Sheep (FTS) rearing management and the development of livestock. This study was conducted in two places were lowland (Payaman Village, Indonesia-30 m asl) and highland (AgriRanch, Batu, Indonesia-700 m asl). The purpose was to study the effect of KAMBLOK to environmental adaptability expressed by the value of HTC and daily weight gain. The materials used were 10 heads male FTS ages 9-12 months at each land. Feed were elephant grass, concentrate and KAMBLOK. Water was ad-libitum. The method was experiment and direct observation. The variables were Heat Tolerance Coefficient and body weight gain. HTC in the highlands was 2.10±0.02, while FTS in lowland showed 2.11±0.02. Body weight gain in the lowlands was 85.33±4.86 g/day, while the body weight in the highlands was 117.33±6.25 g/day. The conclusion was different land and KAMBLOK did not significantly affect of HTC. Future studies suggested to use FTS with the same rearing management in different lands to obtain the rearing of an effective and efficient FTS.

Keywords: Lowland, Highland, Respiratory rate, Body temperature, Environmental temperature

INTRODUCTION

Fat Tailed Sheeps were small ruminants' potential as a source of protein and many people reared on farms (Rosyidi, 2009). Theywere animals that spread in Indonesia and the largest cultivated in East Java (Sodiq and Tawfik, 2004). The problem was traditional rearing system that was less attentive to the needs of livestock feed and the resulting development was not optimal, so we need additional feed to fullfil the nutritional needs.

Ram had a body weight greater than ewes at the same age (Yusran, 2001). Yani (2006) suggested that the growth of livestock ram generally faster at the same age than the ewe. Sheeps were experiencing slower growth curve beginning and increased in the age of 3-4 months and dropped back to reach adulthood body. Growth was generally measured by weight and height. Lambs reached 75% weight of an adult at a yearage and 25% after six months later at 18 months by feed according to their needs (Sodiq and Tawfik, 2004).

Productivity FTS was the result of the interaction of genetic and environment factor (Aldomy et al., 2009). Genetic factors determined the ability of production, while the environmental factor supported factor to be able to produce optimal livestock according to their

abilities. Environmental factors can be classified into two, namely the environmental factors that can be controlled, such as feed quality and rearing management as well as environmental factors that cannot be controlled, such as environmental temperature (weather and climate), the intensity of solar radiation, humidity and length of exposure to sunlight (Ben et al., 2011). The ambient temperature posed a direct influence on the livestock, for example, stress can be measured by looking at the respiratory rate and body temperature as a parameter for estimating the adaptability of livestock.

Sheepswere ruminant livestock types tend to experience heat stress caused by microbes in the rumen (Philips, 2001). Heat or cold stress was expressed by the adaptability of livestock or Heat Tolerance Coefficient (HTC). Previous studies conducted on cattle crossbred (Limousine and PO-Limpo) females that the HTC in the lowlands was 2.18 and the highland was 2.20 (Widada et al., 2013). This became the basis that the altitude also affected the sheep.

Based on the explanation, the research on the effect of altitude difference to the value of HTC FTS had not been done. This research needed to be done, so it can be determined in accordance with the rearing system of sheep adaptability in a region or a specific altitude.

MATERIALS AND METHODS

General. The material used in this study was 20 FTS (9-10 months and 20-24 kg) with details of 10 LEC in highland and 10 animals in the lowlands. Sheeps were fed byelephant grass as a source of fiber, and concentrate and KAMBLOK as supporting feed.

Statistics. The method used was descriptive with direct observations at both locations. Observations value of HTC every two times a day at most low ambient (morning) and the highest (noon) temperature. Sampling using purposive sampling, which samples based on certain criteria (Widada et al., 2013).

RESULTS AND DISCUSSION

Effect of Altitude on the Heat Tolerance Coefficiant Fat Tailed Sheep

HTC value related to body temperature and respiratory rate. Environmental and temperature conditions, activities, feed and water consumption affected the body temperature and respiratory rate, and the value of HTC. The ambient temperature might affected the condition of livestock, the higher the ambient temperature resulted in exposing to heat stress, then it disrupted the physiological functions of livestock and decreased immunity (Mader et al, 2006). Rachmawati, et al. (2008) stated that the ambient temperature could affect the body temperature, grazing, besides livestock were exposed to high temperatures will be more drinking and eating less to regulate their body temperature.

Observations HTC in the highlands and lowlands indicated that HTC in two altitude were not much different. Sheep were in the lowlands have HTC of 2.11±0.02, while livestock in the highlands HTC showed value of 2.10±0.02. This was caused by environmental conditions sheep were still in a comfortable condition. Sukaryani (2011) stated that Thermoneutral Zone (TNZ) for sheep in the rearing of the environment was at a temperature between 22-31°C. Livestock tried to increase heat production in the body if the ambient temperature was getting lower, otherwise the sheep performed evaporation to release heat when the ambient temperature increases.

The difference on each animal in both altitude, because of differences in body size and durability of each animal to environmental conditions. Son (1994) explained that livestock body size affected HTC. The smaller the size of the body of cattle increased the value of HTC, this was caused by small animals were more breathing to reduce the heat in the body.

Results of statistical analysis showed that a different lands did not affect the value of HTC. This was presumably because the animals had adapted to their respective environments. Basics parameters used to estimate the adaptability of livestock were body temperature and respiratory rate. Arifin et al. (2013) stated that the respiratory rate is increased when the body temperature increases and will also affect the value of HTC.

Weight Body Gain of Fat Tailed Sheep at Different Altitude

Weight gain is an increase in the volume that will occur when the feed consumed exceed the basic necessities of life, excess nutrients consumed will be converted into sinew and fat (Williamson and Payne, 1993).Body weight gain in the lowlands of 85.33±4.86 g/day, while the weight gain of fat tailed sheep in the highlands was 117.33±6.25 g/day. The difference was caused by different environmental conditions, livestock in the lowlands would be more metabolized in the body, thus affecting the digestibility of feed. This was in accordance with the opinion of Parakkasi (1999) that feed conversion was determined by several factors: the temperature of the environment, genetic potential, feed nutrients, energy content and disease. The observation compared with the results of Wanto et al. (2014) that daily weight gains without given additional feed were 82.00±7.80 g/day in the lowlands and 110.95±13.27 g/day in the highlands, then daily weight gain by KAMBLOK was higher than those not given KAMBLOK. This was in accordance with the opinion of Farizal (2008) reported in their study that the addition of Urea Mollasses Block and weight gain could improve sheep. Environmental conditions affecting feed intake and utilization, environmental conditions with high temperatures (in the lowlands), the cattle would multiply drinking and reduced feed intake, in contrast to the environment was low (at high altitude), cattle would increase feed intake and reduce drinking. Rachmawati, et al. (2008) stated that the ambient temperature could affect the body temperature of cattle and grazing (eating). Livestockswere in an environment with higher temperatures drinking and reduce feed consumption, due to regulate their body temperature resulting in decreased feed efficiency and disrupted the activities of the organs of the body.

The utilization of feed nutrients also differ in cattle that were in the lowlands and the highlands. Livestock in the lowlands would draw heavily on the feed nutrients for energy as breathing was not done by livestock in the highlands. Awabien (2007) explained that affects the respiratory needs of the body in certain circumstances, so that the need for such nutrients, oxygen and heat could be fulfilled.Statistical analysis showed that the altitude affects daily weight gain. It was suspected the influence of environmental temperature different circumstances, so that the feed conversion in a different body, in accordance with the opinion of Parakkasi (1999) that feed conversion was determined by several factors, namely the temperature of the environment, genetic potential, feed nutrients, energy content and disease.

CONCLUSIONS

Based on the results of this study, it can be concluded that: (1) Body temperature in the lowlands was higher than the temperature of cattle in the highlands, (2) Respiratory frequency of malesin lowland were higher than in the highlands, and (3) Elevations of different altitude did not affect the HTC FTS value of males.

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