DIFFERENCES IN FEEDING BEHAVIOR OF EXTENSIVE AND INTENSIVE GRAZING OF BALINESE CATTLE IN MANGGARAI

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Abstract: This study aims to determine the differences in feeding behavior of Balinese cattle (*Bos Sondaicus*) raised extensively and intensively. This observation used 10 Balinese cattle with an average age of 1-2 years. This observation was conducted in Manggarai Regency. The data obtained were analyzed descriptively, variables included frequency of grazing and rumination, duration of grazing and rumination of extensively and intensively reared Balinese cattle. In the observation results, the frequency of grazing in intensively reared Balinese cows was 1 time and in extensively reared cows 2 times, in the frequency of rumination in intensively reared cows 200 times and in extensively reared cows 110 times, in the duration of grazing in intensively reared Balinese cows 30.00 minutes and in extensively reared cows 32.00 minutes, and in the duration of rumination in intensively reared Balinese cows 40.00 minutes and in extensively reared cows 33.00 minutes.

Keywords: *Bali cattle, Frequency, Duration, Rumination, Grazing*

INTRODUCTION

Bali cattle (Bos sondaicus) is a germplasm in Indonesia that is widely distributed in Bali, West Nusa Tenggara, East Nusa Tenggara, Sulawesi and Papua. Bali cattle are one of Indonesia's indigenous cattle breeds that have several advantages (Nurhakiki and Halizah, 2020). Currently, the total population of Bali cattle in Indonesia is more than 3 million heads or 26% of the total cattle population in Indonesia (Nurwanty and Haary, 2016). According to BPS data from East Nusa Tenggara Province, the number of Bali cattle in Manggarai Regency in 2021 reached 26,815 and in 2022 the number reached 27,339.

Cattle include livestock that have a large body posture, have horn characteristics, have a nervous nature (like kicking), large body weight of Balinese cattle. In one year, Balinese cattle can give birth once, are easy to control and have good fiber digestibility (Rahmi, 2022). Livestock behavior can be defined as a series of movements that occur intentionally or unintentionally from an animal. Livestock behavior, especially eating and drinking, is different for each animal and has certain characteristics to meet its needs. Livestock eating behavior can be influenced by several factors, one of which is maintenance management.

Balinese cattle rearing is divided into two systems: extensive and intensive. Extensive husbandry is a way of keeping livestock outside of cages, in pastures, or in forests. Livestock are allowed to graze on nature or crops that are not used for agriculture. This maintenance system is also known as traditional pattern maintenance. The advantages of the extensive rearing system are, saving the cost of making cages, saving feed costs, little labor costs, no need to worry about the density of cages that can cause disease. The extensive rearing system releases livestock in pastures consisting of several males and females (Graser, 2014).

The intensive rearing system is modern rearing that uses the latest technology that makes it easier for farmers to maximize the growth and performance of their livestock. The advantages of an intensive rearing system are as follows, facilitate feeding, facilitate cleaning of cages, facilitate disease management, uniformity of weight and high egg productivity, facilitate the harvest process. An intensive rearing system is a rearing system where cows receive more regular or routine treatment in terms of feeding, cleaning cages, bathing cows, weighing, controlling diseases and so on (Sudarmono and Sugeng, 2019).

From the description of the problems described above, this research was conducted to evaluate the eating behavior of Balinese cattle (Bos sondaicus) with the title "Differences in Feeding Behavior of Balinese Cattle (Bos sondaicus) Extensively and Intensively in Manggarai" to see differences in terms of frequency and duration of Balinese cattle raised with extensive and intensive systems.

METHOD

There were 10 Balinese cattle observed in this study. The average age of the cattle observed was 1-2 years. The research location for Balinese cattle with extensive rearing system was conducted in Karot Village and the research location for Balinese cattle with intensive rearing system was conducted in Wali Village. Variables in this study include frequency of grazing and ruminansi as well as duration of grazing and ruminansi of Balinese cows raised extensively and intensively.

Data analysis used in this study used descriptive analysis. This descriptive analysis aims to describe the differences in feeding behavior of extensively and intensively reared Balinese cattle based on data obtained from the research. The data analyzed includes the frequency of grazing and rumination, duration of grazing and rumination of Balinese cattle raised extensively and intensively. Data obtained from this study will be presented in graphical form.

RESULT

Intensive and Extensive Grazing Frequency of Balinese Cattle

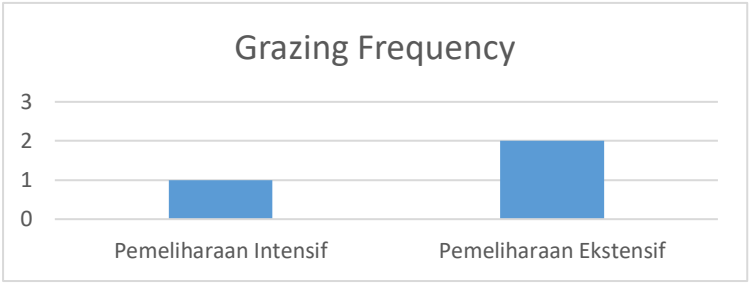
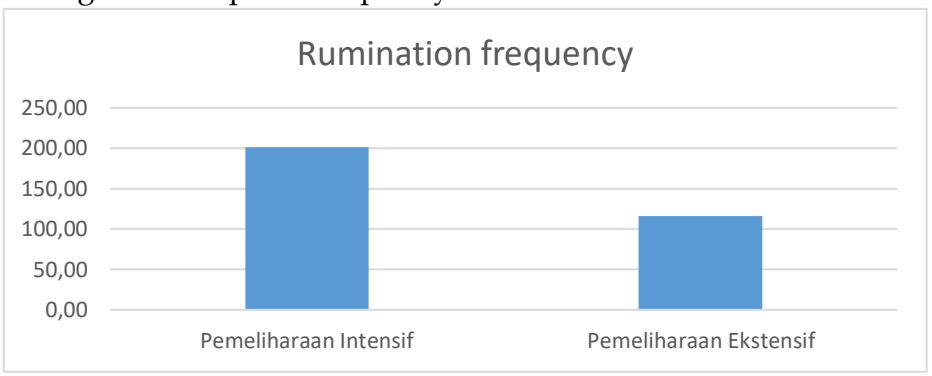


Figure 1. Graph of Intensive and Extensive Grazing Frequency of Balinese Cattle

Intensive and Extensive Bali Cattle Rumination Frequency

Figure 2. Graph of Frequency of Rumination of Intensive and



Extensive Balinese Cattle

Intensive and Extensive Grazing and Rumination Duration of Balinese Cattle

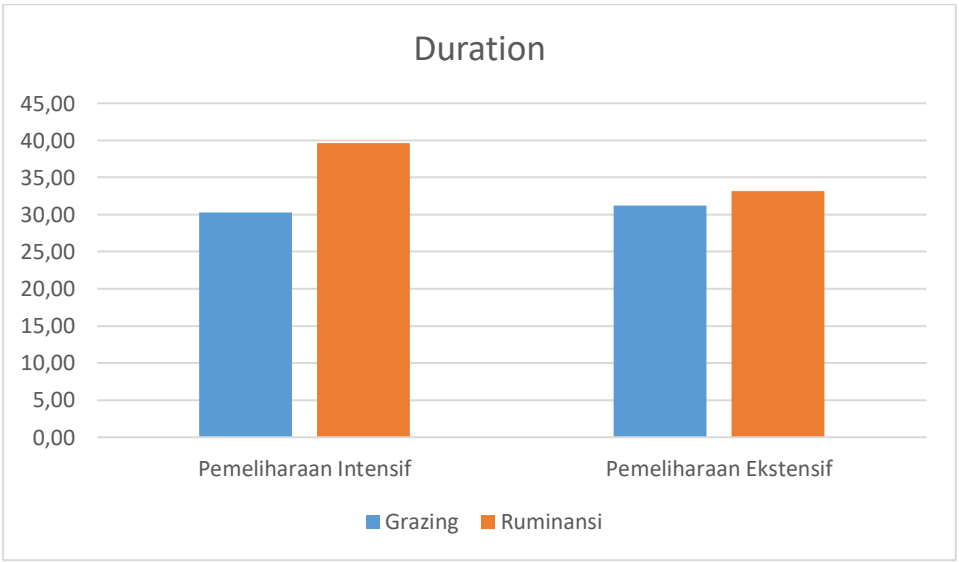


Figure 3. Graph of grazing duration and grazing duration of intensive and extensive Bali cattle.

DISCUSSION

Intensive and Extensive Grazing Frequency of Balinese Cattle

Feeding behavior is an important activity performed by animals or livestock in obtaining nutrients. Feeding behavior in cattle differs according to the rearing system applied by the farmer. The grazing system (extensive) is different from the feeding behavior of cattle in cages (intensive). Feeding behavior in grazed cattle is very dependent on the basic pattern of eating behavior of the cattle itself, cattle tend to move actively in search of food and can determine the type of food to be eaten (Kusuma et al., 2015).

Grazing is where animals or livestock carry out activities to eat grass or other plants that grow on open land such as in pastures. Grazing activity in cattle has the characteristics of a bowed head, bringing the head closer to the grass then taking the grass using the tongue, with the lower teeth and pulling the grass until it is separated from the stem. This is in line with the opinion of (Kocu et al., 2017) which states that the characteristics of grazing Balinese cattle include head bowing, bringing the mouth closer to the grass, sticking out the tongue, tying the tongue to the grass and cutting the grass with the teeth. Grazing frequency is the number of times a livestock performs grazing activities in the morning, afternoon and evening.

The observation of grazing frequency in Balinese cattle in Langke Rembong Sub-district is presented in Figure 1. The intensive cattle rearing system is cattle rearing system carried out in cages from the beginning until they are sold (Nurhakiki & Halizah, 2020). Based on the field results shown in Figure 1, which states that intensive maintenance has a grazing frequency of 1 time. Grazing once a day in intensively reared cattle is a way to balance the natural needs of livestock with strict control over feed.

Meanwhile, extensive rearing is a rearing system in which the farmer's interference with his livestock is almost non-existent (Sugeng, 2015). Based on the field results shown in Figure 1, the extensively reared cattle have a grazing frequency of 2 times. The grazing frequency of 2 times

a day in extensively reared cattle aims at feed quality and sustainable use of grazing land. The difference in grazing frequency between intensively and extensively reared cattle is caused by the eating behavior of Balinese cattle. This is in line with the opinion of (Rembo et al., 2021) which states that the nutritional value of feed available on pastures affects feed consumption and feed efficiency of Balinese cattle. How to obtain nutrients can be obtained by eating activity behavior.

Intensive and Extensive Bali Cattle Rumination Frequency

Rumination is a process of cattle grazing, eating and chewing. The rumination activity of cattle begins with walking to a comfortable place (shade), after a while the cattle will ruminate, known by seeing the activity of chewing food but the food is not visible from the outside. Balinese cattle perform rumination frequency by standing and while sleeping. This is in line with the opinion of (Munandar et al., 2022) which states that cows perform rumination activities while standing.

The frequency of rumination in intensively and extensively reared Balinese cattle in Langke Rembong Subdistrict is presented in Figure 2 which shows that there is a difference in the frequency of intensively and extensively reared ruminants. The frequency of intensively reared ruminansi is 200.00 times, while in extensive rearing the frequency of ruminansi is 110.00 times. This can be caused because the amount of grass consumed by livestock is not much so that the rumination process is shorter. The results of previous studies the frequency of rumination activity tends to be lower obtained by ongole cows compared to Balinese cows. This is due to the faster digesta indicator of ongole cows so that the rumen is empty quickly and the frequency of feed consumption increases (Aling et al., 2020).

The higher frequency of rumination in intensively reared cattle is due to more nutrient-dense and finer feeds, as well as more frequent and regular feeding. In addition, because cattle in intensive systems eat a more structured diet, they need to ruminate more frequently to digest feed effectively. Meanwhile, in extensive rearing, coarser and less controlled

feeds and longer grazing times reduce the need for frequent rumination (Suryani, 2022). The solid feed given to Balinese cattle is usually concentrated, which contains energy, protein, minerals and vitamins needed to support the growth and production of cattle.

Intensive and Extensive Grazing Duration of Balinese Cattle

Duration of grazing is the amount of time an animal eats in the morning, afternoon and evening. Duration of grazing is the length of the daily meal with how long the Balinese cattle eat. Abundant feed quantity can prolong the duration of grazing activity in cattle. Grazing activity is influenced by several factors, namely quantity, crude fiber and feed form. (Wiyono et al., 2022).

The duration of grazing of intensively and extensively reared Balinese cattle in Langke Rembong District shows a difference as shown in Figure 3. The duration of grazing that is intensively reared shows lower at 30.00 minutes, while the Balinese cattle that are extensively reared is higher at 32.00 minutes. This is due to the type of feed consumed by Balinese cattle. This is in line with the opinion of Joseph (2020), which states that the weight of Balinese cattle is influenced by sufficiently available feed, both quantity and quality.

The quality of feed is strongly influenced by the nutrients it contains. Good feed must contain complete nutrients, such as protein, carbohydrates, fat, vitamins and minerals needed by livestock. The duration of grazing activity in cattle is influenced by the amount, shape and fiber content of the feed. An abundant amount of feed will extend the duration of grazing activity in cattle (Faresty, 2016). Longer grazing duration in extensive rearing is caused by larger grazing land, more difficult to reach feed, and variable feed quality. In contrast, intensive rearing has a shorter grazing duration because cattle are given more controlled and more nutritious feed, and grazing space is limited.

Duration of Intensive and Extensive Breeding of Balinese Cattle

Rumination behavior in ruminants is related to the digestion of fibrous food in the rumen. Ruminants are animals that have four stomach

chambers, namely rumen, reticulum, omasum, and abomasum. The duration of rumination activity is the length of daily rumination with how long the rumination activity of Balinese cattle. The duration of rumination activity is influenced by the amount of grass and grazing will be reduced within 8 hours because most of it is used to walk to the savanna (Purwantari et al., 2015).

The duration of rumination of intensively and extensively reared Balinese cattle in Langke Rembong Subdistrict shows a difference as shown in Figure 3. The duration of rumination of intensively reared Balinese cattle is higher at 40.00 minutes, while that of extensively reared Balinese cattle is 33.00 minutes. Rumination duration is influenced by several factors, such as the age of the cattle, the type of feed given and the amount of feed consumed. The duration of rumination in intensively reared cattle is higher than that in extensively reared cattle because cattle in intensive systems are given feed that is more nutritious, structured and easier to digest. These feeds require more time to be effectively digested in the rumen, so the cows need more time for ruminalization. In contrast, although cattle in extensive systems are fed coarser and harder-to-digest feed, the time required for rumination is shorter as cattle chew less feed over a longer period of time (Heryanto, 2016).

The duration of rumination in cattle is influenced by the age of the cattle, with young cattle usually taking a shorter time to ruminate due to better digestive efficiency. In mature or older cattle, the time taken to chew and ruminate feed can be longer as the rumen has to work harder to digest harder or coarser feed. Fiber-rich feed, such as coarse grass, takes longer to digest and ferment in the rumen (Wahyuni and Amin, 2020).

CONCLUSION

Based on the average value of observed behaviors including grazing frequency, ruminansi, grazing duration and ruminansi of intensively and extensively reared Balinese cattle in Langke Rembong District. The difference of grazing frequency in intensively reared Balinese cattle is 1 time and in extensively reared cattle is 2 times. The difference of grazing

frequency between intensively and extensively reared cattle is caused by the feeding behavior of Balinese cattle. The difference in frequency of grazing in intensively reared cattle was 200.00 times and in extensively reared cattle was 110.00 times. This can be caused because the amount of grass consumed by cattle is not much so that the rumination process is shorter. The difference in grazing duration in intensively reared Balinese cattle was 30.00 minutes and in extensively reared cattle was 32.00 minutes. Caused by the type of feed consumed by Balinese cattle. The difference in duration of rumination in intensively reared Balinese cattle was 40.00 minutes and in extensively reared cattle was 33.00 minutes. Caused by the type of feed and age of cattle.

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