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GROWTH PERFORMANCE OF YOUNG BALI CATTLE UNDER VARIOUS FEEDING MANAGEMENT

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ABSTRACT

Bali cattle is one of Indonesian native breed which has been spread out by the government across the country for decades. About 30% of the total cattle population in Indonesia is Bali cattle. As native breed, Bali cattle has many superiority in some aspects such high efficiency to use low quality diet, high reproductive performance, an ideal animal to work in the field and the ability to adapt in a harsh environment. Bali cattle are mainly kept by small holder farmers for biological, social and economic roles. The feeding system is mostly based on natural grazing or cut and carry systems. These phenomenon in fact influence the growth performance of Bali cattle. Although some observation indicated a variation data in growth rate, generally under natural grazing management, Bali cattle showed low average daily gain (ADG) (0.20 kg/d). However, when additional feed (high quality feed) was given, Bali cattle could grow at higher rate (which up to maximum 0.87 kg/d). It is thus concluded that although genetically Bali cattle has low growth rates, a better feed can result in increasing ADG.

Key words: Bali cattle, growth rate, nutrition

INTRODUCTION

Bali cattle (*Bos javanicus* or *Bos sondaicus*) is one of Indonesian native breed which is believed to be originated from wild banteng (*Bibos banteng*) (Chamdi, 2005). There are actually three major of cattle breeds used as draft/beef in Indonesia. These are Ongole, Bali and Madura. The less well known breed, the Aceh, is found in the Aceh Province. About 30% of the total cattle population in Indonesia is Bali cattle which is spread across the country (Martojo, 2002). The pureness of Bali cattle is still maintained in Bali island. In other parts (e.g. In Java and Sumatera), some of Bali cattle have been crossed – bred with Zebu breed (Siregar, *et al.*, 1985 and Wiryosuhanto, 1996). Bali cattle is also reported to be found in other countries such as in Sabah Malaysia and Northern Australia (Devendra, *et al.*, 1973; Payne, 1990).

Despite its weakness (hight susceptibility to Jembrana disease and Malignant catarrhal fever, which is contracted through sheep as vector), the Bali cattle has superior trait as pioneer breed. These superiority include: high efficiency to use low quality diet, high reproductive performance, ideal to work in the field and the ability to adapt in a harsh environment (Suranjaya, 1999). Bali cattle have been spread in all provinces but the population is mainly concentrated in three eastern regions namely Lombok, West Timor and South Sulawesi. The government has paid a lot attention to this breed as part of the transmigration program particularly outside of the Java island.

SUPPORTING PAPERS
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Most of Bali cattle are kept by small holder farmers and use as part of their farming systems. The animals are kept for biological, social and economic roles. These roles include: as source of progeny (calves, weight gain) as safe deposit (sources of cash in emergency), as insurance for crop harvest failure, as drought animals and manure for fertilizer (Martojo, 2002). In addition, in many societies particularly in the villages, Bali cattle are also used as prestigious symbol. It means that having more cattle can indicated a better social status of the owner.

Until recently, there are a lot of studies regarding the growth performance of young Bali cattle across the country. However, the data revealed especially ADG still varied among the region and the management systems. This variation are probably mainly influenced by management, feed availability and feed quality. For those reasons, this paper will review the growth performance of young Bali cattle under various feeding systems in many regions and strategy to increase the growth rate. The economic assessment is also included in this review to enable for future direction from nutrition and economic aspects.

Feeding Management

Most of Bali cattle are kept by smallholders where the cattle herds are generally quite small, with only 2-4 cattle per family. The cattle are generally managed in a traditional system. The smallholders use few cash inputs in rearing the animals. The labours supplied usually by the farmers and member of family (children, wife or older people). In many cases, the animals are housed in a simple shed and fed with cut and carry roughages. The grass is cut by the farmers or laborer and carried to stalls or yards where the cattle is held. In the other situation, the smallholders tether their cattle in grazing areas during the day and confine them at night. In some areas, cattle are permitted to run free in designated areas during the cropping season and are permitted to graze crop residues during the dry season. The feed resources for Bali cattle and other ruminants in Indonesia mostly are native forage on wastelands, roadsides, unplanted land and crop-stubble. There are also increasing use of improved forages such as Elephant King grass. Some farmers also use some leguminous trees (Leucaena, Gliricia, Sesbania, Caliandra leaves), agricultural by products such as rice straw or cane tops as a basal feed and rice bran, corn bran, fresh sagu, UMB, copra meal, putak, whole cotton seed, cacao pods, and palm press fiber as feed supplement for Bali cattle.

The Growth Performance of Bali Cattle

The growth performance of Bali cattle under various feeding systems is shown in Table 2. A comparison between five types of large ruminants at one feeding levels ia shown in Table 1. Table 1, clearly indicated that Bali cattle has second lowest growth rate after Madura cattle.

Table 1. The effect of high quality feed on growth, feed intake, feed digestibility and feed conversion ratio of large ruminants in Indonesia (Moran, 1978)

	Bali cattle	Ongole cattle	Madura cattle	Grati cattle	Buffaloe
Growth rate (kg/d)	0.66	0.75	0.60	0.90	0.73
Feed intake (kg DM/d)	6.02	6.42	5.33	7.97	5.80
OM digestibility (%)	68.6	72.6	70.6	73.7	68.3
Feed conversion ratio	9.12	8.56	9.22	8.85	7.95

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This study leads to the scientist to conclude that genetically Bali cattle has slower growth rates. With good quality diet, Bali cattle produced average daily gain 660 g/d. However, this contention has been debated by other workers (Siregar and Talib, 1992; Mastika,, 1996; 2002). These authors have demonstrated that Bali cattle can grow at faster rate (more than 660 g/d) when given a good quality diet.

Under natural grazing system from 12 studies as shown in Table 2, the average ADG of Bali cattle is 0.20 kg/d. This data indicated that either steers or heifers showed low ADG. This low ADG was probably mainly due to low quality and availability of feed. Therefore it is strongly recommended to add supplemental feed to increase Bali cattle ADG. However, in the smallholders' situation, low cost input from supplement and availability and accessibility of supplement must be considered. As has been listed in Table 2, there are a number of supplemental feed that has been used in many feeding system by researchers.

In the study of Abduh *et al.* (1992), the growth rate of Bali cattle on natural grazing area was 0.10 kg/d. However, supplementation with ricebran (1% + urea 2%) the growth rate increased to 0.14 kg/d. Paat *et al.*, (1992) reported that the liveweight gain was 0.42 kg/d of Bali heifer (1-1.5 years old) on natural grazing and increased to 0.51 kg/ after supplemented with Gliricidia leaves (25% of total ration). Sariubang *et al.* (1992) recorded a growth rate at 0.492 kg/d after the Bali steers were given 3 kg /head/d of Gliricidia leaves. With the local feed (fresh sagu, rice bran, corn bran, copra meal and by-product of fish) Siregar and Talib (1992) showed a growth rate of Bali cattle at the rate of 0.7 kg/d.

CONCLUSIONS

The growth performance of young Bali cattle is varied which is derived by feed quality and feed supply. Under natural grazing system Bali cattle has a low growth rate which averaged 0.20 kg/d. However, supplementation with leguminous leaves or agricultural byproduct can lead to the increasing Bali cattle growth rate. However, when choosing feed supplement for Bali cattle, local availability, price and farmers accepatance need to be considered.

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