THE PERFORMANCE OF JAVA AND ONGOLE CROSSBRED BULL UNDER INTENSIVE FEEDING MANAGEMENT

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ABSTRACT

This study was set up to evaluate the performance of Java and Ongole Crossbred (OC) bulls fed concentrate and rice straw. A total of four Java bulls and four OC bulls were used in this experiment. The bulls were fed concentrates (50% of the total dry matter feed requirement) and rice straw (*ad libitum*). The concentrates were consisted of rice bran, beer waste product, copra meal, minerals, with crude protein (CP) and total digestible nutrients (TDN) contents of 15.32% and 73.09%, respectively. The average daily gain (ADG), dry matter intake (DMI), protein and energy intake, and feed conversion ratio (FCR) were observed. The results of this study showed that the ADG, DMI, CP and TDN intake, and FCR were not significantly different ($p > 0.05$). The ADG of Java and OC bulls were 0.58 kg and 0.78 kg, respectively. The averages of DMI, CP and TDN intake were 6.59 kg (2.09% of BW), 0.81 kg and 4.34 kg for Java bulls whereas for OC bulls were 6.42 kg (2.11% of BW), 0.78 kg, and 4.20 kg, respectively. The FCR of Java bulls was 11.49 and those of OC bulls was 9.21. It can be concluded that Java and OC bulls raised intensively and fed concentrate and rice straw had the similar performance.

Keywords: Ongole crossbred bull, Java bull, performance

INTRODUCTION

The performance of beef cattle production that means the productivity of livestock is very important to know. The productivity of beef cattle production can be measured by the average daily gain. High weight gain should be due to the efficient utilization of feed that can be seen from the value of feed conversion.

Hardjosubroto (1994) reported that Ongole Crossbred (OC) cattle are originated from Java cattle and Sumba Ongole cattle. According to Sumadi (2010), the OC cattle were raised in most of Central Java areas (53.31% of the total population). The OC cattle are resistant to hot weather and disease, and they can also take advantage of low quality forages (Adiwinarti *et al*., 2010).

Java cattle are one of Indonesia indigenous beef cattle found in Brebes regency that have not been raised intensively. Java cattle may be a potential of beef cattle and may not be inferior to OC cattle. Java cattle is resistant to insects and tropical environments (Kantor Peternakan Brebes, 2006), capable of utilizing large amounts of crude feed and low quality feed (Lestari *et al*., 2010).

Sumadi (2010) stated that the productivity of beef cattle is influenced by genetic, environmental factors, and interactions between them. Genetic potential of cattle contributes 30% of all factors affecting productivity, will be optimum when it is supported by appropriate environment (Sasimow, 1987). Feed is one of the environmental factors that influence the productivity of livestock. Good quality of ration and sufficient in quantity will be able to increase the productivity of livestock. Williamson and Payne (1993) stated that the quality and quantity of feed consumed affect the body weight gain. Feed intake is an important factor that must be considered, as Parakkasi (1995) stated that variability in production capacity caused by feeding in livestock was caused by differences in consumption ($\pm$ 60%), digestibility ($\pm$ 25%), and the feed conversion ($\pm$ 15%). Furthermore, the increase of nutritional value of a ration will increase feed intake, until it reaches about 70% digestibility coefficient.

This study was set up to compare the performance of Java bulls and Ongole Crossbred bulls under intensive feeding management At the same management, it is expected to know the real genetic potential of Java bull.

MATERIALS AND METHODS

This research was conducted for 6 months. A total of 8 bulls consisted of 4 Java bulls and 4 Ongole Crossbred (OC) bulls were used in this experiment. Those bulls had relatively the same age, i.e. 1.5-2 years (I_1 permanent) with an average initial body weight of 290.00±24.60 kg (Java bull) and 271.33±4.58 kg (OC bull).

The research was conducted to compare the productivity of Java and OC bulls fed the same ration. Concentrates were provided as much as 50% of the total dry matter requirement (2.6% of body weight) and rice straw *ad libitum.* The concentrates were consisted of rice bran (56.22%), copra meal (23.78%), beer waste product (20%) and minerals (1% of the total concentrate). Nutrient content of the ration is presented in the Table 1. Drinking water was always available. Concentrates were provided starting at 07.00 am and rice straw were provided starting at 09.00.

The study lasted for 4 periods: preparation (4 weeks), adaptation (4 weeks), preliminary (2 weeks), and treatment period (12 weeks). The parameters observed were the performance of beef production included: feed intake (DM, CP, and TDN intake), the average daily gain and feed conversion. Data were analyzed using t-test according to Steel and Torrie (1981).

RESULTS AND DISCUSSION

The performance of Java and Ongole Crossbred bulls are presented in the Table 2 and 3. In this research, one of the OC bull was death, while one of the Java bull has very low body weight because of sick, so data of those bulls were discarded from analysis. The results showed that the performances of Java and OC bulls were not significantly different (P>0.05).

The average daily gain (ADG) of Java bulls that was 0.58 kg, equivalent (P>0.05) to those of OC bulls that were 0.78 kg. The ADG of animals is strongly influenced by the feed provided and feed intake. The average of dry matter intake (DMI) and CP and TDN intake for Java and OC bulls in this study did not differ significantly (Table 3), therefore the average daily gain obtained was also not significantly different.

Compared to the results of research by Umar (2007), the ADG of Java bulls was similar to that of Madura cattle (0.58 kg vs. 0.60 kg), whereas the ADG of OC bulls in this study was higher (0, 78 kg vs. 0.60 kg). However, the ADG of OC bulls in this study was lower than those reported by Ngadiyono *et al.* (2008), the ADG of OC bulls fed *Pennisetum purpureum* 20% and concentrate 80% was 0.87 kg and 0.93 kg. Ashari and Juarini (2010) reported that the ADG of Bali cattle reared in the PT Agricinal with complete ration was 0.73 kg, whereas traditionally maintained in plasma was 0.24 kg. Qomariyah and Bahar (2010) reported that the feedlot Bali cattle have the ADG of 0.6 kg. Adiwinarti *et al*. (2010) reported that the ADG of OC cattle fed rice straw and concentrate was 0.69 kg. Purbowati *et al.* (2005) studied that OC cattle fed concentrate and fermented rice straw fermentation had the ADG of 0.24 kg. Java, Madura, Bali cattle, and OC cattle are local beef cattle of Indonesia. Research of Purbowati *et al.* (2005), Umar (2007), Adiwinarti *et al*. (2010), Ashari and Juarini (2010), Qomariyah and Bahar (2010), and the results of this study indicated that the local cattle of Indonesia (Madura, Bali, OC and Java) have similar productivity, depending on the management and the feed intake.

DMI is one of the important factors affecting livestock production. The capacity of animal to consume dry matter is a limiting factor in utilizing feed. The higher DMI, the weight gain expected is also higher.

The DMI of both Java and OC bulls in this

Table 1. Nutrient Content of the Feedstuffs (in 100% Dry Matter)

Materials	DM	Ash	EE	CF	CP	NFE
	---------- % ----------					
Rice Straw	85.90	26.61	1.71	30.98	7.37	33.33
Rice Bran	87.62	11.51	8.39	22.24	10.28	47.58
Copra meal	85.41	8.63	7.93	10.35	21.51	51.58
Beer waste product	90.43	8.32	3.83	17.41	22.15	48.29

DM=Dry Matter; CF= Crude Fiber; NFE=Nitrogen Free Extract,
EE=Ether Extract, CP= Crude Protein, TDN=Total Digestible Nutrients

Table 2. The Average Body Weight and The Average Daily Gain of Java and Ongole Crossbred (OC) Bulls

Parameter	Java	OC
Initial body weight (kg)	290.00±24.60	271.33± 4.58
Final body weight (kg)	341.28±22.14	340.61±23.77
Body weight gain (kg)	51.28± 3.84	69.28±26.43
Average Daily Gain (kg)	0.58± 0.04	0.78± 0.30

Table 3. The Average DMI, CP and TDN intake, and also Feed Conversion of Java and Ongole Crossbred (OC) Bulls

Parameters	Java	OC
Total of dry matter intake (kg)	6.59±0.15	6.42±0.13
DMI of rice straw (kg)	2.52±0.20	2.56±0.13
DMI of concentrates (kg)	4.07±0.29	3.86±0.02
DMI (% body weight)	2.09±0.14	2.11±0.04
CP intake (kg)	0.81±0.03	0.78±0.01
TDN intake (kg)	3.59±0.46	3.14±0.40
Feed conversion ratio	11.49±1.09	9.21±3.80

study were largely derived from the concentrate intake (61.76% in Java bulls and 60.12% in OC bulls), while the consumption of straw was only about 38.24% in Java bulls and 39.88% in OC bulls. Thus, Java and OC bulls like concentrates more than rice straw. This was because the quality of the concentrates was higher than those of rice straw (the concentrates contained 15.32% CP and 73.09% TDN, while rice straw contained 7.37% CP and 53.99% TDN). This is similar to Parakkasi (1995) that the increasing of nutritional value of feed will increase the consumption, until reaching about 70% of digestibility coefficient. Previous studies also reported the same finding, Purbowati *et al*. (2005) reported OC cattle consumed as much as 62.62% of concentrate and fermented rice straw as much as 37.38%.

The DMI (% body weight) of Java and OC bulls were 2.09% and 2.11% of body weight, respectively (Table 3). The average body weight of Java bulls was 315.64 kg and that of OC bulls was 305.97 kg. The percentage of DMI in this study was lower than those of Umar (2007) using Madura cattle and OC cattle that the DMI reached 3.61% in Madura cattle and 3.02% in OC cattle. Ngadiyono *et al*. (2008) also reported that the DMI of OC bulls were 2.3-2.4% body weight. Ashari and Juarini (2010) that used Bali cattle reported that DMI was on the average of 2.65% (2.5 to 3.2%) of body weight. The results of this study indicated that Java bulls utilized DMI less than Madura and Bali cattle (2.09% vs. 3.61% and 2.65%), as well as OC cattle (2.11% vs. 2.3-3.02%) do. According to Jurgens (1993), cattle weighing 700 lbs (317.5 kg) need a feed at 2.34% BW (for ADG 1 lb or 0.45 kg) and 2.46% BW (for ADG 1.5 lbs or 0.68 kg). It showed that cattle in this study consumed less dry matter than that of suggested by Jurgens (1993). The CP and TDN intake of Java bulls were 0.81 kg (12.29%) and 3.59 kg (54.68%), whereas those of OC bulls were 0.78 kg (12.15%) and 3.14 kg (47.29%), respectively. Even though the DMI of bulls in this study was lower than DMI recommended by Jurgens (1993), but the CP intake of bulls in this study were higher than those recommended by Jurgens (1993) which suggested that the need for cattle weighing 317.5 kg need a diet of 8.6% CP and 56% TDN (for 0.45 kg ADG) and 9.2% CP and 59.5% TDN (for 0.68 kg ADG). The feed conversion ratio (FCR) between Java and OC bulls showed no significant differences ($p>0.05$). This means that the ability to use the feed into a product of body weight in both cattle was

relatively the same. Java bulls spend 11.49 kg of dry matter to obtain 1 kg of body weight gain, whereas the OC bulls were 9.21 kg. Compared to the results of Umar (2007), the FCR of Java bulls in this study (11.49) was higher compared to those of Madura cattle (10.21). The FCR of OC cattle in both studies was relatively the same, namely 9.21 and 9.92. Feed conversion ratio of OC cattle in this study (9.21) was lower than those in Purbowati *et al.* (2005) and Purnomoadi *et al*. (2007). Purbowati *et al.* (2005) reported that FCR of OC bulls were 17.41 and Purnomoadi *et al*. (2007) reported that OC bulls fed 50% concentrate were 11.20.

CONCLUSION

It can be concluded that the ADG, DMI, protein and energy intake, and FCR of Java and OC bulls in this study were similar. This means if the Java cattle intensively reared and fed good quality of feed, then the Java cattle will be able to produce as well as the OC cattle do.

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