THE EXISTENCE AND PERFORMANCE OF JAVANESE CATTLE

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ABSTRACT

Nowadays, there are a lot of cattle breeds are existing in Indonesia as a result of the crossbreeding policy; however those breeds were not identified on their genotypes. It might have a negative effect on the development of indigenous breed, such Javanese cattle. The aim of this study was to explore the existence of Javanese cattle in order to understand its' future potency and sustainability. Eighteen Javanese cattle were measured of their exterior performance and body vital statistic, and were compared with those of 24 Ongole Crossbred, one of local cattle in Indonesia that has adapted since long time ago. A total 58 Javanese and Ongole Crossbred cattle owner farmers have been interviewed. Exterior performance and vital statistic of Javanese cattle are significantly different from those of Ongole Crossbred. Forty percent of observed Javanese cattle are light red, 33,4 % are reddish-brown and 16,6 % are reddish-black in colour. While, 100 % of observed Ongole Crossbred are white in colour. Most of Javanese cattle have no hump, however, most of Ongole Crossbred have. The dewlap of Javanese cattle is smaller, compared to that of Ongole Crossbred. The grade of Javanese cattle varies from very small, small and medium, while the grade of Ongole Crossbred varies from small, medium and large. In general, the reproduction performance of Javanese cattle is higher than that of Ongole Crossbred. The main reasons for keeping Javanese cattle are less capital needed and its' high reproduction performance; while the main reasons for keeping Ongole Crossbred cattle are less capital and feed needed.

Keywords: Javanese cattle, Ongole Crossbred, Indonesia

INTRODUCTION

In South East Asia, Indonesia is an example of a country where for centuries, beef cattle systems have developed in harmony with local conditions of climate, vegetation, existing farming systems and consumer preferences. Cattle play an important role in many aspects of a farmer's life; they produce dung to fertilise the land, utilise agricultural by-products, act as live savings in case of the farmer's urgent cash requirements, produce meat, and the special advantage of cattle compared to other animal is their ability to plough land (draught power) under mixed farming systems.

The high population increase in Indonesia is a major driving force to increase on the demand of animal products including beef meat. This demand can not be supplied only by local breed, due to the fact that it has a relatively low productivity. In order to fulfil meat demand and improve productivity of local breed, Indonesian government have been implemented the either artificial insemination program using exotic breed or imported live animals semen which are believed have a better productivity. There is a tendency that farmers did not keep local breed anymore, it was changed by the presence

of crossbreed. Nowadays, there are a lot of cattle breed are existing in Indonesia as a result of the crossbreeding policy; however that breeds were not identified on their genotypes. It might have a negative effect on the development of indigenous breed, such Javanese cattle. It is important to realise that the introduction of crossbreds changes the objectives of keeping cattle from supporting crop production and capital asset function to meat production, and consequently changes the production systems.

As result of widely crossbred used, little attention has been given to indigenous beef cattle breed in Java Island. Little do people know that original cattle in Indonesia are not only Sumba Ongole, Bali and Madura cattle, but also Javanese cattle. There is also concern on the potential danger in the long term in loose dissemination of the introduced genetic material as it could threaten the genetic identity of indigenous breed types (Ayalew, 2000). Thomas and Rangnekar (2004) stated that animal breeding program in most developing countries have tended to neglect the characterization and improvement of valuable indigenous breeds that are generally most associated with small-scale farming systems. One reason that local stock have been neglected is that policy-makers and scientist do not appreciate the merits of this stock (Udo, 1994). The condition in Java is not similar with Bali and Madura Island, where there is purification of indigenous breed program (Bali and Madura cattle). Bali and Madura cattle are indigenous cattle, which are recognized to have a good reproduction performance. Bali cattle are very fertile, the average calving percentage is apparently 80%, the heat period is said to last for up to 48 hours, first calving usually takes place at 30-36 months of age and average cow produces six calves in her lifetime (Payne and Rollinson, 1973). The Madura cattle, however seems to be less fertile than Bali cattle.

Otherwise, the information of indigenous beef cattle in Java named as Javanese Cattle, is very limited. The original Javanese cattle, presumptive developed from a crossing between an old mix of Indo-Chinese with Zebu and Banteng (Felius and Fokkinga, 1996 quoted by Barwegen, 2004), nowadays can be found in some remote corners of East Java, e.g. Pacitan and Tengger. They are kept for agricultural purposes, transport, breeding and meat production. Over time, Javanese cattle has suffered infectious diseases and other unfavourable factors, such as selling the best animals for transport and slaughtered, unfavourable purposes of breeding purposes, less quality of feed. Together with the continuous crossing with Ongole-Zebu, Australian or Dutch cattle (Barwegen, 2004), have caused a deterioration of this breed in Java. Further, around the 1930s, Javanese cattle were crossed with Bengali cattle, this make the popularity of cattle rose, better prices were given for larger cattle and its hoped that the economic significance of upgraded cattle would rise (Sibinga Mulder, 1927, quoted by Barwegen 2004). In 1987, the population was estimated at 2000, but the number is ever decreasing. Martojo (2005) stated that local breeds (Aceh, Pesisir, Madura, Bali, Java-Ongole and Sumban-Ongole) were improved using Ongole bull from India. This was recorded in the 19th century using Ongole bulls and small sized local Java-breeds (now considered extinct) in East Java. Barwegen (2002) stated that based on the interview held at BIB-Singosari, Malang-East Java, Javanese cattle now seem lost to the mists of history.

This paper is aimed to investigate the existence and performance of Javanese cattle as local breed, which is compared with Ongole Crossbred, another local breed in Pacitan and Wonogiri Regencies. These areas were considered as areas where Javanese cattle could still be found

MATERIALS AND METHODS

Eighteen of female Javanese cattle and 24 female Ongole Crossbred cattle kept by farmers in Pacitan and Wonogiri Regencies which are known as big supplier areas of beef cattle. Twenty five Javanese cattle farmers and 33 Ongole Crossbred farmers have been interviewed individually using Participatory Rural Appraisal (PRA) method. Secondary data were collected mostly from publications and Animal Husbandry Bureau.

From the survey, 4 districts in Pacitan Regency were determined as research areas, i.e. Tegalombo, Tulakan, Bandar and Pacitan Districts. While,2 districts in Wonogiri Regency were determined as research areas, i.e. Pracimantoro and Paranggupito Districts.

This study was divided into two parts. The first part consists of qualitative and quantitative analysis by observing exterior characteristics and measuring vital statistic of Javanese and Ongole Crossbred cattle. Exterior characteristics observed are colour, existence of black back line, hump, and dewlap. While, vital statistics measured are length of body, girth of chest, height at withers, height at hip and head index. Cattle grade was measured based on ratio between length of the body and height at the withers as percentage. Very small cattle grade is defined less than 100%, small cattle grade is defined as 100 – 105% , medium cattle grade is defined as 105 – 110%, and large cattle grade is defined over 110%.

The second part was based on descriptive analysis regarding the perspectives of the farmers to Javanese and Ongole Crossbred cattle and management of cattle keeping.

Quantitative data was analysed using one-way Anova. Ranking preference was used to determine level of preference on specific issues asked during the interview. The questions about reasons of keeping Javanese cattle or Ongole Crossbred were answered by employing ranking preference analysis and tested using GLM (General Linear Model) procedure of SPSS.

RESULTS AND DISCUSSION

Exterior characteristics.

According to Table 1, the exterior characteristics of Javanese cattle and Ongole crossbred seem to be different. Based on study of Susilowati *et.al* (2003), the exterior characteristics of observed Javanese cattle seem to be similar with Galekan cattle (Javanese cattle in Trenggalek Regency, East Java) which is suspected of having close relationship with Madura cattle.

Body Vital Statistics

Having been obtained size of body vital statistics and grade value of Javanese and Ongole crossbred (Table 2, 3, and 4), it is concluded that Javanese cattle are smaller than Ongole Crossbred.

Reproduction characteristics

The reproduction characteristics of Javanese and Ongole cattle are shown in Table 5. In general, reproduction performance of Javanese cattle is better than those of Ongole Crossbred.

Table 1. Exterior characteristics of Javanese and Ongole Crossbred cattle in Pacitan and Wonogiri Regencies

Exterior characteristics	Percentage (%)	
	Javanese cattle (n=18)	Ongole Crossbred (n=24)
Dominant colour :		
• White	0,00	100,00
• Reddish-black	16,66	0,00
• Light red	50,00	0,00
• Reddish-brown	33,34	0.00
Ear		
• Less drooped	81,75	0,00
• Drooped	18,25	100,00
Dewlap		
• Exist, but small	100,00	0,00
• Exist, rather large	0,00	100,00
Back line		
• Not exist	43,75	100,00
• Exist	56,25	0,00
Hump		
• Not exist	92,00	0,00
• Exist, but small	8,00	8,33
• Exist , rather large	0,00	91,67

Table 2. Average and standard error of body vital statistics size of Javanese and Ongole Crossbred cattle in 1,5 – 4 years of age

No.	Body Vital Statistics	Javanese Cattle (n=4)	Ongole Crossbred (n=8)
1	Girth of chest (cm)	$145,00\pm3,87^a$	$147,75\pm2,76^a$
2	Height at the withers (cm)	$116,75\pm1,88^a$	$123,25\pm1,51^b$
3	Length of the body (cm)	$113,75\pm3,42^a$	$131,00\pm2,69^c$
4	Height at the hip (cm)	$119,50\pm2,32^a$	$127,25\pm1,49^b$
5	Length of head (cm)	$41,75\pm1,12^a$	$46,63\pm0,84^c$
6	Wide of head (cm)	$15,75\pm0,25^a$	$16,75\pm0,65^a$
7	Head Index	$0,38 \pm 0,008^a$	$0,35 \pm 0,009^a$
8	Body Weight (kg)	$250,50\pm17,95^a$	$264,00\pm13,35^a$

[a,b] different superscripts indicate significant differences between body vital statistics (P<0.05)
[a,c] different superscripts indicate highly significant differences between body vital statistics (p<0,01)

Table 3. Average and standard error of body vital statistics size of Javanese and Ongole Crossbred cattle over 4 years of age

No.	Body Vital Statistics	Javanese Cattle (n=14)	Ongole Crossbred (n=16)
1	Girth of chest (cm)	$148,29\pm1,89^a$	$154,69\pm1,12^c$
2	Height at the withers (cm)	$117,50\pm1,00^a$	$123,56\pm1,36^c$
3	Length of the body (cm)	$119,50\pm1,27^a$	$130,19\pm1,91^c$
4	Height at the hip (cm)	$122,93\pm1,26^a$	$127,63\pm1,44^b$
5	Length of head (cm)	$45,50\pm0,81^a$	$47,69\pm0,46^b$
6	Wide of head (cm)	$15,78\pm0,21^a$	$17,13\pm0,18^a$
7	Head Index	$0,35\pm0,009^a$	$0,36\pm0,004^a$
8	Body Weight (kg)	$265,07\pm9,69^a$	$298,75\pm5,79^c$

[a,b] different superscripts indicate significant differences between body vital statistics (P<0.05)
[a,c] different superscripts indicate highly significant differences between body vital statistics (p<0,01)

Table 4. Grade value of Javanese and Ongole Crossbred cattle

Grade	Javanese Cattle (%)	Ongole Crossbred cattle (%)
Grade value of cattle in 1,5 – 4 years of age		
Very small	75	-
Small	25	37,5
Medium	-	25
Large	-	37,5
Grade value of cattle over 4 years of age		
Very small	21,43	-
Small	57,14	62,5
Medium	21,43	12,5
Large	-	25

Tabel 5. Reproduction characteristics of Javanese and Ongole Crossbred cattle

No.	Reproduction characteristics	Javanese cattle (n=25)	Ongole crossbred (n=33)
		Average and Std. error	Average and Std. error
1.	Age of cattle (years)	$7,76 \pm 0,48$	$7,21 \pm 0,48$
2.	First age of mating (months)	$27,16 \pm 1,28^a$	$32,73 \pm 1,34^b$
3.	First age of calving (months)	$37,68 \pm 1,22^a$	$43,03 \pm 1,30^b$
4.	*Post Partum Oestrus* (days)	$162,60 \pm 14,06^a$	$292,3 \pm 29,72^b$
5.	*Post Partum Mating* (days)	$188,40 \pm 15,15^a$	$329,1 \pm 31,21^b$
6.	Service per conception	$1,78 \pm 0,17$	$1,79 \pm 0,14$
7.	Calving Interval (months)	$15,24 \pm 0,49^a$	$20,30 \pm 0,96^b$
8.	Litter Size (head)	$1,00 \pm 0,00$	$1,00 \pm 0,00$
9.	Weaning age (months)	$6,89 \pm 0,41$	$8,67 \pm 1,06$

[a,b] different superscripts indicate significant differences between body vital statistics ($P<0.05$)

Tabel 6. Reasons for keeping Javanese and Ongole Crossbred cattle

No.	Reasons	Javanese cattle farmers		Ongole Crossbred cattle farmers	
		Average and std.dev (n=25)	Rank	Average and Std.dev (n=33)	Rank
1.	Less capital needed	$6,84 \pm 0,37$	1	$8,64 \pm 0,82$	1
2.	High reproductive rate	$5,64 \pm 0,99$	2	$5,09 \pm 2,04$	5
3.	Less feed needed	$5,48 \pm 1,05$	3	$7,33 \pm 0,85$	2
4.	Highly resistance to diseases	$4,08 \pm 0,76$	4	$5,87 \pm 1,02$	3
5.	Draught animal power used	$3,08 \pm 0,81$	5	$5,61 \pm 1,73$	4
6.	High productivity			$5,03 \pm 1,88$	6
7	High price sale			$3,61 \pm 1,54$	7
8.	Veterinarian needed	$2,44 \pm 1,16$	6	$2,36 \pm 0,60$	8
9.	Other*	$1,16 \pm 0,80$	7	$1,39 \pm 1,37$	9

*other reasons mentioned: easy management (Javanese cattle), trend (Ongole crossbred cattle)

Farmers' perspectives of keeping Javanese and Ongole crossbred cattle

The result of the interview revealed that, the main reasons for keeping Javanese cattle are less capital needed and its' high reproduction performance; while the main reasons for keeping Ongole Crossbred cattle are less capital and feed needed, as shown in Table 6.

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