



## Income of Madura cattle farmers in Madura island of East Java province of Indonesia

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### Abstract

Madura cattle are indigenous in Madura Island of Indonesia, which are raised for beef/ draught, racing (karapan) and beauty contest (sonok). The purpose of this study is to determine the farmer income of beef/ draught cattle, racing bull and contest cows business in Madura Island, and to determine which business gives the greatest advantage to the farmers. This study involved 240 beef cattle farmers, 135 racing bull farmers and of 145 beauty contest cows farmers from all over Madura Island. Data collected were analysed for fixed costs, variable costs, total costs, revenue, income, benefit-cost ratio (B/C ratio). The results showed that the average income/head/year in beef/draught, racing and beauty contest cattle were IDR. 6,698,017; IDR. -8,218,347; and IDR. 447,880, respectively. The average value of B/C ratio in the beef/draught cattle business, racing bull and cow contest were -0.51, -0.20 and 0.04, respectively. It is concluded that cow contest business has the best advantage based on the aspects of farmer's income and B/C ratio.

**Key words:** income, Madura cattle, karapan, sonok

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*Bang. J. Anim. Sci.* 2014. 43 (1): 68-73

### Introduction

Madura cattle are indigenous in Madura Island, East Java Province, Indonesia. Their population in Madura Island in 2010 were 787,434 heads (21.02% of the total cattle population in East Java Province), spread over 4 districts, namely Bangkalan (164,201 heads), Sampang (176,076 heads), Pamekasan (130,576 heads) and Sumenep (316,571 heads) (Animal Husbandry Department of East Java Province, 2011). Madura cattle are raised for beef/ draught, racing (karapan) and beauty contest (sonok). According interviewed with the officer of Department of Animal Husbandry of Bangkalan, Sampang, Pamekasan and Sumenep in 2011 the population of beef/ draught, racing and beauty contest cattle in 2010 were 552,788 heads, 617 heads and 2,066 heads, respectively.

Differences of utilization of Madura cattle cause differences in the way of rearing, cattle prices, and the income of farmers. Riszqina *et al.* (2011) found that racing bull farming is more profitable than beef/ draught cattle in Sapudi Island. The purpose of this study was to investigate the income of beef/draught cattle, racing bull and beauty contest cow farmers in Madura Island and

determine cattle business that gave the biggest advantage for income of farmers in Madura Island.

### Materials and methods

The study was conducted by survey in Madura Island, East Java Province, Indonesia. Data collected consisted of primary and secondary data. The primary data were collected by field observation and interview with respondents who were chosen by purposive random sampling method. The respondents consisted of 240 beef cattle farmers, 135 racing bull farmers and 145 beauty contest cow farmers. Primary data consists of information about the characteristics of farmers, cattle characteristics (utilization of cattle, number of cattle, cattle age, cattle condition); manufacturing cost of housing, age of housing, the cost of equipment purchases; buying and selling price of cattle within a period of one year; feed costs, labor costs, the amount and type of labor, cost of treatment/herbal medicine, the cost of practice, the race costs, transportation costs, marketing costs, sources of business capital. Primary data was used to calculate the fixed costs, variable costs, total costs, revenue

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farmers, farmers acceptance, B/C. The secondary data were obtained from the Department of Animal Husbandry of districts of Bangkalan, Sampang, Pamekasan and Sumenep. Secondary data such as the number of races cattle, beef cattle, cattle sonok by region in each district.

The data collected were analysed to calculate fixed cost, variable cost, total cost, revenue, income, the benefit-cost ratio (B/C ratio) (Soekartawi 1995; Soekardono 2009), using the following formula:

$$Income = Revenue - (Fixed\ cost + Variable\ cost) \quad (1)$$

$$Total\ Cost = Fixed\ cost + Variable\ cost \quad (2)$$

$$B/C\ ratio = Benefit : Total\ Cost \quad (3)$$

The results of B/C were then interpreted as follow:

B / C > 1 → farming was feasible

B / C < 1 → farming was not feasible

B / C = 0 → farming was at break-event point

Fixed cost component for the beef cattle business consists of housing depreciation, equipment depreciation, and vehicle depreciation. Fixed cost components of racing bull business consist of depreciation of housing, equipment, vehicle, cattle clothes, and other racing instruments. Fixed costs in the beauty contest cow business consist of depreciation of housing, equipment, vehicle, and contest instrument.

Components of variable costs in the beef/draught cattle business consist of the cost of cattle purchasing, feed, drug/herbal medicine, labor, marketing. The variable costs in the cattle business of racing bull and of beauty contest cow was similar to beef except cost of trainer for racing and beauty contest.

## Results and Discussion

### Characteristics of farmers

Most of the cattle owners were farmers, male, and over 40 years old (Table 1). Madura cattle farmers had mostly been experienced for 10 years. Most of farmers went to elementary school

or never go to school (75.4% in beef cattle farmers, 46.7% in racing bull farmers, and 84.8% in beauty contest cow farmers). The level of education was one of the factors that play an important role in determining the ability of farmers to raise their livestock.

### Beef/draught cattle

Most of Madura cattle were owned by people in the rural area of Madura Island. In general, the cattle were raised in a traditional way; in which the knowledge of raising methods was gained from generation to generation. Most of Madura cattle were raised as beef cattle and as draught cattle to plough rice fields. Most of the farmers ran cow-calf system and fattening system.

**Table 1.** Characteristics of beef cattle farmers, racing bull farmers and beauty contest cow farmers in Madura Island

Characteristics of farmers	Beef Cattle (%)	Racing bull (%)	Beauty contest Cow (%)
<b>Sex</b>			
Male	87.1	100.0	98.6
Female	12.9	0.0	1.4
<b>Age farmers</b>			
< 30 years	15.0	18.5	4.1
30 – 40 years	24.6	28.1	22.1
>40 years	60.4	53.3	73.8
<b>Main Job</b>			
Businessman	0.8	13.3	1.4
Merchant	4.2	11.9	8.3
Employee/retired	2.9	2.9	5.5
Farmer	85.4	45.2	73.8
Community Leader	6.7	14.0	11.0
<b>Dependant</b>			
≤ 4 people	57.9	59.3	48.3
> 4 people	42.1	40.7	51.7
<b>Education</b>			
Tertiary Education	1.7	8.1	2.8
Senior High School	13.3	31.1	6.2
Junior High School	10.4	14.1	6.2
Primary School	44.1	35.6	55.9
Not complete primary school/ never go to school	31.3	11.1	28.9

Source : analyzed primary data

Setiasih and Wahab (2011) explain that the method of raising of Madura cattle in four districts in Madura Island was specific in

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accordance with business goals. Breeding farms were centralized in Sumenep regency, while fattening and rearing beef cattle were scattered in Bangkalan, Sampang and Pamekasan regencies. The average number of cattle raised was 2.28 heads/ farmer, ranging between 1 and 7 heads. This finding was similar to the results of study by Winarso et al. (2005), that the small scale farmers in East Java raised 2-6 heads per family, while richer farmers had 10-30 cattle per family. There were several marketing channels of beef/draught cattle in Madura Island, i.e. through fellow farmers, middlemen, or being brought to the cattle yard. The average purchase price per head of beef cattle was IDR.3,766,064, ranging between IDR. 666,667 and IDR 18,450,000, while the average selling price per head of beef cattle was IDR. 4,349,804, ranging between IDR. 800,000 and IDR. 21,250,000 (Table 2). Revenue of beef/draught cattle farmers per cattle per year ranged between IDR. - 46,078,000 and IDR. 1,478,125.

### **Racing cattle**

Bull racing is a part of the social culture in Madura Island. The racing bulls were selected based on the body conformation from the birth. The price of the calves were more expensive than that of regular beef calves.

Racing bull were owned by rich people only because this business needed a lot of money. The average number of racing bull ownership was 3.32 heads, ranging between 1 and 40 heads. The success of a racing bull farmer was marked by winning the race. The victory of racing bull brought an honour for the owner. The price of champion bulls also increased much. Pricing were usually based on the characteristics appearance of the strapping and ability of cattle to trot, achievement shown during training and competition. Marketing racing bull was not the same as beef cattle/draught cattle, because it did not need to be taken to the market. The farmers who were interested came and made an offer. The average purchase price of racing bull was between IDR 1,000,000 and IDR. 113,333,333 (average IDR. 22,971,764), while the selling price ranged between IDR. 1,500,000. to IDR 312,500,000. The total costs for maintenance of racing bull varied. The average revenue of racing bull per year was IDR. -8,218,347 or between

IDR - 162,432,000 and IDR. 136,084,000. The results of this study show that most of racing bull farmers got losses but they still had opportunity to make profits.

**Table 2.** Total cost, revenue, and farmer income per head in the beef cattle/draught cattle business, racing bull and beauty contest cow in Madura Island

Costs (IDR.)/year	Average	Maximum	Minimum	SD
<b>Total Cost</b>				
Beff Cattle	12,057,457	52,435,000	3,831,750	6,942,769
Racing bull	50,648,716	248,080,000	6,423,333	42,263,013
B. Contest Cow	24,134,856	71,375,000	5,813,750	11,628,981
<b>Revenue/head</b>				
Beff Cattle	5.368.440	21,248,500	1,215,750	2,726,385
Racing bull	42.427.666	250,063,000	770,625	48,470,301
B. Contest Cow	22.746.635	98,598,429	1,885,833	14,343,809
<b>Income/head</b>				
Beff Cattle	-6.689.017	1,478,125	-46,078,000	6,364,654
Racing bull	-8.218.347	136,084,000	-162,432,000	255,115,159
B. Contest Cow	447.880	52,438,439	-29,278,500	9,598,701
<b>Scale ownership</b>				
Beff Cattle	2.28	7	1	1.11
Racing bull	3.32	40	1	1.30
B. Contest Cow	2.70	12	1	1.55

Source: analyzed primary data; B. contest, beauty contest

### **Beauty contest cows**

Beauty contest cows were preserved females for pleasure, producing calves cow. The cows were selected based on the view of the body from newborn calf. The price of this calf was more expensive than that of regular beef calf. They were trained since the age of 6 months to walk upright and able to follow the rhythm of the song. The cows were trained to walk in pairs.

The cows were fed diet consisting of grass/forage, rice bran and corn. The forages given were Leucaena leaf, noni leaf and papaya fruit. The cows were periodically given herbs from a mixture of spices, brown sugar, and coconut milk to increase appetite and keep cow skin smoothness.

The ownership of beauty contest cow was in average of 2.70 heads, ranging from 1 to 12

heads per farmers. Almost all beauty contest cows farmers only reared cows; there were only 7 farmers who had a bull for superior shires.

The average purchase price per head of beauty contest cows was IDR. 13,440,874 or between IDR. 1,400,000 to IDR. 55,000,000, while the average selling price per head of beauty contest cows was IDR. 21,590,731 or between IDR. 1,666,667 to IDR. 76,285,714 (Table 2).

The average farmers income per head of beauty contest cow was IDR. 447,880, ranging between IDR. 29,278,500 and IDR 52,438,429. Advantages obtained from beauty contest cows motivated the farmers to continue their business.

**Comparison of maintenance costs in the beef/draught cattle business, racing bull business and beauty contest cow business**

The income of farmers was affected by revenue from the saling cattle and cost for maintenance. The maximum and minimum range of data distribution to the total cost and revenues in the racing bull business cause maximum and minimum range of the average farmers income of the larger racing bull business. The percentage of fixed costs and variable costs for each of the beef/draught cattle business, racing bull business and beauty contest cow business were determined by many components. Determinant of the cost of the business component racing bull were not equal to the beef/draught cattle business and beauty contest cow business. Value of the components had been different contribution to the cost of raising livestock.

Variable costs on businesses in Madura cattle generally had been a range of 92-96 percent of the total cost. The composition of fixed costs and variable costs in fattening cattle in Tanzania of 0.33% and 99.67% with the greatest composition is used for the enclosure for the purchase of fixed costs and variable costs for livestock (Mlote et al. (2013)). The composition costs are not much different from the composition of cattle maintenance costs on Madura.

The largest cost component in the beauty contest cow business sequentially was used to purchase livestock, labor, feed, herbal/medicinal, training

and marketing. The cost to purchase livestock was also the largest component in the racing bull business, followed by the other cost components: medicine/herbs, labor, training, competition and feed. Costs for labor in beef cattle/ draught cattle business was largest, followed by the other cost components, including breeding stock, feed, medicine / herbal medicine and marketing.

**Table 3.** Average cost composition in beef/ draught cattle business, racing cattle business and beauty contest cow business in Madura Island

Costs	Beef Cattle Business (%)	Racing Bull Business (%)	Beauty Contest Cow Business (%)
<b>Fixed Costs</b>	<b>3.68</b>	<b>3.69</b>	<b>7.77</b>
housing	1.46	0.88	1.21
Equipments	2.22	2.81	6.56
<b>Variable Costs</b>	<b>96.32</b>	<b>96.31</b>	<b>92.23</b>
Cattle	33.50	39.23	53.00
Feeds	14.62	3.35	10.82
Herbs/medicine	2.55	25.45	3.39
Labor	45.25	14.78	22.24
Marketing	0.39	-	0.07
Training	-	8.59	2.72
Competition	-	4.91	-
<b>Total Cost</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>

Source: analyzed primary data

Feed costs, labor, and herbs occupied a large proportion of the cost after the cost of cattle purchasing, in determining the income of farmers. Madura cattle breeders generally did not pay the forage and labor cost, so the value of the loss was not so perceived by the farmers. Riszqina et al. (2012) found that variable cost in beef cattle business in Sapudi island (located adjacent to Madura Island) was used for feed (61.65%), labor (18.39%) and stockers (13.76%) as well as marketing, drug/herbs (3.53%). Variable costs on the businesses racing stocker used for the purchase of stockers (59.18%), herbs (21.89%), race (7.44%), feed (6.07%), labor (4.45%), drugs (0.03%). The cost and revenue were different between kinds of cattle business, The amount of the total cost of the racing bull business was very different from beef cattle business and beauty contest cow business, although the percentage of fixed costs

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and variable costs were not much different. This caused differences in farmers' income.

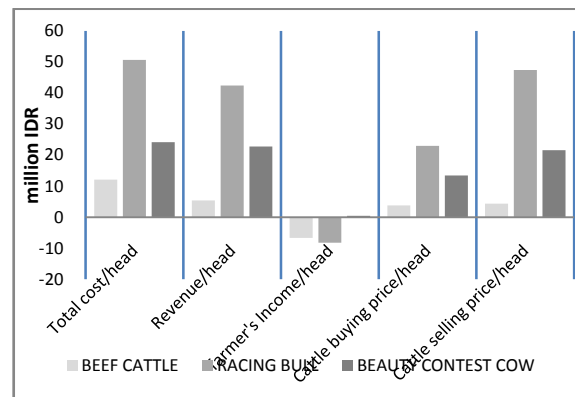
**Table 4.** Buying price selling price, B/C ratio of beef/draught cattle, racing bull and beauty contest cows in Madura island

Component	Average	Maximum	Minimum	SD
<b>Buying Price/ head (IDR)</b>				
Beef Cattle	3,766,064	18,450,000	666,667	1,993,231
Racing bull	22,971.764	113,333,333	1,000,000	25,334,704
B. Contest Cow	13,440,874	55,000,000	1,400,000	9,110,106
<b>Selling Price /head (IDR)</b>				
Beef Cattle	4,349,804	21,250,000	800,000	2,280,823
Racing bull	47,391,490	312,500,000	1,500,000	51,967,097
B. Contest Cow	21,590.731	76,285,714	1,666,667	13,585,864
<b>B/C rasio</b>				
Beef Cattle	-0.51	0.21	-0.94	0.20
Racing bull	-0.20	2.20	-0.99	0.56
B. Contest Cow	0.04	2.16	-0.78	0.46

Source: analyzed primary data

The average total cost/head of beef/draught, racing bull, and beauty contest cow business were IDR 12,057,457; IDR 50,648,716; and IDR 24,134,856, respectively. The amount of the total cost, revenue and income were strongly influenced by the buying price and the selling price of cattle. The buying and selling prices of the bull were the biggest components in racing bull business, then on the beauty contest cow business and the last on the beef cattle business/draught cattle business (Table 4).

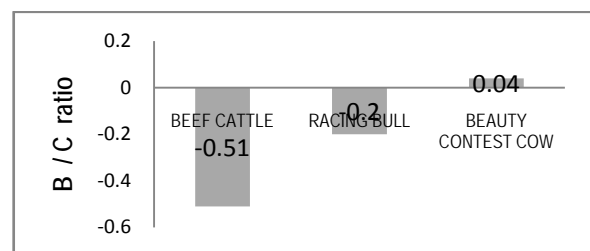
The price of beef/draught cattle was determined by estimating total meat weight produced by the animal, while the price of the beauty contest cows and the racing bull was depending on the condition of livestock. The racing bull and the beauty contest cow were symbols of pride and pleasure for the owners, in addition to profit. A beauty contest cow that had a good appearance and healthy or was used for breeding, was usually expensive. A racing bull which had been often become champion of racings was also expensive. There were no standard price for the racing bull and the beauty contest cows.



**Figure 1.** Total cost, revenue, income and price on beef/draught cattle business, racing bull business and beauty contest cow business

Based on the average value of the cattle business income, the most beneficial was beauty contest cow business; 45,51% farmers obtained benefits and 54,49% farmers got loss. There were 26,67% racing bull farmers obtained benefits, while the other 73,33% got loss. Most of beef/draught cattle farmers (97,93%) got loss, and only 2,07% of them obtained benefits (Figure 1).

The economic feasibility of racing bull business, of beef cattle/draught cattle business and beauty contest cows business was also shown by the B/C ratio. The average value of B/C ratio of beef cattle, racing bull and beauty contest cow business was -0,51, -0,20 and 0,04, respectively. This values mean that no benefits for farmers of beef cattle/draught cattle and racing cattle, because farmers are still losing money (Figure 2). Soekardono (2009) explains, that a project can be claimed to be eligible if the value of B/C ratio > 1. There were no respondents of beef/draught cattle business who had a B/C ratio >1, while 6 farmers of the racing bull business (4,44 %) and 3 farmers of the beauty contest cows business (2,07 %) had B/C ratio > 1.



**Figure 2.** B/C ratio on beef cattle / draught cattle, racing bull and beauty contest cows business

A study by Riszqina *et al.* (2011) shows that the racing stockers in Sapudi Island also suffered losses, indicated by the B/C ratio being -0.51 and 0.44 in farmers who had 2-3 cattle and 4-5 cattle. The price of beef cattle/draught cattle was strongly influenced by the regional price fluctuations and planting/harvesting seasons. On the other hand, the beauty contest cows and the racing bull prices were not influenced by fluctuations in the price of regional and planting /harvesting seasons.

Moran (2008) and Moran (2009) claim that cost of feed and feed quality was one of the keys to success in the cattle business. Ahmed *et al.* (2010) reported, that was high cost of feed of the major problems on small scale cattle farmer. Khan *et al.* (2009), suggested that was self sufficiency in feed production by farmers. This indicates that the feed was a determining factor farmers profit. Our results indicate that the determinant of profit farmers was feed, cattle purchase price - sale of cattle; herbal cattle; labor costs greatly affect the profits of farmers.

### Conclusion

Based on the data obtained in this study, it can be concluded that the farmers' income/head/year of beef/draught cattle, racing bull and beauty contest cow business were IDR 6,689,017; IDR - 8,218,347 and IDR 447,880, respectively. The beauty contest cows business was most beneficial compared to the beef/draught cattle business and the racing bull business in Madura Island based on aspects of farmer's income and B/C ratio.

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