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Changes in Breeder Behaviors and Production System of Madura Cattle Breeding.

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ABSTRACT

This research on Changes in Breeder Behaviors and Production System of Madura Cattle Breeding aimed to examine the control structure of cattle breeding and the socio-economic impacts resulting from changes in cattle breeders' behaviors in Sampang Regency, Madura. This research employed a survey method. Data were collected through interviews with respondents, participatory observations, and documentation study. The respondents were selected using a proportional random sampling technique. The results informed that the population density of Madura reached 797 people/km^2, not much different from that of East Java, reaching 833 people/km^2. The household breeder groups held the most dominant power in the structure of cattle breeding in the regency, each of which raised 1-2 cattle, both for pure and crossbred Madura cattle breeder groups. The economic impacts indirectly felt by Crossbred Madura Cattle's breeders include economic benefits from the higher selling price. Also, the Madurese community is likely to face the social effects resulted from changes in cattle production systems, one of which is the threat to Madura cattle sustainability. Based on these results, we suggest the government carry out intensive supervision and control in the context of preserving Madura cattle. Moreover, economic incentives need to be allocated to motivate Madura Cattle breeders.

Keywords: Behavior Changes, Preservation, Impact, Madura Cattle

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INTRODUCTION

In 2016, the beef cattle population in East Java was 4,407,807 heads, spread over 39 cities and regencies (East Java Animal Husbandry Service, 2017). The population of ruminants during 2013-2016 generally increased, excluding the buffalo population. The average increase in beef cattle population reached 3.73 percent every year (East Java Animal Husbandry Service, 2017).

Madura is one of the regions in East Java Province with a large population of beef cattle. In 2016, the beef cattle population in Madura was approximately 931,112 heads, spread over 4 (four) regencies, including Bangkalan, Sampang, Pamekasan, and Sumenep. The beef cattle population in Madura during 2013-2016 continued to rise, with an average increase rate of 2.02 percent every year (East Java Animal Husbandry Service, 2017). However, the average increase rate of cattle population in Madura was lower than in East Java. Therefore, various efforts are needed to increase the performance of beef cattle production in Madura.

The fact that Madura cattle is one of the conserved local cattle breeds in Indonesia becomes a problem. Therefore, not all livestock development programs aimed at increasing beef cattle production performance can be implemented in Madura, for example, the crossbreeding program. This situation creates a dilemma in the context of improving the performance of beef cattle production in Madura.

In 2000, with AI (Artificial Insemination) technology, the Animal Husbandry and Health Service introduced the crossbreeding program between Madura cattle and superior bulls outside Madura, namely Limousin and Simental, an effort to increase the production performance. Madura cattle breeders have well-accepted the crossbreeding program between these cattle breeds. The adoption of this crossbreeding has led to changes in the behaviors of the Madura cattle breeder community. Winardi explained two situations related to one's behavior: needs and stimulants (Winardi, 2002). Both needs and stimulants will affect one's behavior in carrying out activities to achieve predetermined goals.

The phenomenon of the crossbreeding program development in Madura has led the researchers to analyze changes in the production strategy of Madura cattle using a socio-economic approach. Therefore, it is necessary to carry out research activities on Changes in Breeder Behaviors and Production Systems of Madura Cattle Breeding. These research results are expected to be used as the basis for formulating livestock development policies in Sampang Regency, Madura, and assessing the socio-economic impacts resulting from changes in the behaviors of Madura cattle breeders.

RESEARCH METHOD

This research was conducted in Sampang Regency, Madura, using a survey method (Singarimbun dan Efendi, 1990). Data were collected using several techniques, namely interviews, participatory observation, and documentation study using data instruments in the form of questionnaires and interview guidelines. The data sources consisted of cattle breeders selected as respondents and key informants. The respondents were determined using a proportional random sampling technique, while the key informants were chosen using a snowball technique. The data collected were analyzed using a descriptive-analytical approach, namely describing the field findings, interpreting the data, and connecting the socio-economic phenomena and technical parameters of beef cattle breeding.

RESEARCH RESULTS

General Description of Livestock

Table 1 provides information on the development of ruminants livestock, including beef cattle, dairy cattle, buffalo, goats, and sheep in East Java during 2016-2019. It can be seen that dairy cattle had the highest growth rate of population. In contrast, the buffalo population continued to decline by 3.56 percent every year (Central Bureau of Statistics of East Java, 2019)

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Table 1: The Population of Ruminant Livestock in East Java during 2016-2019

Species of Ruminant Livestock	2016	2017	2018	2019	Average Growth (%)
Beef Cattle	4,407,807	4,511,613	4,637,970	4,705,067	2.47
Dairy Cattle	265,002	273,881	280,364	287,196	2.92
Buffalo	27,304	26,622	24,364	23,994	-3.56
Goats	3,279,732	3,376,323	3,476,635	3,524,899	2.62
Sheep	1,370,878	1,362,062	1,374,742	1,382,418	1.93

Source: Central Bureau of Statistics of East Java (2019)

Table 2 shows that during 2013-2016, the population of beef cattle continued to increase. However, the population growth of beef cattle in Madura was generally still lower than in East Java (Livestock Data, 2017).

Table 2: The population of Beef Cattle in East Java and Madura

Regions	2013	2014	2015	2016	Average Growth (%)
Bangkalan	186,027	191,245	197,675	200,279	2.49
Sampang	200,279	203,863	211,176	212,776	2.04
Pamekasan	149,855	152,045	155,086	160,635	2.35
Sumenep	345,095	349,081	353,124	357,422	1.18
Madura	881,256	896,234	917,061	931,112	2.02
East Java	3,949,097	4,125,333	4,267,325	4,407,807	3.73

Source: Livestock Data (2017)

Respondent Characteristics

Table 3 provides information on the characteristics of cattle breeders in Madura. Viewed from the age aspect, most SMS breeders were relatively older than the SMM breeders, 64 percent and 44 percent, respectively. Regarding the education background, it appears that most of the SMS breeders only completed elementary schools.

Table 3: Characteristics of Breeder Respondents

Aspects	SMM Breeder	SMS Breeder	Cattle Breeder
Age (Old)	44%	64%	54%
Education (Elementary School)	56%	64%	60%
Number of Livestock (1-2)	48%	52%	50%
Paddy Land	80%	100%	90%
Moor Land	88%	100%	94%
BHMT	100%	100%	100%
Additional Feed	12%	20%	16%

Source: Primary Data

Table 3 suggests that most of the breeders raised only 1-2 cattle, in which both SMM and SMS breeder groups were relatively not different. Besides, regarding land ownership as support for cattle breeding, it turned out that most of the breeders had paddy and moorlands. However, none of them cultivated forage crops. Only a few breeders, especially SMS breeders, provided additional feed in the form of concentrate for cattle.

Impact of Changes in Breeder Behaviors and Production System of Cattle Breeding

Behavior changes in cattle breeding production in Madura began with the AI (Artificial Insemination) program using frozen semen of superior bulls outside Madura. The crossbreeding program between Madura cattle and Limousin cattle started along with the issue that Madura cattle experienced decreasing production performance, tending to be smaller in size or weight ((Siswijono and Nurgiartiningsih, 2010). The AI (Artificial Insemination) program with frozen semen of superior bulls from outside Madura has now been institutionalized among the community of cattle breeders in Madura (Nurgiartingsih, 2010). The cattle breeder community in Madura perceived that the crossbreeding between Madura cattle and Limousin/Simental cattle was intended to increase the performance of Madura cattle production (Siswijono, Nurgiartiningsih, and Winarto, 2015). The results of the interviews with respondents revealed that some of the considerations motivating the beef cattle breeder community to adopt such crossbreeding were that the crossbred calves have a larger size or weight, higher selling price, and faster or easier selling potential. Thus, the researchers also observed the socio-economic impacts resulting from the breeder behaviors and breeding production system changes.

Economic Impact of Changes in Production System of Cattle Breeding

Behavioral changes in the production system of beef cattle breeding provide the breeder community with benefits, namely the increased revenue from crossbred cattle selling. In general, calves will only be sold after the weaning period, when they reach 7-8 months old. The standard consideration underlying most breeders to sell their cattle is to meet their household needs.

The interviews with respondents indicated that the average selling price of weaned crossbred Madura calves was more expensive than the pure one. The price difference between the two could range from IDR 1,000,000 to 3,000,000 (depending on the calf performance). According to the respondents, the weaned crossbred Madura calves' average selling price was IDR 8,475,000 (depending on the cattle performance). Meanwhile, the average selling price of the weaned pure Madura beef calves could reach IDR 6,775,000, not much different from the crossbred one (highly depending on the calf performance).

Social Impact of Changes in Production System of Cattle Breeding

Behavior changes in the production system of Madura cattle breeding adopting the crossbreeding program between Madura cattle and superior bulls from outside Madura may lead to the extinction of pure Madura cattle, especially if this crossbreeding is not well controlled. The extinction of pure Madura cattle will impact the preservation of the Madurese culture, such as *Kerapan Sapi* (the Traditional Festival of Bull Racing) and *Kontes Sonok* (Cow Beauty Contest).

The field interviews showed that pure Madura cattle is the best and irreplaceable species of cattle to meet the needs for community activities, namely *Kerapan Sapi* and *Kontes Sonok.* Therefore, changes in the livestock production system by adopting crossbreeding between Madura cattle and superior Limousin/Simental bulls will certainly threaten Madurese culture, especially Kerapan Sapi *Kontes Sonok.* The Madurese community perceives that traditional Madurese culture activities of *Kerapan Sapi* and *Kontes Sonok* require pure Madura cattle (Siswijono and Nurgiartiningsih, 2010).

CONCLUSIONS

- The household breeder groups held the most dominant power in the structure of cattle breeding in the regency, each of which raised 1-2 cattle, both for pure and crossbred Madura cattle breeder groups.
- Crossbred Madura cattle production indirectly provides the breeders with economic benefits obtained from the increasing sale price of cattle. In contrast, the system changes in cattle breeding production are likely to cause negative social impacts for the Madurese community, one of which is the threat to pure Madura cattle sustainability.

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SUGGESTIONS

- The government needs to carry out intensive supervision and control in the context of preserving Madura cattle.
- Economic incentives need to be allocated to motivate Madura cattle breeders to produce superior Madura cattle breeds.

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