Strategy for Improving Production Performance and Preservation of Madura Cattle

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Abstract. Research on strategies to improve the production performance and preservation of Madura Cattle aims to formulate a strategy for Madura Cattle farming management. The study utilized survey method. Data were collected by interview, participatory observation and documentation. The survey results showed that farmers had a negative perception of production performance and they believed that cross-breeding was the best way to improve the appearance of Madura Cattle. Documentation of the study proved that an important step had been taken by the government in the preservation of Madura Cattle with the establishment of institutional preservation of Madura Cattle. However, the institution for preservation of Madura Cattle only tends to regulate Madura cattle farmers’ obligations without regulating the rights of these farmers. Based on the results of the study, it was concluded that the institutional preservation of Madura cattle has developed significantly, especially on their efforts to preserve Madura cattle. The result of this study suggested that the establishment of a policy of regulating cross-breeding patterns and the determination of economic incentives were needed as an alternative to the institutional development of Madura Cattle preservation.

1. Introduction

The population of Madura Cattle was up to 21.12 percent of the total beef cattle population in East Java with total population of about 931,112 cows in 2016 [1]. The average population rate increased by 1.85 percent per year, which was lower compare to total population rate in East Java. This is showing the improvement of the production performance of Madura Cattle was also relatively low. Therefore, various efforts were needed to improve the production performance of Madura Cattle.

However, Madura Cattle is known as one of the germplasm cattle in Indonesia. As a consequence, not every improvement production performance program can be implemented in Madura Island. For example, cross-breeding between Madura Cattle with superior cattle such as exotic cattle could cause a dilemma. The cross-breeding will improve the production performance of Madura Cattle. On the other hand, this could threat the germplasm conservation in Madura Island if the cross-breeding is not strictly controlled.

In practice, Madura Cattle farmers implemented cross-breeding between Madura cattle with superior males such as Limousin or Simental breed. A study proved that Madura Cattle
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farmers adopted Artificial Insemination (AI) using Limousin or Simental breed to increase the production performance of Madura Cattle [2]. This is showing the change of behavior of Madura Cattle farmers. These two factors affect people’s behavior in doing activities to achieve their goals.

Based on the occurrence of cross-breeding between Madura Cattle with other breeds, it is important to research strategy to improve production performance and preservation of Madura Cattle. This research aims to formulate a strategy for Madura Cattle farming management including cross-breeding strategy and institutional preservation development of Madura Cattle as local germplasm in Indonesia.

2. Methods
The study was conducted in Sampang District, Madura. The survey method is utilised in this study [3]. Data were collected by interviews, participatory observation, and documentation. There were two instruments used in collecting data of the study. First was questionnaires and second was interview guidance. Questionnaires were used for interviewing respondents which aims to collect frequency distribution data. Interview guidance was utilised to collect data related to process and history. The participatory observation was employed to capture knowledge and evidence about information from respondents. Documentation study was utilised to gather secondary data and information related to institutional preservation development of Madura Cattle.

Respondents of the study were Madura Cattle farmers. Respondents were chosen with random sampling technique. Data were descriptively analysed and interpreted to link the social and economic phenomenon, as well as technical parameters of cattle farming.

3. Result and Discussion

3.1. Livestock ownership and farmers’ perception
Table 1 shows information on Livestock ownership of Madura Cattle household farming.

| Madura Cattle (heads) | Respondent | Percentage |
|-----------------------|------------|------------|
| 1-3                   | 88         | 70.40      |
| 4-6                   | 34         | 27.20      |
| >6                    | 3          | 2.40       |
| Total                 | 125        | 100.00     |

Source: Siswijono [5]

Table 1 shows that 70.40 percent of respondents owned 1-3 cows per farmer. Supporting this, data from a study on Increasing Animal Population Through Artificial Insemination in Pasuruan Regency showed that up to 66.70 percent of household cattle farming owned 1-3 cows per farmer [4]. Moreover, another study on the feasibility study of Ongole Breed development center in Probolinggo confirmed that average ownership of cattle farming was 1-3 cows per farmer [5].

Documentation of the study informed that the perception of Cattle farmers on the production performance of Madura Cattle was negative. This means that farmers confirmed that the production performance of Madura Cattle decreased by the time [6]. Therefore, farmers believed that cross-breeding between Madura Cattle and other breeds was an effective way to improve the production performance of Madura Cattle.
3.2. Development of Madura Cattle institution preservation
Utilising field observation technique, this study gathered information regarding the development of Madura cattle institution preservation. The study categorised 5 issues related to the development of Madura Cattle Institution Preservation.

3.2.1. Determination of Madura Cattle cluster
The original geographical distribution of Madura Cattle was in Madura Island and surrounding. Characteristic of Madura Cattle differs from other local cattle breeds. The protection and conservation of this specific characteristic of Madura Cattle remain important because it is part of native genetic resources of Indonesian cattle. Based on the geographical distribution of Madura Cattle, physical performance and characteristic of Madura Cattle, it is important for the government to protect and conserve the preservation of Madura Cattle. The government established Agriculture Ministry Statement Letter (Surat Keputusan Menteri Pertanian) No: 3735/Kpts/HK.040/11/2010 on determination Madura Cattle as one of Indonesian native cattle.

3.2.2. Indonesian National Standard (Stadar Nasional Indonesia/SNI) of Madura Cattle
Indonesian government through Agriculture ministry established a quality standard of Madura Cattle on SNI 7651.2:2013/ Badan Standarisasi Nasional ICS 65.020.30. The SNI was part of government determination to improve and protect Madura Cattle as one of Indonesian native cattle. The SNI ought to be the guidance in Madura Cattle farming, especially in cattle selection of appropriate Madura Cattle performance. The good performance of Madura Cattle that fulfill the SNI standard were targeted for breeding purpose. On the other hand, Madura Cattle does not fulfill the SNI standard aimed for producing meat.

3.2.3. Establishment of Madura Cattle breeding area
Indonesian government established three islands as conservation and breeding areas for native cattle, Pulo Raya, Nanggroe Aceh Darussalam; Sapudi Island, Jawa Timur; Nusa Penida Island, Bali (Keputusan Direktur Jenderal Peternakan Dan Kesehatan Hewan, Nomor: 18020/Kpts/PD.420/F2.3/02/2013). These three islands have been established as conservation areas and sources of Aceh Cattle, Madura Cattle ana Bali Cattle breeds. The establishment of these areas as conservation and breeding areas for native cattle based on considerations of policy aspect, natural resources availability, socio-economic and technical reasons.

Based on the geographical area, there are some modifications to the Madura Cattle preservation areas. In the beginning, the preservation areas were including the entire island. However, in 2013 the area contracted only in Sapudi Island and Sumenep Regency. The reduction of preservation areas gave access for Madura Cattle farmers outside Sapudi island and Sumenep recency to carry out cross-breeding Madura Cattle with other breeds. Hayami and Kikhuci stated that technologies played an important role in the institutional change in the farming community [7]. The government under the Directorate of Animal husbandry and Veterinary established two Technical Implementation Unit (Unit Pelaksana Teknis Peternakan/UPT) to supervise and protect the preservation of Madura Cattle, namely UPT Sapi Madura in Pamekasan Regency, Madura, and Banjar Baru, Kalimantan.

Institutional was established to solve technical problems on Madura Cattle preservation. Therefore, institutional developed based on the problems faced by the community [8]. Wijono and Setiadi stated that new areas were needed to extend the breeding area to restrict the large area of the native breed and followed with the appropriate selection programs that will produce high-quality breed and improve the performance of Madura Cattle [9].
3.2.4. Determination of IB fee incentives

Interview data of the study informed that frozen semen of Madura Cattle is free of charge for farmers. When farmers need Artificial Insemination (AI) service by using Madura Cattle frozen semen, they only need to pay Rp. 50.000,- for the service and they will get the frozen semen for free. The government subsidise the Madura Cattle frozen semen to attract farmers using Madura Cattle breed. However, in 2016 the government establish the Special Program for Obligatory Pregnant Cattle (Upaya Khusus Sapi Indukan Wajib Bunting/UPSUS SIWAB). With this program, the government provided free semen for all-breed, not only for Madura Cattle. The government established the program to accelerate the livestock population in Indonesia, especially cattle and buffalo. With the program, farmers only need to pay about Rp. 50.000 for the AI service and free of charge for any semen they chose. Although the program could increase the livestock population in Indonesia, this affected farmers' participation in Madura Cattle preservation.

3.2.5. Incentives determination of productive cattle

The government with the Directorate General of Animal Husbandry established a policy on the economic incentive system for protection and controlling the slaughter of productive cattle (Sapi Betina Produktif/SBP). With the policy, the government provided cash as an incentive for farmers who have pregnant productive cattle. Farmers only need to provide a certified document from the authority stating that the productive cattle got pregnant. Funds are needed for negotiation and implementation to generate, maintain and change the institution [7].

However, interview data showed that economic incentives for productive cattle were given for all farmers who have pregnant cattle without classifying farmer’s status and orientation, especially for those who have preservation orientation. For instance, farmers who maintain the preservation of Madura Cattle received similar economic incentives with those cross-breed Madura Cattle with other breeds. Therefore, there were no special rewards for the farmer’s effort to maintain the preservation of Madura Cattle.

3.3. Madura cattle business management strategy

Indonesian government with the Ministry of Agriculture has implemented some strategies to improve production performance and preservation of Madura Cattle. The government issued a number of statutory regulations and institution models of Madura Cattle preservation, including Determination of Madura Cattle Cluster, Indonesian National Standard (Stadar Nasional Indonesia/SNI) of Madura Cattle Breed, Establishment of Madura Cattle Breeding Area, development of Village Breeding Centre and Technical Implementation Unit (Unit Pelaksana Teknis Peternakan/UPT).

Generally, the preservation institutions established by the government only regulate obligations for all Madura Cattle farmers. On the other hand, it does not incorporate the economic benefit for Madura Cattle farmers. It demonstrates an imbalance between the obligations and rights of Madura Cattle farmers. This situation was causing behavior deviations of Madura Cattle farmers in supporting Madura Cattle preservation programs. In fact, cross-breeding between Madura Cattle with superior breeds using Artificial Insemination technology occurs for improving production performance. Interview data revealed that the economic factor was the main reason for farmers doing cross-breeding. Farmers did not get significant economic benefits in supporting Madura Cattle preservation. This situation became a dilemma of Madura Cattle farming development.

Based on the situation, it is important for the government to develop preservation institutions that meet the need of Madura Cattle farmers. Madura Cattle preservation institution created by the government to develop the previous institution should obtain support and active participation from the Madura Cattle farming community. As shown, the economic aspect was the strongest inhibiting factor in Madura Cattle preservation. Therefore, the development of the institution should be economic incentive-based. The
economic incentive-based institution should be established immediately to motivate Madura Cattle farmers to actively participate in Madura Cattle preservation program. The next question is how the Madura Cattle preservation institution should be formed to encourage the active participation of Madura Cattle farmers in supporting the program. Data of the study showed that cross-breed Madura Cattle was more profitable for farmers compare to native Madura Cattle. Therefore, it is important to calculate the economic value to encourage farmers to actively participate in supporting Madura Cattle preservation. Based on the data of the study, there are two strategies could be adopted for improving production performance and institution preservation of Madura Cattle.

3.3.1. Determination of cross-breeding patterns
Cross-breeding patterns should be regulated, especially on the level of household Madura Cattle farming to increase economic benefit for Madura Cattle farmers. Farmers believed that cross-breeding was the most effective technique to improve the production performance of Madura Cattle. Farmers preferred cross-breed calves because it has better performance and economic value. However, without appropriate control and supervision, cross-breeding could be a threat to Madura Cattle preservation.

Based on the phenomenon in the Madura Cattle farming community, the determination of cross-breeding patterns possibly will control and maintain the preservation of Madura Cattle. This study is suggesting cross-breeding patterns selang-seling (by turns). With the Selang-seling patterns, a female Madura cattle will be breed with Madura semen using AI technique, on the next breeding time the cattle will be cross-breeding with other breeds semen, and so on. Determination of selang-seling patterns will control and maintain Madura Cattle preservation and at the same time provide better economic value for farmers. Kustiyah explained that the best production performance is the F1 because it could be tolerated from economic and physical aspects. Therefore, F1 male or female cattle will be aimed for producing meat instead of breeding purpose [10].

3.3.2. Determination of economic incentive preservation
Indonesian government implemented strategies to elevate livestock performance. Determination of economic incentive preservation policy for productive cattle and Artificial Insemination techniques were existing examples of the government’s strategies. However, the economic incentive preservation policy threatened the preservation of animal genetic resources, especially on the preservation of native Indonesian germplasm, such as Madura Cattle. Because the economic incentives provided by the government failed to classify the farmer’s status and orientation, especially for those who have preservation orientation.

Based on the challenge of Madura Cattle preservation, this study suggested an economic incentive system for Madura Cattle preservation is crucial to be implemented. The economic incentive preservation system is similar to the economic incentive for productive cattle or AI incentive system. Additionally, Madura Cattle farmers who participate in the preservation of Madura Cattle will receive additional economic incentives. Moreover, Madura Cattle farmers will receive the economic incentive preservation up until the calves reach a certain age agreed. This study suggested that Madura Cattle farmers receive economic incentive preservation at least double of incentive for productive cattle or decided based on the weight ratio index. Therefore, it is strongly suggested that the government provide special budget for preservation incentive.

4. Conclusions and suggestions
In conclusion, the Indonesian government with the Ministry of Agriculture has implemented some strategies to improve production performance and preservation of Madura Cattle. However, the preservation institutions established by the government only regulate the responsibility of Madura Cattle farmers, yet it pays little attention to the
economic benefit for farmers. This situation was causing behavior deviations of Madura Cattle farmers in supporting Madura Cattle preservation programs. Moreover, cross-breeding between Madura Cattle with superior breeds using Artificial Insemination technology occurs for improving production performance.

Therefore, this study suggested two strategies for improving production performance and institution preservation of Madura Cattle. First, the establishment of cross-breeding patterns policy to control and maintain Madura Cattle preservation and at the same time provide better economic value for farmers. Second, the determination of economic incentives as an alternative to the institutional development of Madura Cattle preservation.

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