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Analysis towards Prompting and Inhibiting Factors in Bull-Cement Selection of AI Cattle in Madura.

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ABSTRACT

The study aimed at improving the production of Madura cattle and at the same time, maintaining the purity of the cattle as one of the germplasm in Indonesia. The specific objective of the study was to identify the prompting and inhibiting factors in the selection of Madura bulls as the source of AI frozen cement in Madura. The data collection method was survey. The datanwere obtained by interviewing the respondents, conducting participatory observation and documentation as well as distributing structured questionnaire. The results indicated that the prompting factors in the selection of Madura bulls as the source of cement were 1) there was increasing market-demand for crossbred cattle, 2) the crossbred cattle had good price, 3) the cattle produced more calves, 4) the crossbred cattle (exotic) was larger than the native Madura breed, 5) farmers believed that crossbreeding between the exotic breed and native Madura breed improving the appearance of the latter species, 6) Artificial Insemination seemed to be the best proper technique for cross-breeding. The three inhibiting-factors in the selection of Madura bulls as the source of cement were: 1) pure, local breed was the only breed allowed to participate in *sonok*, a contest native to Madurese, 2) crossbred cattle needs more qualified food compared to the local one, and 3) the crossbred cattle was prone to disease. The Focus Group Discussion revealed that economic value of the cross-bred cattle was the most important element to consider in the bull selection. The conclusion is that economics was the primary driving factor in the selection of the bulls in Madura; Based on the findings, it is suggested that incentive should be given to the cattle raisers who breed the native Madura breed as a part of cattle farm development in Madura.
Keywords: *adoption, inovation, crossbreed, conservation and Madura cattle.*

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INTRODUCTION

Food security is a condition in which the availability of food is sufficient to meet the household needs, both in terms of quantity, quality, and safer to use and affordable to the community. The livestock sector is one important part of the security system and national food security. However, livestock production in the country has not been able to meet consumption needs, especially the needs of meat and milk. Annually, the government had to import 30% of the national meat consumption and 70% of the national milk consumption.

Indonesia has some cattle breeds with the potential to be developed as a producer of beef. Madura cattle is one type of beef cattle which had long been kept by farmers in rural communities. Madura Cattle population in 2012 was estimated at around 905,271 , with an increase in population of 7:29% annually. Madura Cattle population currently accounts for around 21% of the total beef cattle population in East Java. In general, the Madura cattle shows improvement, but there are indications that the performance of Madura Cattle production tends to decline. Therefore, improving production of Madura cattle requires a lot of efforts.

East Java Provincial Government has made various efforts to improve the production of the Madura cattle. Problem appeared when Madura cattle was established as one of the local germplasm in Indonesia; thus, crossbreeding between Madura cattle and exotic breed is prohibited. However, the practice on the field is totally different , the cattle breeder in Madura applied Artificial Insemination (AI) using cement from superior male breed coming from other areas as the source of frozen cement (Nurgiartiningsih, et al, 2009). The phenomenon creates dilemma in establishment of the livestock development policy. On one side, Madura was established as a closed-zone in order to maintain the purity of   Madura cattle but,on the other hand, it is necessary to improve the production of Madura cattle and preserve the species.

Based on the phenomenon, analyzing the prompting and inhibiting factors in the selection of Madura bulls as the source of AI frozen cement in Madura is of necessity. It is expected that the findings contribute to establishment of policy related to livestock development in Madura, particularly one related to production, empowerment of cattle raiser and preserving the Madura cattle.

MATERIALS AND METHODS

The source of data was cattle raisers in Madura; they were considered as both respondents and key informants. The cattle raisers referred to those breeding Madura cattle and crossbreed cattle.

The research was conducted using survey (Singarimbun and Effendi, 1990). Random sampling was the sampling technique to select the respondents while snowballing technique was used for selecting the key informants . The types of data collected were both primary data and secondary data. The data collection techniques were interview, participatory observation and documentation study. The instruments for the data collection were   questionnaires and interview guides.

There were two types of interviews, respondent interviews and in-depth interviews. Questionnaire was used during the respondent interviews to collect data related to distribution of frequency while interview guide was used during the in-depth interviews to gather data related to process or   historical events. The objective of the Participatory observation was to obtain knowledge and evidence from the social world since observation and taking participation were the only techniques to get information from particular sources of information. The data collected   were analyzed using descriptive analytical approach, which describes and elaborate the findings related to the selection of the superior male cattle as the source of frozen cement.

RESULTS

Cattle Population in Madura

In 2012, the cattle population in Madura were 905,271 spreading across four districts, Bangkalan, Sampang, Pamekasan and Sumenep. Table 1 provided information about the   of Madura cattle population between 2010 and 2012 .

Tabel 1. Madura Cattle Population.

Areas	2010	2011	2012	Growth (%)
Bangkalan	164,201	193,576	205,157	11.94
Sampang	176,076	196,414	196,807	5.88
Pamekasan	130,576	127,674	142,445	4.67
Sumenep	316,571	357,038	360,862	6.93
Madura	787,424	874,702	905,271	7.29

Source: Department of Animal Husbandry, 2013

Based on Table 1, Sumenep had the highest cattle population in 2012 (360, 862 heads)while Pamekasan had the lowest (142, 445). Table 1 also showed that between 2010 and 2012, the cattle population in Madura increased gradually by 7,29% annually.

Table 1 showed that between 2010 and 2012, the highest increase of the cattle population took place in Bangkalan, the increase was 11.94% annually.   the lowest increase of the cattle population took place in Pamekasan, only 4.67% annually.

Cattle Raiser's Characteristics

In general, the cattle raisers in Madura were older, had low education and raising cattle was their main occupation . Most of them (76.0 percent) kept 1 or 2 cows and , the majority of them (86.0 percent) ran small-scale cattle farm. The farmers commonly sold the cows when they were between six to 12 months old considering their price and household needs. The majority of the cattle raisers preferred Limousine, a breed of cow, as a source of frozen cement for AI considering that the species was large, their price was more expensive, there was high demand for crossbred species and crossbreeding was the method for of improving the appearance of Madura cattle.

Prompting and Inhibiting Factors in the Bull Selection

Rogers (1971) explained that the pace of adoption of innovation is influenced by several factors, namely: relative advantage, compatibility, complexity, triability and observability.Relative profit was associated to economic considerations, time when an individual applied innovation to managed his or her business where profitability or loss were detrimental to the business. Compatability was related to whether innovation was still related to the technology applied to business activities managed by a person or farmer / rancher.

The complexity was associated to how much difficulty farmers encountered when they applied innovation to their business . The farmers would not apply an innovation if the risk they were about to encounter was high. Conversely, if the degree of difficulty was relatively small, the farmers would certainly adopt the innovation. Triability, related to innovation, referred to whether or not innovation was applicable for a small scale, in an attempt to convince   the farmersprior to applying the innovation on a large scale. Innovation may be observed, which was related to the results of the application of innovation during testing time.

Prompting Factors

Having conducted survey towards the cattle raisers, it was found out that there were several factors they took into account in selecting which cows to choose from as the source of frozen cement   Table 2 described the prompting factors in selecting the cattles as the source of frozen cement.

Table 2. Frequency Distribution of the Prompting Factors in the Frozen Cement Selection

No.	Prompting Factors in Selecting the Cement	Disagree	Neutral	Agree	Total
1	Crossbreeding would result in larger calves (exotic) compared to the local breed			50 (100.0)	50 (100.0)
2	There was higher demand for crossbred cattle	3 (6.0)	4 (8.0)	43 (86.0)	50 (100.0)
3	Crossbred cattle had higher price			50 (100.0)	50 (100.0)
4	Crossbred cattle was larger			50 (100.0)	50 (100.0)
5	Crossbreeding was the best method to improve Madura cattle.			50 (100.0)	50 (100.0)
6	Availability of AI service on cattle			50 (100.0)	50 (100.0)

Source: Primary Data (2015)

The prompting factors were as follow: the first, crossbreeding would result in larger calves (exotic) compared to the local breed; the second, the price of crossbred cattle was more expensive than local one; the third, crossbreeding between the local and the breed is the best way to improve the size of the Madura cattle; the fourth, the Madura Cattle tend to be smaller than the the crossbred (exotic); the fifth, AI Technology simplified the process of crossbreeding, and finally, the demand for the crossbred was very high.

Inhibiting Factors

The survey revealed there were several inhibiting factors during the selection of the cattle as the source of frozen cement. Table 3 described the inhibiting factors in more detailed manner.

Table 3. Frequency Distribution of the Inhibiting Factors in the Forzen Cement Selection.

No	Inhibiting Factors	Disagree	Neutral	Agree	Total
1	The local breed was the most suitable breed for "karapan Sapi" and "sonok"and sapi sonok is the local breed.		2 (4.0)	48 (96.0)	50 (100.0)
2	"Kerapan sapi" and "sonok" required the local breed.		3 (6.0)	47 (94.0)	50.0 (100.0)
3	The Crossbred cattle needed better food compared to the local breed.	1 (2.0)	3 (6.0)	46 (92.0)	50 (100.0)
4	Conservation program for the Madura cattle was needed to get the best cow for "kerapan sapi" and "sonok."	4 (8.0)	2 (4.0)	44 (88.0)	50 (100.0)
5	"Kerapan sapi" and "sonok" were two traditions which should be conserved.	2 (4.0)	15 (30.0)	33 (66.0)	50 (100.0)
6	Crossbred cattle was prone to diseases	11 (22.0)	30 (60.0)	9 (18.0)	50 (100.0)
7	Crossbreeding would result in better calves for "kerapan sapi" and "sonok."	28 (56.0)	18 (36.0)	4 (8.0)	50 (100.0)

Source : The Survey (2015)

There were seven inhibiting-factors, namely the first, the the local breed was the only one allowed to participate in "Karapan Sapi" and "Sonok."; the second, "Karapan sapi" and "sonok" required the local breed; The third, the crossbred cattle required better food compared to the local breed; the fourth, Conservation program for the Madura cattle was needed to get the best cow for "kerapan sapi" and "sonok." ; the fifth, "Karapan Sapi" and "sonok" were traditions the locals should preserve ; the sixth, the crossbred cattle was prone to disease ; and the last, Crossbreeding would result in better calves for "kerapan sapi" and "sonok."

CONCLUSION & RECOMMENDATION

Conclusion

Based on the findings, the following conclusions can be made.

1. The general characteristics of the cattle farmers in Madura are they are relatively older , their level of education is relatively low, and farming is their main occupation;
2. The farmers usually keep 1 or 2 cows and the most frequent type of cattle farming is nursery;

3. The Breeders mostly sell the cattle when it is between 6 and 12 months old depending on prices and household needs;
4. The most preferable breed as the source of frozen cement for AI was the Limousine cowas a source of frozen semen for AI;
5. The driving factors in selecting the bulls for the source of frozen cement, include the demand of crossbred cows is high, the price of crossbred calves is expensive, the size of the crossbred cakves is larger the local breed tends to be smaller than the crossbred , crossbreeding between the local breed and other breeds (exotic breeds) is the best way to improve the appearance of the local breed , IA simplifies the process of crossbreeding;
6. The inhibiting factors in selecting the bulls becoming the source of frozencement are cultural issues ("Karapan Sapi" and "sonok") , the crossbred needs good food,and the crossbred calves are prone to disease;
7. The economic aspect is a key driver in choosing the breed of cattle as the source of frozen cement.

Recommendation

Based on the findings, several recommendations can be made.

1. Based on the findings, it is suggested that incentive should be given to the cattle raisers who breed the native Madura breed as a part of cattle farm development in Madura;
2. Future researchers should conduct a study that analyzes cattle raiser's access to variety of resources and one that identifies vulnerability-context of both the local breed and crossbred farming system.

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