Reproductive Disorders in Beef Cattle in Kerek Subdistrict, Tuban Regency, Indonesia

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ABSTRACT

Tuban regency is one of the second largest beef cattle producers in East Java after Sumenep Regency with a total 344.203 beef cattle population. Based on the cases of reproductive disorders of beef cattle data in Tuban Regency from 2018 until 2019 reported the incidence of reproductive disorders was as many as 8.501. Treatment of reproductive disorders in Kerek Subdistrict, Tuban found 797 cases of reproductive disorders from 9.150 total population. The purpose of this study is to identify how several factors, namely feed, age, and cage environment contributes to cases of reproductive disorders in beef cattle in Kerek Subdistrict, Tuban Regency in 2018-2019. The samples used in this study were 131 cows with reproductive disorders. The method used in this study was the survey method and obtained primary and secondary data. Primary data were obtained from field surveys of farmers, Secondary data was obtained from the examination of reproductive disorders in beef cattle by the Department of Fisheries and Livestock. The data obtained were then tabulated and analyzed with a chi-square test. The results showed that feed variables, age, and cage environment can affect the occurrence of reproductive disorders in beef cattle in The District Kerek, Tuban.

Keywords: Reproductive health, Reproductive disorders, Beef Cattle, Livestock

INTRODUCTION

Beef cattle is one of the livestock commodities that have great potential to be developed (Saputra & Widodo, 2016). Tuban Regency is one of the second largest producers of beef cattle in East Java after the Sumenep regency. The results of the accuracy data of the Dinas Perikanan dan Peternakan Tuban that the population of beef cattle, especially in Tuban Regency in 2016 amounted to 329,272, while in 2019 there was an increase in the number of beef cattle 344,203. Kerek District is one of the sub-districts located in Tuban regency which has the largest beef cattle population with a population of 28,114 and productive heifers as much as 9,150, but the current beef cattle population has not been able to reach the target determined by the Tuban Regional Government where the target population of livestock in Tuban regency must be 50% of the population (Dinas Perikanan dan Peternakan Tuban, 2019).

Efforts to increase the production of beef cattle farming are currently still many obstacles, such as the problem of reproductive disorders that can reduce livestock productivity and infertility. Reproductive disorders in many beef cattle include ovarian hypofunction, repeat breeding, silent heat, persistent corpus luteum (CLP), delayed puberty, and endometritis or metritis (Prihatno et al., 2013).

Based on the assessment results of reproductive disorders of beef cattle in Tuban Regency, from 2018 to 2019 in 20 sub-districts reported incidents of reproductive disorders as many as 8,501. Examination and treatment of reproductive disorders in the Kerek Subdistrict were carried out from 2018 to 2019, while the examination report from reproductive disorders found 797 cases from a 9,150 total population (Dinas Perikanan dan Peternakan Kabupaten Tuban, 2019).

The reproductive health of beef cattle is closely related to livestock management factors, if livestock management is good then the reproduction of beef cattle also goes well (Armelia et al., 2019). Management factors are very closely related to feeding or nutrient factors. Lack of nutrients in the body over a long period of time will affect reproductive function, low reproductive efficiency, and eventually low productivity (Pradhan et al., 2015). Nutritional deficiencies will affect the function of the anterior pituitary so that the lower production and secretion of the hormones FSH and LH, as a result of which the ovaries do not develop and reproductive disorders occur. Age can be directly related to the existence of reproductive disorders, if the age of beef cattle is getting older then the quality of production and reproduction of beef cattle will decrease and livestock are susceptible to reproductive disorders (Jelantik et al., 2007). According to Prihatno et al., (2013) the cage environment is one of the factors in the occurrence of cases of reproductive disorders. When poor cage sanitation can be indicated the management of livestock rearing is bad. The number of reproductive disorders of beef cattle in The District of Kerek Tuban Regency needs to be created an effective reproductive health program in livestock in order to produce better reproductive efficiency so as to increase the income of farmers who are doubled before and in tackling a case of reproductive disorders in livestock, the effort that needs to be done is to implement reproductive health programs, which are prepared with livestock data on reproductive disorders (Dinas Perikanan dan Peternakan Kabupaten Tuban, 2019).

Supporting effective reproductive health programs in livestock to minimize the incidence of cases of reproductive disorders, it is necessary to do research to find out the causes of reproductive disorders among several factors including feed, knowledge of age, and environmental conditions of cages that occur in Kerek District of Tuban Regency.

MATERIAL AND METHOD

Location and Time

This study was conducted in the Kerek District, Tuban Regency, East Java, Indonesia from January until March 2021. Collection of primary data in the form of interviews with farmers and secondary data from the Tuban District Fisheries and Livestock Service/ Dinas Perikanan dan Peternakan Kabupaten Tuban.

Material

The material used in this study is data on beef cattle that were identified have reproductive disorders as many as 131 beef cattle obtained from calculations using formulas from various villages in Kerek District, Tuban Regency, and reports of reproductive disorder management activities of the Tuban District Fisheries and Livestock Service 2018-2019. Questionnaires are used to obtain data from farmers.

Research Procedure

A sampling of female beef cattle is taken by purposive sample method where the criteria are taken from villages that have a history of high reproductive disorders and a high livestock population in Kerek District, Tuban Regency. The number of beef cattle samples was taken as much as 131. The method used in this study is the survey method. The data taken is primary data and secondary data. Primary data were obtained from surveys in the field and interviews with farmers and secondary data was obtained from the results of an examination of reproductive disorders of beef cattle by the Tuban District Fisheries and Livestock Service.

Observed variables

The livestock data taken includes data on the number of female beef cattle that were identified have reproductive disorders as a variable dependent, while the variable independent is the cause or factor such as feed, knowledge of age, and the environment of the cage.

Data Analysis

The data obtained in this study were tabulated and analyzed using the Chi-square ($x2$) test with the Windows Statistical Product and Service (SPSS) application to determine the factors that cause the incidence of reproductive disorders in Kerek District, Tuban Regency.

RESULT AND DISCUSSION

The research was conducted by retrieving primary and secondary data. The research was conducted in Kerek District, Tuban Regency. The research time was conducted from January until March 2021 for primary data retrieval by interview and observation with farmers and secondary data obtained from the Tuban District Fisheries and Livestock Service. The sample used was a female beef cattle that were identified have reproductive disorders of as many as 131, where 86 beef cattle had ovarian hypofunction, 21 beef cattle had Persistent Corpus Luteum (CLP) and 24 beef cattle had endometritis that could be seen in Table 1.

Chi-square (X2) analysis results show that 3 variables have a p-value>0.05. These three variables can affect the occurrence of cases of reproductive disorders because in this study the sample used positively identified have reproductive disorders, there are no negative samples of reproductive disorders so the factors of reproductive disorders that occur in the Kerek District, Tuban Regency can be caused by the same factor.

Feed and drinking effects

Feed is one of the variables of this research. Maintenance management factors carried out by farmers in Tuban Regency are still simple where the feed given to livestock is only sourced from forage such as corn hay, rice straw, and weed grass. The average feed becomes mandatory animal feed given every day and corn hay becomes the most often given feed because the majority of farmers work as corn farmers. All farmers (100%) also know if additional feeding can meet the nutritional needs of livestock. In fact, there are only 24 farmers who provide additional feed in the form of bran mixed with drinking water. Giving additional feed to beef cattle is not done every day and the amount given is not measured. The provision of drinking water to cattle by farmers is done in the same way that is given in one container every day, not given ad-libitum. Feed is a very important factor in a livestock business (Yoo, 2010). Superior livestock will not show their superiority without the support of good feed and adequate amounts and it can be concluded that feed is one of the important factors against the performance of production so a lack of nutrients in the feed can cause reproductive disorders (Damayanti et al., 2020). According to (Balitbang Pertanian, 2017), the standard needs of beef cattle are crude protein 15%, crude fat 6%, crude fiber 18%, and Total Digestive Nutrient (TDN) 65%. The feed provided in Kerek District, Tuban Regency has not been sufficient for livestock needs, where farmers only provide corn hay feed to be the largest presentation feed compared to others. Lack of these nutrients can adversely affect reproduction, causing livestock to be less fertile and high incidence cases of reproductive disorders. Low-nutrient feed supply is common, and if it occurs continuously for a long time will negatively affect livestock productivity (Fauzi et al., 2020). Suhartanto (2017) mentioned that a lack of protein in rations can increase the risk of reproductive disorders. Insufficient feeding is the cause of animal reproduction disorders lack of calcium and phosphor can cause livestock to become infertile, and lack of nutrients is capable of causing early embryo death. Lack of feed can affect ovulation and fertilization. The lack of acute feed nutrients in ovarian touch through rectal exploration will be felt in the hypofunction of the ovaries, namely slippery surface ovaries because there is no growth of follicles or corpus luteum (Koeck et al., 2010). It was concluded that this feed is one of the causes of high cases of ovarian hypofunction and persistent corpus luteum in Kerek District, Tuban Regency, especially in the Mliwang sub-district and Padasan sub-district which has cases of high ovarian hypofunction.

Table 1. Reproductive disorders case data from Tuban Fisheries and Livestock Service

Sub-district	Reproductive disorders in Kerek District (2018-2019)			
	Ovarian Hypofunction	Persistent Corpus Luteum	Endometritis	Total
Mliwang	31	16	15	62
Karanglo	18	1	5	24
Margomulyo	16	4	2	22
Padasan	21	0	2	23
Total	86	21	24	131

Table 2. Chi-square analysis (X2) and p-value causes of the incidence of reproductive disorders

No	Description	X^2	p-value
III	Feeding and drinking	17.417	p=0.135**
IV	Environmental cage	6.302	p=0.613**
V	Knowledge of age	13.068	p=0.110**

The provision of drinking water is done twice a day, morning and evening, each giving as much as two drinking water. Based on Prastiya et al., (2021), the drinking water given should be ad-libitum or available at all times, and the drinking water needs of the female beef cattle must be fulfilled every day to reach 20-40 liters/day. Drinking water has an important function for the body to maintain the balance of body fluids, ion balance, digestion, nutritional metabolism, waste expenditure, maintaining the fetal environment, and transport of nutrients to body tissues (Prihatno et al., 2013). Water will be channeled throughout the body through aquaporins with the aim of the reproductive tract, if there is a disruption of water homeostasis it can cause decreased fertility (Zhang et al., 2012).

The environment of the cage effects

The cage environment was a variable in the study. The cages of all farmers in Kerek District are only available for feed, the rest of the feed and cattle dung are discarded in shelters that are not far from the cage. Regular cleaning of the cage is done 2 times a day without disinfectant. The type of cage floor used there are only two types of, namely ground floor and cement floor. Farmers who used the ground floor 48 respondents and 22 farmers used cement floors. There are only 35 cages that have sewerage and the remaining 35 cages do not have it, the sewerage can not function optimally because the manufacture of this sewerage is not too good just to make it so that sometimes there are puddles or residual dirt on the floor or in the sewerage. The type of cage used there is only one type, namely the open cage system, so this type of open cage allows sunlight to enter the cage well, and air exchange in a good cage. A dirty cage environment, especially during artificial insemination is a predisposition to the occurrence of diseases of the reproductive organs (Noakes, 2017). According to Prahitno (2013) that the environment the cage and the sanitation of the cage is an indicators of poor management of livestock rearing. A dirty cage environment, especially during artificial insemination is a predisposition to diseases of the reproductive organs (Noakes, 2012). Prastiya

et al. (2021) stated that cage sanitation determines the level of pollution of the reproductive organs that can cause infection in the uterus and cause the incidence cases of reproductive disorders. Infection of the uterus can lead to failure in embryonic fertilization and implantation and cause endometritis (Ahmed &Elsheikh, 2014). Cage dirt shelters should also have sewerage to facilitate cage cleaning (Damayanti et al., 2020). The poor environment of cages and sewers can be caused by breeders lacking awareness and knowledge of the importance of cleanliness of the cage and the impact caused primarily on the reproductive system and the increasing occurrence of reproductive disorders (Prihatno et al., 2013).

Knowledge of cattle age

Based on the results of research that has been done there are 36% of farmers do not understand when the female beef cattle are ready to be mated and there are 3% do not understand at all. 96% of farmers do not understand when the age beef cattle can breed and 2% do not understand, besides that there are 35% of breeders do not understand what age beef cattle first ask to be mated and 2% do not understand at all. The age of cattle is one of the factors that affect reproductive efficiency, the condition of the reproductive organs has decreased due to the anterior pituitary gland responsible for the function of the genital gland has decreased (Anshori, 2015). The genital glands of young cattle are not fully able to receive embryos so the implantation process is also disrupted (Hermadi & Susilowati, 2017). According to him, the ability of the reproductive organs will cause the hormonal system to be disrupted even though the hormonal system affects the reproductive ability of beef cattle in terms of ovulation, estrous, fertility, and maintaining the pregnancy. Anshori et al. (2017) stated that the increasing number of parity causes the cattle to get older so that the cattle condition will continue to decrease and reproductive appearance also decreases, increasing the risk of reproductive disorders.

Prasetiyo (2018) states that the first mating time in good cattle maintenance can be done on the first estrous sign appears at the age of 14 to 16

months, while for cattle that are not good maintenance, the first mating can be done at the age of 2 to 3 years.

CONCLUSION

Risk factors for the occurrence of cases of reproductive disorders in beef cattle in Kerek District, Tuban Regency can be caused by feed factors, age knowledge, and cage environment so it is necessary to conduct an extension program for farmers on how to manage good livestock maintenance, knowledge about the age and productive livestock, diseases and reproductive disorders and how to prevent it.

CONFLICT OF INTEREST

The article of this study does not conflict of interest against anyone related to finances, personal, or other related to and with the material discussed in the manuscript.

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