Cattle farmers' perception of health problems in Tenga District, South Minahasa Regency, North Sulawesi

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ABSTRACT

The Objective of this research is to determine the health problems cattle based on the perceptions of cattle breeders on people's farms in Tenga District, South Minahasa Regency, North Sulawesi. The material used in the research is cattle breeders who are directly involved in cattle rearing activities. Because the population was quite large, namely 210 out of 2550, sampling was carried out. To determine the size of the sample, use descriptive statistics based on the Slovin formula. The method used in this research is interviews. Data were analyzed descriptively statistically, using a Liker scale. The variables measured are reproductive health disorders, metabolic health disorders and health disorders caused by infectious agents. Result shows that the variable for reproductive health disorders obtained a total score of 450, with the category rarely occurring, the variable for metabolic health disorders being 569, which means it is in the frequently occurring category, the variable for health disorders by infectious agents obtained at 511, occurring frequently. Thus, the total perception overall is 1530. In conclusion, the farmer's health problems often occur in cattle within reproductive health problems, metabolic health problems and health problems caused by infectious agents.

1. INTRODUCTION

Livestock health is one of the factors that influences the success of a cattle farming business. Diseases that attack livestock are known to reduce livestock productivity due to impaired nutrient absorption. Animal health problems can be detrimental to farmers due to livestock deaths, costs incurred for treatment, decreased production, and decreased feed efficiency [1]. These losses show that livestock health management is important to implement in livestock businesses. The term "animal/livestock health" is defined as a condition or state in which the animal's body, comprising all cells and body fluids, is functioning in a normal physiological manner [2]. Perception is an organizational process whereby stimuli received by an organism or individual are interpreted in such a way that they become meaningful and meaningfulness becomes an integrated activity within the individual [3]. The potential for the development of cattle livestock in Pakuure's two and three villages is considerable, based on data from the North Sulawesi Provincial Central Statistics Agency [4]. Tenga District in South Minahasa Regency has a cattle population of 3204 head. Traditional cattle farming is usually managed by the community as a family with

different amounts for the purpose of additional capital, savings, or as labor. In the context of cattle farming, it is important to recognise that health problems cannot be separated from a number of other factors, including reproductive disorders, metabolic disorders and infectious disorders caused by disease agents. Various livestock health problems are not monitored thoroughly either by the cattle owners themselves or breeders. A significant proportion of those engaged in cattle farming remain unaware of the crucial role played by livestock health in terms of both economic and environmental impact on public health. Responding to the problem of a lack of understanding by cattle breeders about how to raise cattle properly, research will be carried out on breeders' perceptions of cattle health problems in Tenga District, South Minahasa Regency.

2. Materials and Methods

This research was conducted in Indonesia, located in Tenga District, South Minahasa Regency, North Sulawesi Province, namely Pakuure Dua and Pakuure villages. The material used in this research is cattle breeders who are directly involved in technical activities of raising cattle. The research method used in this research is a questionnaire by providing a set of questions or statements provided. In determining the sample size, the researcher used the error rate or level developed by Isaac and Michael, including 1%, 5%, 10%. Because the population used by researchers is quite large, the researchers used an error rate of 10%. [5]. The formula used by researchers to determine the sample size uses the Slovin formula as followed:

$$n = \frac{N}{1 + N(e)^2}$$

where:
n = number of samples
N = total population
e = error tolerance limit
therefore:

$$N = \frac{210}{1 + 210 \times 0.01} = 68$$

Thus, the sample size taken by researchers was 68 respondents.

Data analysis

The data analysis used in this research is descriptive statistics using grouping, simplification, and presenting data such as tables and measurements using a Liker scale. Liker scale is used to measure the attitudes, opinions and perceptions of a person or group regarding social events or phenomena [6]. By using a Likert scale, the variables to be measured are translated into indicators that can be measured. Then these indicators are used as a starting point for compiling instrument items which can be in the form of statements or questions. Each answer is associated with a form of statement or support for perception which is expressed in words which are categorized as follows: Very often occurs SST 5, Often occurs ST 4, Rarely occurs JT 3, Very rarely occurs SJT 2, Never occurs TPT 1. To measure Farmers' Perceptions of Cattle Health Problems based on the Variables Reproductive Health Problems, Metabolism, Infectious Agents using the basic assumptions of class intervals and class ranges as follows:

Maximum score = Highest score × Number of samples × Number of questions = 5 × 68 × 2 = 680
Minimum score = Lowest score × Number of samples × Number of questions = 1 × 68 × 2 = 136
Class Range = Number of highest values - Number of lowest values
Number of classes = (680-136)/5=108.8
With these values, categories can be created as shown in Table 1.

Table 1. Perception categories in this research

No	Criteria for scoring	Score
1	Never happened TPT	$136 - 224.$
2	Very rarely occurs SJT	$244.8 - 353.5$
3	Rare JT	$353.6 - 462.3$
4	Frequently occurs ST	$462.4 - 571.2$
5	Very often occurs SST	$571.2 - 680$

To find out the overall score of Farmers' Perceptions of Cattle Health Problems in Pakuure Dua and Pakuure Tiga Villages, Tenga District, South Minahasa Regency, the following classification or grouping is used:

Maximum score = Highest score $\times$ Number of samples $\times$ Number of questions = $5 \times 68 \times 6 = 2040$. Minimum score = Lowest score $\times$ Number of samples $\times$ Number of questions = $1 \times 68 \times 2 = 136$. Class Range = Highest number of values – Lowest number of values. Number of classes = $2040 - 136 = 380.8$. With these values, categories can be created in Table 2.

Table 2. Overall Value of Farmers' Perceptions of Cattle Health Problems

No	Criteria for scoring	Score
1	Never happened TPT	$136 - 516.7$
2	Very rarely occurs SJT	$516.8 - 897.5$
3	Rare JT	$897.6 - 1278.3$
4	Often occurs ST	$1278.4 - 1659.1$
5	Very often occurs SST	$1659.2 - 2040$

3. Results

Reproductive health disorders

Reproductive health problems in cattle are caused by poor cattle management in terms of feeding, rearing environment, disease prevention and weaning [7]. The results of a survey on reproductive health disorders in cattle used as research samples in the villages of Pakuure Dua and Pakuure Tiga are presented in Table 3.

Table 3. Farmers' perceptions of cattle health and reproductive problems in Pakuure Dua and Pakuure Tiga villages.

Variable	Indicator	Answer category	Score Value	Frequency (Person)	Total	Percentage (%)
Reproductive	Genetic	SST	5	0	0	0
Health		ST	4	10	40	14.71
Disorders		JT	3	30	90	44.12
		SJT	2	18	36	26.47
		TPT	1	10	10	14.71
Sub total				68	176	100
	Breeding system	SST	5	31	155	45.59
		ST	4	15	60	22,06
		JT	3	15	45	22.06
		SJT	2	7	14	10.29
		TPT	1	0	0	0

		68	274	100
Sub total				
Total			450	Rare

Data from Table 3 shows that in the variable reproductive health disorders, the genetic indicators obtained were 176, in the total genetic indicators obtained in the SST category were 0 (0%), ST 40 (14.71%), JT which was 90 (44.12%), SJT 36 (26.47%), TPT 10 (14.71%). In the second indicator with the marriage system indicator, a very high number was obtained, namely 274, the total obtained in the SST category was 155 (45.59%).

Metabolic health disorders
Metabolic health disorders are disorders in the livestock's body. Metabolic disorders arise when there are errors in selecting and providing forage, insufficient or excessive food or nutrients given to livestock, toxic substances in feed ingredients, and environmental influences [8]. Data from Table 4 shows that in the variable metabolic health disorders, the indicator for selecting and providing forage was 295, where in the SST category it was 160 (47.06%), ST 120 (44.12%), JT 9 (4.41%), TPT 0 (0 %). For environmental indicators, the number was 274, whereas for SST it was 150 (44.12%), ST 76 (27.94%), JT 30 (14.71%), SJT 18 (13.2%), TPT 0 (0%). Therefore, the total number obtained from the two indicators is 569 in the frequently occurring category.

Health problems caused by infectious agents
An infectious condition where the infection is caused by the attack and proliferation of microorganisms. Disease is usually caused by several factors, both infectious and non-infectious [9]. Infectious diseases are health problems caused by viruses, bacteria, fungi and parasites.

Table 4. Farmers' perceptions of cattle health problems with the variable metabolic health problems in Pakuure Dua and Pakuure Tiga villages

Variable	Indicator	Answer category	Score Value	Frequency (Person)	Total	Percentage (%)
Metabolic Health Disorders	Selection and provision of forage	SST	5	32	160	47.06
		ST	4	30	120	44.12
		JT	3	3	9	4.41
		SJT	2	3	6	4.41
		TPT	1	0	0	0
Sub total				68	295	100
Breeding system		SST	5	30	150	44.12
		ST	4	19	76	27.94
		JT	3	10	30	14.71
		SJT	2	9	18	13.2
		TPT	1	0	0	0
Sub total				68	274	100
Total					569	Happens often

This disease attacks healthy livestock and can be transmitted to other livestock through wind, carrier animals, feed and breeders [10]. The results of a survey on health problems caused by infectious agents in cattle used as research samples in the villages of Pakuure Dua and Pakuure Tiga are presented in Table 5.

Table 5. Farmers' perceptions of cattle health problems with the disturbance variable caused by infectious agents in Pakuure Dua and Pakuure Tiga villages

Variable	Indicator	Answer category	Score Value	Frequency (Person)	Total	Percentage (%)
Health Problems by Infectious agent	Environment	SST	5	18	90	26.47
		ST	4	31	124	45.59
		JT	3	12	36	17.65
		SJT	2	5	10	7.35
		TPT	1	2	2	2.94
Sub total				68	262	100
	Sanitation	SST	5	30	95	27.94
		ST	4	20	80	29.41
		JT	3	20	60	29.41
		SJT	2	5	10	7.35
		TPT	1	4	4	5.88
Sub total				68	249	100
Total					511	Happens often

Table 5 shows that the total number obtained is 511, which means it is in the frequently occurring category. Where the environmental indicators obtained were 262, where in the SST category 90 (26.47%), ST 124 (45.59%), JT 36 (17.65%), SJT 10 (7.35%), TPT 2 (2.94%). And the sanitation indicator obtained 249, where in the SST category it was obtained 95 (27.94%), ST 80 (29.41%), JT 60 (29.41%), SJT 10 (7.35%), TPT 4 (5.88%).

Total Overall Perception

The assessment of breeders in Pakuure Dua and Pakuure Tiga villages, Tenga District, South Minahasa Regency regarding their overall perception can be seen in Table 6.

Table 6. Recapitulation of farmers' assessments of perceptions in Pakuure two and Pakuure three villages

Variable	Value	Description
Reproductive health disorders	450	Rare
Metabolic health disorders	569	Frequent
Health problems caused by infectious agents	511	Frequently occurring
Total	1530	Often occurs

4. Discussions

Reproductive Health Disorders, the second indicator with the marital system indicator, obtained a very high number, namely 274, the total obtained in the SST category was 155 (45.59%). The total obtained is very high because the cattle breeding system in Tenga District, South Minahasa Regency, specifically in the villages of Pakuure Dua and Pakuure Tiga, which still uses a natural breeding system, where the selection of males is only limited to large body size without paying attention to the reproductive health of males and the selection of female cattle seeds that are less fertile. The natural mating system and selection of males is limited to large body size without considering the reproductive health of the males [11], the fertility level cannot be ascertained, the ST category is 60 (22.06%), JT 45 (22.06%), SJT 14 (10.29%), TPT 0 (0%). Therefore, the total number obtained from the two indicators is 450 with the category rarely occurring.

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Traditional breeding of female cattle is prone to reproductive failure due to poorly selected breeding stock and low quality feed, resulting in low productivity [12]. The same can be said of these two villages. Cattle rearing is primarily a sideline, a means of providing for one's family. As a result, the health of cattle receives little attention. The results of the survey in the villages of Pakuure Dua and Pakuure Tiga showed that the cattle rearing system was extensive or we often heard that they were released on grazing fields, resulting in a lack of attention to feeding the cattle. Due to lack of attention to feeding, many cattle in these two villages are affected by the metabolic health disorder bloat. Bloat is a non-infectious systemic disorder that causes disturbances in the digestive system of ruminants [13]. Bloat can be classified into primary bloat (frothy/wet bloat) which is in the form of persistent foam mixed with the contents of the rumen and secondary bloat/tympanic bloat (free gas/dry bloat) which is in the form of free gas separated from the ingesta [14]. According to answers from cattle farmer respondents in Pakuure Dua and Pakuure Tiga villages, cattle are often affected by worms and ticks. Causes of worms include consumption of forage that is still dewy and forage contaminated by water snails as vectors (carriers) of liver worms [15]. The characteristics of cows infected with worms are decreased appetite, dull fur and diarrhea. Prevention of this disease can be done by maintaining sanitation and withering the forage that will be given to cows. Treatment is carried out by administering piperazine, valbazen and zanil worm medicines. Controlling ticks is usually done by farmers using 2 sticks of magic lime dissolved in two liters of water for each livestock. Designing sanitation systems is an important part of processing livestock waste [16]. Good sanitation will make processing easier and improve the quality of waste. Poor sanitation will also create a growth and development medium for parasites, bacteria, fungi and viruses. Hygienic measures are efforts to maintain health through cleanliness so that it is free from disease infections such as bacteria, viruses, fungi or parasites, namely by cleaning the pen from excessive piles of dirt and monitoring the cleanliness of the equipment used in managing cattle farms. Thus, more comprehensive education is needed for farmers regarding the strategy, management and health of raising cattle [17].

Conclusions
Based on the results of the research, it can be concluded that the Farmers' Perception of cattle health problems in Tenga District, South Minahasa Regency, Pakuure Dua and Pakuure Tiga villages often occur in cattle within reproductive health problems, metabolic health problems and health problems caused by infectious agents.

Suggestion:
Improvements need to be made, especially in the management of cattle rearing, extension workers are still needed to provide guidance to farmers to direct farmers to an efficient and environmentally friendly livestock system.

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