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# CHARACTERISTICS OF FARMERS AND PRODUCTION OF SHEEP DUNG AS ORGANIC FERTILIZER FOR FOOD CROPS IN KISAR ISLAND

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Farmer Characteristics, Sheep Manure Production, Organic Fertilizer, Food

## ABSTRACT

Characteristics of breeders determine sheep farming activities. Breeders are expected to always be able to improve their knowledge in carrying out various business activities, especially in utilizing the production of sheep dung to be used as organic fertilizer for plants. The purpose of this study was to determine the characteristics of farmers and the potential for production of sheep dung for food crops, especially corn. The method used in this study is a qualitative descriptive approach for breeder characteristics and the availability of sheep manure as a potential organic fertilizer measured through adult sheep that excrete manure per day or for 24 hours, then multiplied by the existing livestock population. The results showed that 44% of farmers aged 31-50 years, 56% had elementary school education, 65%, farmers as a main job 65% and farmers only as a sideline 11%, and the priority scale of farmers doing this activity is first to increase income, producing organic fertilizer , as traditional livestock and for savings. The production of sheep manure for one year is 11,711,609 tons/head/year, but the utilization rate for corn food crops is only 372,736 tons/year so that the excess is 11,338.873 tons/year due to its use only on corn and not on corn. other plants

## INTRODUCTION

Food sources are not only needed by humans, but this is also needed by animals to increase production needs for meat availability. Efforts to increase meat production can be carried out by fattening livestock by providing high quality feed and forages that have low protein content and digestibility, including sheep. According to (Council, 2001), Sheep in the starter period, i.e. with a body weight (BB) of 10 kg with a PBB of 200 g/head/day, require feed with a PK content of 25.49% and a TDN of 80%. For this reason, in order to improve the quality of sheep feed, it is necessary to provide forage containing protein, energy, minerals and vitamins. Feeding with attention to the things described above, this can guarantee the quality of livestock meat and increase production. However, data shows that sheep meat production for the period 2018 – 2021 has decreased and only in 2021 experienced a slight increase of 3.09%, which is detailed as follows; in 2018 production reached 82.27 thousand tons, decreased to 70.07 thousand tons in 2019, fell again in 2020 to 54.19 thousand tons. Whereas in 2021 it only increased by 55.86 thousand tonnes (BPS, 2021).

Factors that also influence the determination of feed for sheep fodder concentrate is the energy content in the feed itself. An energy system that states the energy value of a feed ingredient or ration and energy needs for ruminants, one of which is corn. Corn is very favored by livestock, qualifies as an energy source, easy to store, easy to produce on a large scale, and is a good source of carotene..

In addition, sheep also have great potential to use their manure for fertilizing soil for corn plants. Research result (Mirella, 2022) showed that organic fertilizer made from sheep manure was able to increase the availability of nutrients for plants and increase soil fertility, in the range it had 64% water content, 31% organic matter, 0.7% nitrogen, 0.4% P2O5, 0.25% K2O. , CaO 0.4% and a C/N ratio of 20-25%. Thus, the use of animal manure in the composition of fertilizers can also improve the structure, nutrient composition of the soil and be able to bind and store more water so that crop production will also be better than those that do not get additional organic matter.

Kisar Island is one of the areas in Southwest Maluku Regency which has the potential of local genetic resources such as Kisar sheep and corn plants as the staple food of the people in the area. The integration of kisar sheep and corn crops as a mutually beneficial system can be utilized to increase the potential of livestock and corn in the region. However, until now these two potentials are only considered as complementary and have not been utilized as an integrated potential that is mutually beneficial and has a broad market orientation if it is developed on a larger business scale, so that this can increase production, both kisar sheep and corn plants and community income.

So that land use and the development of an integrated area of "Kisar sheep - corn", can be maximized and can be directed based on the suitability of the land, both for food crops and for Kisar sheep, this study aims to determine the characteristics of sheep breeders and analyze sheep manure as manure.

## METHOD RESEARCH

The paradigm used in this study is the positivism paradigm. The basic consideration is using positivism, because this paradigm is rooted in ontological understanding which discusses the truth of a fact. To get the truth, we need an approach method to prove the truth of the fact. The approach method is a process of collecting data for research, in order to prove the truth of the facts.

The approach method used in this research is a quantitative approach method. According to (F. X. Sugiyono, 2017) said, "the quantitative approach method is a method that is based on a positivist paradigm, used to examine certain populations or samples, collecting data using research instruments, analyzing data is quantitative or statistical, with the aim of testing the hypotheses set based on the theory used".

This research activity was carried out on Kisar Island, Southwest Maluku Regency, Maluku Province with the consideration that the area is endemic to Kisar sheep and corn as a staple food. This research was conducted in July 2022.

Population is a generalization area consisting of: objects/subjects that have certain qualities and characteristics determined by the researcher to be studied and then conclusions drawn (Prof Sugiyono, 2011). The population is the totality of each element to be studied which has the same characteristics, it can be an individual from a group, event, or something to be studied (Handayani, Hadi, Isbaniah, Burhan, & Agustin, 2020) The population in this study were 75 sheep breeders.

To determine the size of the research sample, use the Slovin formula.

$$n = N / (1 + (N \times e^2))$$

$n = N / (1 + (N \times e^2))$

Keterangan :

n = Sampel  e = Margin Error

N = Populasi

Sehingga:
n = 75/ (1 + (75 x 0,05²))
n = 75/ (1 + (75 x 0,0025))
n = 75/ (1 + 0,2)
n = 75/1,2
n = 62,5
n = 62 (dibulatkan)

Based on the Slovin formula, the size of the research sample was 62 people/respondent.

The data collected is divided into primary data and secondary data. Primary data were obtained through direct observation/measurement in the field or through structured interviews using a questionnaire.

Secondary data were obtained from relevant agencies as well as the results of previous studies that were relevant to the research topic being conducted.

According to (S. Sugiyono, 2015), "There are two main things that affect the quality of research data, namely the quality of research instruments, and the quality of data collection. In research, besides requiring the right method, it is also necessary to choose relevant techniques and data collection so that the results of the research are objective. According to (Puttileihalat, Sukesi, & Cahyono, 2018) states, "The use of appropriate data collection techniques and tools enables objective data to be obtained". According to (Bungin, 2011), "The data collection method is part of the data collection instrument that determines the success or failure of a study." Therefore, the data collection techniques used must be in accordance with the nature and characteristics of the research conducted or based on the approach used.

The tools and materials needed in this research are: Hanging scales with a capacity of 100 kg. Scales sitting capacity of 5 kg, Measuring roller capacity of 100 meters. Sheep manure bag. Questionnaire. Stationery.

Data analysis can be done with several topics as follows:

• Farmer Characteristics

Characteristics of breeders are measured based on; age, education, breeding purposes, and employment status.

• Production of sheep dung as organic fertilizer.

Analysis of the availability of sheep manure as a potential organic fertilizer was measured through adult sheep that excrete manure per day or for 24 hours, then multiplied by the existing livestock population..

## RESULTS AND DISCUSSION

### 1. Farmer Characteristics

#### a. Breeder's Age

Farmer characteristics are traits or traits possessed by a breeder that are displayed through mindsets, patterns of attitudes and patterns of action towards their environment. (Puttileihalat et al., 2018). The characteristics or characteristics possessed by breeders include several factors or elements inherent in a person, which can be said to be characteristics of breeders. Variable characteristics of

breeders in this study consisted of age, education level, purpose of breeding, and employment status. Table 1 describes the characteristics of breeders

**Table 1**
**Proportion of respondents on Kisar Island according to breeder characteristics, 2022**

| Age Classification (yr) | Sheep Farmer Respondents | |
|---|---|---|
| | Number of people) | Percent (%) |
| 20 – 30 | 15 | 24 |
| 31 – 50 | 27 | 44 |
| > 51 | 20 | 32 |
| Amount | 62 | 100 |

Source: Primary Data, 2022

Age range of sheep breeders The highest range is in the range of 31-50 years, which is 44 percent, then followed by the age range above 50 years (24 percent), and the age range of 20-30 years (32 percent). These results can be said that Kisar sheep breeders are mostly at a mature age in thinking and acting, not quick to get emotional, even still tough at work and precise in the decision-making process.

According to (Tarmidi, 1992) that at the age of 15-65 years, a person is included in the productive age category with good working ability and good thinking ability. This condition allows breeders to be able to work rationally in meeting all the economic and psychological needs of their lives. In this condition, breeders also have a more controlled emotional situation. Thus the age of the farmer also influences the success of the sheep farming business on Kisar Island.

**b. Education**

Education is the level of school owned by a respondent until the time this research was conducted. Education is used to measure the insight and perspective of respondents. Table 2 describes the educational level of sheep farmers on Kisar Island.

**Table 2**
**Distribution of respondents based on education level on Kisar Island, 2022**

| Level Education | Sheep Farmer Respondents | |
|---|---|---|
| | Number of people) | % |
| SD | 35 | 56 |
| SMP | 17 | 27 |
| SMA | 7 | 11 |
| PT | 3 | 5 |
| Amount | 62 | 100 |

Source: Primary Data, 2022

These results indicate that the education level of Kisar sheep breeders is generally still low. A low level of education makes breeders less rational in accepting and understanding new information. This has an impact on the desire to improve their livestock business in a better or commercial direction. Even though the breeders are experienced enough, if they are not followed by a sufficiently good level of education, formal or non-formal, then the livestock business will not develop properly, because breeders only rely on their personal experience..

(Mosher & Duce, 1987) states that a good level of education has an important role in the productivity of the livestock business being carried out. Furthermore, according to Haryadi and (Syahlani, 1999), that the high level of education affects the farmer's work motivation because of the maturity of thinking and this is related to the business development being carried out.

**c. Job status**

Employment status is the status of breeders in pursuing a job. Job status can be measured on the main job and side work. Table 3 describes the distribution of respondents based on employment status.

**Table 3**
**Proportion of respondents on Kisar Island according to breeder characteristics, 2022**

| Job status | Respondent Sheep Farmer | |
|---|---|---|
| | Number of people) | Percent (%) |
| Main : | | |
| civil servant | 15 | 24 |
| Farmer | 40 | 65 |
| breeder | 7 | 11 |
| Amount | 62 | 100 |
| Side : | | |
| Farmer | 40 | 65 |
| breeder | 7 | 11 |
| Other | 15 | 24 |
| Amount | 62 | 100 |

Source: Primary Data, 2022

The results showed that the main occupation of the sheep breeders was as a farmer (65%) with the main farming being corn. While the sheep farming business is a side job (11%). carried out jointly with corn farming.

**d. Breeding Goals**

Based on research, the maintenance and development of the Kisar sheep farming business is generally carried out by the head of the family (father) and assisted by other family members. The Kisar sheep farming business is not a main business but is a complement to the food crop farming business, namely corn. The objectives of raising sheep according to the priority scale are as presented in Table 4.

**Table 4**
**Proportion of respondents on Kisar Island according to priority scale, 2022**

| Breeding Purposes | Priority Scale | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | | 2 | | 3 | | 4 | |
| | N | % | N | % | n | % | n | % |
| Income | 17 | 68 | 5 | 20 | 3 | 12 | 0 | 0 |
| Savings | 6 | 24 | 7 | 28 | 10 | 40 | 2 | 8 |
| custom | 0 | 0 | 1 | 4 | 17 | 68 | 7 | 28 |
| Fertilizer | 11 | 44 | 10 | 40 | 4 | 16 | 0 | 0 |

Description: n is the number of respondents

Based on field research, the priority scales of the function of the sheep farming business on Kisar Island are, respectively, as a source of income (68% priority scale 1), as the main producer of organic fertilizer (44% priority scale 1 and 40% priority scale 2), as livestock. adat (40% priority scale 3), and as savings (68% priority scale 3) to be sold at any time if needed.

In the corn farming business on Kisar Island, the use of sheep manure as organic fertilizer has long been carried out by farmers. The integration of sheep livestock with corn crops on Kisar Island has been going on for a long time where sheep manure is used as fertilizer while the remnants of corn crops in the form of leaves and corn stalks are often consumed by sheep, especially during the dry season. Corn cultivation is the main business of the Kisar people, because previously corn was the staple food of the local natives and it is still continuing today along with the use of rice as a staple food.

Kisar sheep are not the main livestock in the socio-cultural status of the local indigenous people. The social position of livestock is dominated by pigs and buffaloes. Lamb is only used as a complementary food menu on certain occasions, for example at weddings. In such conditions, Kisar sheep are only kept as a subsistence farm. As a family savings and source of income, Kisar sheep are sold on a small scale, around 5 to 20 heads per year per breeder.

**2. Potential of Sheep Manure as Organic Fertilizer**

Manure is a fairly important by-product, consisting of solid and liquid manure from livestock mixed with food waste, can add nutrients to the soil. (Sarief, 1986). The application of manure in addition to increasing the availability of nutrients, can also improve the physical properties of the soil. Some soil physical properties that can be affected by manure include aggregate stability, volume weight, total pore space, plasticity and water holding capacity (Soepardi, 1983).

According to (Admim, 2008). Potential of Sheep Goat Manure One of the livestock that has potential as a source of organic fertilizer is goats and sheep. On average, each animal requires 5.35 kg of fresh forage feed/day or 33.3 kg/breeder. Based on the calculation results, from the amount of feed consumed, 4 kg will be removed as feces from feed consumption of 5.35 kg per head per day.

The results obtained in Kisar Island that the production of manure produced is 32.0866 tons/head/day from the existing livestock population of 5,540 heads, by holding sheep from the afternoon until the morning. Manure production for one year is 11,711,609 tons/head/year. This sheep dung is allowed to accumulate in the cage and is used during the growing season which is carried out twice a year, namely the west season and east season. This shows that the production of dung produced by sheep on Kisar Island is very low when compared to the existing theory. The production of

sheep dung depends on the number of sheep that are kept and the length of the growing season.

The use of sheep manure is based on existing experience, where its use for two growing seasons is 7.168 tons/ha/year. From the area of corn plantations on Kisar Island of 52 ha, the amount of manure that can be used is 372,736 tons / year. Based on the data above, there is an excess of 11,338.873 tons/year of manure. This advantage is due to the fact that farmers have not utilized the manure optimally, besides that its use is only given to corn plants, not to other food crops

## CONCLUSION

Based on the explanation above, it can be concluded that 44% of breeders are aged 31-50 years, 56% have elementary school education, 65% are farmers as their main job 65% and breeders are only a sideline of 11%, and the priority scale of breeders carrying out this activity is first to increase income, producer of organic fertilizer, as customary livestock and for savings.

The production of sheep manure for one year is 11,711.609 tons/head/year, but the level of utilization for corn crops is only 372.736 tons/year so that the excess is 11,338.873 tons/year which is caused by its use only in corn plants and not in other plants.

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