



## STUDY OF THE AVAILABILITY OF FODDER AND PALM LEAVES ON THE NEED FOR GOAT FEED IN NAGAN RAYA REGENCY

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### ABSTRACT

Oil palm fronds are waste from the harvesting process that is routinely carried out by oil palm plantation business actors. Oil palm fronds can be obtained throughout the year along with harvesting fresh fruit bunches. Based on availability continuously, palm fronds can be used as processed products, one of which is as an alternative feed for ruminants as a substitute for grass so that it can be used as animal feed. The purpose of this study was to determine the potential of palm fronds and leaves as goat feed in Nagan Raya district. This research was conducted in Nagan Raya Regency in several stages, namely demand and availability, internal and external conditions. Based on the results of the study it can be seen that the average feed requirement per 1 year old goat ready for slaughter in Nagan Raya Regency is around 990 kg. In a month, goats need as much as 90 kg of feed with a composition that is usually done by goat breeders as much as 40% grass and 60% palm fronds and leaves so that in 1 Ha of Oil Palm Plantation it can meet <52 goats (composition of 60% Palm feed = 54 kg, 40% grass feed = 36 kg). It can be seen that the development of goat farming will be influenced by various conditions, namely internal and external. This condition can be seen by using a SWOT analysis to find out what are the strengths, weaknesses, opportunities, and threats for farmers. External conditions on goat farms are everything that is outside of the condition of the livestock that can affect the sustainability of the livestock business.

Keywords: *Potency, Fronds and Palm Leaves, Goat Feed*

### 1. INTRODUCTION

Oil palm fronds are waste from the harvesting process that is routinely carried out by oil palm plantation business actors. Palm fronds can be obtained throughout the year by collecting Fresh Fruit Bouquets. Judging from its continuous availability, palm fronds can be used as processed products, one of which is alternative feed for ruminants as a substitute for grass which allows it to be used as feed. According to Suryan (2016), the nutritional value of palm fronds consists of 97.39% dry matter, 3.96% ash, 2.23% crude protein, 47.00% crude fiber, 3.04% crude fat, neutral detergent fiber (NDF) 76.09% detergent fiber (ADF) 57.56%, hemicellulose 18.51%, lignin 14.23% cellulose 43.00% as well as content nutrition from palm fronds are 94.15% DM, 6.15% PK, 34.75% SK, 3.67% LK, 6.15% ash, 49.28 N-free extract (Muayyidul Haq et al., 2018). Each oil palm can produce 22 leaves per year, and the average leaf weight per stem is 2.2 kg (after peeled for animal feed), so each hectare can produce about 9 tonnes/ha/year of fresh leaves for animal feed, etc. . 1.64 tons/ha/year of dry matter (Jaelani, 2015). This image shows the great potential of palm fronds as animal feed.

According to the Minister of Agriculture (2015), feed is a single or mixed food ingredient, both processed and unprocessed, which is given to animals for survival, production and reproduction. The development of oil palm plantations reduces the availability of fodder sources because it affects the amount of existing pastures due to human settlements that use open land and the tendency of farmers to plant land with plants that can be used directly to people's needs. Utilization of agricultural waste as alternative feed is a solution to the shortage of ruminant feed.

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One of the underutilized by-products of plantation crops is waste from oil palm plantations. With the existence of these plantations, waste can be used as animal feed for birds and ruminants in the form of leaves, leaves, empty fruit bunches, fruit skins, fruit fibers, stalks, palm mucus and oil palm cake. Alternative feed for plantations Oil palm includes leaves and fronds of oil palm. Generally, oil palm fronds are harvested before the fruit is harvested. This is due to the location of the oil palm clumps in the crevices of the palm leaves. In other words, the number of leaves received by each harvester per day is highly dependent on the number of fresh fruit bunches (FFB) harvested.

Community knowledge, especially oil palm farmers, to process agricultural waste products is still very minimal so that Nagan Raya Regency, which has the potential for oil palm plantations with an area of 50,863.34 Ha, has not utilized fronds and most of them are still waste for the community. The potential availability of oil palm fronds and leaves as a source of organic feed that can be processed is still not widely known by the public (Febrina & Liana, 2018). The breeders just know that palm frond waste is often used as firewood for livestock. Therefore, it is necessary to utilize the potential of palm fronds and leaves as animal feed in Nagan Raya District. The remaining fronds of the oil palm harvest are sufficient as additional feed for ruminants (Rizali, Fachrianto, Ansari, & Wahdi, 2018). So from the description above, it is necessary to carry out further analysis of the use of palm fronds and leaves as ingredients for goat feed in a sustainable manner. Sustainable use can be seen through a study of the potential availability and needs of palm fronds and fronds in Nagan Raya District.

## **2. RESEARCH METHODS**

### **2.1. Time and Place**

This research was conducted from June 2022 to November 2022 in Nagan Raya District, Aceh Province.

### **2.2. Sample Research Population**

Determination of the sample using Purposive Sampling Technique. Technique *Purposive Sampling* is intentional sampling with certain considerations. The advantage of the purposive technique is that the objectives of the researcher can be fulfilled. The population in this study were goat breeders and oil palm farmers in Nagan Raya district.

### **2.3. Research Data**

Data sources for this study came from secondary data obtained from the Central Bureau of Statistics (BPS) Nagan Raya, Dinas. The data are grouped and placed according to the components of the SWOT analysis (Strengths, Weaknesses, Opportunities, Threats). The data collected includes;

- a. Data on the area of oil palm plantations in Nagan Raya Regency in 2015 -2020
- b. Goat livestock data in Nagan Raya Regency in 2015 -2020
- c. Data on the availability of palm fronds in Nagan Raya Regency in 2015 -2020
- d. Data on palm fronds used as stakes or stakes for plants in Nagan Raya Regency in 2015-2020
- e. Feed data generated from palm fronds and leaves in Nagan Raya District. 2015-2020 years
- f. Data on the fulfillment of fronds and palm leaf feed for goats in Nagan Raya District. Year 2015 – 2020

The method used to collect data in this study is as follows:

a. Interview, the purpose of the interview is to obtain information and this interview is supplemented by a questionnaire, which is a list of questions that invite answers (data) from respondents regarding information about agricultural potential in the village, goat farming and problems faced by farmers and herders.

b. Secondary data collection is the collection of data obtained indirectly from existing research sites so that they can be collected directly to collect data (documentation) related to



research results that are consistent with research (Sarwono et al. 2008). In this study secondary data was obtained from the 2020 Central Bureau of Statistics (BPS) data for Nagan Raya Regency as initial data before collecting data in the sub-district.

c. The documentary method is in the form of information derived from important documents either from institutions or organizations or from individuals. Research documentation is taking photos by researchers so that research results can be strengthened (Hamidi 2004).

#### **2.4.Data analysis method**

The form of data used in analyzing the potential of goat feed made from palm fronds and leaves is quantitative and qualitative data. Qualitative data is data that is not expressed as numbers or numbers but as sentences that describe an event or activity (Moleong 2014). The number of theories included in the qualitative material must be more adapted to the phenomena that are developing in the field. Theory offers the researcher the opportunity to understand context in a broader and deeper way. Although mastery of theory requires qualitative research, it must be able to let go of existing theory during research, and not be used as a guide for preparing instruments and as a guide for interviews and observations. Qualitative must have the meaning of "Emic perspective" to obtain knowledge not as it should, not based on what the researcher thinks, but based on what is in the field, what is experienced and thought by the participants or sources of information. Borg and Gall in Sugiyono (2014) argue that qualitative research is more difficult than quantitative research because the data collected is subjective and the instrument as a data collection tool is the researcher himself.

Lincoln, Guba in Sugiyono (2014), Qualitative Research Instruments argues that there is no other choice in qualitative research other than making humans the main research instrument. This is because objects do not have a fixed shape. Problems, research priorities, research methods, hypotheses used, even the expected results, all of which cannot be defined clearly and firmly beforehand. All of them have not been developed during research. In a completely uncertain and unclear situation, only the researcher himself is the only way to achieve it. data that have been grouped into each SWOT analysis variable. Strategy selection is based on selected combinations of SWOT analysis to make more effective decisions.

a.Descriptive method Descriptive research is the basis for all research to seek the accuracy and adequacy of all activities; objects, processes and people. Descriptive research recognizes several forms that can be classified, such as case studies, which are in-depth studies of events, circumstances and situations that allow something to be expressed or understood.

b.SWOT stands for Strengths, Weaknesses, Opportunities, Threats. SWOT is a tool for compiling the strategic factors of an organization that can be used to clearly describe how the external opportunities and threats faced by an organization can be adjusted to its strengths and weaknesses.

#### **Need and Availability**

Need and Availability Analysis of needs and availability is a process that maps the availability of raw materials for feed derived from palm leaf midrib with the needs of goats in Nagan Raya Regency. The need will be analyzed based on data on the number of goats in Nagan Raya Regency and the need for goat feed in general. This data will be synchronized with the availability of existing raw materials from the Nagan Raya Regency Oil Palm Plantations. The analysis also aims to provide raw materials by taking into account the sustainable growth of oil palm plants so that they remain productive and are able to provide raw materials in a sustainable manner. Both of these data will be analyzed using Microsoft Excel and presented in a quantitative descriptive analysis.

#### **Internal and External Conditions**

The development of goat farming will be influenced by various conditions, one of which is internal and external conditions. Internal and external conditions on goat farms are everything that

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is inside and outside of the condition of the livestock that can affect the sustainability of the livestock business. There are several internal and external conditions in a goat farming business that can help the process of developing a livestock business, so breeders must be able to know what are the strengths, weaknesses, opportunities and threats of their business. In research (Ginting et al, 2020) breeders must be able to overcome internal weaknesses and avoid external threats in order to take advantage of external opportunities. For this reason, it is necessary to do an analysis of what is included in the internal and external conditions of goat farms in Nagan Raya Regency. This analysis uses the SWOT method which aims to see what are the strengths, weaknesses, threats and opportunities in the goat farming business so that it can be used as a reference in planning or developing a goat farming business development strategy in Nagan Raya Regency.

**2.5. Research Procedures**

This research was conducted in several stages, namely needs and availability, internal and external conditions. The following describes the implementation stage:

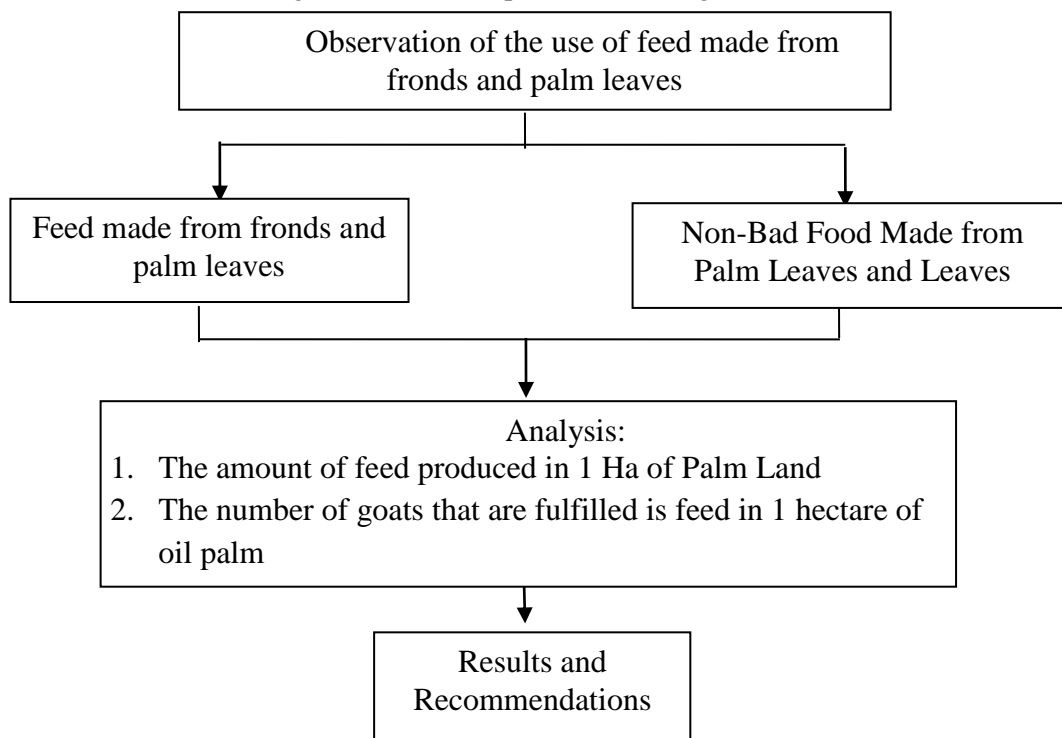


Figure 1. Research Flowchart

**3. RESULTS AND DISCUSSION**

**3.1. Need and Availability**

The current area of oil palm is in Nagan Raya Regency with a total of 2689 farmers with an area of smallholder oil palm plantations of 50863.34 Ha and spread across 9 Districts. While the area of the company's plantations is 78,000 ha, the fronds on the company's plantations cannot be utilized by breeders because the company already has standards in the process of caring for the land.



| No | Subdistrict      | Land Area (Ha) |
|----|------------------|----------------|
| 1  | Darul Makmur     | 29,499         |
| 2  | Tripa Prosperous | 5,448.77       |
| 3  | Kuala            | 1399           |
| 4  | Kuala Pesisir    | 745,34         |
| 5  | Tadu Raya        | 9,283          |
| 6  | Beutong          | 2067.43        |
| 7  | Seunagan         | 397,3          |
| 8  | Like Makmue      | 627.5          |
| 9  | East Seunagan    | 396            |

Source: BPS Nagan Raya 2020 (processed)

The average feed requirement for one year old goat ready for slaughter in Nagan Raya Regency is around 990 kg. In a month, goats need as much as 90 kg of feed with a composition that is usually done by goat breeders as much as 40% grass and 60% palm fronds and leaves. While the use of palm fronds and fronds is on average used as stakes or plant stakes as much as 15% of the number of fronds produced, while one frond and leaves can produce 7 kg of feed which has been chopped using a grinding machine. So that in 1 Ha of Oil Palm Plantation it can produce 2835 kg of fronds and palm leaves feed to meet <52 goats (60% composition of Palm feed = 54 kg, 40% grass feed = 36 kg).

| No | Information                   | 2015       | 2016       | 2017        | 2018         | 2019         | 2020        |
|----|-------------------------------|------------|------------|-------------|--------------|--------------|-------------|
| 1  | Oil Palm Plantation Area (Ha) | 41,436.8   | 49,401.14  | 50132.24    | 50,497.79    | 50,680.79    | 50,863.34   |
| 2  | Goat (Tail)                   | 98.44      | 10,940     | 11,378      | 11,798       | 11,568       | 11,488      |
| 3  | Leaf Availability             | 16,781,904 | 16,781,904 | 19,228,371  | 20,352,906.5 | 20,476,370.7 | 20,574,948  |
| 4  | Stake (15%)                   | 2,517,285  | 2,517,286  | 2,884,256   | 3,052,936    | 3,071,456    | 3,086,242   |
| 5  | Leaf Feed (kg)                | 99,852,328 | 99,852,328 | 114,408,809 | 121,099,793  | 121,834,405  | 122,420,938 |
| 6  | Can Meet (Tail)               | 168,102    | 168,102    | 192,607     | 203,872      | 205,108      | 206,096     |

Source: BPS Nagan Raya 2020 (processed)

Based on the table above, the availability of palm fronds as livestock feed is very high, this is because the amount of feed available can meet more than the number of goats available each year.

### 3.2. Internal and External Conditions

|   |  |
|---|--|
| <b>Strength</b><br>1. High demand for mutton on holidays<br>2. There are high nutrients in feed from fronds and palm leaves | <b>Weaknesses</b><br>1. Limited human resources and technology |
| <b>Opportunity</b><br>1. Oil palm commodity as the  | <b>Threats</b><br>1. Higher use of chemical residues           |



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|   |   |
|---|---|
| <p>mainstay of Nagan Raya Regency with wider oil palm land,</p> <ol style="list-style-type: none"> <li>2. Palm fronds and leaves still have no value for farmers</li> <li>3. Processing of palm fronds and leaves is still limited</li> </ol> | <ol style="list-style-type: none"> <li>2. Increasingly limited availability of grass</li> </ol> |
|---|---|

Based on the results of the SWOT analysis it can be explained that On the strength side, the demand for mutton is high on major holidays such as the Prophet's Birthday and Isra Mi'raj, we know that every certain big day there will be a large demand for mutton at any given time. This is also supported by the presence of high nutrients in the feed from palm fronds and leaves. According to research by Pranata (2019) and Suryani (2016) it is said that the use of palm fronds and fronds is feed that has high nutritional value and has certain ingredients in it. In the weakness section, there are limited human resources and technology, where, what is meant here is their knowledge about the use and processing of fronds and palm leaf feed is still minimal and the availability of chopping machines is still lacking for business actors.

The palm oil commodity, which is the mainstay of Nagan Raya Regency, is an opportunity because the palm oil fields are expanding more and more, so that there is a lot of availability of palm fronds and fronds for feed ferns for breeders. Oil palm fronds and fronds still do not have value for farmers, what is meant here is, farmers still think that the palm fronds and fronds produced from their land are still just remnants of oil palm so that breeders can use the fronds and fronds of oil palm as feed without having to pay. Another thing that becomes an opportunity is the processing of fronds and fronds of oil palm which is still limited so that farmers still don't use it too much and are still only limited to stakes or stakes for horticultural farmers. The thing that is a threat is the use of chemical residues which is increasingly high, a threat to breeders, because farmers use high chemicals so they are afraid it will interfere with the health of their livestock if they consume feed made from palm fronds and leaves. The next threat to breeders is the increasingly limited availability of grass due to massive infrastructure development in Nagan Raya Regency, so that many areas of grass have been lost. The program of the Nagan Raya Regency Government is currently not focused on the utilization of midrib as animal feed. The government is still focused on processing palm oil products so that the utilization of fronds is currently still a neglected potential. From the results of interviews, currently fronds have not become a serious problem that must be resolved because 15% of the cutting waste is still used by farmers in the farming process. The dominant agricultural commodity using palm fronds is long beans. A small number of oil palm farmers do a side job by growing long beans as an alternative to supplement their income.

#### 4. CONCLUSIONS AND SUGGESTIONS

##### 4.1. CONCLUSION

1. The average feed requirement for one year old goat ready for slaughter in Nagan Raya Regency is around 990 kg. In a month, goats need 90 kg of feed with a composition that is usually done by goat breeders of 40% grass and 60% palm fronds and leaves so that in 1 Ha of Oil Palm Plantation it can meet <52 goats (60% composition of oil palm feed = 54 kg, 40% grass feed = 36 kg).
2. The development of goat farming will be influenced by various conditions, one of which is internal and external conditions. External conditions on goat farms are everything that is outside of the condition of the livestock that can affect the sustainability of the livestock business.



3. To see internal and external conditions, it can be seen by using a SWOT analysis so that farmers know what are the strengths, weaknesses, opportunities and threats for their livestock.
4. Analysis of needs and availability is the process of mapping the availability of feed raw materials derived from palm fronds with the needs of goats in Nagan Raya Regency. The need will be analyzed based on data on the number of goats in Nagan Raya Regency and the need for goat feed in general.

#### 4.2. SUGGESTIONS

1. The need for socialization regarding the provision of goat fodder to farmers using palm fronds and leaves for the utilization and reduction of waste.

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