

**POTENTIAL OF GREEN FORAGE TO RUMINANT ANIMALS
IN DEEP COCONUT PLANTATION IN HUAMUAL DISTRICT, SERAM ISLAND**

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ABSTRACT

This research aims to determine the potential for forage for ruminant livestock under coconut trees in Huamual District, West Seram Regency. Three villages, namely Ariate Village, Loki Village and Luhu Village, were selected using the purple sampling method. This research uses a survey method through direct observation and measurements in coconut plantation areas. This research was carried out using the dry weighing method to measure botanical composition, to calculate forage production using the Actual Weight Estimate method and measuring carrying capacity using the Voisin $(y-1) s = r$ formula. The results of this research show that the botanical composition of the forage found in the area under coconut trees is 14 species consisting of 7 species of grass, namely paspalum (*Paspalum distichum*), charred grass (*Sporobolus indicus*), Bermuda grass (*Cynodon dactylon*), Bengal grass (*Panicum maximum*), carpet grass (*Axonopus compressus*), buffalo grass (*Paspalum conjugatum*), field puzzle grass (*Cyperus rotundus*) 63.49%, 5 weed species namely Chinese purslane (*Euphorbia prostrata*), lizard fern (*Cyclosorus aridus*), minjang (*Chormolaena odorata*), flower fern (*Lygodium flexuosum*), galunggung (*Sida acuta*) 28.10% and 2 species of butterfly pea legume (centrosema), calopo (calopogonium) 9.13%. This shows that the most dominant grass is paspalum grass (*Paspalum distichum*), forage production has a fresh weight of 3847.86 tons/year and the carrying capacity in the area under coconut trees is 0.441 Ha/UT or 2.27 UT/Ha. With a total area of 1211 coconut trees, it can be estimated that it can accommodate 534,051 and the data on the ruminant livestock population in Huamual sub-district is 710,949 UT/year.

Keywords: feed, ruminants, plantations

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INTRODUCTION

Livestock farming is an integral part of agricultural development. Livestock is one component that can meet food needs and plays an important role in the growth of people's lives, namely the source of animal protein which increases every year. Livestock farming is still dominated by cattle, which is the current mainstay commodity. Cattle have the potential to be developed in terms of the role of cattle in society and the potential resources available. One of the efforts that can be taken to support the development of resilient livestock, especially in facing the free market era, is through a technical approach with the target of increasing the livestock population. Increasing the livestock population, especially ruminant livestock, really needs to be supported by the availability of forage, both quantity and quality throughout the year.

In an effort to increase livestock production, there is a triangular relationship between land, forage and livestock. The need for and provision of forage is achieved by considering the provision of forage that is

always available throughout the year. Ruminant livestock such as cows, buffalo, goats and sheep have a very strategic role in the economic life of farmers. Directorate General of Livestock & Animal Health (Ditjen PKM) Ministry of Agriculture (Kementan) (2021), that in 2021 beef production in Indonesia will be 437,783.23 tons. One of the problems faced in the livestock sector, especially ruminant livestock, is the problem of limited sources of forage available, thus the development of ruminant livestock production areas will affect livestock production. In general, the forage used comes from various types such as field grass, legumes, which grow in people's plantation areas such as coconut plantation areas. Grazing carried out by ruminant farms in rural areas is often carried out under coconut plantation areas in accordance with the condition of the grass available next to the grazing area owned by the community which is not large enough to accommodate existing livestock (Prawidiputra et al, 1979)

Huamual District, West Seram Regency which consists of 5 villages, namely Ariate, Lokki, Luhu, Iha, Kulur. With an area of 84,181 Km² with a coconut land area of 1211 Ha with a population of 1559 cattle and 555 goats in Huamual District, West Seram Regency (BPS West Seram Regency, 2020). The breeding system carried out in Huamual District is extensive, where livestock are kept by releasing them into continuous grazing fields in coconut plantation areas owned by the village community. Inventorying types of forage and measuring forage production is the first step in determining the quantity of a pasture, because one of the factors that causes livestock to choose grazing is the low quantity and quality of pasture. So far there is no information about the potential for forage for livestock in Huamual District, West Seram Regency, while this information is very important in supporting government programs and the development of livestock businesses specifically for ruminants by local breeders.

METHOD

This research uses a survey method through direct observations and measurements in the field on pastures under coconut trees as the research location. Data collection is divided into two parts, namely primary data and secondary data. Primary data consists of forage species that grow in grazing fields under coconut trees, while secondary data was obtained from agencies related to this research. Determining the sampling location used purposive sampling, selecting villages based on village area and number of livestock, namely Ariate village 14.45 km², Loki village 67.20 km² and Luhu village 225.99 km². Which is usually used as a source of animal feed and pasture for livestock by local communities.

RESULTS AND DISCUSSION

The number of ruminant livestock populations is guided by livestock unit standards. According to the agreement between the Directorate of Program Development and the Directorate of Production Development, it is determined by the number of livestock units as follows:

Table 1. Number of ruminant livestock populations

No	Types of Livestock	Population Type	Conversion Number *)	Total Population (UT)
1.	Cow	1559	0,758	1181,7
2.	Goat	555	0,114	63,3
	Total			1.245

Data: 2022.

Composition of Inner Coconut Plantation Areas

Botanical composition is a method used to describe the presence of certain plant species and their proportions in an ecosystem in a coconut area. The forage that grows in pastures is natural forage, so changes in the botanical composition of forage are greatly influenced by environmental conditions such as soil fertility, water availability. The results of measuring the botanical composition at the research location which is used as a food source in the ruminant grazing area can be seen in the following table.

Table 2. Botanical composition in food source areas

Species	Rang			Composition %
	I	II	III	
<i>Paspalum distichum</i>	45,00	10,53	4,76	35,04
<i>Sporobolus indicus</i>	10,00	5,26	4,76	8,72
<i>Cynodan dactylon</i>	0,00	16,67	9,52	4,34
<i>Euphorbia prostrate</i>	5,00	5,26	14,29	5,95
<i>Cyclosorous aridus</i>	5,00	0,00	14,29	4,84
<i>Chormolaena odorata</i>	5,00	5,26	14,29	5,95
<i>Centrosema</i>	5,00	5,26	4,76	5,12
<i>Panicum maximum</i>	0,00	21,05	4,76	4,85
<i>Lygodium flexuosum</i>	5,00	10,53	4,76	6,23
<i>Axonopus compressus</i>	5,00	5,26	0,00	4,71
<i>Paspalum conjugatum</i>	0,00	5,26	0,00	1,11
<i>Sida acuta</i>	5,00	5,26	4,76	5,12
<i>Cyperus rotundus</i>	5,00	5,26	0,00	4,71
<i>Calopogonium mucunoides</i>	5,00	0,00	4,76	4,01

Data: 2022

The production of forage for livestock is feed material in the form of forage consisting of stems, leaves and flowers, whether from grass or legumes. The results of measurements of fresh weight forage production in grazing areas in coconut plantations were 3.26 tons/ha. Meanwhile, the entire coconut plantation area in Huamual District, West Seram Regency, has a fresh weight production of 3847.86 tons/year. Carrying capacity is the ability of pasture to produce forage required by a number of livestock grazed in one hectare or the ability of pasture to accommodate livestock per hectare. The research results showed that the average holding capacity of grazing fields at the research location was 0.441 UT/Ha. if multiplied by the coconut plantation area of 1211 Ha. in Huamual District, West Seram Regency, it can accommodate 534.84 UT/year.

The botanical composition of a pasture is not always constant because it is influenced by the season, land conditions and use by livestock or through cutting by humans (Smith and Smith, 2002). The results of calculating the percentage of the most dominant type of grass as animal feed on pastures in the inner coconut plantation area is *Paspalum distichum* grass at 35.04%. The height of this type of grass is because this grass species is a natural grass that is very easy to grow because it has rhizome roots that spread easily. According to Smith in Whiteman (1983), *Paspalum distichum* grass is a plant that grows very quickly, has dense rhizomes and stolons, and strong roots. The results of the calculation of the botanical composition are also dominated by types of grass as feed at 63.49%. The high botanical composition of grass species at the research location is due to the large number of grass species that grow on pastures which have faster growth and are resistant to trampling and crushing. According to Crowder and Cheeda, (1982) grass forms clumps, has a strong root system so it is resistant to trampling and being pulled by livestock, and grows back very quickly after bruising or cutting. The rhizomes creep and form new plants which quickly spread when picked on by livestock, thereby inhibiting the growth of other plants. In general, legumes include plants that spread and form trees that can be found in tropical areas. Leguminosae as animal feed has a very good nutritional composition. Of all the forages, legumes have the highest protein content, besides that, legume leaves are popular with many livestock. From the calculation results, the grazing area on coconut plantations for legumes is 9.13%. The low percentage of legumes is caused by climatic conditions that are hot enough so that only these legumes can live in shaded locations. Topography, climate and soil fertility as well as the adaptability of the forage itself are what cause these legumes to grow and produce Anonymous, (1983).

The quality of pasture depends on the ratio of grasses to legumes. From the results of this research, it can be seen that the ratio of grass and legumes is 63.49%: 9.13%. This condition shows that the pasture at the research location is of low quality. According to Saragih and Tero (2009), pastures that have good quality have a proportion of grass and legumes of 60%: 40%. The composition range obtained by the results of this research is still far from the standard for meeting the quality of forage for livestock on this pasture. In accordance with the results of the calculation of the botanical composition, there are 28.10% weeds in the coconut plantation area. The large number of weeds that grow in pasture areas under coconut trees is caused by the rapid growth of weeds which suppresses the growth of grass and legumes. Weeds are a barrier or obstacle in increasing pasture productivity. According to Bambang (2007), weeds can grow very quickly and can dominate areas quickly because their seed production is very fast and widespread, which can reduce the

carrying capacity of pastures as a result of reduced forage productivity. Apart from that, weeds can be detrimental to animal feed plants because they compete for nutrients, sunlight and water. The type of weed that grows usually depends on the soil and climate conditions. According to Bingeli (1997) in Sapakoli (2009), weeds can grow well in an area even though it has unfavorable soil and climate conditions.

CONCLUSION

1. The botanical composition in the Huamual sub-district, western Seram district, is dominated by grasses 63.49%, legumes 9.13% and weeds 28.10%.
2. Production of forage for livestock in the coconut plantation area is 3847.86 tons/year.
3. The capacity of the inner coconut plantation area in Huamual sub-district is good, namely 0.441 or 2.27 ha/UT/year, or is estimated to be able to accommodate 532.84 UT

REFERENCE

- Budiasa, I. K. M. 2005. Availability of Forage Sources for Bali Cattle Based on Different Land Use and Topography in Jembrana Regency, Bali Province. [Thesis]. Postgraduate School, Bogor Agricultural Institute.
- Crowder & Chedda. 1982. Tropical Grassland Farming. New York Longman inc. Directorate General of Animal Husbandry & Animal Health (Ditjen PKM 2021).
- Damry. 2009. Production and Nutrient Content of Natural Grazing Pastures in North Lore District, Poso Regency. *Agroland Journal*, 16 (4):296-300.
- Dekhelep, K. 2016. Botanical diversity and carrying capacity of pastures in TNS sub-district, Central Maluku Regency. [Thesis]. Animal Husbandry Study Program, Faculty of Agriculture, Pattimura University Ambon.
- Herlinae. 2003. Evaluation of the nutritional value and potential of native forage from deep peatlands in Central Kalimantan as animal feed. [Thesis]. Bogor: Postgraduate School, Bogor Agricultural Institute.
- Kamal, M. 1998. Animal Feed and Ration Ingredients. Yogyakarta: Faculty of Animal Husbandry. Gadjah Mada University.
- McIlroy, R. J. 1977. Introduction to Tropical Grassland Cultivation. Translation by the Faculty of Animal Husbandry Team. Bogor Agricultural Institute. Pradnya Paramita.
- Ma'sum, M. 1999. Possibility of using satellite data to estimate ruminant feed product. Livestock Research and Development Center, Agricultural Research and Development Agency. Bogor Department of Agriculture.
- Novyta, C. 2017. Potential of Forage and Carrying Capacity of Cattle Under Coconut Trees in North Tabukan District, Sangihe Islands Regency.
- Reksohadiprodjo, S. 1995. Yogyakarta Tropical Forage Production: BPFE. Gadjah Mada University.
- Rismundandar. 1995. Utilizing Grass Plants. Bandung: New Rays.
- Romney, D. L., & Gill, M. 2000. Intake of Forage. In. D. I. Givens, E. Owen, R. F. E. Axford and. H. M. Omend. Forage Evolution in Ruminant Nutrition. CABI Publishing. New York.
- Subagyo, I. & Kusmartono. 1988. Views of Cultural Science. Nuffic. Brawijaya University. Poor.
- Sofyan, I. 2003. Study of Business Development for Elephant Grass Farms to Provide Feed for Beef Cattle Fattening. Garut Regency, West Java. Faculty of Agriculture. Bogor Agricultural Institute.
- Susetyo, S. 1980. Management and Potential of Sleg Forage for Meat Livestock Production. Faculty of Animal Husbandry. Bogor Agricultural Institute.
- Sugeng, Y. B. 1996. Beef cattle. Self-Help Spreader, Jakarta.
- Sarief, S. 1985. Fertility and Fertilization of Agricultural Soil. CV. Buana Library.
- Skerman, P. J. & F. Riveras. 1990. Tropical Grasses. F.A.O. Rome.
- Susetyo, S. 1980. Management and Potential of Sleg Forage for Meat Livestock Production. Faculty of Animal Husbandry. Bogor Agricultural Institute.
- Susetyo., Kismono I., & Suwardi B. 1981. Forage for Animals. Directorate General of Animal Husbandry, Department of Agriculture, Jakarta.