

Research Article

## Evaluation of Nutrition and *In Vitro* Digestibility of *Leersia hexandra Swartz* as a Feed Source for Beef Cattle in the Cattle Corporation Village

Dewi Eka Nur Anisa<sup>1</sup>, Hamdi Mayulu<sup>2\*</sup>, Taufan Purwakusumaning Daru<sup>3</sup>

<sup>1</sup>Humid Tropical Agriculture Study Program, Magister of Agriculture Program,  
Mulawarman University Samarinda,

<sup>2,3</sup>Department of Animal Husbandry, Faculty of Agriculture, Mulawarman University, Samarinda

\*Correspondence email: [hamdi\\_mayulu@faperta.unmul.ac.id](mailto:hamdi_mayulu@faperta.unmul.ac.id)

### Abstract

This study aimed to assess the nutritional quality and digestibility of dry matter, organic matter, crude protein, and crude fiber in *Leersia hexandra* as a feed option for beef cattle in the Cattle Corporation Village, located in the Babulu Subdistrict, Penajam Paser Utara Regency. Conducted from November 2024 to April 2025, the research employed a survey method with direct observation to evaluate natural grazing pasture conditions. The research locations were selected through purposive sampling, involving five farmer groups that represent the grazing ecosystem characteristics in the area. The study analyzed parameters such as forage nutrient content, biomass productivity, land carrying capacity, and *in vitro* digestibility to gauge the feed utilization efficiency. The findings revealed that *Leersia hexandra Swartz* comprised 86.532% dry matter, 13.468% moisture, 10.296% ash, 3.702% crude fat, 28.962% crude fiber, and 7.330% crude protein. The average digestibility rates were 48.834% for dry matter, 50.400% for organic matter, 77.040% for crude fiber, and 84.664% for crude protein. The substantial chemical composition and digestibility indicate that *Leersia hexandra Swartz* (kolomento) can sufficiently supply energy and protein to fulfill the nutritional requirements of beef cattle. These results highlight the potential of *Leersia hexandra Swartz* as an excellent local forage, well-suited to humid tropical climates and ideal for sustainable feed systems in the Cattle Corporation Village.

**Keywords:** carrying capacity; digestibility; *Leersia hexandra Swartz*; feed, beef cattle

Accepted: 20 Februari 2026

Approved: 29 March 2026

Publication: 31 March 2026

**Citation** : D. E. N. Anisa, H. Mayulu, dan T. P. Daru, "Evaluation of Nutrition and *In Vitro* Digestibility of *Leersia hexandra Swartz* as a Feed Source for Beef Cattle in the Cattle Corporation Village", *Journal of Tropical Pharmacy and Chemistry*, vol. 10, no.1, pp.67-75, Mar. 2026, doi: 10.30872/jtpc.v10i1.370.

**Copyright** : © year, *Journal of Tropical Pharmacy and Chemistry (JTPC)*. Published by Faculty of Pharmacy, Universitas Mulawarman, Samarinda, Indonesia. This is an Open Access article under the CC-BY-NC License



## 1 Introduction

Development in the livestock sector plays an important role in meeting food needs, especially in providing high-quality animal protein sources. Specifically, development in the beef cattle subsector aims to increase livestock populations, meat productivity, and the welfare of farmers. One of the challenges in developing livestock businesses in Indonesia is the low rate of population growth, which results in low beef cattle productivity [1]. The Village-Based Cattle Corporation Program (DKS) is one of the government's initiatives to promote the development of community-based corporate livestock farming. Penajam Paser Utara Regency, particularly Babulu District, has been selected as the pilot project location for this program. The success of this program greatly depends on the availability of sustainable local forage, as feed-both forage and concentrate is a crucial factor in cattle fattening operations [2].

Forage that is abundantly available and grows naturally can help reduce feed production costs, increase livestock productivity, and support environmental sustainability. Support for the availability of forage forms a solid foundation for the feed supply industry [3]. Local feed sources can improve feed cost efficiency, do not compete with human needs, and their quality and quantity are able to meet the production and reproductive needs of livestock [4]. *Leersia hexandra Swartz* is one of the local feed sources in efforts to provide sustainable feed, due to its abundant availability in Babulu subdistrict. Its use as feed for beef cattle requires an in-depth study of its nutritional quality and digestibility level, so that it can be effectively integrated into feed systems based on local resources. The quality of forage is determined not only by its nutrient content such as crude protein, fiber, and organic matter, but also by its digestibility level, which has a direct impact on livestock performance.

The research aims to evaluate the potential of *Leersia hexandra Swartz* as feed for beef cattle in Desa Korporasi Sapi, Babulu District, by examining its nutritional content, dry matter digestibility (DMD), organic matter digestibility (OMD), crude fiber digestibility (CFD), and crude protein digestibility (CPD). By understanding the nutritional quality and digestibility levels, it is hoped that *Leersia hexandra Swartz* can become an economical local feed alternative to support beef cattle productivity in the Desa Korporasi Sapi area.

## 2 Method

The research was conducted from November 2024 to April 2025 in five groups: the Maju Farmers Group in Labangka Barat Village, the Lestari Farmers Group in Gunung Intan Village, the Mugirejo Mandiri Farmers Group in Babulu Darat Village, the Karya Utama Farmers Group in Gunung Mulia Village, and the Sumber Mulyo Farmers Group in Gunung Makmur Village, Babulu Subdistrict, Penajam Paser Utara Regency. The method used in this study was a survey with an observational approach and purposive sampling technique, with the criteria being locations that have a beef cattle population and the presence of *Leersia hexandra Swartz* plants.

The sampling process begins with cutting the stems and leaves, then placing them into sample bags to be weighed in order to determine their fresh weight. The collected samples are then dried in a shaded area (not exposed to direct sunlight) for two days and reweighed to obtain the air-dried weight. The dried *Leersia hexandra Swartz* samples are then analyzed for proximate composition and *in vitro* digestibility at the Laboratory of Nutrition and Feed Science, Faculty of Animal and Agricultural Sciences, Diponegoro University, Semarang, to determine their nutrient content, including moisture content, ash content, crude fiber, crude protein, and crude fat as well as digestibility (dry matter, organic matter, crude fiber, and crude protein). Data analysis is conducted descriptively and analytically to assess the nutritional quality of *Leersia hexandra Swartz* and its digestibility (DMD, OMD, CPD, and CFD).

The research uses *Leersia hexandra Swartz* as the main material. For proximate analysis, the chemicals used include  $H_2SO_4$ ,  $CUSO_4$ ,  $K_2SO_4$ ,  $NaOH$ ,  $HCl$ ,  $H_3BO_3$ , ethanol, and petroleum benzene. Meanwhile, the *in vitro* digestibility analysis requires McDougall's solution and rumen fluid from beef

cattle obtained from a slaughterhouse, as well as chemicals such as  $\text{NaHCO}_3$ ,  $\text{Na}_2\text{HPO}_4 \cdot 12\text{H}_2\text{O}$ ,  $\text{NaCl}$ ,  $\text{KCl}$ ,  $\text{MgCl}_2 \cdot \text{H}_2\text{O}$ ,  $\text{CaCl}_2$ , Pepsin,  $\text{HCl}$ , and distilled water. The equipment used includes a water bath, analytical balance, centrifuge, oven, furnace, vacuum pump, pH meter, test tubes/fermentor tubes, porcelain crucibles, desiccator, tweezers, 1000 ml beaker glass, 250 ml beaker glass, 50 ml measuring cylinder, 10 ml volumetric pipette, syringe/pipette ball, rubber stoppers, dropper pipette, sealing wax, and thermometer. This *in vitro* research method uses the Tilley and Terry technique by mimicking the digestion process of livestock feed materials in the rumen.

Calculation of digestibility (dry matter, organic matter, crude fiber, and crude protein) uses the following formula:

$$\text{Dry Matter Digestibility} = \frac{\text{Dry Sample Material} - (\text{Residual Dry Matter} - \text{Blanko Dry Indegradians})}{\text{Dry Matter Samplel}} \times 100 \%$$

$$\text{Organic Matter Digestibility} = \frac{\text{Organic Sample Material} - (\text{Organic Residue Material} - \text{Organic Blanko Material})}{\text{OrganicSample Material}} \times 100 \%$$

$$\text{Crude Fiber Digeitibility} = \frac{\text{Crude Fiber Sample} - (\text{Crude Fiber Residue} - \text{Crude Fiber Blanko})}{\text{Crude Fiber Sample}} \times 100 \%$$

$$\text{Crude Protein Digestibility} = \frac{\text{Cuude Protein Sample} - (\text{Crude Proteib Residue} - \text{Crude Protei Blanko})}{\text{Cuude Protein Sample}} \times 100 \%$$

### 3 Result and Discussion

#### 1. Nutrient Content of *Leersia hexandra Swartz*

Vegetation found in swampy areas holds potential for enhancing the diversity of feed to ensure the availability of high-quality feed that does not compete with human consumption [5]. *Leersia hexandra Swartz* is a promising source of livestock feed that thrives in wet environments such as rice fields and swamps. This plant can adapt to flooded conditions and varying nutrient content. The nutrient composition of *Leersia hexandra Swartz*, as determined by analysis, is presented in Table 1.

**Table 1. Results of nutritional analysis of *Leersia hexandra Swartz***

Farmer's Group	DMI (%)	WC (%)	ABU (%)	CF (%)	CF (%)	CP (%)
Progressive Farmers	86.299	13.701	10.462	3.183	28.742	8.873
Mugirejo Mandiri	87.494	12.506	11.209	3.606	28.942	7.631
Karya Utama	86.980	13.020	10.425	2.518	27.518	6.388
Lestari	86.524	13.476	10.672	5.704	29.811	6.134
Sumber Mulyo	85.363	14.637	8.711	3.501	29.795	7.625
Avarage DKS	86.532	13.468	10.296	3.702	28.962	7.330

Source: Results of Laboratory Analysis of Nutrition and Feed Science, Faculty of Agriculture, Diponegoro University, 2025

Research on nutrient content shows that the average composition of nutrients in *Leersia hexandra Swartz* consists of dry matter 86.532%, moisture content 13.468%, ash 10.296%, crude fat 3.702%,

crude fiber 28.962%, and crude protein 7.330%. This differs from the findings of Garsetiasih and Herryanto (2005), who reported that the nutrient content of *Leersia hexandra* in the Ciwidey deer habitat, West Java, was DM 90.14%, ash 8.54%, CP 9.64%, CF 35.17%, EE 2.69%, Beta-N 34.10%, Ca 0.41%, and P 0.35%. Furthermore, Garsetiasih (2013) stated that *Leersia hexandra Swartz* growing in grasslands within the perhutani area had a dry matter content of 89.10%, ash 16.45%, crude fat 0.99%, crude fiber 27.43%, and crude protein 8.80%. Meanwhile, research by Muhakka et al. (2020) [6] indicated that *Leersia hexandra* contains crude protein 5.35%, crude fat 2.56%, crude fiber 27.57%, ash 5.63%, NDF 79.47%, and ADF 42.22%. According to research by Mayulu et al. (2020), the nutrient content of *Leersia hexandra Swartz* is moisture 14.91%, DM 85.09%, ash 9.57%, crude fat 1.99%, crude fiber 49.23%, and crude protein 11.28%. These differences may be due to the environmental conditions where *Leersia hexandra* grows and the varying ages of the plants. This is consistent with the statement of Muhakka et al. (2023) [7] that the nutritional values of each forage can vary due to internal and external factors, including seasonal factors.

The research results show an average moisture content of 13.456%, indicating that *Leersia hexandra Swartz* has a drier texture. According to the Indonesian National Standard (SNI) No. 3930-2-2017, the maximum moisture content for feed ingredients is 14%. Therefore, moisture content is an important indicator in assessing the quality of feed ingredients. Feed with low moisture content has a better shelf life [8]. Meanwhile, the dry matter content of *Leersia hexandra Swartz* is relatively high, with an average DM of 86.563%, making it easier to store in dry form. The highest DM content was found in the Mugirejo Mandiri farmer group (87.494%), and the lowest in the Sumber Mulyo farmer group (85.363%).

The highest ash content was recorded in the Mugirejo Mandiri farmer group at 11.209%, while the lowest was found in the Sumber Mulyo farmer group at 8.711%, with an average of 10.296%. These findings are higher compared to the study by Rostini and Zakir (2017) [9], which reported that the ash content in field forages and swamp forages in South Kalimantan was 7.21% and 4.52%, respectively. This mineral content plays an important role in supporting livestock metabolism, especially in enzyme synthesis and electrolyte balance.

The crude fat content found in this study ranged from 2.518% to 5.407%, with an average of 3.702%, which is higher than that reported by Bahrin et al. (2018) [10], who found crude fat levels in field grass between 1.6-1.8%. Nawangsari and Hendrarti (2021) [11] recorded the crude fat content of field grass ranging from 0.41% to 3.11%. According to Sudradjat and Riyanti (2019) [12], for ruminant livestock, it is recommended that the fat content in feed not exceed 5% because high fat levels can affect rumen microbial activity by decreasing the population of fiber-digesting microbes. The average crude fiber content of *Leersia hexandra* in DKS was 28.962%, lower than the results of the study by Mutmainnah et al. (2021) [13], which reported that *Leersia hexandra* had a crude fiber content of 47.79%. However, this is not significantly different from previous research by Rostini et al. (2014) [14], who reported that the fiber content of swamp vegetation in South Kalimantan ranged from 14.84% to 29.35%, with the lowest content in *Paspalum sp.* and the highest in *L. adscendens*.

The results of the study showed that the average crude protein content reached 7.33%. Several authors have reported that native grasses such as *Axonopus purpusii* or *Leersia hexandra* have a protein content ranging from 5 to 10.3%, which is higher compared to some *Brachiaria* species growing in the floodplain fringe ecosystems of Orinoquia, Colombia [15]. The percentage of crude protein in this study is classified as medium quality, in accordance with the opinion of Siregar (1994), who stated that forage is considered low quality if its crude protein content is less than 5%, medium quality if it ranges between 5-10%, and high quality if it exceeds 10%. The crude protein requirement for beef cattle feed is 10-12% (Wahyono and Hardianto, 2004). [16] Based on these standards, other sources such as legumes, maize by-products, and palm oil by-products available at the research location can be utilized.

## 2. In-vitro Digestibility

The digestibility of a feed ingredient reflects how much of its nutrients can be absorbed and utilized by the animal's digestive system. A high amount of digestible nutrients indicates efficient feed digestibility, which affects the quality of the ingredient (Mayulu *et al.*, 2018) [17]. Feed with high nutrient content tends to increase the efficiency of utilization by rumen microbes in ruminant livestock. The results of the analysis of dry matter digestibility (DMD), organic matter digestibility (OMD), crude fiber digestibility (CFD), and crude protein digestibility (CPD) are presented in Table 2.

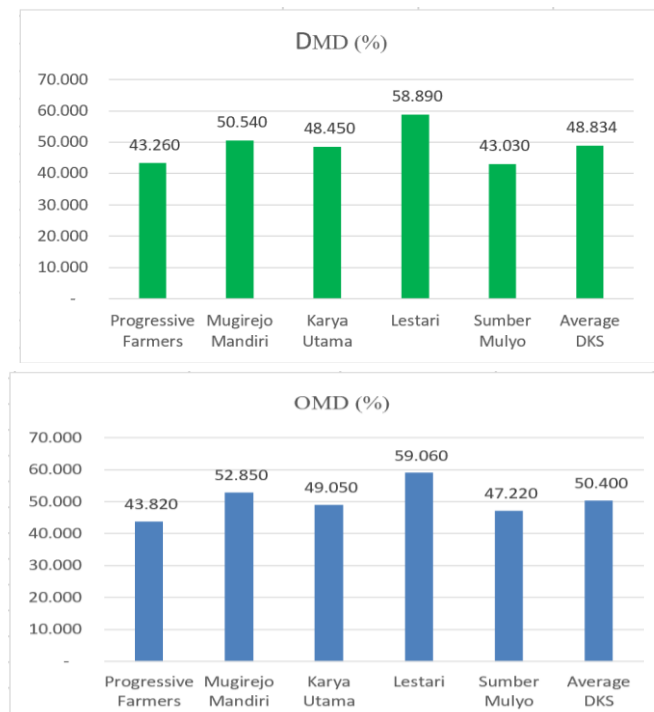
Table 2. Results of In-vitro Analysis of DMD, OMD, CFD and CPD

Farmer's Group	DMD (%)	OMD (%)	CFD (%)	CPD (%)
Progressive Farmers	43.260	43.820	75.100	89.980
Mugirejo Mandiri	50.540	52.820	77.730	84.650
Karya Utama	48.450	49.050	78.460	81.330
Lestari	58.890	59.060	79.460	87.080
Sumber Mulyo	43.030	47.220	73.990	80.280
Average	48.834	50.400	77.040	84.664

Source: Results of Laboratory Analysis, Department of Nutrition and Feed Science, Faculty of Agriculture, Diponegoro University, 2025.

### Dry Matter and Organic Matter Digestibility

The results of the study on the nutrient digestibility of *Leersia hexandra Swartz*, as shown in Table 2, indicate that dry matter digestibility ranges from 43.03% to 58.89%, with an average DMD of 48.834%. Meanwhile, organic matter digestibility ranges from 43.82% to 59.06%, with an average OMD of 50.40%. These figures are higher compared to the findings of Mayulu *et al.* (2020), who reported that the use of *Leersia hexandra Swartz* as the sole feed for buffaloes resulted in a DMD value of 37.81% and an OMD value of 45.36%. The combination of *Leersia hexandra Swartz* and *Neptunia plena* in the ration showed a DMD value ranging from 39.87% to 43.65% and an OMD value between 46.81% and 47.36%.

Figure 1. DMD and OMD Values of *Leersia hexandra Swartz*

The Lestari farmer group has the highest KcBK and OMD values, at 58.89% and 59.06% respectively, indicating the potential for good quality *Leersia hexandra Swartz*. The lowest KcBK value was found in the Sumber Mulyo farmer group at 43.03%, and the lowest OMD value was found in the

advanced farmer group at 43.82%. Research by Mayulu et al. (2018) showed that using a combination of *Leersia hexandra* and *Neptunia plena*-based feeds in sheep rations significantly increased dry matter and organic matter digestibility. Rations containing a mix of these two forages yielded DMD values ranging from 55.86% to 56.51% and OMD from 60.68% to 62.48%, which are significantly higher compared to using just one type of forage, namely *Leersia hexandra Swartz* (DMD 41.93% and OMD 52.72%) and *Neptunia plena* (DMD 42.71% and OMD 49.13%). According to research by Mayulu et al. (2020), the use of *Leersia hexandra* as a sole feed for goats resulted in KcBK values of 21.14% and OMD of 31.42% (Figure 1).

The research results show that the KcBK and DMD values of *Leersia hexandra Swartz* are lower compared to native grass *Cynodon dactylon* (L) Pers, which has a DMD of 54.32% and a KcBO of 52.22% (Hambakodu et al., 2021). Furthermore, these values are also lower than those of cattle feed based on fermented kumpai grass and legumes, with KcBK ranging from 57.59% to 65.88% and OMD ranging from 53.48% to 65.34%. However, the KcBK and OMD values of *Leersia hexandra Swartz* tend to be higher compared to the results of Asikin (2024), who reported that several field grasses such as *Panicum maximum* have a KcBK of 53.6% and a OMD of 49.20%, *Setaria sphacelata* has a KcBK of 48.70% and a OMD of 44.11%, and *Digitaria decumbens* has a DMD of 47.70% and a OMD of 43.00%. The high digestibility of dry matter and organic matter indicates that forage contains high levels of nutrients and can be digested and absorbed well by livestock. Research by Virginia (2015) [18] showed that the average organic matter value of native grass reaches 89.48%, which is considered quite high. This high organic matter content can provide sufficient nutrients, thereby offering greater variation in the nutrients present in the organic matter.

The results presented in Table 2 reveal that the average organic matter digestibility value of *Leersia hexandra Swartz* is higher than its dry matter digestibility who state that organic matter digestibility tends to be higher than dry matter digestibility because dry matter still contains inorganic components such as ash, which cannot be digested by the livestock's digestive system. Conversely, organic matter does not contain ash, making it easier to degrade in the digestive tract.

### Digestibility of Crude Fiber and Crude Protein

The nutritional content, particularly protein and fiber in feed, plays a crucial role in determining feed quality, which affects consumption, digestibility, rumen fermentation, and livestock growth. Protein is required in the form of crude protein and digestible protein, while feed fermentability indicates the degree of degradation in the rumen that produces ammonia as a nitrogen source for rumen microbes [19]. The results of crude fiber and crude protein digestibility analysis are shown in Figure 2.

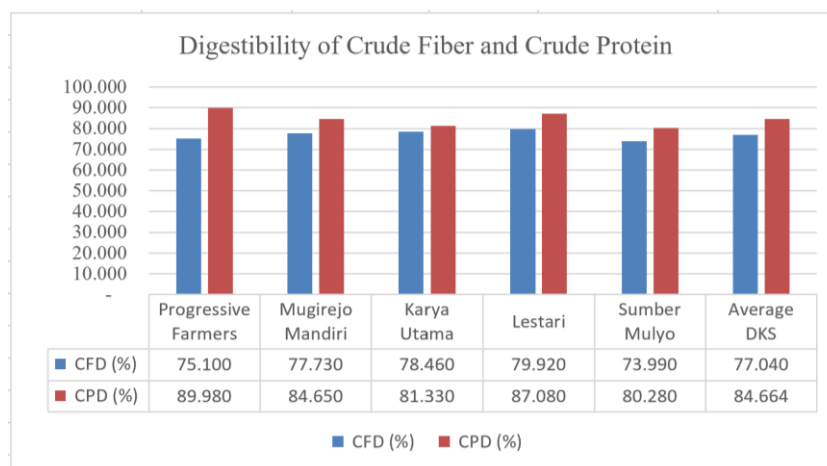


Figure 2. The digestibility values of crude fiber and crude protein

Based on the data shown in the image, the crude fiber digestibility value ranges from 73.99% to 79.92%, with an average of 77.04%. This condition indicates a high ability of rumen microbes to ferment

crude fiber. In addition to being an energy source, fiber also functions to activate rumen microbes and maintain normal rumen function [20]. The crude protein digestibility (CPD) value ranges from 80.28% to 89.98%, with an average of 84.66%, where the highest CPD was found in the advanced farmer group. Nutrient content analysis of *Leersia hexandra Swartz* in the advanced farmer group also showed the highest results compared to the other groups. This is in line with the statement of McDonald et al. [21] who noted that there is a strong positive correlation between the protein content of a feed ingredient and its crude protein digestibility. In other words, the higher the protein content in the material, the greater the fraction of protein that can be digested by livestock. The CPD and crude fiber digestibility values in this study are higher compared to the research [22] which reported that total mixed fiber (TMF) based on kumpai tembaga grass, rice straw, and oil palm fronds had crude fiber digestibility values ranging from 55.15% to 67.34% and CPD values ranging from 28.80% to 45.20%. The high CPD value in this study indicates that *Leersia hexandra Swartz* has potential as a feed with a fairly high protein content.

## Conclusion

Research conducted revealed that *Leersia hexandra Swartz* in the Cattle Corporation Village contains good nutrients for livestock forage. This plant meets the minimum standards for ruminant feed, with adequate crude protein, crude fiber, and dry matter content. *Leersia hexandra Swartz* also demonstrates good digestibility levels for dry matter (DMD), organic matter (OMD), crude fiber (CFD), and crude protein (CPD), making it a viable option as a sustainable local livestock feed.

## 4. Declarations

### 4.1 Acknowledgements (Optional)

The author expresses gratitude to the Wet Tropics Master's Program at the Faculty of Agriculture and the Nutrition and Feed Laboratory at Diponegoro University for their academic support and access provided for the completion of the study, as well as for the laboratory analysis of the research results. Appreciation is also extended to fellow researchers and lecturers in the field of animal feed nutrition who have provided valuable scientific input during the manuscript review process.

### 4.2 Ethics

The writing of the article follows the principles of international scientific publication ethics in accordance with the guidelines of the Committee on Publication Ethics (COPE). References are cited accurately, including the year, author, and official DOI. There is no plagiarism, duplicate publication, or data manipulation in this manuscript. The writing process upholds scientific integrity, transparency, and academic honesty. All statements and interpretations in this paper can be verified through the scientific sources listed in the references.

### 4.3 Conflict of Interest

The author declares that there is no financial, academic, or institutional conflict of interest in the conduct of the research and the writing of the article "Evaluation of Nutrition and *In Vitro* Digestibility of *Leersia hexandra Swartz* as a Feed Source for Beef Cattle in the Cattle Corporation Village." The scientific opinions expressed are based on valid data and literature without intervention from external parties. The author ensures that the objectivity of the analysis and academic integrity have been maintained throughout the manuscript preparation process.

## 5. Bibliography

1] Hajirin, M. Hubeis, dan Suryahadi. 2020. Strategi pengembangan sapi potong di wilayah pengembangan sapi bali kabupaten barru breeding. *Jurnal Manajemen Industri Kecil Menengah*, 15 (1): 48-61.

- [2] Ahmad, S. N., D. D. Siswansyah, dan D. K. S. Swastika, 2002. Kajian Sistem Usaha Ternak Sapi Potong di Kalimantan Tengah. 155-170
- [3] Ikanubun, E. R., E. E. Bachtiar, N. P. V. T. Timur, B. I. Syaefullah, M. Herawati, and S. C. Labatar. 2021. Daya Dukung Lahan Hijauan Makanan Ternak untuk Ternak Sapi Potong di Kampung Bowi Subur, Distrik Masni, Kabupaten Manokwari, Provinsi Papua Barat. *Prosiding Seminar Nasional Pembangunan Dan Pendidikan Vokasi Pertanian*, 2 (1): 227-235. <https://doi.org/10.47687/snppvp.v2i1.202>
- [4] Mayulu, H., Suyadi, S., Christiyanto, M., Sunarso, S., Daru, T. P., dan Haris, M. I. (2020). In vitro digestibility and fermentation ruminant of buffalo ration based on *Neptunia plena* L. Benth and *Leersia hexandra Swartz* as local resources. *Jurnal Ilmu-Ilmu Peternakan*, 30 (2), 148-157. <https://doi.org/10.21776/ub.jiip.2020.030.02.07>
- [5] Riswandi Muhakka, Wijaya A., Imsya A., Karomah C., (2022). Evaluasi Kualitas Fisik dan Fitokimia Ransum melalui Kombinasi Daun Lamtoro dan Indigofera. Prosiding Seminar Nasional Lahan Suboptimal ke-10 Tahun 2022, Palembang 27 Oktober 2022,
- [6] Muhakka, M., Suwignyo, R. A., Budianta, D., & Yakup, Y. (2020). Kandungan Mineral Hijauan Rumput Rawa Sebagai Pakan Kerbau Pampangan di Sumatera Selatan. 978-979.
- [7] Muhakka, Meilando, O., Imsya, A., Naidillah T. P., A., Riswandi, & Nurdin, A. S. (2023). Evaluasi komposisi botani dan nilai nutrien hijauan rawa di Desa Sejaro Sakti Kecamatan Indralaya Kabupaten Ogan Ilir. *Jurnal Peternakan Sriwijaya*, 12(2), 8–17.
- [8] Riswandi, R. Imsya A., Sandi S., Putra A.S.S., (2017). Evaluasi Kualitas Fisik Biskuit Berbahan Dasar Rumput Kumpai Minyak dengan Level Legum Rawa ( *Neptunia Oleracea Lour* ) yang Berbeda. *Jurnal Peternakan Sriwijaya* 6 (1): 1-11
- [9] Rostini, T., dan Zakir, I. (2017). Performans Produksi, Jumlah Nematoda Usus, dan Profil Metabolik Darah Kambing yang Diberi Pakan Hijauan Rawa Kalimantan. *Jurnal Veteriner*, 18 (3), 469. <https://doi.org/10.19087/jveteriner.2017.18.3.46>
- [10] Bahrun, B., T. Widyastuti, N. Hidayat, D. A. Saputra, dan D. R. Putri. 2018. Daya dukung hijauan rumput alam sebagai pakan ternak sapi potong di BKPH Kebasen, Banyumas. Dalam *Prosiding Seminar Teknologi dan Agribisnis Peternakan VI: Pengembangan Sumber Daya Genetik Ternak Lokal Menuju Swasembada Pangan Hewani ASUH* (hlm. 115-119). Fakultas Peternakan, Universitas Jenderal Soedirman. <https://banyumaskab.bps.go.id>
- [11] Nawangsari, D. N., dan Hendrarti, E. N. (2021). Analisis proksimat rumput lapangan sebagai pakan ternak ruminansia di Kabupaten Magelang, Jawa Tengah [Analysis of proximate native grass as ruminant cattle feed in Magelang Regency, Central Java]. *Jurnal Pengembangan Penyuluhan Pertanian*, 18(31), 25-31.
- [12] Sudrajat, I., dan Riyanti, L. (2019). *Nutrisi dan pakan ternak*. Pusat Pendidikan Pertanian, Badan

Penyuluhan dan Pengembangan SDM Pertanian, Kementerian Pertanian. ISBN: 978-602-6367-43-3.

- [13] Mutmainnah, S., Ichsan, A. C., and Syaputra, M. (2021). Palatability and food management strategies of Rusa timor (*Rusa timorensis*) at Wisma Daerah Sumbawa district. *Jurnal Sylva Scienteeae* 04 (1):
- [14] Rostini, T., Abdullah, L., Wiryawan, K. G., dan Karti, P. D. M. H. (2014). Production and nutrition potency of swamp local forage in South Kalimantan as ruminant feed. *Global Science Research Journals* 2 (2):107-113.
- [15] Salamanca-Carreño, A., Vélez-Terranova, M., Vargas-Corzo, O. M., Parés-Casanova, P. M., dan Bentez-Molano, J. (2022). Productive and Nutritional Characteristics of Native Grasses from the Floodplain Banks Ecosystem in the Colombian Orinoquia. *Sustainability (Switzerland)*, 14 (22). <https://doi.org/10.3390/su142215151>
- [16] Wahyono, D.E dan Hardianto, R. (2004). Pemanfaatan Sumber Daya Pakan Lokal untuk Pengembangan Usaha Sapi Potong. Grati. Pasuruan
- [17] Mayulu, H., Fauziah, N., Christiyanto, M., Sunarso, S., dan Haris, M. I. (2018). Digestibility Value and Fermentation Level of Local Feed-Based ration for Sheep. *Animal Production*, 20 (2), 95. <https://doi.org/10.20884/1.jap.2018.20.2.706>
- [18] Virginia, G. (2015). Analisis Nutrisi Rumput Alam (Mexicana grass) dan Rumput Raja ( King grass ) Sebagai Pakan Ternakdi Kelompok Tani Nekmese Kecamatan Insana Barat. 1 (2), 22-23.
- [19] Jena, K., Markus, M. K., dan Imanuel, B. (2020). Kecernaan Nutrien Dan Parameter Rumen Pakan Konsentrat Yang Mengandung Tepung Daun Kersen Sebagai Pengganti Jagung Secara In Vitro. *Jurnal Nukleus Peternakan* , 7 (2), 2656-2792.
- [20] Widodo, Wahyono F., Sutrisno. (2012). Kecernaan Bahan Kering, Kecernaan Bahan Organik, Produksi VFA Dan NH3 Pakan Komplit Dengan Level Jerami Padi Berbeda Secara In Vitro. *Animal Agricultural Journal*, 1 (1): 215-230.
- [21] Mcdonald, P., Edwards, R. A., Greenhalgh, J. F. D., and Morgan, C. A. (2010). *Animal Nutrition*. Pearson Education.
- [22] Imsya, A., . R., M. A. Jakfar, dan S. Ginting. 2017. Pengaruh Rumput Rawa dan Limbah Pertanian sebagai Penyusun Total Mixed Fiber (TMF) terhadap Kecernaan Serat Kasar dan Protein Kasar secara In Vitro. *Jurnal Peternakan Sriwijaya*, 6 (2): 70-78. <https://doi.org/10.33230/jps.6.2.2017.5082>