Vol. 2 No. 3 Edisi Juli 2025 E. ISSN. 3032-2472
Multidisciplinary Indonesian Center Journal (MICJO)
Journal page is available to
https://e-jurnal.jurnalcenter.com/index.php/micjo
Email: admin@jurnalcenter.com

STRATEGY FOR DEVELOPING CASSAVA LEAF ANIMAL FEED (*MANIHOT UTILISSIMA*) (CASE STUDY: SUMBEREJO VILLAGE, PAGAR MERBAU DISTRICT, DELI SERDANG REGENCY)

STRATEGI PENGEMBANGAN PAKAN TERNAK DAUN SINGKONG (*MANIHOT UTILISSIMA*) (STUDI KASUS: DESA SUMBEREJO, KEC. PAGAR MERBAU, KAB. DELI SERDANG)

Henny Pratiwi[1*], Rasidah Sihombing [2],
[1] Islamic University Of North Sumatra, Email:rasidahr557@gmail.com
[2]Polytecnic LP3L Medan, Email : hennypratiwi78@gmail.com

*email Koresponden: hennypratiwi78@gmail.com

DOI: https://doi.org/10.62567/micjo.v2i3.873

Article info:

Submitted: 05/06/25 Accepted: 23/07/25 Published: 30/07/25

Abstract

This study aims to analyze the development strategy of cassava leaf-based animal feed (*Manihot utilissima*) in Sumberejo Village, Pagar Merbau District, Deli Serdang Regency. This study uses a nonprobability sampling method with a saturated sampling technique. With a total of 53 respondents consisting of 50 consumers, 1 business owner and 2 employees. This study uses primary and secondary data. This study uses multiple linear regression analysis to determine what factors influence the development strategy of cassava leaf animal feed and descriptive analysis to analyze the development strategy for the potential and opportunities of using cassava leaves as animal feed. This research method uses qualitative and quantitative analysis. The results showed that cassava leaves have a high crude protein content, which is around 20-30%, and contain crude fiber, fat, and minerals that are beneficial for livestock growth. Multiple linear regression analysis in this study shows that all independent variables have a significant effect on the dependent variable. Among these factors, the economic aspect makes the largest contribution, making it the main factor influencing the dependent variable. Furthermore, social aspects and external support also play a significant role in determining the results. In addition, other factors such as technology, resources, and marketing and distribution also have a significant impact, although with a smaller influence compared to

Multidisciplinary Indonesian Center Journal (MICJO)
Journal page is available to
https://e-jurnal.jurnalcenter.com/index.php/micjo
Email: admin@jurnalcenter.com

economic and social aspects. Thus, the regression model shows a positive relationship between the independent variables and the dependent variable, so that improvements in these aspects will increase the dependent variable, with the main priority on economic and social aspects.
Keywords : Cassava Leaves, Animal Feed, Development Strategy, Sustainability, Market Opportunities

Abstrak

Penelitian ini bertujuan untuk menganalisis strategi pengembangan pakan ternak berbasis daun singkong (*Manihot utilissima*) di Desa Sumberejo, Kecamatan Pagar Merbau, Kabupaten Deli Serdang. Penelitian ini menggunakan metode nonprobability sampling dengan teknik sampling jenuh. Dengan jumlah responden sebanyak 53 orang yang terdiri dari 50 orang konsumen, 1 pemilik usaha dan 2 karyawan. Penelitian ini menggunakan data primer dan sekunder. Penelitian ini menggunakan analisis regresi linier berganda untuk mengetahui faktor faktor apa saja yang mempengaruhi strategi pengembangan pakan ternak daun singkong dan analisis deskriktif untuk menganalisis strategi pengembangan terhadap potensi serta peluang dari penggunaan daun singkong sebagai pakan ternak. Metode penelitian ini menggunakan analisis kualitatif dan kuantitatif. Hasil penelitian menunjukkan bahwa daun singkong memiliki kandungan protein kasar yang tinggi, yaitu sekitar 20-30%, serta mengandung serat kasar, lemak, dan mineral yang bermanfaat bagi pertumbuhan ternak. Analisis regresi linier berganda dalam penelitian ini menunjukkan bahwa seluruh variabel independen memiliki pengaruh signifikan terhadap variabel dependen. Di antara faktor-faktor tersebut, aspek ekonomi memberikan kontribusi terbesar, menjadikannya faktor utama yang memengaruhi variabel dependen. Selanjutnya, aspek sosial dan dukungan eksternal juga memiliki peran yang cukup besar dalam menentukan hasil. Selain itu, faktor lain seperti teknologi, sumber daya, serta pemasaran dan distribusi turut memberikan dampak signifikan, meskipun dengan pengaruh yang lebih kecil dibandingkan aspek ekonomi dan sosial. Dengan demikian, model regresi menunjukkan hubungan positif antara variabel independen dan variabel dependen, sehingga peningkatan pada aspek-aspek tersebut akan meningkatkan variabel dependen, dengan prioritas utama pada aspek ekonomi dan sosial.

Kata Kunci: Daun Singkong, Pakan Ternak, Strategi Pengembangan,Keberlanjutan, Peluang Pasar

1. INTRODUCTION

An agrarian country is a country where the majority of its population relies on the agricultural sector as its main livelihood and the main driver of the economy. The agricultural sector in an agrarian country includes not only food crops, but also plantations, livestock, and forestry which are the main sources of state income and people's lives. In an agrarian country,

Multidisciplinary Indonesian Center Journal (MICJO)
Journal page is available to
https://e-jurnal.jurnalcenter.com/index.php/micjo
Email: admin@jurnalcenter.com

the majority of the population works as farmers or is involved in activities related to agriculture, such as processing agricultural products and distributing food products (Rofita, 2022).

North Sumatra is one of the provinces in Indonesia that has great potential in the agricultural and livestock sectors. This area has an area of around 72,981.23 km² with diverse topography. North Sumatra is also a fairly large cassava producing area in Indonesia. Regencies such as Deli Serdang, Serdang Bedagai, Langkat and Simalungun have extensive cassava farming land. However, the focus of cassava production so far has been more on the use of tubers for human consumption and industry, while abundant cassava leaves often only become waste or traditional animal feed without further processing (Siregar, 2022).

Deli Serdang Regency in North Sumatra is one of the areas with great potential in producing cassava, and is included in the center of cassava production in the province. The development of the agricultural sector, especially in cassava cultivation, is highly expected to support the development of this region, because most of the population works in the agricultural sector. In addition, this sector is also expected to be able to increase regional income and ultimately improve the welfare of the population. At the time of the main harvest, fresh cassava has a low economic value, so efforts are needed to increase added value through processing into various processed products (Khairani , 2023).

Waste feed is feed that comes from the remains of agricultural, plantation, or food industry activities. Examples include rice straw, sugarcane bagasse, cassava pulp, peanut skins, and rice bran. This type of feed is often used as an alternative or supplement because it is more economical and helps reduce environmental waste. Although its nutritional content is generally lower than green fodder or concentrate, some agricultural waste can be processed to increase its nutritional value. For example, rice straw can be fermented to increase its protein content and digestibility, while protein-rich soybean pulp is often used as additional feed (Khoir et al., 2023).

Previous research showed that the results of the study analyzed the potential and strategy for developing cattle in Mandailing Natal Regency, North Sumatra, using survey methods and SWOT analysis. The results showed that feed sources came from inter-plant greens, greens in rice field ditches, and agricultural and industrial waste, with a total feed production reaching 41,028,554 kg of dry matter per year. The proposed development strategy is to build a livestock feed processing industry by utilizing local feed resources, raw materials, geographical location, and government support. The sampling technique was carried out by random sampling. Evaluation of factors influencing the development of cattle farming based on feed resources in Mandailing Natal Regency, North Sumatra, includes analysis of internal factors (IFAS) and external factors (EFAS).

The development of cassava leaf animal feed is also in line with sustainability efforts in the livestock sector. By utilizing abundant local resources, such as cassava leaves, farmers can reduce dependence on imported feed and improve the economic balance in livestock businesses. Increasing the use of cheaper and more nutritious local feed ingredients will

Multidisciplinary Indonesian Center Journal (MICJO)
Journal page is available to
https://e-jurnal.jurnalcenter.com/index.php/micjo
Email: admin@jurnalcenter.com

contribute to improving the welfare of farmers and the sustainability of the livestock sector in this area.

Seeing the great potential of cassava leaves as animal feed and the challenges in its development, this study aims to explore strategies that can be applied in the development of cassava leaf animal feed. This study is expected to provide the right solution to increase the efficiency of animal feed and reduce dependence on commercial feed.

In addition, the availability of cassava leaves that depend on the season is also an obstacle. Although cassava leaves can be harvested throughout the year, fluctuations in availability influenced by the rainy and dry seasons can disrupt the continuity of animal feed supplies. Therefore, a strategy is needed that can ensure a stable supply of cassava leaves throughout the year, one of which is by better management of cassava plants and the use of proper storage techniques for unused cassava leaves.

This condition indicates the importance of developing efficient and sustainable cassava leaf-based animal feed. The use of cassava leaves as animal feed will not only reduce dependence on more expensive imported or commercial feed, but will also provide a solution to increasingly complex feed problems. Given that cassava leaves are a local feed ingredient that is abundant and easy to obtain, its development can be an economical and environmentally friendly alternative for livestock farmers.

Based on the description above, the author is interested in conducting research to compile a thesis entitled "Cassava Leaf Animal Feed Development Strategy".

2. RESEARCH METHOD

This research was conducted in Sumberejo Village, Pagar Merbau District, Deli Serdang Regency with a qualitative and quantitative approach with the objects of research being business owners, employees and consumers. The sampling technique used the nonprobability sampling method with the saturated sample technique. The data used were primary data obtained through questionnaires, interviews, and observations, as well as secondary data from related agencies. Data analysis was carried out through descriptive analysis of multiple linear regression fsn to test the feasibility of the regression model. This study aims to identify factors that influence animal feed development strategies and analyze the potential and market opportunities it has.

3. RESULTS AND DISCUSSION

Respondent Characteristics

The respondents used in this study were 53 people consisting of 1 business owner, 2 employees, and 50 consumers of cassava leaf animal feed. The characteristics of the sample show that the majority of respondents are in the age range of 40-50 years and the least are from the age group of 18-28 years. In terms of college education, only 3.37% and the rest have elementary and junior high school education, each 1.89%. Most respondents have a number of family dependents between 1-3 people (71.70%), 22.64% have 4-6 dependents and 5.66% have no dependents. In terms of livestock experience, 50.94% of respondents have 4-7 years of

Multidisciplinary Indonesian Center Journal (MICJO)
Journal page is available to
https://e-jurnal.jurnalcenter.com/index.php/micjo
Email: admin@jurnalcenter.com

experience, 30.19% have more than 1-3 years of experience, and only 3.77% have no livestock experience.

1. Regression Coefficient Testing (F-Test)

The results of the F test show that all independent variables simultaneously have a significant effect on the cassava leaf livestock feed development strategy, with an F count value of 37.403 and a significance of 0.000 which is less than 0.05. This means that the regression model used is feasible and can explain the relationship between variables. Because F count > F table and sig < 0.05, then H_0 is rejected and H_1 is accepted.

2. Individual Regression Coefficient Testing/ Partial Test (T-Test)

The results of the t-test show that all independent variables, namely aspects of resources, economy, technology, marketing and distribution, and social and external support, partially have a significant effect on the cassava leaf animal feed development strategy. This is evidenced by the t-count value of each variable which is greater than the t-table (±2.009) and the significance value is below 0.05, such as the economic aspect with a t-count of 4.837 (sig = 0.000) and the social aspect with a t-count of 4.088 (sig = 0.000). Because all t-count values are significant, H_0 is rejected and H_1 is accepted, meaning that each variable partially affects the development strategy.

3. Coefficient of determination (R-Square)

The results of the determination coefficient (R^2) test showed a value of 0.893, which means that 89.3% of the variation in the cassava leaf livestock feed development strategy can be explained by five independent variables, namely aspects of resources, economy, technology, marketing and distribution, and social and external support. The remaining 10.7% is influenced by other factors outside this research model. This high R^2 value indicates that the regression model used is very strong in explaining the dependent variable.

4. Multiple Linear Regression

The results of the multiple linear regression analysis are as follows:

$$\mathbf{Y=0.224+0.602}\ X_1\mathbf{+0.640}\ X_2\mathbf{+0.570}\ X_3\mathbf{+0.524}\ X_4\mathbf{+0.604}\ X_5\mathbf{+}\ e$$

Information :

1. The resource aspect has a coefficient of 0.602, meaning that every 1 unit increase in this aspect will increase the dependent variable by 0.602, assuming other variables remain constant. This means that the better the resource aspect available, the higher the dependent variable (e.g. business success rate).
2. The economic aspect has a coefficient of 0.640, which indicates a positive influence on the dependent variable. The economic aspect has the greatest influence compared to other aspects, which means that the economic factor is one of the most important aspects in influencing the dependent variable.
3. The technological aspect has a coefficient of 0.570, which also has a positive effect on the dependent variable. This shows that technology plays an important role in influencing the dependent variable, although its influence is smaller than the economic and social aspects and external support.

Multidisciplinary Indonesian Center Journal (MICJO)
Journal page is available to
https://e-jurnal.jurnalcenter.com/index.php/micjo
Email: admin@jurnalcenter.com

4. The marketing and distribution aspect has a coefficient of 0.524, which means that this variable also contributes to increasing the dependent variable. Although this aspect has a smaller influence than the others, it still shows that good marketing and distribution can help improve the dependent variable.
5. Social aspects and external support have a coefficient of 0.604, with the highest influence after the economic aspect. This aspect has a fairly large influence, even greater than the aspects of resources, technology, and marketing. This shows that social factors and external support are very important in determining the success of the dependent variable.

4. CONCLUSION

Based on the result of data analysis and the discussion of the result in the previous chapter, the researcher concludes that the implementation of Choral Reading Strategy improves the students' reading comprehension of the eight grade students at SMP Negeri 13 Palu. This can be seen from the mean score of experimental class is higher than the mean score of control class. in addition, we can see the significant differences between experimental class and control class. Base on the data analysis show that the research hypothesis is accepted. It is proved by the result of t-counted and t-table in which the result of t-counted (4.59) is higher than t-table (1.67). In short, the previous statements answer the problem statement. It can be inferred that Choral Reading Strategy can improve students' reading comprehension of SMP Negeri 13 Palu.

Conclusion

1. The results of the study indicate that the strategy for developing cassava leaf animal feed in Sumberejo Village, Pagar Merbau District, Deli Serdang Regency must consider various factors that influence the success of the business. Based on the results of multiple linear regression analysis, the economic aspect has the greatest influence on the development of this business. This shows that production costs, selling prices, and consumer purchasing power are the main factors in business sustainability.
2. Cassava leaves have great potential as raw materials for animal feed because of their high nutritional content, especially crude protein which reaches 20-30%. In addition, cassava leaves also contain fiber, fat, vitamins, and minerals that are beneficial for the growth and health of livestock. Another advantage is its abundant availability, considering that cassava is widely cultivated, so cassava leaves can be an alternative feed that is economical and easy to obtain. The development and utilization of cassava leaves as animal feed not only provides economic benefits for farmers, but also contributes to the sustainability of the livestock sector and food security in the future.
3. Cassava leaves have promising market opportunities as raw materials for animal feed in the future, especially because of their abundant availability and high nutritional content. The sustainability of the use of cassava leaves as animal feed depends on several factors, such as the effectiveness of processing techniques to reduce cyanide levels, the stability of supply throughout the year, and government support in developing the agricultural waste feed industry. With innovations in feed processing technology, regulatory support, and increasing

Multidisciplinary Indonesian Center Journal (MICJO)
Journal page is available to
https://e-jurnal.jurnalcenter.com/index.php/micjo
Email: admin@jurnalcenter.com

awareness of farmers about the importance of cheaper and better quality local feed alternatives, cassava leaves have great potential to be developed as a competitive source of animal feed.

Suggestion

1 In future research, several in-depth aspects need to be studied to ensure that the use of cassava leaves as animal feed can be developed optimally, sustainably, and provide greater economic benefits for livestock breeders and farmers as well as researching the feasibility study of the cassava leaf animal feed business.

2 The government and related institutions should provide education and facilitate farmers regarding the benefits of cassava leaves as alternative feed and the right way to process them. Thus, farmers can utilize local resources optimally and the government needs to provide support in the form of policies that encourage the use of local feed ingredients, including subsidies or incentives for business actors who develop the cassava leaf animal feed industry.

5. REFERENCES

Astuti, Y., Susanti, R., & Pratama, A. (2020). Pemanfaatan daun singkong sebagai bahan pangan lokal dengan nilai gizi tinggi. Jurnal Pangan dan Gizi Indonesia, 12(3), 123-132.

Auza, Muhammad Nizam, Otto Nur Abdullah, and T Fauzi. 2019. "Strategi Pengembangan Pabrik Pakan Ternak Ayam Ras Petelur di Kecamatan Blang Bintang Kabupaten Aceh Besar (Studi Kasus Pada UPTD Balai Ternak Non Ruminansia) (Strategy Development of Cattle Feed Factory in the Village of the Chiken in the Blang Bintan." *Jurnal Ilmiah Mahasiswa Pertanian Unsyiah* 4(November): 121–30.

Ari Irawan, Sahrul, Nurul Hakiki, M Ali Fikri Alfarisy, Amalia Tyas Budi, Lucky Lindu Antika, and Mareta Karunia Alda. 2023. "Pemanfaatan Silase Daun Singkong Untuk Pakan Ternak Sebagai Peningkatan Kualitas Ternak." *Eastasouth Journal of Positive Community Services* 01(03): 152–60. doi:10.58812/ejpcs.v1.i03.

BPS,2022. Luas Panen dan Produksi Ubi Kayu di Sumatera Utara Tahun 2018-2022.

Dinas Tanaman Pangan Hortikultura Provinsi Sumatera Utara ,2022. Luas Panen dan Produksi Ubi Kayu Deli Serdang Tahun 2017-2021.

Firmansyah, Deri, and Dede. 2022. "Teknik Pengambilan Sampel Umum Dalam Metodologi." *Jurnal Ilmiah Pendidikan Holistik (JIPH)* 1(2): 85–114.

Handayani, Leni. 2020. "Pemanfaatan Limbah Ubi Kayu Sebagai Pakan Ternak Bergizi." *Prosding Seminar Nasional Hasil Pengabdian* (2013): 185–92.

Khairani, I., & Hidayah, U. (2023). Strategi Pembangunan Kawasan Agropolitan Berbasis Tanaman Pangan Di Kabupaten Deli Serdang Provinsi Sumatera Utara. JSHP : Jurnal Sosial Humaniora Dan Pendidikan, 8(1), 14–26.

Mashur, M., & Agustin, R. (2023). Pakan ternak: Sumber dan pemanfaatannya dalam peternakan ruminansia dan non-ruminansia. Jurnal Ilmu Peternakan, 15(2), 101-110.

Meilawaty, Zahara, Amandia Dewi Permana Shita, Paramudibta Lungit Kuncaraningtyas, Agustin Wulan Suci Dharmayanti, and Zahreni Hamzah. 2020. "Potensi Ekstrak Daun Singkong (Manihot Esculenta Crantz) Terhadap Ekspresi MMP-8 Fibroblas Gingiva Pada Model Tikus Dengan Disfungsi Ovarium Dan PeriodontitisPotential of Cassava (Manihot Esculenta Crantz) Leaf Extract on the MMP-8 Expression Of." *Jurnal Kedokteran Gigi*

Multidisciplinary Indonesian Center Journal (MICJO)
Journal page is available to
https://e-jurnal.jurnalcenter.com/index.php/micjo
Email: admin@jurnalcenter.com

Universitas Padjadjaran 32(2): 105. doi:10.24198/jkg.v32i2.27466.

Nurul Aisyah, Alfirah, Dewi Nur'aeni Setyowati, and Baiq Hilda Astriana. 2021. "Potensi Pemanfaatan Daun Singkong (Manihot Utilissima) Terfermentasi Sebagai Bahan Pakan Untuk Meningkatkan Pertumbuhan Ikan Mas (Cyprinus Carpio)." Jurnal Perikanan Unram 11(1): 13–25.

Pulungan, Tonggi Afipuddin, Strategi Pengembangan, Usaha Olahan, and Ubi Kayu. 2024. " Strategi Pengembangan Usaha Olahan Ubi Kayu (Studi Kasus : Desa Sukasari , Kecamatam PegjahanKabupaten Serdang Bedagai

Putra, Muhammad Yaser Cessar Karthab, Adietya Arie Hetami, Muhammad Tommy Fimi Putera, Fareis Althalets, and Ahkmad Ramli. 2021. "Strategi Pengembangan Dalam Meningkatkan Daya Tarik Wisata Di Kampung Ketupat Warna Warni Kencana Samarinda." *Jurnal Pendidikan dan Pengajaran* 6(2): 152–65.

Peternakan Kaltim. (2024). Pemanfaatan Daun Singkong sebagai Pakan Ternak. Dinas Peternakan Provinsi Kalimantan Timur.

Rachman, Tahar. 2018. "Manfaat Singkong Untuk Perawatan Wajah." *Angewandte Chemie International Edition, 6(11), 951–952.*: 10–27.

Rhofita, E. I. R. (2022). Optimalisasi Sumber Daya Pertanian Indonesia untuk Mendukung Program Ketahanan Pangan dan Energi Nasional. 28(1), 82.

Sabil, Muhammad Arum, Supianto, Nanang Tri Budiman, and Firda Laily Mufid. 2024. "Analisis Tentang Kebijakan Pemerintah Kabupaten Jember Dalam Memberikan Perlindungan Terhadap Lahan Pertanian Pangan Berkelanjutan." Welfare State Jurnal Hukum 3(1): 79–116.

Sugiyono. 2012. "Memahami Penelitian Kualitatif. Bandung: Alfabeta."

Sugiyono. (2016). Metode Penelitian Kuantitatif, Kualitatif, dan R&D. Alfabeta.