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Assistance Program for Alternative Sweet Potato Processing into Flour, Crackers, and Ice Cream to Enhance Local Agricultural Value in Layeni Village, Central Maluku"

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Abstract

Sweet potato is a local food commodity with high carbohydrate content and considerable potential as an alternative staple food to rice. In Layeni Village, sweet potato, locally known as patatas, is widely cultivated and serves as an important source of household consumption and income. However, its utilization remains limited to direct consumption and fresh-market sales, resulting in low economic added value. This Community Service Program aimed to enhance community knowledge and skills in processing sweet potatoes into innovative value-added products to optimize local agricultural resources. The program employed observation, socialization, training, and hands-on practice methods involving local residents as participants. The results indicated an improvement in participants' understanding of sweet potato product diversification and their ability to produce three processed products, namely sweet potato flour, sweet potato flour-based ice cream, and crackers made from sweet potato residue. These products demonstrate potential for development as local micro, small, and medium enterprises (MSMEs). Therefore, the program contributed to increasing the added value of sweet potato commodities while creating opportunities for community-based economic development through innovative products derived from local resources.

Keywords: Sweet Potato; Food Diversification; Innovative Products; Community Empowerment; MSMEs.

Introduction

Sweet potato (*Ipomoea batatas* L.) is one of the local food commodities that plays an important role in supporting Indonesia's national food diversification program. In addition to serving as a source of carbohydrates and energy, sweet potato is rich in dietary fiber, vitamin A, vitamin C, anthocyanins, and various bioactive compounds that are beneficial to human health (Ginting et al., 2014). As an alternative food source, sweet potato has the potential to reduce dependence on rice while strengthening food security based on local resources.

Indonesia is among the major sweet potato-producing countries in Southeast Asia. According to data from the Indonesian Central Bureau of Statistics (BPS, 2023), national sweet potato production exceeds 1.8 million tons annually. This production potential indicates that sweet potatoes serve not only as a household food commodity but also as a promising raw material for various value-added processed products. However, most sweet potatoes are still marketed in fresh form, resulting in relatively low economic value compared to processed products.

Layeni Village, located in Teon Nila Serua District, Central Maluku Regency, is one of the areas with considerable potential for sweet potato cultivation. Following the relocation process caused by a natural disaster in 1979, the people of Layeni Village, who had previously relied on fisheries as their primary livelihood, adapted to their new environment by engaging in agricultural and plantation activities (Liliefna, 2002). One of the main commodities cultivated by the local community is sweet potato, locally known as *patatas*. The availability of agricultural land and favorable agroclimatic conditions enable this crop to grow well and serve as an important food source for the community.

Despite its significant potential, the utilization of sweet potatoes in Layeni Village remains limited to household consumption and the sale of raw products in traditional markets. This condition results in relatively low economic returns for farmers. Previous studies have shown that processing agricultural products into value-added derivatives can increase product value while creating new business opportunities for rural communities (Saragih, 2018). Furthermore, the diversification of sweet potato-based products is considered an effective strategy for enhancing the competitiveness of local commodities and expanding

opportunities for the development of micro- and small-scale enterprises based on local food resources.

One promising form of diversification is the processing of sweet potatoes into flour. Sweet potato flour is an intermediate product with a longer shelf life, easier distribution, and broad applicability as a raw material in various food products. According to Ginting et al. (2014), sweet potato flour possesses favorable functional characteristics and has the potential to partially substitute wheat flour in food processing. In addition, by-products such as sweet potato pulp can be further utilized as raw materials for other food products, thereby supporting more efficient and environmentally friendly resource utilization.

Based on these conditions, community empowerment efforts are needed through the introduction of simple and practical sweet potato processing technologies that can be applied at the household level. This Community Service Program was implemented to enhance the knowledge and skills of the Layeni community in processing sweet potatoes into value-added products, including sweet potato flour, sweet potato flour-based ice cream, and crackers made from sweet potato pulp. The program is expected to provide an alternative approach for utilizing harvest products more productively, increase the economic value of local commodities, and promote the development of village-based microenterprises utilizing local resources.

Method Of Implementation

This Community Service Program (CSP) was conducted at the Layeni Village Hall, Teon Nila Serua District, Central Maluku Regency, from August 7 to August 17, 2024. The target participants were 15 community members consisting of farmer groups and Beneficiary Groups (*Kelompok Penerima Manfaat/KPM*) in Layeni Village. The program aimed to enhance community knowledge and skills in processing sweet potatoes (*patatas*) into value-added food products as an effort to optimize local agricultural resources.

The program employed a participatory approach through socialization, training, hands-on practice, and product exhibitions. This approach was selected because it actively involves participants in every stage of the activity, enabling them to acquire practical knowledge and skills that can be independently applied in their daily lives. The implementation consisted of three main stages:

observation and potential identification, training and product processing practice, and product realization and exhibition.

1. Observation and Potential Identification

The initial stage involved field observations and interviews with community members to identify the potential and utilization of sweet potatoes in Layeni Village. This activity aimed to obtain information regarding production levels, utilization patterns, and opportunities for developing sweet potato-based processed products. The results revealed that sweet potatoes are one of the most widely cultivated crops in the village. However, their utilization remains limited to household consumption and sales in fresh form, resulting in relatively low economic value for local farmers. These findings served as the basis for designing a training program focused on producing value-added sweet potato products.

2. Socialization and Product Processing Practice

The second stage consisted of socialization sessions and hands-on training in sweet potato processing. Prior to the training, the community service team conducted product trials and standardized the processing methods to ensure the feasibility of the technology being introduced. The training materials covered the economic potential of sweet potatoes, post-harvest processing techniques, and opportunities for developing local food-based enterprises.

During the practical sessions, participants were directly involved in producing three processed products:

1. Sweet potato flour, an intermediate product with a longer shelf life that can be used as a raw material for various food products;
2. Sweet potato flour-based ice cream, an innovative food product with added economic value;
3. Crackers made from sweet potato pulp, utilizing processing by-products and supporting a *zero-waste* production concept.

Throughout the activities, participants received direct guidance from the community service team to ensure that each stage of the production process was properly understood and implemented.

3. Product Realization and Exhibition

The final stage involved showcasing the products through an exhibition held on August 17, 2024, at the community center of Layeni Village. The exhibition aimed to introduce the processed sweet potato products to the broader

community and gather feedback from local residents and village authorities regarding the products developed during the program. In addition, the exhibition served as an initial promotional platform to demonstrate the potential of sweet potato-based products as a village flagship commodity and a source of community-based economic development.

Program Evaluation

The evaluation was conducted through participant observation, group discussions, and assessments of participants' ability to perform the product processing techniques independently. The indicators of program success included participant attendance, active involvement during training sessions, the ability to produce sweet potato-based products, and improved understanding of business opportunities related to local agricultural commodities.

Results and Discussion

Observation Results on Sweet Potato Potential in Layeni Village

The initial stage of the program involved field observations and interviews with farmers and community beneficiaries in Layeni Village. The findings revealed that sweet potato (Ipomoea batatas L.) is one of the major agricultural commodities cultivated by local residents due to its high adaptability to the local agroclimatic conditions. Most community members utilize sweet potatoes for household consumption or sell them directly in traditional markets as fresh products. Post-harvest processing activities remain very limited and have not yet been directed toward the production of value-added products.

These findings indicate a gap between the production potential and the utilization of sweet potatoes in the village. In fact, sweet potatoes have considerable potential to be developed into various processed food products with higher economic value. According to Ginting et al. (2014), sweet potatoes contain a substantial amount of starch, making them suitable for processing into flour, snack products, and other functional food ingredients. Furthermore, product diversification based on sweet potatoes can serve as an effective strategy for increasing the added value of local commodities while reducing post-harvest losses.

The observations also revealed that local communities have limited knowledge of sweet potato processing technologies and product diversification.

As a result, farmers' income remains highly dependent on the fluctuating market prices of fresh sweet potatoes. This finding is consistent with Saragih (2018), who argued that the lack of agricultural product processing in rural areas is one of the major factors contributing to the low added value of agricultural commodities.

Prior to conducting community training and socialization activities, the service team carried out a series of preliminary experiments to identify an appropriate processing method that could be easily adopted by local residents. The experiments were intended to ensure that the technology introduced was practical, simple, and applicable using household-scale equipment.

The experimental results demonstrated that sweet potato flour could be produced through several processing stages, including raw material selection, washing and peeling, grating, filtration, starch sedimentation, drying, milling, and sieving. These processes produced fine-textured sweet potato flour that could be utilized as a raw material for various food products.

Raw material selection was found to be a critical factor affecting flour quality. Sweet potatoes harvested at optimal maturity and in good physical condition produced a higher starch yield than immature or damaged tubers. This finding is consistent with Ginting et al. (2011), who reported that raw material quality significantly influences both the yield and characteristics of sweet potato flour.

During the sedimentation stage, the sweet potato starch extract was allowed to settle for approximately 12 hours to maximize starch recovery. The resulting starch paste was then dried under direct sunlight for approximately three to four days, depending on weather conditions. Natural drying methods were chosen because they are more suitable for rural communities with limited access to modern drying equipment. According to Widowati et al. (2009), proper drying significantly affects flour shelf life and overall product quality.

The experiments also showed that the pulp residue remaining after filtration still possessed economic potential and could be processed into other products, such as crackers. Therefore, the processing method not only generated sweet potato flour as the primary product but also created opportunities to utilize by-products as value-added products. This approach is in line with the concept of a zero-waste agroindustry, which emphasizes the utilization of all raw material

components to minimize waste and improve production efficiency (Supriyati & Haryanto, 2020).

The observation and experimental results indicate that sweet potatoes possess significant potential for development into value-added processed products. The introduction of simple processing technologies enables local communities not only to sell sweet potatoes as fresh produce but also to transform them into products with longer shelf life and higher market value.






In addition to increasing the economic value of local agricultural commodities, sweet potato flour production can serve as an entry point for the development of micro-scale enterprises based on local food resources. Rahman et al. (2022) stated that the development of local resource-based food products can strengthen rural economic resilience through business diversification and enhanced production skills. Therefore, this program was not merely a technology transfer initiative but also a community empowerment effort aimed at fostering

sustainable village economic development through the utilization of local resources.

Socialization and Practice of Sweet Potato Processing

The community service program began with a socialization and hands-on practice stage aimed at improving community knowledge and skills in processing sweet potatoes into value-added products. This stage aligns with the community empowerment approach, which emphasizes the importance of practice-based knowledge transfer to enable communities to independently develop their local potential (Mardikanto & Soebianto, 2019).

The socialization activity was conducted in Layeni Village and involved sweet potato farmer groups, beneficiary groups (KPM), and women's organizations (PKK). During the session, the service team explained that sweet potatoes contain high nutritional value, including complex carbohydrates, fiber, and antioxidants, making them highly potential as functional food ingredients (Teow et al., 2007). In addition, the flour processing of sweet potatoes also generates by-products such as pulp, which can be further utilized into products such as crackers, supporting the concept of zero-waste processing in local agro-industry development.

The active participation of the community indicated an increased interest in agricultural product innovation. This suggests that participatory approaches are more effective in improving community understanding compared to one-way extension methods (Chambers, 1994).

The next stage involved experimenting with sweet potato flour as a raw material for ice cream production as a form of local food diversification. The experiment was conducted to ensure formulation success before being implemented in community training sessions.

The ice cream production process included mixing ingredients, heating, cooling, mixing, and freezing stages. Scientifically, the use of tuber-based ingredients in ice cream products can improve nutritional value while providing a naturally rich fiber texture (Sethi et al., 2016).

The ingredients used included sweet potato flour, milk, sugar, coconut milk, salt, and emulsifier (SP stabilizer). This combination helps produce a smooth texture and stable physical properties during freezing storage.

The experimental results showed a relatively stable formulation with a naturally sweet taste and distinctive sweet potato color. This indicates that sweet potato flour has strong potential as an alternative raw material for local food industries with added economic value.

The final stage of the program was product implementation and exhibition, held at the Layeni Village Hall and Universitas Pattimura. This exhibition aimed to introduce sweet potato-based processed food innovations to the wider community and serve as a dissemination platform for the program's outcomes.

The exhibition received positive responses from both the local community and academic participants. This demonstrates that local resource-based innovations are highly relevant and attractive for rural economic development. According to Todaro and Smith (2015), local resource-based economic development is an important strategy for improving rural welfare through value-added production.

The sweet potato flour ice cream product not only serves as a consumable food product but also has strong potential as a micro-enterprise product that can be further developed by the people of Layeni Village. Thus, this program is not only educational but also productive and applicable in the context of community economic empowerment.

Discussion of Program Impact

Overall, the community service activities demonstrate that combining socialization, hands-on practice, and product experimentation effectively enhances community understanding, skills, and motivation in developing local potential.

These findings are consistent with the concept of community empowerment, which emphasizes active participation, capacity building, and sustainability based on local potential (Mardikanto & Soebianto, 2019). Furthermore, local food innovation based on sweet potatoes also supports food diversification and strengthens rural economic resilience.

Through this program, the people of Layeni Village are expected not only to remain raw material producers but also to develop processed products with higher economic value. This has the potential to increase community income and promote sustainable village economic independence.

Conclusion

Layeni Village, Central Maluku Regency, is a settlement formed from migration from Teon Island, which has experienced significant changes in its livelihood structure, shifting from fishermen and sailors to farmers and plantation workers. This transformation has encouraged the community to develop agricultural commodities, particularly sweet potatoes, which have potential as an alternative food source and a local food industry raw material.

However, the utilization of sweet potatoes in Layeni Village is still limited to selling them in raw form, resulting in relatively low added economic value for the community. Therefore, this community service program was implemented as an empowerment effort through innovation in processing sweet potatoes into various value-added products, such as flour, crackers, and ice cream.

The socialization activities, processing practices, and product exhibition conducted in August 2024 received positive responses from the community. This indicates an increased awareness and interest among local residents in developing local potential in a more innovative and productive way. In addition, the program also broadened the community's understanding of the importance of diversifying food products based on local resources.

Through this program, it is expected that the people of Layeni Village will not only act as raw material producers but also become food processing entrepreneurs with higher economic value. This program also has the potential to serve as a continuous training platform for improving community skills in simple, modern, and efficient food processing technologies. Overall, this community service activity contributes to strengthening community capacity in managing local potential and supports the development of a sustainable, agriculture-based village economy.

References

Chambers, R. (1994). Participatory rural appraisal (PRA): Challenges, potentials, and paradigm. *World Development*.

Ginting, E., Utomo, J. S., Yulifianti, R., & Jusuf, M. (2011). Post-harvest technology of sweet potato to support food diversification and agroindustry development. *Buletin Palawija, 21*, 23–34.

Ginting, E., Utomo, J. S., Yulifianti, R., & Jusuf, M. (2014). Potential of purple sweet potato as a functional food. *IPTEK Tanaman Pangan, 9*(2), 69–81.

Jangkar Groups. (2024, October 12). *Ekspor ubi jalar dari Indonesia*. https://jangkargroups.co.id/ekspor-ubi-jalar-dari-indonesia/

Kementerian Pertanian Republik Indonesia. (2003). *Info teknologi: Tepung ubi jalar sebagai pengganti terigu*. https://pustaka.setjen.pertanian.go.id/info-literasi/info-teknologi-tepung-ubi-jalar-sebagai-pengganti-terigu

Kolb, D. A. (2015). *Experiential learning: Experience as the source of learning and development* (2nd ed.). Pearson Education.

Liliefna, H. (2002). *Negeri Layeni dalam pergulatan sosio-cultural*. KBM Indonesia.

Mardikanto, T., & Soebianto, P. (2019). *Community empowerment in public policy perspective*. Alfabeta.

Rahman, F., Hidayat, T., & Nurhayati, S. (2022a). Diversification of local food products as a strategy for rural community economic empowerment. *Jurnal Pengabdian kepada Masyarakat, 6*(2), 112–120.

Rahman, F., Hidayat, T., & Nurhayati, S. (2022b). Diversifikasi produk pangan lokal sebagai strategi pemberdayaan ekonomi masyarakat pedesaan. *Jurnal Pengabdian kepada Masyarakat, 6*(2), 112–120.

Rahyuningsih, N. S., St. A., & Widodo, Y. (2008). *Profil dan peluang pengembangan ubi jalar untuk mendukung ketahanan pangan dan agroindustri*. https://repository.pertanian.go.id/server/api/core/bitstreams/4d6c1c5d-03ba-4325-a6e0-27d9111c9d44/content

Saragih, B. (2018a). Agribusiness-based agricultural development and rural community empowerment. *Jurnal Pangan, 27*(1), 1–10.

Saragih, B. (2018b). Pembangunan pertanian berbasis agribisnis dan pemberdayaan masyarakat pedesaan. *Jurnal Pangan, 27*(1), 1–10.

Sethi, S., Nanda, V., & Bala, M. (2016). Quality evaluation of ice cream prepared with different natural stabilizers. *Journal of Food Science and Technology*.

Supriyati, & Haryanto, B. (2020a). The zero-waste concept in local resource-based agroindustry development. *Jurnal Agroindustri Indonesia, 9*(1), 15–24.

Supriyati, & Haryanto, B. (2020b). Konsep zero waste dalam pengembangan agroindustri berbasis sumber daya lokal. *Jurnal Agroindustri Indonesia, 9*(1), 15–24.

Teow, C. C., Truong, V. D., McFeeters, R. F., et al. (2007). Antioxidant activities, phenolic and β-carotene contents of sweet potato genotypes. *Food Chemistry, 103*(3), 829–838.

Todaro, M. P., & Smith, S. C. (2015). *Economic development*. Pearson.

Widowati, S., Richana, N., Suarni, & Murtini, E. S. (2009). *Root crop flours as raw materials for the food industry*. Indonesian Center for Postharvest Agricultural Research and Development.

Yulifianti, R., Ginting, E., & Utomo, J. S. (2019). Pemanfaatan ubi jalar sebagai bahan baku pengembangan produk pangan lokal. *Buletin Palawija, 17*(1), 1–10.