



EMPOWERMENT OF PALM SUGAR PROCESSING COMMUNITIES: AN EFFORT TO INCREASE ADDED VALUE THROUGH EXTENSION ON PALM SUGAR CROP DIVERSIFICATION IN POLINGGONA DISTRICT, POLINGGONA DISTRICT, KOLAKA REGENCY

Jumi¹, Natalia Halima², Giska Nuraeni Agustin³, Ahmad⁴, Yuli Purbaningsih^{5*}

^{1,2,3,4,5}Universitas Sembilanbelas November Kolaka

Corresponden Email: yulipurbaningsih.usnkolaka@gmail.com⁵

Abstract

The community empowerment program was conducted in Polinggona Village, Polinggona District, Kolaka Regency, which has considerable potential in aren palm (*Arenga pinnata*) resources. However, the utilization of aren palm remains limited due to traditional processing practices, limited production technology, low product diversification, inadequate packaging and marketing, and low added value. This program aimed to improve the knowledge and skills of aren palm processors through counseling, training, and participatory assistance in developing diversified aren-based products. The activity used a participatory approach through field observation, Focus Group Discussion (FGD), problem identification, counseling, appropriate technology introduction, and hands-on practice of product diversification. The results showed that the activities provided participants with knowledge and practical skills related to aren palm cultivation, hygienic processing, the use of appropriate production technology, product diversification, packaging, and digital marketing. The diversification practice resulted in aren chips as an alternative processed product with potential to increase product variety and economic value. The program also encouraged participants to improve product packaging and develop wider marketing opportunities. Overall, the activities contributed to strengthening the capacity of the partner community in processing aren palm products and supporting the development of local economic potential in a more sustainable manner.

Keywords: Aren palm, community empowerment, product diversification, added value, aren chips

INTRODUCTION

Polinggona Village, located in Polinggona District, Kolaka Regency, is one of the rural areas with abundant natural resources in the form of aren palms (*Arenga pinnata*). Aren trees grow well in this area and have long been used by most of the local community as a primary or supplementary source of livelihood through tapping sap and processing it into solid palm sugar (block sugar/brown sugar) (Wijaya, 2024).

Even though the potential availability of raw materials is huge, the contribution of palm sugar processing businesses to improving the economic welfare of the local processors is still limited. Most palm sugar processors in Polinggona Village still use traditional management methods that have been passed down through generations. Limited knowledge of modern cultivation techniques, minimal technology transfer in the processing, and the lack of product diversification cause palm sugar products to have low competitiveness in both local and regional markets (Purbaningsih et al., 2024).

Efforts to improve and empower communities processing palm sugar are in line with the targets of the Regional Medium-Term Development Plan (RPJMD) Kolaka Regency focuses on strengthening the people's economy based on local flagship commodities (RPJMD, 2023). To support achieving these targets, an integrated approach is needed that touches everything from upstream to downstream: starting from improving the aren plant cultivation system, applying Appropriate Technology (TTG) in

production, diversifying processed products, to improving packaging efficiency and accessing modern marketing. (Mariam et al., 2022; Purbaningsih et al., 2023).

This community service program also integrates the principles of Merdeka Belajar Kampus Merdeka (MBKM) through the University's Key Performance Indicators (IKU), especially IKU 2 (students gain experience outside the campus), as well as IKU 3 and IKU 5 (lecturers carry out the tridharma of service, with results directly benefiting the community). Through outreach, training, and guidance on diversifying aren-based products, this activity is expected to have a real impact in increasing the added value of aren commodities and strengthening the economic independence of processing communities in Polinggona Village (Lestari et al., 2026; Nurrahmawati et al., 2024). Based on the initial observations and Focus Group Discussion (FGD) with palm sugar processing partners in Polinggona Village, five main problem formulations were identified as obstacles in business development: (1) Palm tree cultivation is not yet optimal: Farmers still rely on harvesting from wild-growing palm trees without any planned seedling efforts, intensive maintenance, or sustainable agroforestry planting arrangements. (2) Production and processing technology are still limited: The sap boiling process still uses traditional stoves that waste firewood and small pans or iron cauldrons that rust easily, so production capacity is limited and hygiene is not guaranteed. (3) Product diversification is still limited: Palm sap products are only made into solid sugar (coconut shell molded sugar) without other variations like granulated palm sugar or nata de coco processing. (4) Product packaging and marketing are still limited: Product packaging only uses regular clear plastic bags or banana leaves without an identity label, with marketing reach limited to local traditional markets and middlemen. (5) The added value of aren plant products is not optimal: Due to fluctuating product quality and the weak bargaining position of processors, the economic value that processors get is very low compared to the retail price at the end consumer level.

IMPLEMENTATION METHOD

This community service activity was carried out using a group approach in a participatory way (Participatory Action Research). The activities took place from June to August 2026 in Polinggona Village, Polinggona District, Kolaka Regency. In detail, the stages of the activity include: Field Observation: Direct visits to the aren tree stands and the partner's sap processing kitchen in Polinggona Village to observe tapping techniques, environmental cleanliness, and production tools (Fitri et al., 2024). Discussion involving the academic/implementation team, the Polinggona Village government, representatives from the Industry and Trade Office, and the community of aren sugar processing partners. Problem Identification Results: Formulating and mapping 5 critical points of obstacles in community aren sugar processing businesses. Problem-Solving Steps: Developing an extension module, designing a TTG (energy-efficient stove, large stainless steel pan, sugar crystallizer) aid package, and preparing mentoring instruments. Extension Implementation: Delivering interactive materials on aren seedling techniques, agroforestry planting patterns, food production hygiene, and farm business

financial management. Aren Product Diversification Practice: Hands-on training in making aren palm sugar, testing crystal moisture content (<2%), making kolang-kaling products, training in standing pouch packaging design, and digital marketing strategies.(digital marketing) (Ichwan et al., 2025). The flow of activity implementation is designed systematically as shown in Figure 1.

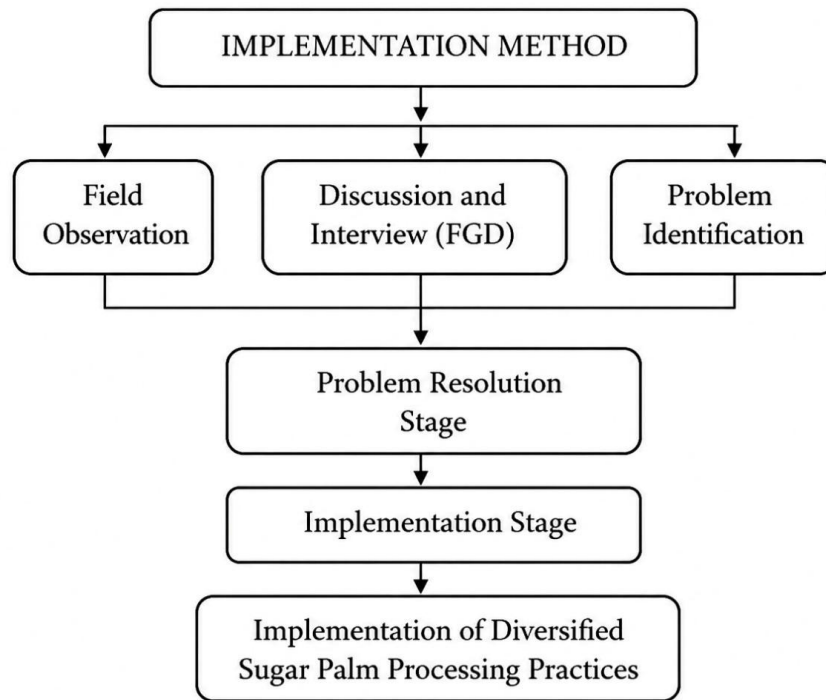


Figure 1. Flowchart of the Activity Implementation Method for Empowerment

RESULTS AND DISCUSSION

The implementation of community empowerment activities in Polinggona Village is adjusted to the stages of the implementation method and discussion of supporting images, which are detailed separately:

Problem Identification Stage through Observation, and FGD

1. Field Observation

Field observation in PKM (Student Creativity Program) activities is the activity of observing and collecting information directly at the location that is the object or target of the program. Observation is carried out to obtain real data on conditions, problems, needs, potential, as well as the activities of the community or target group related to the ideas or solutions offered in PKM (Lumbantobing et al., 2025).



Figure 2. Field Observation of the Processing Conditions of Aren Palm Sap in Polinggona Village

Figure 2 shows the process of direct field observation by the service team along with the farmers while tapping aren sap from aren trees that are 8–12 meters tall. It can be seen that the community still uses traditional methods with a single bamboo ladder without adequate safety equipment. In addition, the collection of aren sap uses used jerrycan containers without natural preservatives, so the risk of early fermentation turning it sour is very high before the sap can be cooked.

2. Discussions and Interviews (FGD)

Discussions, interviews, and Focus Group Discussions (FGD) in PKM activities are methods used to gather information directly from partners or target communities. The aim of these activities is to understand the problems, needs, potential, experiences, and obstacles faced by the partners. Discussions are conducted through exchanging opinions between the PKM team and the partners to reach a mutual understanding of the issues and possible solutions. Interviews are done through direct question-and-answer sessions with sources to get more in-depth information, while FGDs are conducted with several participants related to the issue to gain different perspectives and develop solutions together. The results of these activities serve as a basis for the PKM team to adjust programs or innovations to fit the real conditions and needs in the field.



Figure 3. Implementation of Focus Group Discussion (FGD) with Partners and Stakeholders

Figure 3 documents the implementation of a Focus Group Discussion (FGD) carried out in a warm and participatory manner with community leaders, local government representatives, and groups of palm sugar farmers. In this FGD, an in-depth identification was carried out regarding production obstacles, fluctuations in the price of brown sugar at the middleman level, as well as community expectations regarding the introduction of palm sugar processing technology. This FGD resulted in a joint commitment to participate in the entire series of product diversification training.

3. Problem Identification

The results of problem identification in PKM activities are a summary of issues found through field observations, discussions, interviews, or FGDs with partners and the target community. This identification aims to ensure that the program being designed truly addresses the needs on the ground. The results usually cover the main problems, the causes of the problems, the impacts they create, as well as the potential that can be developed as a basis for determining the solutions or innovations to be applied through PKM activities. Mapping the objective field conditions and grouping the five main problems of the local community's aren business is shown in Figure 4.

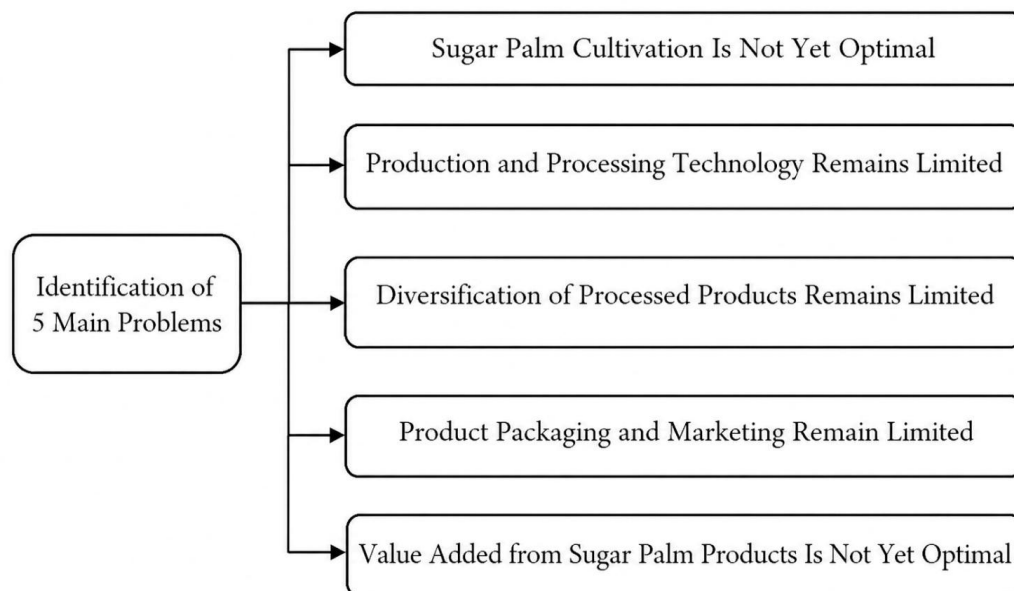


Figure 4. Mapping Chart of the 5 Main Problems in the Aren Sugar Business

Figure 4 shows a map of the connections between the 5 main problems in the partner aren sugar business in Polinggona Village. Problems upstream (cultivation not yet optimal and limited processing technology) directly cause limitations downstream (low product variety, non-standard packaging, and limited market access). This chain of problems affects the not-yet-optimal added value received by the processing farmers. This mapping serves as a basis for developing an integrated intervention strategy from upstream to downstream.

4. Problem-Solving Stages

The stages of problem-solving in PKM activities are a series of steps carried out to address issues identified with partners or target communities. This process starts by determining the main problem based on observations, interviews, discussions, or FGDs. Next, the PKM team designs solutions tailored to the needs and conditions of the partners, then conducts socialization and provides training or guidance on those solutions. After that, the solutions are directly implemented through planned practices or activities. The final stage is to perform monitoring and evaluation to assess the program's success, identify any ongoing challenges, and make improvements so the solutions can be applied sustainably. To tackle the structured problems above, an empowerment intervention strategy is formulated, covering three main pillars based on outreach and implementation Appropriate Technology (TTG) (Nugroho, 2021). The stages of problem-solving as shown in the diagram below.

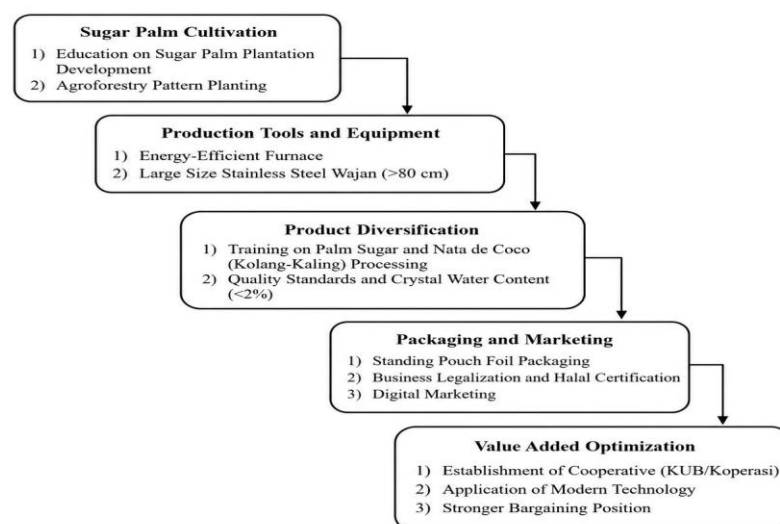


Figure 5. Stages of problem-solving

Figure 5 shows the five interconnected pillars of the problem-solving strategy in aren plant development. Pillar 1, Aren Cultivation, focuses on improving community skills through education on high-quality aren seedlings and the implementation of agroforestry planting patterns to ensure the sustainability of raw materials. Pillar 2, Appropriate Technology for Production, is aimed at using suitable technologies like energy-efficient biomass stoves and large stainless steel pans to increase efficiency and production capacity. Pillar 3, Diversification, is carried out through training on palm sugar and nata de palm processing, as well as applying quality standards and crystal moisture content so that the products have better quality and more variety. Then, Pillar 4, Packaging and Marketing, includes using foil standing pouches, meeting P-IRT and halal certifications, and utilizing digital marketing to boost appeal and market reach. Finally, Pillar 5, Value-Added Optimization, is carried out through the formation of farmer groups or cooperatives, developing partnerships with modern retailers, and strengthening farmers' bargaining power. These five pillars are expected to work together to improve productivity, quality, competitiveness, and the economic value of aren plant products, so that the welfare of the people managing aren can increase.

5. Presentation and Material Counseling

Presentation and outreach of materials in PKM activities are stages of delivering information, knowledge, and skills to partners or target communities as part of the problem-solving process. This activity is done by presenting materials related to the problems that have been identified, the solutions offered, and how to implement them. The materials can be delivered interactively through presentations, discussions, Q&A sessions, and using supporting media to make it easier for participants to understand the information given. Through this activity, it is hoped that partners will not only gain new knowledge but also be able to understand and apply the offered solutions or innovations independently and sustainably (Nisraeni et al., 2025).



Figure 6. Implementation of Presentation and material counseling

Figure 6 shows the atmosphere during the delivery of extension materials by an academic resource person to processing partners. The topics presented included the principles of planned Arenga cultivation through agroforestry patterns, the implementation of Food Sanitation and Hygiene (SSOP), the advantages of using stainless steel pans, as well as techniques for crystallizing palm sugar (Arifin et al., 2025). Participants' enthusiasm was evident from the two-way discussions that took place during the presentation.

6. Implementation Stage of Aren Product Diversification Practice

The implementation stage of the aren product diversification practice is an activity where partners directly apply the knowledge and skills that have been provided through previous outreach sessions. At this stage, participants are guided by the PKM team to practice processing aren raw materials into various value-added products. Activities include preparing materials and equipment, processing according to procedures, and packaging and storing products. During the practice, the PKM team provides guidance and support to ensure that each step is done correctly and to maintain the quality and cleanliness of the products (Sihite et al., 2026). Through this practice, partners are expected to be able to independently develop aren products, increase the economic value of aren, and open up opportunities for more sustainable business development.



Figure 7. Practice of Diversifying Aren Products

The result of the training activities on diversifying aren-based processed products is the aren chips produced through processing practice with partners. Besides the processing practice, participants were also given an understanding of the importance of product design and packaging to increase the appeal and selling value of the products. Based on Figure 7, participants directly followed the practical process accompanied by the PKM team, from introducing materials and products to the processing, handling, and packaging of aren chips. This activity is expected to improve partners' skills in producing more diverse, attractive, and competitive aren-based products, potentially allowing them to be marketed more widely, including online. With this product development, aren chips are expected to become one of the village's flagship products that can boost the economic value of aren products and support the sustainable development of local potential.

CONCLUSION

Community empowerment activities in the Polinggona Village show that the development of processed aren (sugar palm) products needs to be carried out comprehensively, starting from cultivation, production processes, product diversification, packaging, and marketing, up to increasing added value. Based on observations and focus group discussions (FGD), five main problems were identified: aren plant cultivation is not yet optimal, production and processing technology are limited, product diversification is limited, packaging and marketing are still simple, and the added value of aren products is not yet optimal.

The outreach and practical sessions provide partners with knowledge and skills about managing aren plants, production hygiene and cleanliness, using appropriate technology, developing processed products, packaging, and marketing. The diversification practices result in aren chips as one of the alternative processed products that partners can develop. These activities also help partners better understand the importance of attractive packaging and broader marketing opportunities.

Thus, this empowerment activity can serve as an initial step in enhancing partners' abilities to process and develop products made from aren. Product development, improvements in production processes, packaging, and sustainable marketing are expected to increase the economic value of aren products while also supporting the development of local potential in Polinggona Village.

ACKNOWLEDGMENTS

We would like to express our gratitude to the LPPM for giving the opportunity and support in carrying out this activity independent PKM. We also extend our thanks to the University of Nineteenth November Kolaka (USN Kolaka), the Rector, Head of LPPM, Dean of the Faculty of Agriculture, Fisheries, and Animal Husbandry, as well as the Head of the Agribusiness Study Program who have given permission, guidance, and support in the implementation of this PKM activity. Thanks also go to the Kolaka Regency Government, Polinggona District Government, Polinggona Village Government, as well as all parties who have helped and supported the smooth running of this PKM activity.

REFERENCES

- Arifin, M., ... Fauziah, E. (2025). Implementasi dapur bersih untuk meningkatkan higienitas produk gula semut pada sentra produksi tradisional. *COSECANT*, 5(1), 169–174. <https://doi.org/10.25124/cosecant.v5i1.9393>
- Fitri, R., ... Syukriady, D. (2024). Kreativitas mahasiswa KKNP melalui program kerja fisik membangun sekolah adiwiyata. *Jurnal Abdimas Indonesia*, 4(2), 668–685.
- Ichwan, M., ... Syahid, M. (2025). Penerapan inovasi teknologi pengolahan gula semut di Desa Gantarang, Kabupaten Sinjai. *Teknologi Terapan Untuk Pengabdian Masyarakat*, 8(1), 46–58.
- Lestari, A. D., ... Dewi, T. K. S. (2026). Peningkatan nilai tambah produk aren melalui diversifikasi gula batok menjadi gula semut berbasis teknologi tepat guna di Desa Giri Madia, Kecamatan Lingsar, Kabupaten Lombok Barat. *Jurnal Pengabdian Magister Pendidikan IPA*, 9(1), 39–46. <https://doi.org/10.29303/jpmipi.v9i1.13856>
- Lumbantobing, A. M., ... Fitriyah, N. (2025). Optimalisasi pemanfaatan teknologi dalam mendorong inovasi dan kreativitas kewirausahaan pada kalangan pelajar di SMAN 5 Kota Serang. *Pena Ilmiah PKM*, 1(1), 11–20.
- Mariam, ... Mustafa, A. (2022). Diversifikasi olahan gula aren menjadi gula semut dan gula aren cair melalui program pengembangan produk unggulan daerah. *Jurnal Dinamika Pengabdian*, 8(1), 105–111.
- Nisraeni, ... Hardianto. (2025). Pemberdayaan masyarakat melalui peningkatan kualitas produksi dan digital marketing gula aren dalam rangka mewujudkan kemandirian ekonomi kreatif. 6(3), 1463–1474. <https://doi.org/10.53696/27214834.1328>
- Nugroho, S. A. (2021). *Pemberdayaan masyarakat desa berbasis teknologi tepat guna di daerah*. Guepedia.
- Nurrahmawati, ... Kurniawan, H. (2024). Peningkatan nilai tambah gula aren melalui perbaikan packaging dan diversifikasi produk menjadi gula semut di Kabupaten Rokan Hulu. *Community Development Journal: Jurnal Pengabdian Masyarakat*, 5(5), 10112–10119. <https://doi.org/10.31004/cdj.v5i5.35067>
- Purbaningsih, Y., ... IProgram. (2023). Model pengembangan usaha pada pemberdayaan masyarakat pengolah gula aren melalui diversifikasi produk olahan gula aren di Desa Lamondape Kecamatan Polinggona Kabupaten Kolaka. *Jurnal Pengabdian Masyarakat*, 6(2), 166–171. <https://doi.org/10.31970/abditani.v6i2.292>

- Purbaningsih, Y., ... F, R. A. (2024). Pemberdayaan dan peningkatan ekonomi keluarga pada Kelompok Wanita Tani Harum Sari melalui diversifikasi produk olahan gula aren di Kelurahan Polinggona Kecamatan Polinggona Kabupaten Kolaka. *Jurnal Abditani*, 7(2), 196–202. <https://doi.org/10.31970/abditani.v6i2.292>
- RPJMD. (2023). *Rencana pembangunan jangka menengah daerah Kabupaten Kolaka tahun 2019–2024*.
- Sihite, H. Y., ... Agma, M. A. A. (2026). Pelatihan inovasi minuman kopi dan strategi pemasaran digital di Kampung Wisata Kopi Sangit Bawah Langit. *Jurnal Pengabdian Masyarakat Bidang Sosial dan Humaniora*, 5(2), 289–300. <https://doi.org/10.55123/abdisoshum.v5i2.8341>
- Wijaya, W. D. (2024). Potensi ekologi dan ekonomi tanaman aren. *Warta BSIP Perkebunan*, 2(1), 10–13.