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Article

Empowering Coastline Communities through the Optimization of Processing and Diversification of Kase Fish Products in Pasie Nan Tigo Village, Padang

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Abstract

The Pasie Nan Tigo Village in Padang is a coastal area with significant fisheries potential, including the Kase fish (*Thryssa dussumieri*). The community's utilization of Kase fish is still dominated by the sale of fresh fish and dried Kase fish, resulting in limited product diversification and value addition. This community service activity aims to enhance the utilization of Kase fish through product diversification, packaging development, and improved understanding among partners regarding production management, legal compliance, and marketing. The activity was carried out through the identification of partners' challenges, product and packaging development, discussions, outreach, and training in Kase fish processing. The results of the activity showed that Kase fish was successfully developed into four processed products: crispy Kase fish, Kase fish crackers, floss, and nuggets. Proximate analysis indicated that crispy Kase fish and Kase fish crackers (as the main introduced products) had protein contents of 14.55% and 13.33%, respectively. The activities also resulted in the development of product packaging and labels, training on legal compliance and marketing, and the provision of supporting facilities. These activities offer an alternative for utilizing Kase fish into value-added products and support the development of fisheries processing businesses in the Pasie Nan Tigo Village.

INTRODUCTION

The Pasie Nan Tigo Village is one of the villages in the Koto Tangah Subdistrict, Padang City, West Sumatra. Most residents in the Pasie Nan Tigo area work as fishermen because the area itself is located along the coast. One of the fish species caught by fishermen in the Pasie Nan Tigo area is the Kase fish (Thryssa dussumieri). The Kase fish is a small marine fish (often processed as salted fish or Kase/Kase ase) native to the coastal waters of West Sumatra, including Padang and Pariaman (Nurhidayati & Razak, 2021). The availability of this fish resource presents a potential that can be developed through processing to increase the product's value and community income.

During the production season, Kase fish catches can be abundant, causing the community to face challenges in selling and storing fresh fish. The community's utilization of Kase fish is still dominated by selling it fresh and simple processing into dried Kase fish. Limited product diversification means that the added value of Kase fish has not been optimized, especially when catch volumes increase. One group engaged in the processing and marketing of fishery products in the Pasir Jambak area, Pasie Nan Tigo

Village, is the Fish Processing and Marketing Group (Poklahsar) PN3 Bersaudara. This group has produced several processed products, such as dried Kase fish and sala lauak, but the production process is still carried out using simple methods with manual equipment and limited technology.

The challenges faced by partner groups are not limited to product diversification but also encompass quality, business management, legal compliance, and marketing. Production processes that remain rudimentary can result in suboptimal production capacity and inconsistent quality. From a marketing perspective, products are generally still sold in the local community, at traditional markets, or on a made-to-order basis, with simple packaging and incomplete product information. The use of digital media to expand marketing reach is also not yet optimal. These conditions align with the challenges commonly faced by small and medium-sized enterprises, particularly in the areas of business management and marketing (Hadiyati, 2010; Kuncoro, 2008).

Product diversification is one approach that can be taken to increase the value added of fishery products (Wellyalina et al., 2013). Processing fresh fish into ready-to-eat or semi-finished products, such as fish balls, nuggets, fish floss, and other processed items, can enhance economic value compared to selling fish in its fresh state (Anggraini et al., 2026; Wellyalina et al., 2025). Based on this potential and these challenges, Kase fish can be developed into a wider variety of products, including crispy Kase fish and Kase fish crackers. The development of these products is expected to provide alternative uses for Kase fish during periods of abundant catches while simultaneously increasing the market value and appeal of local processed products.

In addition to product innovation, the implementation of sound production management is necessary to maintain process efficiency, consistent quality, and optimal use of raw materials. Knowledge of food sanitation and hygiene is also crucial for producing safe and marketable products. Furthermore, product compliance is a vital aspect of business development as it supports product quality and safety assurance while enhancing consumer trust and expanding marketing opportunities in broader markets (Nazaruddin et al., 2026; Rahmawati et al., 2024; Syukri et al., 2025). Therefore, community service activities in the Pasie Nan Tigo Village were carried out through outreach on product innovation, production management, and product legality, as well as training in the production of crispy Kase fish and Kase fish crackers. These activities are expected to enhance the community's knowledge and skills in transforming local fisheries resources into value-added products and to support more sustainable business development.

METHOD

This community service activity was carried out using the Participatory Action Research (PAR) approach. PAR is a method that involves various stakeholders, such as academics, community members, industry representatives, or other third parties, with the aim of providing practical, long-term solutions to the problems faced by the relevant parties (Ayu et al., 2026; Putri et al., 2026). The PAR approach also aims to ensure that the communities invited to collaborate are not merely involved for the benefit of one party alone, but also play an active role in identifying the problems faced, planning feasible solutions, implementing them, and evaluating the results (Soedarwo et al., 2022).

The partner involved in this community service activity was Poklahsar PN3 Bersaudara, a fish processing and marketing group located in Pasie Nan Tigo Village, Koto Tangah Subdistrict, Padang, West Sumatra. The activities carried out included an initial outreach session as the first step in identifying the problems faced by Poklahsar PN3 Bersaudara, followed by the development of processed Kase fish on a laboratory scale. This was followed by a follow-up discussion on the program's sustainability, a workshop on outreach and training regarding innovations in processed Kase fish products, licensing and legal compliance for processed products, product marketing management, and training on the production of various processed Kase fish products.

RESULT AND DISCUSSION

The community service activities conducted in collaboration with the Poklahsar PN3 were carried out in several stages, including identifying the partners' challenges, developing products and packaging, holding follow-up discussions on the partners' needs, and conducting outreach and training on the diversification of processed Kase fish products. This series of activities was designed to increase the

utilization of Kase fish through the development of value-added products and to enhance the partners' readiness in the areas of production, legal compliance, and marketing.

Identification of Partners' Challenges

The results of the initial visit and discussions with partners indicate that the challenges faced by Poklahsar PN3 Bersaudara are primarily related to production and marketing (**Figure 1**). In terms of production, the equipment used is still rudimentary, resulting in limited production capacity and efficiency. The processing procedures also do not yet fully and consistently adhere to food sanitation and hygiene standards. Additionally, product quality remains inconsistent, particularly in terms of taste, texture, and shelf life.

In terms of marketing, the products are still packaged in simple packaging and lack design and size variations tailored to market needs. Marketing is still dominated by sales in the immediate vicinity and at local markets, while the use of digital media and online marketplaces has not been optimized. These findings serve as the basis for determining the content and form of the interventions provided during the community service activities.

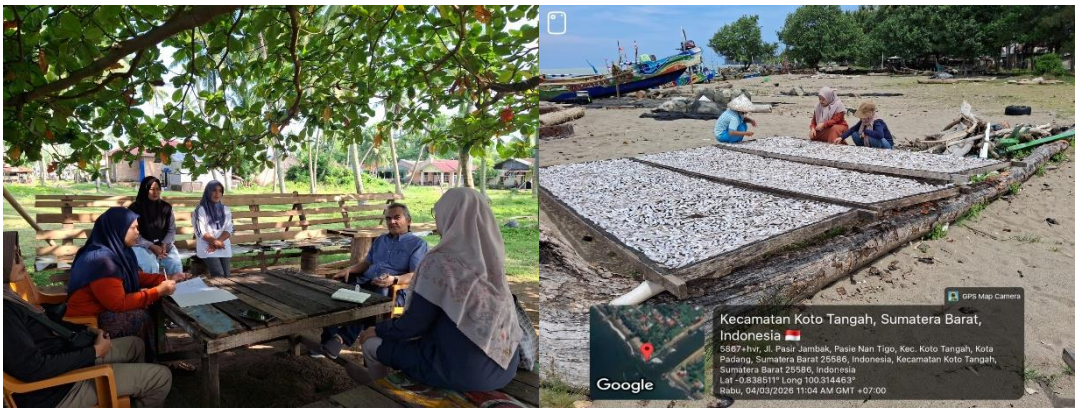


Figure 1. Information session and initial discussion regarding the condition of Poklahsar PN3 Bersaudara

Product Development, Packaging, and Nutritional Value

The initial stage of product development involved the production of crispy Kase fish and Kase fish crackers as alternatives for diversifying processed products. Both products were successfully developed on a laboratory scale and subsequently used as sample products to be introduced to partners (**Figure 2**). Development focused not only on formulation but also on product identity and packaging. Each product was equipped with a label that distinguished its type and characteristics, and was then packaged in a form ready for introduction and further development by partners.

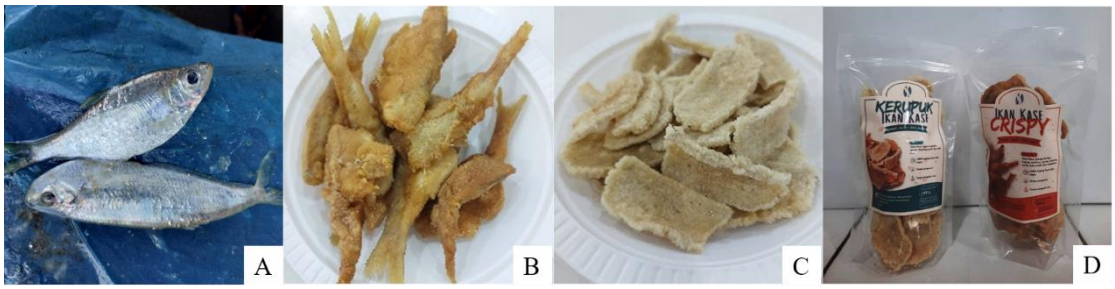


Figure 2. Raw Kase Fish (A), Processed Kase Fish Products; Crispy Kase Fish (B), Kase Fish Crackers (C), and Packaged Products (D)

As part of the product development, a proximate analysis was conducted to obtain information on the nutritional content of crispy Kase fish and Kase fish crackers. The results of the analysis are presented in **Table 1**.

Table 1. Proximate Analysis of Processed Kase Fish Products

Parameters	Crispy Kase Fish	Kase Fish Crackers
Moisture content (%)	9.87 ± 0.45	7.79 ± 0.09
Ash content (%)	4.33 ± 0.39	4.00 ± 0.00
Protein content (%)	14.55 ± 0.88	13.33 ± 0.01
Fat content (%)	1.92 ± 0.38	0.34 ± 0.05
Carbohydrate content (%)	69.33 ± 0.46	74.54 ± 0.08

Note: The values are presented as mean ± standard deviation (SD)

Product innovation is essential in the processing of fishery products to increase their market value and extend their shelf life. Innovation through product diversification is achieved by transforming raw, fresh fish into ready-to-eat or semi-finished products such as fish floss, fish balls, or fish nuggets. This processing results in a significant increase in revenue, as the selling price of processed products is much higher than that of ordinary fresh fish (Anggraini et al., 2026). The protein content of Kase crispy fish is 14.55%, and that of Kase fish crackers is 13.33%. These values indicate that both products still provide a fairly good protein contribution from the fish raw material. As a comparison, Baishak et al., (2020) reported protein levels of 12.55–17.82% in fish crackers developed from three types of carp. The protein content of Kase fish crackers, at 13.33 ± 0.01%, falls within that range. Carbohydrates constitute the largest component in both products, accounting for 69.33% in Kase crispy fish and 74.54% in Kase fish crackers. The high carbohydrate content can primarily be attributed to the use of starchy/flour-based ingredients in the product formulations, particularly in the fish crackers. This is consistent with the characteristics of fish crackers, which are generally made from a mixture of fish and flour or starch (Asikin et al., 2024).

Outreach and Product Development Discussion

A follow-up discussion with Poklahsar PN3 Bersaudara was held in the Pasie Nan Tigo Village on September 13, 2026 (**Figure 3**). This event served as an opportunity to introduce the results of product development while also identifying the partners' needs and the real-world challenges they face. One of the issues raised by the partners was the lack of drying and storage space when there is an abundance of Kase fish. This issue is particularly critical because fish is a perishable food item that quickly deteriorates in quality. An abundance of catch can also lead to a drop in fish prices, making it necessary to explore alternative uses beyond selling the fish freshly.



Figure 3. Joint Activities of the Poklahsar PN3 Bersaudara in the Pasie Nan Tigo Village

The developed Crispy Kase fish and Kase fish crackers were then introduced to the partners as alternatives for product diversification. At this stage, discussions were also held regarding product development opportunities, legal considerations, and marketing. The partners gained an initial understanding of the product development process and the steps that need to be prepared before the products are marketed more widely.

Outreach, Workshops, and Processing Training

The orientation and training sessions were held on September 16, 2026, at the Multipurpose Building of the Faculty of Agricultural Technology and the Technopark Laboratory, Pilot Plan, Universitas Andalas. The topics covered included innovations in processed Kase fish products, product legality, and marketing management. During the session on legal compliance, partners received an

explanation regarding the process for obtaining a Business Identification Number (NIB), a Food Product Registration Certificate (PIRT), and other related requirements. Meanwhile, the marketing session covered key considerations in the development and marketing of processed products. The session continued with a discussion and Q&A so that partners could raise issues they were facing in developing their businesses (**Figure 4**).



Figure 4. Training Session for Partners

Following the orientation, the activity continued with a hands-on processing session using Kase fish raw materials sourced directly from the partners. The community service team also provided processing modules as a guide throughout the activity. The training covered the production of four products: crispy Kase fish, Kase fish crackers, Kase fish floss, and Kase fish nuggets. Through hands-on practice, the partners were introduced to the processing stages, from raw material preparation to the production of finished goods (**Figure 5**).



Figure 5. The Process of Producing Processed Fish Products with Partners. Processed Kase Fish Products Produced: Crispy Kase fish, Kase fish crackers, Kase fish floss, and Kase fish nuggets

Provision of Supporting Facilities

To support the sustainability of Kase fish processing activities, the community service team also provided supporting facilities in the form of drying racks used for sun-drying fish (**Figure 6**). These facilities were developed as part of efforts to assist partners in handling their catch and supporting the Kase fish processing process. In addition to the drying racks, the community service team also procured the equipment needed to support the product processing. The provision of these facilities is expected to support the sustainability of processing activities and business development at the group level. At the time of writing this article, the process of handing over some of the equipment to the partners was still underway.



Figure 6. Racks for drying Kase fish

In general, the community service activities have resulted in a series of initiatives to develop processed Kase fish products, including product diversification, packaging and labeling development, nutritional value analysis, processing training and capacity building, as well as the provision of supporting facilities for the Poklahsar PN3 Bersaudara. These activities provided partners with experience in transforming Kase fish from raw materials into various processed products, while also introducing aspects of packaging, labeling, legal compliance, and marketing. The provision of drying racks and processing equipment was further aimed at supporting the sustainable implementation of the project's outcomes and the development of the Kase fish processing business by the partners.

CONCLUSION

The community service activity in Pasie Nan Tigo Village successfully introduced diversified processing methods for Kase fish (*Thryssa dussumieri*) through the development and training in the production of crispy Kase fish, Kase fish crackers, Kase fish floss, and Kase fish nuggets. The activities also included the development of packaging and labels, training on product legality and marketing, and the provision of supporting facilities such as drying racks for fish. The results of the activities showed that Kase fish, which has traditionally been used primarily as fresh or dried fish, has the potential to be developed into a variety of value-added processed products. This series of activities provided partners with practical knowledge and experience in processing, packaging, and preparing products for more sustainable business development.

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