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COMMUNITY EMPOWERMENT THROUGH TEMAN SEHAT PROGRAM IN UTILIZING PINEAPPLE PEELS INTO FERMENTED DRINKS TEPACHE

PEMBERDAYAAN MASYARAKAT MELALUI PROGRAM TEMAN SEHAT DALAM MEMANFAATKAN KULIT NANAS MENJADI MINUMAN FERMENTASI TEPACHE

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Abstract

Pineapple peels are generally not utilized to their full potential and are often discarded as organic waste. Pineapple peels have great potential to be used as raw materials for food products because they contain carbohydrates and natural sugars that support the fermentation process. However, their utilization in the community remains relatively limited, so educational efforts are needed to improve the community's knowledge and skills. This community service activity aimed to improve the public's understanding of how to utilize pineapple peels to make a fermented beverage through the TEMAN SEHAT (TEpache MANfaat SEHAT) program. The implementation methods included preparation, outreach, a demonstration of tepache production, product tasting, interactive discussions, and a descriptive evaluation based on participant engagement during the activity. The results of the activity showed that participants enthusiastically took part in the activity, were active during discussion sessions, and gained an understanding of the potential of pineapple peels, the tepache production process, and the benefits of processing organic waste into value-added products. The TEMAN SEHAT program contributes to increasing public knowledge and encourages the sustainable utilization of pineapple peel waste as a food product with economic value.

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Keywords : Fermentation, Pineapple Peel, Tepache, Koto Tibun Village.

Abstrak

Kulit nanas umumnya belum dimanfaatkan secara optimal dan sering kali dibuang sebagai limbah organik. Kulit nanas memiliki potensi besar untuk digunakan sebagai bahan baku produk pangan karena mengandung karbohidrat dan gula alami yang mendukung proses fermentasi. Namun, pemanfaatannya di tengah masyarakat masih relatif terbatas, sehingga diperlukan upaya edukasi untuk meningkatkan pengetahuan dan keterampilan masyarakat. Kegiatan pengabdian kepada masyarakat ini bertujuan untuk meningkatkan pemahaman masyarakat mengenai cara memanfaatkan kulit nanas menjadi minuman fermentasi melalui program TEMAN SEHAT (TEpache MANfaat SEHAT). Metode pelaksanaan kegiatan mencakup tahap persiapan, sosialisasi, demonstrasi pembuatan *tepache*, pencicipan produk, diskusi interaktif, serta evaluasi deskriptif berdasarkan keterlibatan peserta selama kegiatan berlangsung. Hasil kegiatan menunjukkan bahwa para peserta berpartisipasi dengan antusias, aktif dalam sesi diskusi, serta memperoleh pemahaman mengenai potensi kulit nanas, proses pembuatan *tepache*, dan manfaat pengolahan limbah organik menjadi produk bernilai tambah. Program TEMAN SEHAT berkontribusi dalam meningkatkan pengetahuan masyarakat serta mendorong pemanfaatan limbah kulit nanas secara berkelanjutan menjadi produk pangan yang memiliki nilai ekonomi.

Kata Kunci : Fermentasi, Kulit Nanas, Tepache, Desa Koto Tibun.

1. INTRODUCTION

Pineapple (Ananas comosus L.) is one of the horticultural commodities that has an important role in the Indonesian agricultural sector. Indonesia ranks as a pineapple producer third largest in Southeast Asia after the Philippines and Thailand (Kurniati et al., 2021). According to data from the Central Statistics Agency (BPS), pineapple production in Indonesia shows a trend of increasing in recent years, namely 1.76 million tons in 2015, increasing to 2.4 million tons in 2020 and 3.2 million tons in 2025.

Most parts of the pineapple fruit are utilized as food ingredients, but about 23.64% of the pineapple fruit parts consist of peels, crowns and other parts becoming organic waste (Fitria & Lindasari, 2021). The increasing pineapple production in Indonesia has led to an increase in the amount of pineapple peel waste generated from consumption and processing industries. Pineapple peels are generally not utilized optimally and are frequently discarded as organic waste. If not managed properly, the waste can accumulate, causing an unpleasant odor and potentially contaminating the environment. Pineapple peels contain various components that have potential for use. Pineapple peels contain 86.70-81.72% water, 1.66-20.87% crude fiber, crude fiber, 10.54-17.53% carbohydrates, 0.69-4.41% protein, 0.02% fat, 0.48% ash and 13.65% reducing glucose (Yusi Amalia et al., 2024).

Pineapple peels have great potential to be used as raw materials for product food because they still contain carbohydrates and natural sugars that support the fermentation process. Through simple and innovative processing technology, pineapple peels can be processed, ito become a product that has added value. One innovation in utilizing pineapple skin waste is processing it into tepache, which is a traditional fermented drink that uses sugar natural and microorganisms on the pineapple skin as fermentation agents. In addition to containing sugar, as a fermentation substrate, pineapple skin is also rich in bioactive compounds, such as the enzyme bromelain and dietary fiber that provides benefits for health (Sari et al., 2024). Processing pineapple skin into tepache not only increases the usefulness of organic waste, but also produces a fermented drink that has the potential to contain beneficial microorganisms. Utilization of pineapple skin waste into tepache is one form of implementing the

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concept of economy circular and processing organic waste that is oriented toward increasing added value as well as environmental sustainability.

Problem Statement Although pineapple skin has great potential to be processed into food products with added value, its utilization at the community level is still low. Based on the results of observations conducted in Koto Tibun village, pineapple skin is generally only discarded as waste after the fruit is consumed or processed, so it has not yet provided added value. In addition, knowledge of the community regarding the use of skin as raw material for fermented drinks, especially tepache is still limited. These conditions indicate the need for educational and training activities to improve community knowledge and skills in processing pineapple skin waste as a beneficial product.

Through counseling activities and demonstrations of making tepache, the community is expected to be able to understand the fermentation process in a simple way and have skills in processing organic waste into a product that is fit for consumption. Waste processing is one effort that can be carried out to minimize the impact of environmental pollution while also increasing the usefulness of the waste produced (Yunita et al., 2024).

2. RESEARCH METHOD

Community service activities are carried out through the TEMAN program HEALTH (Tepache MANfaat SEHAT) which aims to improve knowledge and community skills in utilizing pineapple skin into fermented drinks tepache. The activities are carried out in a participatory manner using educational methods, demonstrations, product tasting and interactive discussion. The implementation of community service activities consists of several stages as follows.

Preparation Stage

The preparation stage begins with carrying out observations and coordination with the village government and TP-PKK administrators to identify problems related to the utilization of pineapple rind waste. Then the preparation of socialization materials is carried out, creation of presentation media as well as preparation of tools and materials used in the demonstration for making tepache.

Implementation Stage

The activity begins with delivering material about the definition of tepache, its content and benefits of pineapple peel, basic fermentation principles, and the potential of tepache as a value-added food product with added value. After the material is delivered, a tepache making demonstration is conducted, using pineapple peels as the main material so participants can gain a direct picture of the steps of making it.

Tasting and Discussion Stage

After the demonstration, participants are given the opportunity to taste tepache that has previously fermented. The activity is carried out to introduce taste characteristics, aroma and product acceptance to participants. Subsequently, there is a discussion and Q&A as a forum for participants to ask questions.

Evaluation Stage

The activity evaluation is conducted descriptively through observation of participant involvement during the activity, activeness in discussion sessions, and participant responses towards the material and products introduced. The evaluation results are used to determine the level of participant understanding and community acceptance of the innovation in utilizing rind of fruit pineapple to become tepache-fermented beverage. The TEMAN SEHAT program implementation method can be seen in Figure 2.1 below.

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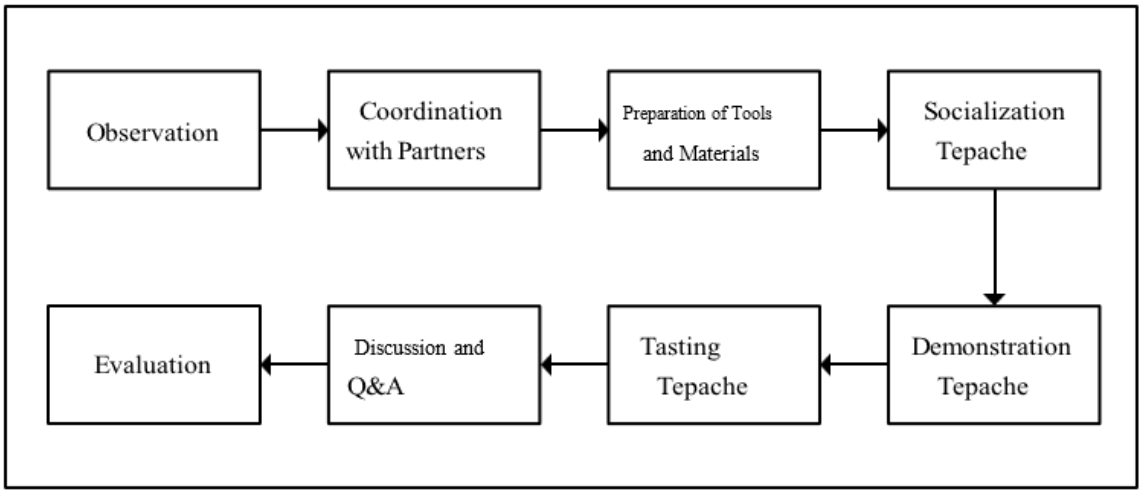


Figure 1. TEMAN SEHAT Program Implementation Method

3. RESULT AND DISCUSSION

Activity Preparation

Before the activity is conducted, the KUKERTA Team of Riau University carried out coordination with the village government and TP-PKK as partners in the activity. Preparation stage the activity aims to determine the implementation time, participant targets, and to prepare the needs during the activity. In addition, drafting socialization material on utilizing pineapple peels into tepache fermentation drink, preparing presentation media, and preparing tools and materials used in the tepache making demonstration.



Figure 2. Coordination with Partners

The preparation stage is an important step in community service activities because it can support the smooth implementation of the program. Good coordination with partners will increase participant participation and facilitate the material delivery process so that the activity goals can be achieved optimally (Yusuf et al., 2024).

Socialization and Counseling

Socialization and counseling on tepache fermentation drink production in the village Koto Tibun was held on Friday, July 10, 2026 with a total of 22 participants attended by members of the Family Empowerment and Welfare. Community service activity began with a presentation on the utilization of pineapple peels into a drink fermentation tepache through the TEMAN SEHAT program (Tepache Health Benefit). The material provided includes the potential of pineapple peel waste, the nutritional content of the peel pineapple, fermentation principles, tepache production process, benefits of consuming tepache drink and opportunities for using tepache as a valuable product. During the socialization activity, participants paid good attention to the material provided. This is evident from the interaction established between the speakers and participants, where participants actively listen to

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the material, ask questions and provide feedback on the information conveyed. This enthusiasm shows that the material provided meets the needs society and able to attract participants' interest to learn more about the utilization of pineapple peel waste.



Figure 3. Tepache Socialization and Counseling Activities

Socialization activities play an important role in improving knowledge of the community. Direct information delivery enables participants to obtain a better understanding than through print media or information from social media. In addition, two-way communication during the activity allows participants to share experiences and problems they face so that the material provided becomes more contextual. Participants gain the understanding that pineapple peels which had been considered waste actually still contain carbohydrates, fiber, protein and reducing sugars that can still be utilized (Hidayat Sukriadi et al., 2022). The information provides a new perspective that organic waste does not always have to be discarded, but can be processed into products that have utility, economic value, and benefits for health.

Tepache Making Demonstration After the material presentation, the activity continued with a demonstration of tepache making. The demonstration was carried out directly by the implementing team using pineapple peels as the main raw material. The stages of tepache making demonstration can be seen in Figure 3.1 below.

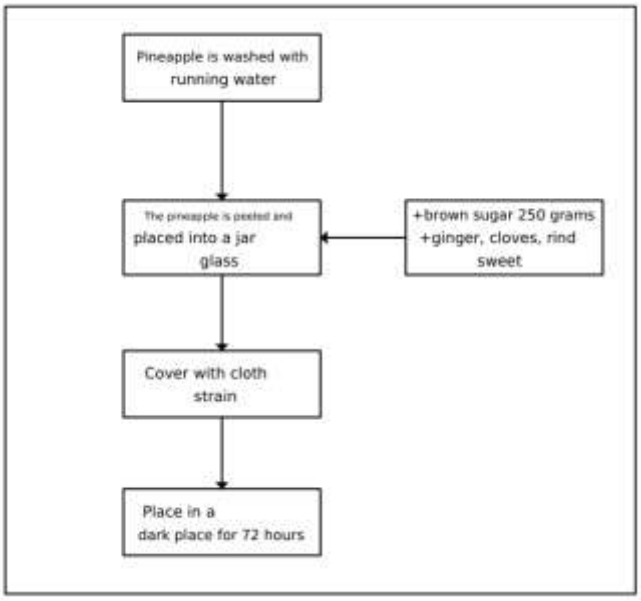


Figure 4. Stages of Tepache Demonstration

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The demonstration method was chosen because it can provide a more real learning experience to participants. Through direct observation, participants can understand each stage in tepache making more clearly than just receiving explanations theoretically. Demonstration also provides an opportunity for participants to discuss when there are stages that are not understood (Rosfiani et al., 2025). During the demonstration activity took place, participants showed interest in the fermentation process that is relatively simple and can be done using household equipment. This becomes one of tepache's advantages because it does not require complicated technology or costs high production. Thus, this innovation has the potential to be applied independently by the community as an alternative utilization of pineapple rind waste.



Figure 5. Tepache Making Demonstration

In addition to introducing the manufacturing techniques, the demonstration also aims to enhance participants' confidence that tepache can be made safely if procedures are followed fermentation correctly. Understanding about equipment sanitation, quality of raw materials, and the duration of fermentation became important aspects emphasized during the activity so that the product that is produced has good quality and is safe for consumption.

Tepache Product Tasting

One of the sequence of activities that attracted participants' attention is the tasting activity for tepache tasting. The served product is Tepache that has been fermented previously, thus it has characteristic taste and aroma. Through this activity participants can directly recognize the taste of tepache as a fermentation product made from pineapple skin. Most participants gave positive feedback toward the served product. Tepache is perceived to have a fresh taste with a blend of sweet and slightly sour notes, making it different from pineapple-based drinks commonly consumed. In addition, the distinctive fermentation aroma also becomes a new experience for most participants because they had not previously consumed tepache.

Tepache tasting is not only aimed at introducing the product to the public, but also to increase acceptance of new food innovations. The tasting experience directly provides an overview of product quality so participants are more able to understand the potential of tepache as an alternative drink made from pineapple skin.

Discussion and Evaluation of the Activity

The activity ended with a discussion and Q&A session. Participants raised various questions about the fermentation process, storage duration, consumption safety, variations of additives and marketing opportunities for the product. The discussion took place interactively creating two-way communication between the speakers and participants. Based on the results of observations during the activity, participants showed high enthusiasm for the material that idelivered. Participant activity in asking questions and giving responses shows an increasing interest in utilizing pineapple peels as fermented products. Participant activity indicates that the extension methods combined with demonstrations and tastings can increase participant involvement in the learning process (Hidir, 2021)

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Figure 6. Implementation of Tepache Extension Program Work

Overall TEMAN SEHAT activities are able to provide new insights to the public about the potential of pineapple peels as tepache raw material. The activities of extension do not only introduce innovations in organic waste-based food products, but also encourage the community to be more aware of waste management through a simple approach. Using pineapple peels as tepache is one form of application of the circular economy that transforms waste into useful products. Through tepache making extension activities, it is expected that the community can further develop the skills they have acquired so that the use of pineapple peel waste is applied sustainably in daily life.

4. CONCLUSION

Program (TEpache Health Benefits) is one form of community empowerment through the utilization of pineapple peel waste into a fermented drink tepache fermentation. The activities implemented, consisting of socialization, demonstrations, tastings of products, and interactive discussions, can increase public knowledge about the potential of pineapple peels as raw materials for fermentation products. Extension activities also introduce food innovations that have the potential to provide economic added value. Participants' enthusiasm during the activities shows an increase in understanding and interest in utilizing pineapple peels as innovative products. Sustainability of the program should be supported through further mentorship on good production techniques, packaging, storage and marketing strategies so that tepache can develop as a flagship product based on local potential (Resdati et al., 2022)

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