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Article

Innovation In Waste Cooking Oil, Coconut, And Rice-Based Products Through Outreach Activities In Nagari Cupak

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Abstract

Nagari Cupak in Solok Regency possesses significant local potential, particularly in coconut and Solok rice commodities; however, their use has remained limited to household consumption and raw material sales. In addition, waste cooking oil produced by households and small businesses is often unmanaged, posing environmental risks. This community engagement program aimed to enhance the skills of PKK women in utilizing local resources and converting household waste into value-added products. The activities included the delivery of materials on producing traditional coconut cooking oil and Virgin Coconut Oil (VCO), followed by hands-on workshops on making waste-cooking-oil soap and rice-based solid soap. A participatory approach was implemented through lectures, discussions, and guided practice. The results show that participants gained an improved understanding of coconut oil processing and were able to independently produce waste-oil soap and rice soap with acceptable texture and aroma. Challenges encountered included limited equipment for VCO practice and difficulties during soap molding. Overall, the program successfully increased community knowledge, technical skills, and awareness of local resource utilization while opening opportunities for small-scale entrepreneurship based on simple, locally sourced products.

INTRODUCTION

Nagari Cupak is a village located on the slopes of Mount Talang in Solok Regency, known for its abundant local resources, particularly agricultural commodities such as Solok rice and coconut. In addition to these potentials, many households and small businesses in the area produce waste cooking oil. To this day, the utilization of these local resources remains dominated by household consumption and the sale of raw materials, resulting in relatively low economic value for the community. Furthermore, improperly managed waste cooking oil poses environmental risks.

Cooking oil is an essential household necessity in Indonesia. It is produced from plant-based materials that have undergone refining processes to ensure safe use in food preparation. Beyond providing a high energy source, cooking oil enhances flavor, texture, and the visual appeal of dishes, while also creating a crispy outer layer on fried foods (Adilla et al., 2024).

Free radicals are unstable molecules that can damage body cells, including triggering skin aging and cellular degradation due to DNA disruption and tissue damage (Susanti & Puspitaningtyas, 2019). One natural ingredient believed to help maintain skin health is rice. Rice-based soap, made from young

rice extract enriched with vitamins and nutrients, contains natural compounds that support the regeneration of damaged or dead skin cells (Malahayati et al., 2022).

Coconut is an extremely versatile agricultural resource, as nearly all parts of the fruit can be utilized for various purposes, both edible and non-edible. Coconut water can be processed into nata de coco, vinegar, and soy sauce; coconut meat can produce coconut oil, cooking oil, oleochemical products, and meal; while the shell and fiber can be used for activated charcoal, shell flour, rubber fibers, and geotextiles (Budi et al., 2021). Among coconut-based products, Virgin Coconut Oil (VCO) is one of the most valuable, characterized by its low moisture and free fatty acid content, clear color, pleasant aroma, and long shelf life of more than one year (Emilia et al., 2021).

Higher education institutions play a strategic role in facilitating knowledge transfer and fostering entrepreneurial mindsets at the community level. Through community engagement programs, universities act as agents of change by introducing simple innovations, increasing the value of local products, and strengthening entrepreneurial perspectives. This program was therefore designed to enhance the capacity of the Nagari Cupak community in developing value-added products that are practical and have potential for small-scale business development.

EXPERIMENTAL SECTION

The community engagement program was conducted on 21 January 2026 at the PKK Hall of Nagari Cupak, involving members of the PKK women's group as the primary participants. The implementation applied a participatory approach, positioning community members as active actors in the learning process.

The activity stages included material presentation, interactive discussions, and hands-on practice. The materials covered the processing of coconut into traditional cooking coconut oil and Virgin Coconut Oil (VCO), the conversion of waste cooking oil into environmentally friendly soap, the production of rice-based solid soap, and discussions on value addition and local entrepreneurship potential. Throughout the activities, intensive assistance was provided to ensure participants understood the technical aspects and the feasibility of developing simple household-scale products.



Figure 1. The activity explains VCO and cooking oil



Figure 2. Product image

RESULT AND DISCUSSION

A. Implementation and Field Observations

The community engagement activities in Nagari Cupak proceeded smoothly from the beginning. All material delivery and practical sessions ran effectively with high enthusiasm from participants. The activities were divided into material presentation sessions (traditional coconut cooking oil and VCO) and hands-on practice sessions (waste-cooking-oil soap and rice-based soap). Field observations highlighted several key findings:

1. Material on cooking coconut oil and Virgin Coconut Oil (VCO)

   The session on heating coconut milk to produce traditional coconut oil, along with the non-heating extraction method for VCO, provided new understanding for the PKK participants. Although the process was not demonstrated directly, participants were able to follow the explanation clearly and asked several questions about shelf life, oil quality, and market potential.

2. Practice of waste-cooking-oil soap production

   The hands-on activity involving waste cooking oil ran effectively. Participants successfully followed each step, from filtering and mixing ingredients to molding the soap. Observations indicated that many participants had only recently learned that used cooking oil could be processed into a safe and useful household cleaning product.

3. Practice of rice-based soap production

   The rice soap practice resulted in products with good texture, and the mixing process could be carried out easily using simple household tools. The use of local rice—particularly Solok rice—enhanced the uniqueness of the product and increased participant interest.

4. Final product quality

   Both the waste-oil soap and rice soap produced solid and well-formed bars with acceptable aromas. Participants demonstrated confidence and the ability to replicate the process independently after the session.

B. Community Response and Participation

Throughout the activity, the PKK participants showed strong engagement and a positive response. Enthusiasm increased during the hands-on sessions, as the processes were simple and produced visible results. Several participants expressed that converting used cooking oil into soap was a new and valuable household skill.

Participants also inquired about potential home-based businesses using rice soap and VCO. This reflects not only an increase in technical skills but also the emergence of entrepreneurial ideas based on local resources. Some participants expressed interest in trying the soap-making process at home, especially since the raw materials were easy to obtain and did not require specialized tools.

C. Challenges Encountered

1. Limited equipment for VCO and coconut oil practice

   The production of VCO and traditional coconut oil requires more time and additional equipment, resulting in these materials being delivered only through explanation rather than hands-on practice.

2. Strong odor of waste cooking oil

   At the initial stage, the odor of used cooking oil was quite strong and caused discomfort for some participants. However, after proper filtering and ingredient mixing, the odor was significantly reduced.

3. Challenges in rice soap production

   In addition to difficulties achieving a fine rice powder texture, participants also faced challenges during the molding process. Limited mold availability and uneven pressure caused some soap bars to be imperfect, cracked, or irregularly shaped. These issues occurred primarily during the first trial when the mixture began to harden before all participants had finished molding. With guidance and technique adjustments, the results improved.

4. Limited session time

The available time was insufficient to discuss advanced topics such as packaging, product standardization, and expanded entrepreneurship opportunities.

CONCLUSION

The community engagement program in Nagari Cupak was carried out successfully and received positive responses from both participants and local officials. The delivery of material on coconut-based products—traditional cooking oil and Virgin Coconut Oil (VCO)—along with hands-on practice in producing waste-cooking-oil soap and rice-based soap, provided relevant knowledge on utilizing local resources and household waste.

The activities demonstrated that simple and easily accessible materials can be transformed into useful household products with potential economic value. The program increased community awareness regarding proper waste management, local product processing techniques, and opportunities for small-scale entrepreneurship. The skills gained are expected to be applied independently by PKK members and the broader community, contributing to creativity and economic self-reliance based on local potential.

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