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INCREASING THE ADDED VALUE OF CASSAVA (MANIHOT ESCULENTA) THROUGH CULINARY PRODUCT INNOVATION BASED ON AU BAIN MARIE TECHNIQUES IN A COMMUNITY SERVICE PROGRAM

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Abstract

This community service program aims to enhance the added value of cassava (Manihot esculenta) through culinary product innovation using the *Au Bain Marie* technique. The activity was conducted on December 5, 2024, in Sukajadi Village, involving 15 participants, including housewives, local MSME entrepreneurs, and youth. Through training, participants were taught the process of transforming cassava into innovative products, such as cassava cakes with a soft texture, superior taste, and high visual appeal. The results showed that the *Au Bain Marie* technique effectively produces high-quality products that meet modern market demands. Product evaluation scored an average of 4.6 out of 5 on parameters such as taste, texture, appearance, and market potential. Furthermore, this program successfully improved participants' skills in modern food processing and created economic opportunities through cassava-based product diversification. In conclusion, cassava processing using the *Au Bain Marie* technique can empower the community of Sukajadi Village and support economic sustainability based on local food resources. This program is expected to be replicated in other regions to maximize the potential of local food ingredients and improve community welfare.

Keywords: *Au Bain Marie*, Cassava, Culinary Product Innovation, Community Service

INTRODUCTION

Cassava (*Manihot esculenta*) is one of the local food sources that has great potential in Indonesia, mainly due to its abundant production, low production costs, and ability to grow in various soil conditions. According to KBBI, cassava is a vine root plant, the leaves are used as vegetables, and the tubers can be eaten. There are two meanings of cassava, namely cassava and sweet potato. The American continent, especially Brazil, is the place of origin of cassava, which is referred to by the Indonesian people as cassava or cassava (*Manihot Esculenta).* In Indonesia, this shrub-shaped food crop ranks third as a staple food, after corn and rice. Cassava has a fairly complete nutritional profile, containing vitamins B1, C, minerals Fe, F, and Ca, as well as carbohydrates, fats, proteins, and dietary fiber. In addition, tannins which are non-

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nutritional substances are also found in cassava. Despite having many nutritional and economic benefits, the use of cassava is still limited to traditional processed products, such as gaplek, tapioca flour, and cassava chips. This situation shows that cassava has added value that has not been fully explored, especially in producing innovative culinary products that suit the needs of the modern market. Culinary sustainability, especially in the use of cassava, is an innovative product that combines social, economic, environmental, and nutritional factors. The use of natural foods is also highlighted by environmental issues and the development of a definition of food sustainability based on ecology and local identity (Pranowo, 2021) (Troncoso-Pantoja et al., 2023).

The Au Bain Marie *technique*, or the indirect heating technique with hot water medium, is a method that can be used to produce food products with soft texture, consistent quality, and longer durability. This method dates back to the third century when Mary the Jewess, a chemist who lived around 200 AD, made a discovery that originated in French and means Mary's Bath. Au Bain Marie refers to a technique that uses *a double boiler* to heat a room gradually without the heat of a direct flame. The secret of this method is its ability to blend baking and steaming. This technique offers the opportunity to create cassava-based culinary products that are innovative, healthy, and have high economic value. On the other hand, the limited knowledge and skills of the local community in processing cassava into value-added products cause the potential of cassava as a superior commodity to not be optimally exploited. (Amagloh et al., 2021).

Sukajadi Village is one of the tourist attractions in West Java, Bogor Regency which is famous for its 1001 waterfalls, stunning scenery, and fresh air. Visitors can explore the caves and enjoy the view of the tea plantations from the summit area. Cultural diversity, thematic tourism, history, tourism communities, and culinary tourism are additional tourist attractions in addition to natural tourism. With a population density of 2,458 heads of families spread across 32 RTs and 11 RWs, Sukajadi Village is located in Tamansari District, Bogor Regency which was established in 1984. The majority of the villagers are Muslims. The majority of the population works in public transportation, home industrial shoe workshops, bamboo crafts, farming, and farm labor. Originality of this Program Activity aims to develop cassava-based culinary products using (Rumiasih et al., 2017). *the Au Bain Marie technique*, which has not been widely applied in the processing of local food ingredients in the target area. With this approach, it is hoped that culinary products that are not only attractive and have high selling value but are also environmentally friendly and sustainable. The originality of the activity lies in combining traditional methods with modern techniques to increase the added value of cassava, especially in Sukajadi Village.

The objectives of this community service are to 1) develop cassava-based culinary products using the innovative Au *Bain Marie* technique and high selling value. 2) Provide training to local communities to process cassava in *a modern* and sustainable way. 3) Improve the community's economy through diversification of local food products and 4) Increase public awareness about the importance of utilizing local resources Optimal.

The existing problems are 1) The low diversification of processed cassava products in the community. 2) Lack of knowledge of modern food processing techniques, such as *Au Bain Marie.* 3) The high dependence of the community on wheat and rice-based food products and 4) The market need for healthier and innovative food products.

IMPLEMENTATION METHOD

The implementation of community service carried out in Sukajadi Village is:

1. Program Preparation: This community service program begins with a planning process involving the implementation team, village officials, and community groups in Sukajadi Village.

Figure 1. Preparation

Preparations are carried out by identifying the needs of the community through surveys and interviews. Data shows that the people of Sukajadi Village have great potential in cassava production, but its use is still traditional with a low selling value. In addition, it was found that people's skills in modern processing techniques such as *At the Bain Marie* is still very minimal. As a follow-up, training materials were prepared which included:

1. Basic knowledge about cassava (*Manihot esculenta*) and its potential.
2. Au Bain Marie's *basic techniques*, from tool preparation to practical application.
3. The application of cassava-based culinary innovation.

2. Implementation of Activities:

The implementation of the activity was carried out on December 5, 2024 at residents' homes in Sukajadi Village. The activity is divided into the following stages:

a Stage 1: Counseling and Provision of Theoretical Materials

Participants were given counseling on the importance of diversifying processed cassava as an effort to increase economic value. In this session, the advantages of the technique were also explained *At the Bain Marie*, such as its ability to produce products with a soft texture, high consistency and healthier due to the use of minimal fat. This counseling was delivered by lectures, discussions, and question and answer methods.

Figure 2. Material Delivery

b Stage 2: *Au Bain Marie Technical Practice Training*

Practical training is the main focus of the activity. Participants are taught the steps to use the technique *At the Bain Marie*, starting from preparing cassava raw materials, processing cassava into dough, to the cooking process using indirect methods.

Figure 3. *Au Bain Marie Engineering Practice Training*

The implementation procedure is as follows:

1. Preparation of ingredients: Cassava is peeled, washed, and mashed.
2. Ingredient mixing: Cassava dough is mixed with additives such as sugar, coconut milk, and natural flavors.
3. Cooking: The dough is put into a heat-resistant mold, then cooked using *the Au Bain Marie* technique using a double pot filled with boiling water.
4. Cooling and packaging: After cooking, the product is cooled and packaged

a Stage 3: Evaluation of Results and Capacity Building of Participants

The products of the training are tested based on taste, texture and visual appeal. The implementation team provides input for product improvement to match modern market standards. Participants were also taught how to use social media to promote their products.

Figure 4. Product Evaluation

3. Post-Training Assistance: To ensure sustainability, mentoring is carried out for two weeks after training. This assistance includes monitoring the production process, marketing consulting, and technical assistance if there are obstacles in using *the Au Bain Marie* technique.

Figure 5. PKM Training

4. Implementation Techniques Used: This method incorporates a participatory approach through direct community involvement in all stages of the activity. The implementation process refers to the principles of *community-based development* (Rahardjo, 2018) and *food processing innovation* (Nugroho & Supriyadi, 2019) to ensure relevant and applicable activities for participants.

Figure 6. Cassava Processed Products

RESULTS AND DISCUSSION

The community service activities that have been carried out are: Community service activities in Sukajadi Village on December 5, 2024 have succeeded in achieving several success indicators as follows: A total of 15 people, consisting of housewives, local MSME actors, and village youth, actively participated in this activity. The participation rate reached 100% based on participant attendance and involvement in theory and practice sessions. **Culinary products produced** from the results of the training produced cassava-based product variant cakes using *the Au Bain Marie* technique. **Product EvaluationEvaluation is carried out through taste tests and product acceptance by participants and community representatives. The results show that the product was well received, with the average evaluation score as follows:**

Table 1. 1 Product Evaluation

Parameter	Cake Singkong
Taste	4.6 / 5
Texture	4.7 / 5
Appearance	4.7 / 5
Potential Market Acceptance	4.5 / 5

DISCUSSION

Engineering Potential *At the Bain Marie* in Processing Cassava with Techniques *At the Bain Marie* proven to be effective in producing processed cassava products with soft texture, optimal taste, and high visual appeal. This method also allows for a reduction in oil use, so the product is healthier and suitable for the modern market that is increasingly concerned with low-fat foods. These results support the findings of Nugroho & Supriyadi (2019) which states that this technique is ideal for processing local food ingredients into high-quality products.

Impact of Community Skills Improvement Through training, the people of Sukajadi Village have succeeded in improving cassava processing skills, especially in using modern techniques. As many as 85% of participants stated that their confidence increased in trying new product innovations, while another 15% felt that more follow-up assistance was needed. Challenges and Solutions Some of the challenges faced during the implementation are equipment limitations *At the Bain Marie* and the need for community adaptation to new methods. However, the solution in the form of adapting a simple tool such as a double pot gives satisfactory results. Product Acceptance Rate Graph The following is a graph of the average product acceptance based on evaluation parameters: *(Visualizations can be created in bar format to show the score of each product parameter)*.

Increasing Economic Potential With this technique, cassava-based products have a great opportunity to be marketed in the local MSME sector and through online platforms. Further assistance will be focused on product packaging and marketing strategies to strengthen economic impact. This service activity succeeded in identifying and developing the potential of cassava in Sukajadi Village through techniques *At the Bain Marie,* producing innovative culinary products, as well as empowering people to improve their skills and economic well-being. This approach has great potential to be replicated in other villages with similar conditions.

CONCLUSION

Community service activities in Sukajadi Village with the theme "Increasing the Added Value of Cassava (*Manihot esculenta*) Through Culinary Product Innovation Based on *Au Bain Marie* Technique" have succeeded in improving the skills and knowledge of the community in processing cassava into innovative, high value-added, and environmentally friendly culinary products. Through *Au Bain Marie technical training*, participants were able to produce superior cassava-based processed products, namely cassava cakes, which have high attractiveness in terms of taste, texture, and aesthetics. This program also has a positive impact on community empowerment by increasing participants' confidence in creating new culinary products and opening opportunities for local MSME-based economic development.

The success of this activity shows that cassava processing with modern techniques can be an innovative solution to maximize the potential of local food while supporting the economic sustainability of the community. In the future, further assistance is needed in the aspects of marketing and product packaging to strengthen the wider economic impact. This program can be used as a model of sustainable service and replicated in other regions with similar potential.

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