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Healthy Food Processing Skills Training for the Sukajadi Village Women Farmers Group (KWT)

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ABSTRACT

Household food security is not only determined by the availability of food but also by the community's ability to manage and process it healthily and sustainably. However, a preliminary study of 30 members of the Women Farmers Group (Kelompok Wanita Tani/KWT) in Sukajadi Village showed that the level of understanding and skills in healthy food management was still low, with an average pre-test score of 33%. This condition highlights the need for training programs that can enhance community capacity in utilizing local food resources optimally. This study aims to describe the implementation of food resource management training and analyze its impact on empowering the healthy food processing skills of KWT members. The program was carried out in five stages: (1) needs analysis and mapping, (2) follow-up planning based on the analysis and mapping, (3) implementation, (4) group assistance, and (5) evaluation. The results show that training on processing vegetable residues into vegetable floss (abon sayur) improved the understanding, skills, and creativity of KWT members. The average post-test score increased significantly to 87% compared to the pre-test score of 33%, and participants demonstrated high enthusiasm during hands-on practice. Thus, this training not only enhanced healthy food processing skills but also raised community awareness of managing food wisely based on the zero-waste principle, while simultaneously opening opportunities to improve household economic resilience.

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INTRODUCTION

Food security is one of the key indicators of sustainable development as it is directly related to the quality of life of a community. However, food availability at the household level is often not managed properly, which may lead to food waste and a reduction in the nutritional value of the food consumed. According to the Food and Agriculture Organization of the United Nations (FAO, 2019), improper food management can result in food loss and food waste, which are detrimental in terms of economic, environmental, and social aspects. Food loss and food waste represent long-term food wastage and have become a major global issue due to their large volume (Wang et al., as cited in Asri & Handoyo, 2024).

Asri and Handoyo (2024) state that Indonesia is the country with the highest amount of food waste in Southeast Asia. This is reflected in the proportion of food loss in Indonesia in 2019, which reached 45%, and food waste at 55% (Bappenas R, as cited in Asri & Handoyo, 2024). The emergence of food loss and food waste can be traced across five stages of food management: (1) production, (2) post-harvest and storage, (3) processing and packaging, (4) distribution and marketing, and (5) consumption. Food loss generally occurs in the first three stages, while food waste is concentrated in the last two stages (Asri & Handoyo, 2024). These five stages are closely related to the activities of the Women Farmers Group (Kelompok Wanita Tani/KWT), since aside from being engaged in planting and harvesting food crops, KWT members also carry the primary role as housewives who are responsible for food processing and consumption at the household level.

The Women Farmers Group (KWT), as a women's organization in rural areas, holds a strategic role in supporting household food security. Through empowerment programs, members can develop food processing skills based on local potential. Ardiani and Dibyorini (2021) explain that empowering women through KWT can enhance self-reliance, support household income, and foster innovation in diverse food processing practices. Thus, improving the skills of KWT members in processing healthy food is an essential part of efforts to improve household welfare and strengthen local food security.

Furthermore, the concept of sustainable food resource management emphasizes efficiency and sustainability in the utilization of food materials. This concept is closely related to the zero waste principle. According to Marini et al. (2024), zero waste is a sustainable principle and lifestyle aimed at reducing waste from human activities to the minimum, or even eliminating it altogether. One form of implementing the zero waste principle is encouraging communities to utilize all parts of food ingredients, including vegetable residues that are often discarded, by processing them into nutritious products. Nutritional understanding and training in healthy food processing play a significant role in raising community awareness. Mahayaty and S. (2025) state that nutrition education, as an effort to facilitate understanding of nutrition literacy among housewives, is closely related to healthy food consumption behavior in families. Therefore, improving mothers' nutritional knowledge can encourage better dietary practices. Consequently, the implementation of healthy food processing training not only aims to produce new food products but also provides education for communities to be wiser in choosing and processing daily food. This is supported by Febriyanti et al. (2023), who emphasize that training is crucial for processing available food resources into nutritious and affordable meals for the community.

Previous studies support the importance of training in food resource management based on local potential to improve community skills. Chandra et al. (2024) found that diversifying sweet corn into popcorn improved the knowledge and skills of Women Farmers Group (KWT) members in producing food products with economic value, with an increase in achievement from 30% to 70%. This indicates

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that simple training utilizing local food resources can significantly impact the capacity building of rural women. Similarly, Azkiyah et al. (2025) conducted research on processing vegetables into unique and nutritious products, such as processing spinach and water spinach into jerky and spinach sticks. The training implementation showed significant success, as vegetable farmers experienced improved knowledge and skills in processing vegetable-based products.

A similar finding was reported by Goeltom et al. (2021), who studied the utilization of cassava peel and tampoi fruit peel into chips. Their research proved that training programs encouraged communities to adopt environmentally friendly mindsets by minimizing food waste through processing it into valuable products. Maleachi et al. (2022) also reported that utilizing jackfruit seeds as the main ingredient for chips, kefir, and sherbet is a proper form of food diversification, as jackfruit is easy to obtain at a relatively low cost. Processing jackfruit seeds into food products transforms previously undervalued materials into economically valuable resources, while at the same time contributing to environmental conservation by reducing waste volumes that negatively impact the environment.

Based on a preliminary study through observation and a pre-test administered to 30 members of the Women Farmers Group (Kelompok Wanita Tani/KWT) in Sukajadi Village, the average pre-test score was found to be 33%. This result indicates that the skills and understanding of KWT members in managing healthy food resources were still relatively low. This condition is consistent with the view of Rahman et al. (2023), who stated that the lack of public awareness regarding proper food management leads to food disposal behavior, thereby causing high levels of household food waste. In addition, limited information and minimal practical experience are contributing factors to the suboptimal ability of KWT members in producing healthy food products. Therefore, the food resource management training in Sukajadi Village was designed as a solution to improve knowledge, skills, and community awareness in managing food wisely and sustainably.

Based on this background, this study was formulated to answer two main problems, namely related to the process of implementing food resource management training for KWT members in Sukajadi Village and (2) a description of the implementation of the training that can empower the skills of KWT members in processing healthy and value-added food. The purpose of this study is to describe the implementation of the training and analyze its impact on healthy food processing skills, awareness of wise food management, and empowerment of KWT members in Sukajadi Village.

METHOD

The implementation of food resource management training was carried out for 30 members of the Women Farmers Group (Kelompok Wanita Tani/KWT) in Sukajadi Village, Ciamis Regency. This activity was conducted from July to August 2025 and consisted of five stages: (1) needs analysis and mapping through coordination with the Sukajadi Village government and KWT representatives, (2) follow-up planning based on the results of the needs analysis and mapping by the service team, (3) training implementation which included theoretical explanation and practical sessions, (4) group mentoring during independent practice, and (5) overall evaluation of the activity. The measurement instrumentused to assess the program's success was a pre-test administered before the training and a post-test conducted after the training and mentoring, given to the 30 KWT members.

The research design used was a one-group pre-post test for 30 members of the Sukajadi Village Women's Group (KWT), selected purposively based on their active participation and availability in all training sessions. The assessment instruments consisted of a knowledge test and a skills observation

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sheet validated by experts (content validity = 0.82). Data analysis used a paired t-test to determine significant differences between pre- and post-training scores ($p < 0.05$). The criteria for training participants in this community service activity can be seen in table 1.

TABLE 1. Criteria for Training Participants

Variable	Category	Percentage (%)
Age	30–40 years	46.7%
	41–50 years	36.6%
	>50 years	16.7%
Education	SMP	40.0
	SMA	53.3
	University Education	6.7
KWT Membership	< 3 years	43.3
	≥ 3 years	56.7

RESULT AND DISCUSSION

The implementation of food resource management training in Sukajadi Village was based on the results of needs analysis and mapping conducted with 30 members of the Women Farmers Group (KWT) through observation, interviews, and the distribution of a pre-test. The results of the pre-test are presented in Table 2.

TABLE 2. Pre-Test Score Achievement

No.	Aspect	Scor
1.	Basic knowledge of the concept of food waste	30%
2.	Understanding the difference between food loss and food waste	30%
3.	Knowledge of the circular economy concept and sustainable food management	35%
4.	Understanding the factors causing food waste	40%
5.	Knowledge of the utilization of rarely processed vegetable parts	25%
6.	Awareness of the ecological and economic benefits of food processing	27%
7.	Knowledge of the use of processed food residues	30%
8.	Understanding the nutritional content and functions of processed products	35%
9.	Knowledge of raw materials for healthy food products	30%
10.	Understanding the practical benefits of processed vegetable products	45%
11.	Knowledge of the use of dried vegetable products in cooking	28%
12.	Technical knowledge of processed food storage	30%
13.	Understanding that vegetable flakes, vegetable stock powder, and dried vegetables are valuable products	40%
14.	Knowledge of the advantages of zero-waste-based food products	25%
15.	Understanding the contribution of processed food to household food security	40%
	Average Percentage	**33%**

Based on Table 2, it can be seen that the level of understanding and practical skills of KWT members in managing healthy food resources wisely and optimally was at an average score of 33%. This indicates that the community, particularly KWT members, have not fully understood or mastered the skills of healthy food management. In fact, it is very important for KWT members, who also play a role as

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housewives, to know, understand, and master the skills of managing healthy food wisely and optimally, since as housewives they hold a crucial role in organizing and managing food resources within the family or household. Figure 1 below illustrates the implementation of the pre-test.

FIGURE 1. Implementation of the Pre-test

After conducting the pre-test, interviews were also carried out with several respondents to explore how KWT members managed food resources at home. Based on the results of the interviews, it was found that in preparing food at home, KWT members generally processed food ingredients by using only the commonly consumed parts of vegetables or fruits. For instance, when processing fruits, the skin was peeled off, and only the flesh was consumed. Similarly, with vegetables, parts that are rarely consumed, such as carrot peels, broccoli stems, chili stems, cabbage cores, and the like, were mostly discarded or directly used as compost. In fact, from a nutritional perspective, these vegetable parts contain valuable nutrients for the body. According to Mukherjee and Mishra (in Rahayu & Rahayu, 2021), broccoli stems contain high levels of vitamin C, fiber, and carotenoids, making them a potential source of added nutritional value in food products.

Based on these findings, it is considered important to provide education to KWT members regarding how to manage healthy food and household food resources wisely and optimally, so that family nutritional needs can be better fulfilled while reducing food loss and food waste at the household level. In this community service activity, such education took the form of food resource management training consisting of both theoretical explanations and hands-on practice. The implementation of this training served as an initial effort to facilitate KWT members' understanding of how to manage healthy food and food resources wisely and optimally. This aligns with the view of Hayati & Yulianto (2021), who stated that training activities can enhance productivity and improve individual skills.

The training on food resource management was held on August 1, 2025, at the Sukajadi Village Hall and was attended by 30 KWT members who had previously participated in the pre-test. The training was delivered by a food management expert who is also a lecturer at the Faculty of Technology and Industrial Education, Indonesia University of Education. The training began with an opening session, followed by lectures, demonstration practices, and a question-and-answer session. Throughout the program, the participants were highly enthusiastic in following the lectures and practical sessions. This was evident from the large number of participants who asked questions and actively engaged in each training session. Such enthusiasm is consistent with the findings of Azkiyah et al. (2025), which revealed a high level of engagement from the Dukuh Cempakaan Farmers Group, Botosari Hamlet, Dukuh Mencek Village, Jember Regency, in participating in training on processing products from local vegetables. The implementation of the training activities can be seen in Figure 2.

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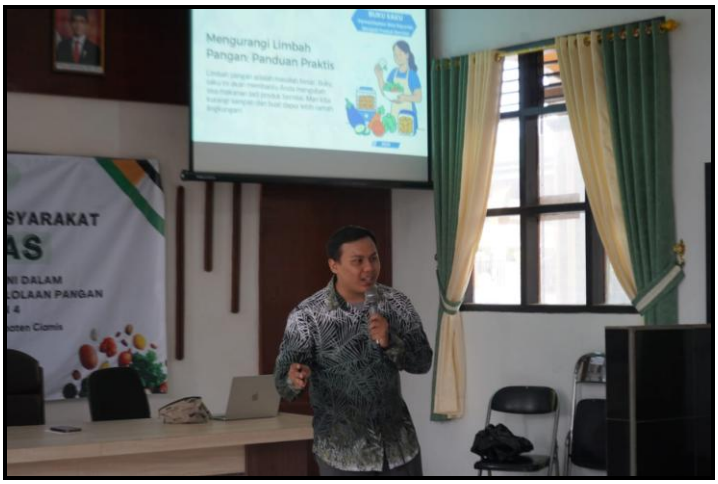

FIGURE 2. Implementation of the Training

In addition to the delivery of theoretical material on food loss, food waste, and how to wisely and optimally manage healthy food resources, the training activity was also strengthened with a practical demonstration on making vegetable floss (Abon Sayur) from vegetable residues that are often discarded. Figure 3 below illustrates the implementation of this practical activity.

FIGURE 3. Implementation of the Demonstration Practice on Processing Vegetable Residues into Floss

Based on Figure 3, the practice of making vegetable floss began with a demonstration of the tools and ingredients required. These tools and ingredients were also listed in the pocketbook entitled “Pocketbook on Utilizing Vegetable Residues into Value-Added Products”, which had previously been prepared by the community service team and distributed to each training participant. The tools and ingredients needed for making vegetable floss from vegetable residues are presented in Figure 4 below.

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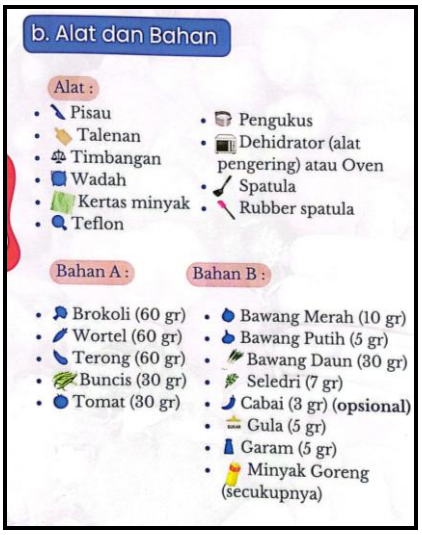

FIGURE 4. Tools and Materials Required

After the implementation of the training and its practical sessions, step-by-step mentoring was provided to KWT members in managing food resources through the production of vegetable floss from vegetable residues. The mentoring activity was conducted twice. Figure 5 below illustrates the mentoring activities.

FIGURE 5. Mentoring Activity 1

The implementation of this mentoring activity served as a follow-up to the previously conducted training, so that KWT members could fully understand both the theory and practice of managing healthy food resources wisely and optimally. The first mentoring session focused on providing more specific guidance in the production of vegetable floss from vegetable residues, while the second mentoring session emphasized developing product packaging strategies to make the products more appealing. Thus, the vegetable floss produced by KWT members would not only be for family consumption but could also be marketed with attractive packaging, thereby supporting both household and community economies. This is in line with the view of Yusiana et al. (2024), who stated that packaging plays an important role in increasing the appeal and market value of a product. The second mentoring activity is illustrated in Figure 6.

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FIGURE 6. Mentoring Activity 2

After the mentoring stage, the program continued with an evaluation of the overall activities that had been implemented. The evaluation was conducted to measure the improvement in KWT members' understanding of the concept of managing healthy food resources wisely and optimally. This improvement was assessed by administering a post-test to KWT members. The post-test results showed a very significant increase compared to the pre-test, with the average post-test score reaching 87%. The results of the post-test are presented in Table 3.

TABLE 3. Post-Test Score Achievement

No.	Aspect	Scor
1.	Basic knowledge of the concept of food waste	86%
2.	Understanding the difference between food loss and food waste	82%
3.	Knowledge of the circular economy concept and sustainable food management	86%
4.	Understanding the factors causing food waste	91%
5.	Knowledge of the utilization of rarely processed vegetable parts	86%
6.	Awareness of the ecological and economic benefits of food processing	86%
7.	Knowledge of the use of processed food residues	86%
8.	Understanding the nutritional content and functions of processed products	91%
9.	Knowledge of raw materials for healthy food products	91%
10.	Understanding the practical benefits of processed vegetable products	82%
11.	Knowledge of the use of dried vegetable products in cooking	86%
12.	Technical knowledge of processed food storage	86%
13.	Understanding that vegetable flakes, vegetable stock powder, and dried vegetables are valuable products	86%
14.	Knowledge of the advantages of zero-waste-based food products	86%
15.	Understanding the contribution of processed food to household food security	91%
	Average Percentage	**87%**

This score indicates that KWT members were able to understand both the theory and practice of managing healthy food resources wisely and optimally. In addition, members also demonstrated increased awareness in reducing food loss (FL) and food waste (FW), both in managing agricultural production at the KWT gardens and in household food management by reprocessing FL and FW into value-added products. The percentage of awareness increased from 33% to 86%.

Through the evaluation results above, it can be concluded that the implementation of healthy food resource management training for KWT members in Sukajadi Village has been successful in improving healthy food processing skills wisely and optimally. This success is certainly also supported by several

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factors, including the motivation of KWT members to continue learning, the implementation of training accompanied by pocket books and practical demonstrations of how to make shredded vegetable scraps directly, and the provision of mentoring as a follow-up to the training activities that have been implemented. In addition, to support the sustainability of the program, monitoring and evaluation activities are carried out periodically every three months to review the development of member skills, identify obstacles faced, and provide directions for improvement so that the training results can continue to be implemented consistently. This certainly provides a complete combination of theory, direct practice, mentoring, and ongoing evaluation to training participants so that they can improve and maintain healthy food processing skills for the village community, especially KWT members of Sukajadi Village.

However, alongside these achievements, several challenges were also identified during the training and mentoring activities. One of the main challenges arose in the initial practice of making vegetable floss, where the vegetable residues were ground too finely, which prolonged the drying time of the mixture. To overcome this issue, a roasting process was applied to dry the finely ground mixture, enabling KWT members to successfully produce vegetable floss. Furthermore, the community service in this study has limitations because it did not involve a comparison group. Therefore, further research is recommended using an experimental design and a longer timeframe.

CONCLUSION

The implementation of healthy food resource management training for members of the Women Farmers Group (Kelompok Wanita Tani/KWT) in Sukajadi Village proved effective in improving community knowledge, skills, and awareness related to healthy food processing based on the zero waste principle. The pre-test results indicated that the initial understanding of KWT members was still low, with an average score of 33%. However, after participating in the series of training sessions, practical activities, mentoring, and evaluation, the post-test score increased significantly to 87%. In addition, members' awareness of reducing food loss and food waste also increased from 27% to 86%. This success was influenced by a combination of systematic training methods, hands-on practice in producing vegetable-floss (abon) from vegetable residues, the provision of a pocketbook as a guide, and continuous mentoring that motivated participants to further develop their skills. Other positive impacts of the program included the growth of KWT members' creativity in utilizing local food resources, the development of environmentally friendly mindsets, and the emergence of new economic opportunities through marketable processed products.

Thus, this training not only contributed to the improvement of individual skills but also empowered the KWT as an important agent in supporting household food security, reducing food waste, and strengthening household economies in Sukajadi Village sustainably. During the practical sessions, several challenges were encountered, such as errors in the initial processing of vegetable-floss, where the vegetable residues were ground too finely, which prolonged the drying process of the mixture. To address this issue, a roasting process was applied to dry the finely ground vegetable mixture, which allowed the KWT members to successfully produce vegetable-floss. Furthermore, this study has limitations because it did not include a comparison group. Further research using experimental designs and long-term evaluations is recommended to measure the sustainability of the program's impact.

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