

## The Empowerment Program On The Use Of Efficient Technology Of Coffee Processing In Wanagiri Bali

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### **Abstract.**

*The development of coffee-based agricultural businesses can improve the economy and welfare of people in rural and urban areas. Besides that, the increase in the coffee processing business also helps creating new jobs for the wider community. Village community empowerment was carried out to increase knowledge, attitudes, skills, behavior through activity programs and assistance according to the needs. One of the coffee-producing villages is Wanagiri Village, which is located in Sukasada District. The women of the Wanagiri village are members of the Family Welfare Program in Wanagiri Village which is engaged in coffee processing and helps their husbands as farmers. They asked to be given training and assistance regarding coffee food products to increase family income. Coffee is a product that is in great demand by people throughout Bali. Based on the demand, empowerment activities were carried out. Coffee products had been produced and marketed by partners but not yet intensively, and partners wanted to increase their quantity and quality. Partners did not have knowledge in the field of entrepreneurship, so they experienced obstacles in managing the production and marketing; moreover, they do not have a business license either. Solutions made to solve problems faced by partners were: Providing Appropriate Technology in processing coffee products; provide knowledge about good processing methods (GMP), sanitation and hygiene processing (SSOP), product packaging and labeling, broader marketing, entrepreneurship and business management. In addition, another solution was sharing knowledge on how to obtain a production permit and provide equipment assistance. The method used was active community participation and exploratory. The output achieved was the use of Appropriate Technology in Coffee Processing Technology.*

**Keywords:** Coffee production, Coffee Processing, GMP, SSOP and packaging.

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### **I. INTRODUCTION**

Coffee is one of the plantation commodities that has high economic value and plays an important role as a source of foreign exchange for the country. Coffee is known as a functional food because it contains antioxidant compounds and has radical scavenger activity. Indonesia is the fourth largest coffee exporting country after Brazil, Vietnam and Colombia. Bali is known as one of the coffee-producing areas which is very famous in foreign countries. The coffee processing processes carried out by farmers and processing groups are generally very diverse. The processing carried out depends on the processed product to be made and the intended market share. Traditionally, rice coffee beans are produced in two ways, namely the wet method and the dry method. The stages of the wet processing of coffee cherries to become rice coffee (green coffee) are: harvesting the coffee cherries with optimal ripeness (full red color), pulping (stripping the fruit skin), fermentation, washing, drying, removing the skin of the horn (hulling). One of the villages that has the potential for this is the village of Wanagiri. It is located in Sukasada District, Buleleng Regency. The population is 3111 people, 1620 men and 1491 women. The area of Wanagiri Village is 1575 Ha, consisting of 1122 Ha of plantations, 11.50 Ha of fields, 28.25 Ha of housing, the rest are offices. The location and boundaries of the village of Wanagiri are the villages of Ambengan, Git-git, Sambangan and Panji in the north; Pegayaman, south of Pancasari Village to the East of the Village; while in the west this village is bordered by Gobleg Village, Kec. Banjar. The distance between the village government and the sub-district

is 20 km, while the distance between the district and the village is 22 km; in addition, the distance between the Province and villages is 57 Km. Furthermore, there are 3 hamlets in this village, namely Banjar Dinas Yeh Ketipat,

Banjar Dinas Bhuanasari and Banjar Dinas Asah Panji. Wanagiri Village is a relatively young village because it was only formed in 1973 which was a merger of three hamlets which were previously other villages, namely: Banjar Dinas Asah Panji which belongs to the Panji village area, Banjar Alas Ambengan which belongs to the Ambengan Village area whose name is now changed to Banjar Dinas Bhuanasari according to the Decree of the Regent Number. 10 of 1989 and Banjar Yeh Ketupat which is included in the Gitgit Village area. Most of the people's livelihoods are engaged in the tourism sector and the agricultural sector. Coffee is one of the agricultural products managed by the Wanagiri village community. Through the Family Welfare Program, the harvested coffee beans have been being produced into coffee products, but the products produced were not yet competitive in the market. As an educational institution, Warmadewa University considered this condition as an opportunity as well as a challenge to establish more intensive and sustainable cooperation in the long term. So far, most universities are more oriented on the theoretical aspect of science and technology development, but the development aspect towards practice is still limited. Hence, the contribution of science through research activities has not been able to provide real benefits for the wider communities. Through community service activities funded by Warmadewa University, it was hoped that the coffee processing group in Wanagiri Village would have the skills and insights in managing coffee beans from local agricultural products. In addition, this program was also aimed at encouraging the entrepreneurial spirit in each individual, so that they would be able to open up business opportunities related to the conditions in the Wanagiri Village area. Furthermore, the community was expected to be able to produce coffee products well, and manage the production better. The group was also given knowledge about work management, business management, so they were able to manage time and run the business as well as possible, thus increasing income and family welfare could be realized.

## II. METHODS

The methods for implementing appropriate technology service activities for coffee processing for the Family Welfare Program in Wanagiri Village were:

1. Interview and discussion methods to find out the problems experienced by the partners.
2. Face-to-face methods and providing training, so that partners gain knowledge about Good Processing Practices (GMP), Hygiene and Sanitation (SSOP) of coffee processing, packaging, storage, marketing, entrepreneurship and business management.
3. Direct practice guided by instructors who are competent in their fields, so that partners would be able to apply the technology provided and can handle problems in handling product processing and business management.
4. Coffee Processing with Controlled Fermentation Method

Material. The main ingredients needed in coffee processing by controlled fermentation method are: . Optimally ripe Arabica coffee cherries (minimum 95% red skin color). Al-foil packing (standing or cushion), Plastic sack packaging, Equipment needed in coffee processing controlled dry fermentation including: scales, seed sorting tool, bucket, basin, Pulper Machine, Measure 2 liters, Dryer (Solar dryer/oven), Huller Machine, Roasting machine, Powder machine (Grinder), Packaging Machine (Foot Sealer), Filter tool (80 mesh), Measuring water content (Moisture tester). Processing of coffee by controlled dry fermentation, Wet processing of Arabica coffee with dry fermentation includes. Harvest coffee cherries (optimally ripe skin > 95% red), Manual fruit sorting and chopping Skin peeling, Washing I (Washing), Dry fermentation, Washing II, Drying, HS coffee bean, Packaging and Warehousing, Peeling the horn skin of HS coffee beans, Ose coffee beans (coffee rice)

### III. RESULTS

In this Community Service Activity, the Warmadewa University Faculty of Agriculture Team had several activities separated in several stages. In the first stage, the team conducted discussions and analyzed the situation to determine the potential for how community groups could manage the potential of existing coffee plants. Based on the results of the situation analysis and discussion, there were problems indicating that there was no coffee processing technology with good processing methods and good hygiene sanitation. Apart from that, they also stated that they wanted to gain knowledge of economic management, bookkeeping, and to get equipment assistance and be able to work with other partners to distribute their production. After learning about the obstacles experienced by the partners, the Community Service Team provided presentation and training on Good Food Processing Methods (CPKMB/GMP), Hygiene and Sanitation (SSOP) in the coffee processing process. The implementation of training activities can be seen in Figures 1 and 2.



**Fig 1.** Presentation of material regarding good food processing practices (GMP), Hygiene and Sanitation (SSOP) in coffee processing.



**Fig 2.** Training on Good Food Processing Practices (GMP) and Hygiene and Sanitation (SSOP) in coffee processing.

The provision of material and training was expected to be able to provide additional knowledge so that producers were able to meet the predetermined requirements to produce quality food products in accordance with consumer demands. It was also expected to help them to develop and implement control procedures, monitor, and maintain sanitation conditions and practices. The GMP system also ensures consistency in product quality standards. In Indonesia, the development of GMP refers to BPOM (Food and Drug Monitoring Agency). GMP is usually used as a minimum requirement for an industry to operate. In addition to providing training, the Community Service Team of the Faculty of Agriculture, University of Warmadewa also provided assistance on economic management, bookkeeping as well as providing additional training related to packaging. The provision of packaging training aimed to make the product look more attractive so as to increase consumer interest in buying processed products from partners.

Apart from attracting consumer interest, the function of good packaging is to maintain the aroma and taste of the ground coffee that will be distributed. Product packaging will affect consumers' buying interest. In this case, what needs to be considered are the brand, image, color and label on the package. The more attractive the product packaging, the more it will affect consumer interest. The use of design is something that must be seriously considered by every business unit or even individual. Attractive and good packaging designs that match consumer perceptions will affect consumer buying interest. Several factors can

affect the durability of ground coffee while it is packaged, namely storage conditions, roast level, water content of ground coffee, fineness of the powder, and oxygen content in the package. Packaging that contains too much oxygen can cause the aroma and taste of coffee to diminish due to the oxidation process. Meanwhile, too much water content in the package will be able to hydrolyze the chemical compounds in ground coffee and cause a musty smell.



**Fig 3.**The Partner's Coffee Packaging in Wanagiri Village

Partners were also given information and assistance regarding the importance of Home Industry Food Certification which is one of the mandatory requirements that need to be owned by Home Industries to build consumer confidence and be able to encourage an increase in business marketing networks. Household Industry Food Production Certificate is a written guarantee given by the Regent/Mayor or Regency/City Regional Government for IRT food in their working area that has met the requirements for granting SPP-IRT in the framework of Home Industry Food distribution. The implementation of community service activities was followed by discussions regarding matters and constraints that were still faced by partners in running their coffee processing business. The activities carried out went well and were able to provide enlightenment for them. This service activity provided the benefit of increasing knowledge, insight for the members of Wanagiri Family Welfare Program regarding good coffee processing businesses to produce coffee quality according to standards. This activity also had an impact on increasing production, and could improve the quality of the coffee produced, as shown in Table 1.

**Table 1.** Economic and Social Impacts

No	Economic and Social Impacts	Achievement Indicator
1	Enhancement on understanding and skills of the Group	Knowledge on good processing practices (GMP), sanitation and hygiene (SSOP) in product processing
2	Product	Product Quality improvement
3	Group turnover	Increased group turnover

Table 1 shows an increase in sales turnover by partners after the Community Service activities were carried out. Good and attractive packaging techniques and broader marketing can provide increased turnover for groups. Marketing, which was initially only through stalls, has now begun to be marketed by utilizing social media such as Facebook, Instagram and Tiktok. One way of promotion that is easy, fast, cheap and has a wide marketing reach is promotion through social media, namely internet-based media. She also that it's easy because almost everyone already knows them. Furthermore, it is fast because the information sent can be received within seconds. It is also cheap because the use of social media is generally free. Its reach is wide because the penetration of messages conveyed by social media is global or worldwide. In addition to using social media, product marketing was also carried out using a reseller system. Simple bookkeeping had also been started by recording from the initial stage to the end of production. Simple bookkeeping in small and medium businesses is quite important for the progress of the business itself.

#### IV. CONCLUSION

Implementation of Community Service Activities carried out by the Warmadewa University Faculty of Agriculture Team was able to provide problem solutions to the members of Wanagiri Village Family welfare Program regarding appropriate technology in processing coffee products, providing knowledge about good processing methods (GMP), sanitation and hygiene processing (SSOP), product packaging and labeling, broader marketing, entrepreneurship and business management. They were also empowered with knowledge



on how to obtain production permits so as to be able to build consumer confidence and encourage an increase in business marketing networks. Improvements to the coffee processing process provided particularly in the fermentation and drying stages is expected can improve the quality, aroma and taste of coffee and can reduce production costs.

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