

## PKM for Improving Food Security at PKK Bongan Village Tabanan District, Tabanan District-Bali Province

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### ABSTRACT

The problems faced are that chili cultivation techniques are not yet understood, chili processing has not been carried out, equipment and materials for cultivation and chili processing are not yet complete, and the importance of strengthening organizational management. The solution is that the partner group needs to be facilitated from the technological aspects of chili cultivation, chili processing, post-harvest and processing processes, and business management of the partner group. The aim of the activity is: to increase the knowledge and skills of partners in an effort to increase food security by cultivating in the yard and utilizing chili products to be processed into processed products with high economic value which can increase people's income.

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## **INTRODUCTION**

Bongan Village is one of the villages that has developed into a tourist village in Tabanan District with dominant agricultural potential. The various types of plants developed to support village programs have become a commitment of the community, most of whom are still involved and earn income from the agricultural sector apart from other sectors. The area of Bongan Village is 445 ha, consisting of 223 ha of rice fields and 222 ha of dry land, with rainfall of 315 mm/year, the number of rainy months is 6 months, the average temperature is 32oC, located at an altitude of 168 meters above sea level making this village potential for the development of food crops and horticulture.

Administratively, Bongan Village is part of Tabanan District, Tabanan Regency, Bali Province. The location of the village from the city center of Bali Province in Denpasar can be reached by road, a distance of 24.8 km. The administrative area boundaries of Bongan Village based on [Anonimus, 2022) are as follows:

- Northern Boundary : Dauh Peken Village
- Southern Boundary : Pejaten Village
- West Boundary : Sudimara Village
- Eastern Boundary : Kediri Village

Bongan Village consists of 11 (eleven) hamlets, namely: 1). Dusun Bongan Java, Friends, 2). Bongan Kauh Kaja Hamlet, 3). Bongan Gede Hamlet, 4). Bongan Pala Hamlet, 5). Bongan Kauh Kelod Hamlet, 6). Bongan Lebah Hamlet, 7). Wanasara Kaja Hamlet, 8). Wanasara Kelod Hamlet, 9). Bedha Hamlet, 10). Bongan Hamlet, Jawa Kangin and 11). Central Bongan Hamlet. Bali, as a world tourist destination, since the COVID 19 pandemic broke out in early 2020 until now, has really felt the devastating blow to the tourism sector, which is a source of income for most Balinese people. Likewise, Bongan Village has been developed into a tourist village with the potential for waterfalls, beautiful rice fields and its results, which are unavoidable from the influence of the Covid-19 pandemic so that the impact is felt by the community. These conditions will influence people's purchasing power, thereby affecting the food security of the surrounding community.

Anonimus (2012) stated that Republic of Indonesia Law Number 18 of 2012 concerning Food states that Food Administration is carried out to fulfill basic human needs which provide benefits in a fair, equitable and sustainable manner based on Food Sovereignty, Food Independence and Food Security. According to Anonimus (2002), food security can be interpreted as a condition where household food needs are met, which is reflected in the availability of sufficient food, both in quantity and quality, evenly distributed and affordable. Food security is greatly influenced by several factors, including 1). Availability of food quantities, 2). Production must be easily accessible, 3). Utilization of safe and nutritious food, 4). Availability is stable. Food security problems can lead to food insecurity because 1). Uncertainty about food availability and 2). Ease of accessibility in the future and a reduction in both the amount and type of food that meets the needs of healthy living.

Family farming activities or planting in home gardens are things that can help the food security of communities affected by the Covid 19 pandemic. The government has made efforts to increase food security through Sustainable Food Farming (P2L) activities among women farmer groups, not only meeting food needs at the household level, but can also reduce daily expenses and can even increase household income if managed optimally. In various areas, before the Covid 19 pandemic, the need for food was very easy to buy with adequate financial conditions, but the current conditions mean that spending on household needs, especially fulfilling nutrition and health from food, requires us to utilize yard space which before the Covid 19 pandemic was not considered. at all to fulfill food supplies. The yard will have added value if it is managed well and planted with plants that are needed every day and are easy to cultivate. Most of what is grown in the yard are horticultural crops, including chilies, tomatoes, eggplant, onions, vegetables and others which can be harvested quickly and with quality.

To support government programs to increase food security and so that plants can successfully reach harvest in the yard by utilizing existing land, several appropriate cultivation actions must be taken. One way to increase crop production can be done by fertilizing both organic and inorganic. Organic fertilizer can be given in solid or liquid form, including from rabbit droppings. Liquid organic fertilizer derived from rabbit urine has a fairly high nutrient content, namely N 4%, P<sub>2</sub>O<sub>5</sub> 2.8%, and K<sub>2</sub>O 1.2%, relatively higher than the nutrient content in cows (N 1.21%, P<sub>2</sub>O<sub>5</sub> 0.65%, and K<sub>2</sub>O 1.6%) and goats (N 1.47%, P<sub>2</sub>O<sub>5</sub> 0.05%, and K<sub>2</sub>O 1.96%) (Sembiring et al., 2017). Apart from rabbit urine, Erika and Paiman (2011) stated that the content of rabbit feces is that one rabbit that is more than two months old, or whose weight has reached 1 kg will produce 28.0 g of soft feces per day and contains 3 g of protein and 0.35 g of nitrogen from bacteria or the equivalent of 1.3 g of protein. The use of organic fertilizer needs to be increased and given priority not only to increase soil fertility, but also to help create an agroecosystem that is sustainable and safe for human health (Zulkarnain, 2009). Furthermore, research by Wirajaya et al. (2018) in testing "Development of Solid Rabbit Manure on the Growth and Yield of Several Chili Varieties" showed that the weight of fruit per plant when applied with rabbit fertilizer was the highest at 30 tons ha<sup>-1</sup> of 107.10 g, an increase of 57.80% compared to without fertilizer. 0 ton ha<sup>-1</sup> is 67.87 g. Apart from fertilizer from rabbit droppings, it is also given organic fertilizer in the form of Mono Kalim Phosphate (MKP). Patricia (2020) stated that the Phosphate (P) content of 52% and Potassium (K) of 34% in MKP fertilizer has great potential to be given to chili plants. Seeing the nutrient content and role of fertilizer from rabbit droppings and MKP will be able to increase crop yield/production, cultivating chili plants as part of increasing food security so that maximum production requires fertilization.

In order to increase the value of chilies when prices are low, chili processing can be carried out using various innovations. Kurniati et al. (2019) stated that the activities carried out during their service were in the form of training in making dried chilies, powdered chilies, shredded pasta and red chili sauce. Pengabdi Iswari (2022) stated that several technological innovations in chili processing that can be applied at the home industry or mini-industry level include candied chilies, dried chilies, chili flour and block chilies. Likewise, Candrianto et al. (2021) carried out activities by observing that chilies at low prices were processed into powder form with an original taste. Nugroho (2019) has carried out activities with PKK women in Balong Hamlet with training in the process of making powdered and dried chilies which has provided business opportunities for partners.

As an effort to participate in increasing food security in Bongan Village, the implementation of the Community Partnership Program (PKM) will partner with 1 (one) group of PKK women who have a strong will to progress and manage their business well, namely the "PKK Bongan Village" group in Tabanan District involving 22 members to provide counseling and training chaired by Ni Nengah Sukarti. This program will be directed at cultivating chilies in pots properly in the yard, processing chilies, packaging and labeling processed products, organizational management and marketing, providing assistance with materials and tools. Most members of the PKK partner women's group run businesses as housewives and grow horticultural crops. It is hoped that the businesses carried out in various fields can help families increase their income. Utilizing existing yards and free time, this activity is a job that hopes to fill your time profitably. It is hoped that with community service funded by Warmadewa University, the people of Bongan Village in the "PKK" women's group will experience changes in the field of chili cultivation and processing chilies into products of maximum economic value.

The aim of this activity for partners is: to increase the knowledge and skills of partners in an effort to increase food security by cultivating chili plants in pots in the yard and utilizing chili products to be processed into processed products with high economic value. A touch of technology in cultivating chili plants in pots and processing chili products into processed products will provide high added value for PKK women as their main partners in terms of the quality of chili (fresh and processed) and increasing farmers' income. This community partnership program (PKM) involves "PKK" women partners in Bongan Village, Tabanan District, Tabanan Regency, with members as housewives and some who also farm. Based on the results of observations in the field in order to increase food security in the face of the Covid-19 pandemic which is leading to an endemic, information can be obtained on the problems faced by partners, namely the cultivation of chili plants which will be developed in pots, the application of cultivation techniques is not well understood, the chili processing has not been understood and carried out. into processed products, do not yet understand the importance of packaging and labeling of processed products, do not yet have equipment and materials for cultivating in pots and processing chilies into processed products, partner group members need to increase their

understanding of the importance of strengthening organizational management and product marketing. Therefore, partner groups need to be facilitated from the technological aspects of chili cultivation, chili processing, post-harvest and processing processes, and business management of partner groups.

## **IMPLEMENTATION AND METHODS**

The implementation of this community service will be held in the PKK group in Bongan Village, Tabanan District- Tabanan Regency, Bali Province and will start from March to October 2023.

So that community service activities can run well, several stages are carried out and in planning this community service, the method that will be used to facilitate and expedite the absorption of the material is:

1. Interview and discussion methods to find out the problems faced by work partners
2. Direct face-to-face counseling method so that students gain knowledge regarding the application of technology for cultivating chili plants in the yard, making processed chili products, packaging and labeling, as well as better organizational management to generate an entrepreneurial spirit and business management.
3. Handing over materials to students, which can be used as an implementation tool to increase the application of chili utilization & processing technology so that the product can be of high quality and continuously available.
4. Direct practice will be guided by instructors who are competent in their fields so that students can understand and produce cultivated chili plants that grow well and productively in the yard, producing processed chili/candied chili products that meet expectations and are sustainable.
5. Monitoring and mentoring: the party proposing the activity will carry out regular monitoring and mentoring to ensure the success of the business that will be developed by the partner. At this stage, an analysis will be carried out of possible problems that arise from partners during business and work on solutions.
6. A final evaluation will be carried out on the service material provided and implemented by members of the Bongan Village PKK group, its use in horticultural plants in land/gardens and home gardens, efforts to increase members' income.

## **RESULTS AND DISCUSSION**

As one of the universities that always carries out its Tridharma, Warmadewa University with its PKM program which is developed with community service activities will encourage the academic community to help the community, especially the PKK group in Bongan Village in Tabanan Regency. Based on the problems faced by the Bongan Village PKK group, through a process of discussion, counseling, direct practice, and mentoring, several solutions that have been implemented and have been successful are:

### **1. Delivery of material during counseling**

Chili is one of the commodities that can influence the family economy in people's daily lives to fulfill food supplies, which is very important when the pandemic is heading towards the current endemic. The PKK, which is the spearhead of the organization at the Bongan Village level, has a very important role in generating interest among women in planting chilies in order to increase food security through the use of yards. However, in order for the PKK women's contribution to planting chilies in the yard in pots to be successful, they need to be given a good understanding of how chilies can grow, develop and produce good chilies so that the results can be maximized and can help ease the family's burden in fulfilling chilies for their daily needs. Improving the capabilities of PKK members with technology transfer is carried out by providing counseling and practice on how to cultivate chilies properly and correctly so that they can provide seeds independently. Chili, which is one of the food ingredients, can be cultivated using the yard.

This is supported by Kusmiyati et al. (2019) in community service activities in Cileles Village, Jatinangor District, showed that the community needs the use of home yard land by cultivating cayenne pepper plants using the hydroponic method using NFT installations as a solution to the increasing shortage of land for plants and to meet food needs. Furthermore, it was explained that there were still obstacles in its implementation because there was a lack of insight into hydroponics when compared to conventional cultivation, but the community said that the hydroponic method could be an alternative for improving community welfare in terms of food sufficiency. By Syukur et al. (2016) stated that chili plants, apart from being an important vegetable commodity and having high economic value in Indonesia, are also important industrial raw materials with good and correct cultivation. The importance of chili plants, which can be one of the crops to maintain community food security, is that they should be cultivated properly, including by selecting quality seeds; preparation of good seeding media; seeding; preparation of planting media; planting seeds; Plant maintenance includes installing stakes, pewiwilwn, supplementary fertilization, irrigation, weed control, pest and disease control, harvesting and post-harvest. The outcomes achieved by the Bongan Village PKK partner group and members are motivated to increase understanding and implement chili cultivation properly and correctly. 100% of partner group members have carried out chili cultivation properly and correctly. The healthier the plants are with proper cultivation, the more influence it will have on chili production.

## **2. Manufacturing of Processed Chili Products**

Apart from being used in fresh form as an ingredient in food dough, chili fruit can also be used as processed ingredients in other forms which have higher economic value. The processed form of chilies can be made into sweets which can be an alternative processed product in the future, if production is abundant on the land, it can become a mainstay for PKK women in Bongan Village to increase utilization and community income. In order to increase the ability of women in the processing process, technology transfer is carried out regarding the manufacture of quality processed chili products and partner groups can produce continuously which can be done by the group independently. The influence of the availability of chilies in meeting food needs is so great, in conditions of abundance in the market chilies will drop in price which is not in line with farmers' expectations. By Merta et al. (2019). The harvest is too abundant, causing the selling price to become unstable which can be detrimental to the chili farmers in the village and one way to do this is by producing candied chilies. When people can't stand the spiciness of chilies, candied chili products are an alternative with various ingredients that really help human health. Anonimus (2015) stated that apart from its delicious taste, the content of chilies or chilies, we all know that the vitamin C content of fresh red and green chilies is a rich source of vitamin C-. 100 g of fresh chili provides about 143.7 mg, or about 240% of the RDA. Vitamin C is a powerful water-soluble antioxidant. This is necessary for the formation of collagen in the body. Collagen is the main structural protein in the body required to maintain the integrity of blood vessels, skin, organs, and bones. Consuming foods rich in vitamin C can help protect the body from scurvy, increase immunity, and fight free radicals in the body. As a result, the Bongan Village PKK Partner Group and 100% of its members have been able to adopt techniques for processing chilies into quality candied chili products that can be produced continuously by themselves and are beneficial for their group members.

## **3. Transfer of Packaging and Labeling Process Technology**

If processed chili products want to compete in the market, they need to be packaged and labeled. Group members have increased understanding and need to know how to package and label the resulting product to have characteristics and be suitable for marketing. Post-process technology transfer of chilies into processed products with proper packaging and labeling can be provided. Partner groups and members are 100% capable of packaging processed products and are able to do it themselves so that they can increase the added value of chili products and their processed products.

#### 4. Increasing Group Management Capabilities

The PKK, which is a mothers' organization that exists at the lowest levels of society, must be managed well so that its existence continues. With human resources being the spearhead in the sustainability of planned programs, their ability to manage them needs to be improved. Members' abilities are still lacking in managing the group in the various activities carried out that need to be improved by transferring technology to strengthen partner institutions and structuring partner management so that the PKK organization runs well, efficiently and successfully. 90% of partner groups have been able to work together and be united and develop their members so that they can become pioneers and continue to be transmitted to the surrounding community in running the organizations they lead.

#### 5. Assistance with materials and tools

Quality and competitive cultivation and processed products can be determined by the materials and tools used. Currently there is still a lack of these materials and tools in the partner group and this has been done by helping with materials and tools so that cultivation and the quality products produced when marketed can compete with other products. 100% of the materials and tools have been provided to partners to be used in the cultivation and processing of quality and sustainable chili products.





**Figure 1. PKK Group Activities and Processed Products**

## **CONCLUSIONS AND RECOMMENDATIONS**

The "PKK" group in Bongan Village, Tabanan, in this PKM has been able to adopt all the material provided. This can be demonstrated, among other things:

1. The partner group and its members have demonstrated their seriousness in participating in counseling, interacting during counseling, practicing in the field, mentoring.
2. Partner groups with their members are motivated to carry out more active activities to utilize yard land to plant chilies in pots.
3. Increasing the ability of partner group members to process chilies and other products properly and correctly in order to obtain quality and sustainable products.
4. Groups and members can run the organization better..
5. Assistance with materials and tools will be able to support group activities to obtain quality, quantity and sustainability from the plants cultivated and the processed products produced.

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