
Community Empowerment through Agricultural Commodity Processing Training as an Effort to Improve Community Welfare in Kerta Barat Village, East Java

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Abstract. Kerta Barat Village in Dasuk District is one of several tomato and chili producing areas in Sumenep Regency. The economic potential of processed food production from agricultural commodities is considerable. This potential can be further increased by harvest abundance. Tomatoes and cayenne chillies are categorized as agricultural commodities with a shelf life and are difficult to store for long periods. The best solution to the overabundance of crop products is by processing these agricultural materials into processed products capable of extended periods of storage. Additionally, processed food products will add to the economic value of the commodity itself. This community service aims to empower the people of Kerta Barat Village by exploiting the potential of agricultural commodities through the processing of tomato sauce and cayenne chilli powder products. This activity was carried out through training and mentoring on the subject of food product processing of tomato sauce and cayenne chili powder. Knowledge and skill increase were seen to have followed this empowerment activity, namely partners can process tomato and cayenne chilly commodities into tomato sauce and cayenne chili powder products through the use of simple technology. A social impact was perceived where partners have become acquainted with agricultural commodity processing technology, namely for the process of drying and size reduction in the manufacturing of processed tomato and cayenne chili products. Additionally, the utilization of post-harvest technologies is crucial for the process of making produced commodities more useful and increase its economic value, which in turn can lead to welfare for the locals.

Keywords: Farming commodity, tomato, cayenne chili, food processing technology

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INTRODUCTION

Based on harvest surface area, production and production value of vegetable crop commodities in 2019, tomatoes and cayenne chili have productivity values of 96 quintals / Ha and 42 quintals / Ha respectively (BPS Sumenep Regency, 2020a). In comparison, Dasuk District has a lower tomato productivity value and a higher productivity value of cayenne chili (BPS Kabupaten Sumenep, 2020b). This crop commodity can be harvested more than once within a period of 1 year and is usually removed when the last harvest yield is insufficient.

Tomato and cayenne chili are horticultural crops that have high economic value, albeit prices for these commodities often fluctuate. If the production is too much during a stable demand state, a drastic drop in prices can occur. This had previously happened to several farmer groups in Kerta Barat Village, Dasuk District, Sumenep Regency. The prices of tomatoes and cayenne chilies were cheap, ranging from IDR 500-1,000 / kg from the supplier.

The population in Kerta Barat Village is 1,342 people, where most work as farmers or livestock breeders. The education level of the population in this village is quite low, namely, 42% have not graduated from elementary school; 38.9% are elementary school graduates; 13.24% are junior high and high school graduates, and only 0.02% have diploma/bachelor degrees (BPS Kabupaten Sumenep, 2020b). Horticultural crops grown in this area are shallots, cayenne chili, tomatoes, cucumbers, and long beans, while the livestock consists of cows and goats. Farming management in this village still employs simple techniques, where business running is grounded around a sense of kinship and managed on privately owned lands. Crops or agricultural commodities are sold to suppliers or directly sold in both the local market of Dasuk District and the main market in Sumenep City District. The production of tomatoes and cayenne chili can meet the daily demands of Sumenep Regency population.

Efforts of community empowerment towards the exploitation of agricultural crop excess had been carried out as an effort to diversify food products, develop sustainable agriculture, and process vegetable waste or crop residues to avoid them being wasted (Destryana, Wibisono, & Sumitro, 2020; Fitriani, Dayat, & Widyastuti, 2020). Additionally, processing of tomato and chili products is a creative way of fully utilizing locally produced commodities of Sumenep Regency (Yuniastri, Ismawati, & Putri, 2019). One of the methods of processing tomato and red chili commodities is by means of

preservation as a way to extend shelf life so that excess harvest can be converted into processed food products with higher economic value (Saputro & Susanto, 2015; Tanjung & Anggraeni, 2019). Processed tomato paste/tomato sauce and cayenne chili powder are examples of products produced through processing technology that is easy to utilize using inexpensive materials (Aprilyan, Lutfi, & Yulianingsih, 2015; Sjarif, Apriani, Community service, & Manado, 2016). Additionally, tomato sauce and cayenne chili powder are processed food products that are attractive to consumers and are widely consumed daily. Chili powder is a ready-to-use food product that is widely consumed by people in Indonesia including several other countries such as Japan, Korea, Taiwan, and Malaysia. The advantages of chili powder are not limited to its function as a food additive in the food industry, but also for having a practical form and packaging with high economic value (Jamilah, Kadirman, & Fadilah, 2019; Pribadi & CNAWP, 2018).

With this issue as the focus, this community service needs to be carried out with the aim of empowering the farmers of Kerta Barat Village by fully exploiting the potential of the commodity. Through this community service, carried out by the Agricultural Product Technology Study Program of Wiraraja University, it is hoped that the results can facilitate and motivate tomato and cayenne chili farmers in running their farming businesses successfully. Additionally, it can expand the knowledge and skills of the farming community of Kerta Barat Village, Dasuk District, Sumenep Regency in agricultural product processing techniques.

PROBLEMS

Some of the main issues that are the bases for the implementation of this community service activity in Kerta Barat Village, Dasuk District, Sumenep Regency are namely:

1. The issue of excessive tomato and cayenne chili production and falling prices. A solution for agricultural product processing is needed that is suitable for the capabilities and conditions of the farmers of Kerta Barat Village, Dasuk District.
2. The very low level of education of the population is an obstacle for the transfer of knowledge and agricultural products processing technology. The agricultural commodities produced by this community are varied, resulting in the need for agricultural product processing options that can increase the shelf life and the economic value of these commodities.

Through this observation, it can be concluded that the basic supports needed by the West Kerta Village farmers are counselling and assistance in terms of production

management of processed tomato and cayenne chili products. Processing of agricultural products is mainly the processing of tomato sauce and cayenne chili powder.

IMPLEMENTATION METHOD

The implementation method used in this community service activity is the training and mentoring approach. The training was carried out through one-day outreach activity in the form of a demonstration of processing tomatoes and chilies into processed food products. Participants in the activity are the population of Kerta Barat Village accompanied by village officials.

The making of sauce from fresh tomatoes consists of several stages namely, paste making, mixing of several food additives, cooking and packaging. Firstly, the tomatoes are blanched by immersing them in water at temperatures around 80-90 °C for about 3 minutes, the goal is to preserve the natural bright red colour of the tomatoes without the need to add food colouring.

During the cooking stage of the tomato sauce, use low heat to avoid overcooking and the loss of nutrients, especially vitamins. When pouring the cooked sauce into a bottle, avoid filling it completely and leave approximately 2 cm of free space below the rim of the bottle. Additionally, do this while the sauce is still hot to avoid air bubbles from occupying the empty space as it can cause discolouration and allows microbes to grow during storage.

The ingredients for tomato sauce are shown in Table 1.

Table 1. List of ingredients needed in making tomato sauce

Name	Amount
Apple tomatoes	2 kg
Salt	27 gr
Granulated sugar	140 gr
Vinegar	25 ml
Maize starch/corn starch	40 gr
Ground chili	5 gr
Powdered cloves	0,5 gr
Garlic powder	1,6 gr
Cinnamon powder	0,5 gr
Na-benzoate	1 gr
Glass / glass bottle packaging	adjustable

The next step is to wash the tomatoes that will be used. The tomatoes that have been thoroughly washed are then put in boiled water (just below boiling point) for about 3 minutes or until the skin peels off, then remove the tomatoes from the water and drain the

juice. Peel the skin and remove the seeds and stems once the tomatoes cool. Weigh the tomato then blend for about 15 minutes until smooth, then cook it over low heat flame for about 30 minutes to form a paste. Food additives are prepared by dissolving cinnamon, cloves, chili and garlic together with 100 ml of water and boiled for about 5 minutes, which is then filtered to extract the juice. Put the tomato paste in a blender together with corn starch then blend again for about 5 minutes. Remove it and cook the pasta again over low heat. Add spices, sugar and salt into the paste and mix well until thick (thickness is adjusted to your liking). Add vinegar and Na-benzoate while stirring for about 2 minutes then turn off the heat. Remove the sauce and immediately place it in a packaging (sterilize the packaging beforehand).

The process of making cayenne chili powder follows the community service stages (Saputro & Susanto, 2015) with several adjustments. The stages in the making of cayenne chili powder are as follows: 1) sort cayenne chilies by selecting fresh chilies; 2) wash with fresh water; 3) steam the chilies for 20 minutes; 4) drain the boiled cayenne chilies; 5) dry with a cabinet dryer at 60 ° C for 20 hours; 6) mill in a blender.

RESULTS AND DISCUSSION

In preparation for this community service activity, the implementation team first conduct an experiment in the Food Processing Laboratory of the Agricultural Product Technology Study Program, Wiraraja University. After the processing stages and the required materials had been determined, the schedule for training and assistance can be adjusted.

The implementation of training and mentoring activities begins with the introduction of agricultural product processing technology theory to the community. The technology introduced was preservation technology and drying technology, starting from material preparation, compacting, to the adding of food additives. Participants involved in this activity were several farmers in Kerta Barat Village, Dasuk District, Sumenep Regency. There were two training and mentoring activities that were provided. The first is the Preservation Technology Training activity through making tomato sauce, and the second is training and assistance in drying technology through the manufacture of cayenne chili powder (Figure 1 and Figure 2). Training and mentoring methods were used for the empowerment of Kerta Barat Village community. This method is used in an effort to

prevent the quality reduction of human resources and aid organizations which are at risk of collapse due to the development of technological innovations (Chan, 2015).



Figure 1. Counseling on tomato sauce and cayenne chili processing.



Figure 2. Training process on tomato sauce and cayenne chili powder processing.

According to Rahmiyati (2015), community empowerment activities are aimed to motivate communities as an effort to expand capabilities and improve quality of life, both socially and culturally. Every activity was carried out with health protocols in mind as they were carried out during the Covid-19 Pandemic. Training and Mentoring were carried out once per meeting with a focus on short durations and a small number of participants. Additionally, training and mentoring activities were carried out after the Government's New Normal Adaptation laws were implemented, i.e. that crowd-gathering activities were carried out in accordance with strict health protocols on all parties involved.

During the activity, farmers present were enthusiastic about participating in the training and assistance program for tomato sauce and chili powder processing technology. The results of tomato and cayenne chili processing can be seen in Figure 3. This activity is a positive-impact activity that farmers in Kerta Barat Village, Dasuk District, Sumenep Regency, were looking forward to. The knowledge and technology introduced here can be utilized by farmers to increase the economic value of tomatoes and chilies and extend their shelf life, which avoids wasting unused crops caused by an overabundance of harvest. Apart from the problem of processing agricultural products, another issue that often occurs for farmers is low sell value (Pribadi & CNAWP, 2018). Farmers often feel disadvantaged by the selling value of produced commodities that are not proportional to the incurred operational costs. Prices given by middlemen are sometimes so low that the cost of goods sold for agricultural commodities was not achieved.

The benefits for the community following implementation of this service are a) the community becomes motivated to diversify into producing processed food products from agricultural products; b) the community becomes motivated to participate in socio-economic activities towards prosperity, such as considering entrepreneurship (Tanjung & Anggraeni, 2019); c) expanding public knowledge in the benefits of added value in processed agricultural products that can have an impact on the productivity of economic activities in the community. This activity also changed the behaviour of farmers, namely farmers become aware of the effects and benefits of processing techniques on agricultural raw materials and expanded their knowledge on food additive chemicals used in the preservation process of food products.

An evaluation carried out during the implementation of this activity discovered a lack of facilities in Kerta Barat Village that could be used as a means for processing agricultural food products. This consequently means that sanitation and hygiene standards of tomato sauce and chili powder products could not be achieved properly.



Figure 3. Products from the processing of tomato and cayenne chili (a) tomato sauce and (b) cayenne chili powder.

CONCLUSION

An increase of knowledge and skills within the community were observed following this empowerment activity, namely, partners can process tomato and cayenne chili commodities into tomato sauce and cayenne chili powder products through the use of simple technologies. A social impact can be seen where partners become acquainted with agricultural commodity processing technologies, namely the drying process, compaction, and preservation technologies in the manufacture of processed tomato and cayenne chili products. Additionally, the utilization of post-harvest technologies is crucial for the process of making produced commodities more useful and increase its economic value, which in turn can lead to welfare for the locals.

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Original Title:

Pemberdayaan Masyarakat melalui Pelatihan Pengolahan Komoditas Pertanian sebagai Upaya Peningkatan Kesejahteraan Masyarakat di Desa Kerta Barat Kecamatan Dasuk

Abstrak. Desa Kerta Barat di Kecamatan Dasuk merupakan salah satu daerah penghasil tomat dan cabai rawit di Kabupaten Sumenep. Potensi produksi produk olahan pangan dari komoditas pertanian cukup besar, kondisi ini diperkuat jika terjadi panen berlimpah. Komoditas tomat dan cabai rawit termasuk komoditas pertanian yang mudah rusak, sulit untuk menyimpan komoditas ini dalam waktu lama. Solusi terbaik dalam penanganan produk panen yang berlimpah adalah pengolahan bahan pertanian menjadi produk olahan yang bisa disimpan dalam waktu lama. Selain itu, produk olahan pangan juga menambah nilai ekonomis dari komoditas itu sendiri. Kegiatan pengabdian ini bertujuan untuk memberdayakan masyarakat Desa Kerta Barat dengan memanfaatkan potensi komoditas pertanian untuk diolah menjadi produk saus tomat dan bubuk cabai rawit. Kegiatan ini dilaksanakan dengan metode pelatihan dan pendampingan dalam proses pengolahan produk pangan saus tomat dan bubuk cabai rawit. Terjadi peningkatan pengetahuan dan keterampilan dalam kegiatan pemberdayaan ini yaitu mitra dapat mengolah komoditas tomat dan cabai rawit menjadi produk saus tomat dan bubuk cabai rawit dengan teknologi yang sederhana. Dampak sosial yang dirasakan yaitu mitra mengenal teknologi pengolahan komoditas pertanian yaitu proses pengolahan pengeringan dan pengecilan ukuran dalam pembuatan produk olahan tomat dan cabai rawit. Selain itu proses pemanfaatan teknologi pascapanen menjadi sangat penting agar komoditas yang dihasilkan dapat lebih bermanfaat dan menambah nilai tambah ekonomi sehingga kesejahteraan masyarakat bisa tercapai.

Kata kunci: Komoditas pertanian, tomat, cabai rawit, teknologi pengolahan pangan