Training of Frozen Cassava (*Manihot esculenta*) Processing to Increase Selling Value

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**Abstract.** Frozen cassava is one of the food innovations of cassava based. The long shelf life of frozen cassava can increase its selling value so that it can be used as a typical souvenir at Sosok Peak. The priority problem to be resolved is the lack of knowledge about the processing of cassava products so that the product is marketable and as an alternative for souvenirs. Following up on the results of the problem identification, the activity carried out was training on the process of making frozen cassava. The covid-19 pandemic activities were carried out online, through webinars, tutorials accessed through [https://youtu.be/EQeePrurIEY](https://youtu.be/EQeePrurIEY) and training modules distributed to partners. The output of this service was in the form of knowledge and skills of the women of the P2WKSS group of Sanan hamlet, Bawuran village regarding frozen cassava; new business of the P2WKSS hamlet of Sanan; frozen cassava production process video; learning module.

1. **Introduction**

Currently, Bawuran Village is developing village-owned enterprises (BUMDes) as an effort to improve the welfare of village communities by managing village potential according to community needs, or in other words as a source of village economic activity, as well as a commercial institution that opens up wider space[1] to the village community to increase income, in other words to create jobs and reduce unemployment in the village.

BUMDes Bawuran Village that is being developed is the Sosok Peak Tourism Object. Sosok peak is a mountainous land with an area of about two hectares[2]. This land is difficult to irrigate, so it is not suitable for agriculture. The alternative is used for tourist destinations managed by BUMDes. Sosok peak is expected to become the icon of the village which later can empower the community, whether directly involved or not.
Figure 1. Sosok peak

With this tourist spot, culinary and souvenirs are one of the supporting facilities that must be prepared. So far the shop provides food and drinks that can be eaten on the spot, but there are no typical souvenirs from the peak of Sosok, even though some visitors from other areas expect that there will be souvenirs typical of tourist attractions.

Management from parking to food stall sellers at the Sosok peak is managed by residents around the top of Sosok, so that there is potential for the production of souvenirs (food products) to be carried out by a wider community in order to improve the welfare of residents in Bawuran Village. One of the groups that is ready to produce is the p2wkss hamlet of sanan, which is a potential human resource.

Cassava (Manihot esculenta) is often found in Indonesia as a source of carbohydrates[3]. Likewise in Bawuran Village, many people grow cassava, but only sell it raw materials or for their own consumption. This has the potential to develop frozen cassava products so that they can be used as souvenirs from the top of Sosok.

Frozen food technology is a food preservation by reducing the environmental temperature so that the water in the food freezes and inhibits the growth of microorganisms[4]. The advantages of frozen food are the nutritional content of food ingredients is maintained, but sometimes the sensory quality is changed[5]. Frozen food packaging must be able to maintain its integrity during the filling, sealing, freezing and even re-freezing process[6][7].

2. Materials and Methods

2.1 Material

The materials are cassava, garlic, salt, pepper, and sugar.

2.2 Methods

The methods are used in this community service were preliminary surveys, online counseling and training, production, and consultation. In the preliminary survey, the service team found out the initial conditions both geographically, natural resources and human resources so that potentials could be maximized and the challenge is faced by the community are to be developed in an effort to improve people's welfare[8]. Preliminary survey is divided into 2 activities. The first activity visited to the Bawuran village Office to ask permission, the second activity was a community service team gathering P2WKSS group members to explore their potential, listened to members' expectations.

The next process was the implementation of a series of activities in the form of training carried out online. The online method was webinars using the zoom meeting application so that the locations of these activities were carried out in their places. For counseling and training on making frozen cassava, a video of making frozen cassava is made by the service team, partners caould access it at https://youtu.be/EQeePrurIEY. The processing of frozen cassava is started from peeled, soaked for 10 minutes, boiled for 30 minutes, soaked in cold water for 5 minutes, drained, then packed in plastic.

After counseling and training on making frozen cassava, then the P2WKSS group members did the exercises at their homes, the results were evaluated by the community service team. The next activity is consultation. The consultation aims to provide an opportunity for the P2WKSS group to convey obstacles, challenges, and obstacles when carrying out the follow-up of this training, so that it is expected to get a proportional solution. Consultation was carried out with whatsapp group media.
Through this consultation, activity evaluation can also be carried out. Figure 2 shows the entire community service’s flow.

![Figure 2. Flow of Community Service Activities](image)

3. Results and Discussion

Community service (PKM) of the Agricultural Product Technology undergraduate program regarding the process of making products for souvenirs with cassava raw materials in the P2WKSS group of Sanan, Bawuran, Pleret hamlet has been implemented since March 2020-July 2020. PKM is divided into several stages of activities, namely preliminary survey, training, and consultation.

The preliminary survey was carried out 2 times in March 2020, namely the first activity was a visit to the Bawuran Desan Office to meet with the head of Bawuran Village and village officials on March 6, 2020. From this meeting, recommendations were obtained from groups that have good human resource potential for developing a business, namely the P2WKSS hamlet of Sanan, Bawuran. Then, the second activity was the community service team gathering P2WKSS group members to explore their potential, listening to the members’ expectations on March 8, 2020. From the meeting, problems were found so that an agreement was made for the production of subordinate souvenirs made from cassava, namely frozen cassava. Community participation is a technical process of providing opportunity and authority wider for the community to jointly solve various problems. The division of authority is carried out based on the level of community participation in these activities[9].

Initially, this community service was planned to be carried out by direct training to the Sanan P2WKSS group, but during the Covid-19 pandemic it was prohibited to carry out activities that gathered mass. So that this activity is carried out online, with the zoom meeting application. The next process is the implementation of a series of activities in the form of counseling and training on July 8, 2020 online. The online method used is a webinar using a zoom meeting application so that the location of this activity is carried out in each place with 5 participants representing the P2WKSS group.

This training was held at 09.00 WIB and ended at 11.30 WIB. The training on the process of making frozen cassava was to increase the shelf life of cassava so that it could be used as an alternative souvenir. This training is conducted online, so partners can see the video that has been made by the service team at https://youtu.be/EQeePrurIEY. Practical partners of making frozen cassava products are carried out in their respective homes as shown in Figure 3.

Process of cassava frozen production are peeling, the purpose of peeling cassava is to remove the cassava peel and dirt that is on the cassava. Then washed with running water to remove dirt. Then cut the cassava about 7 cm or according to taste. The purpose of cutting is to equalize the shape and size of the cassava so that the processing process becomes uniform. Soaking the cassava using clean water for 10 minutes. Water is used until all the cassava is submerged. Soaking aims to remove toxins in cassava, namely cyanide acid[10]. The cassava is boiled for 30 minutes and then soaked in cold spiced water for 5 minutes in order to accelerate the penetration of the spices and stop the gelatinization. After soaking, it is drained and packed using plastic.
The next activity is the evaluation of products that have been produced by members of the P2WKSS Sanan group by the Service Team. Frozen cassava products can be seen in Figure 4.

![Figure 4. Frozen cassava 'Telasa'](image)

Evaluation of frozen cassava products that have been produced by partners includes:

- Evaluation of packaging, namely when sealing there are some products that are not tightened so that they are not tight enough, resulting in messy / untidy products.
- Evaluation of the product, namely the size is not uniform so that the level of maturity is different and reduces the aesthetics. And at the time of packaging the steamed cassava is not really cold so that there is moisture in the packaging, when put in the freezer it becomes ice crystals.
- Products that have been fried according to the standard are crunchy on the outside and soft on the inside. Product is shown in Figure 4.

The next activity is a consultation using the WhatsApp group application, so that if the partner has problems when developing this product or will make innovations such as giving natural dyes to frozen cassava products, or giving a taste to the WhatsApp group.

4. Conclusion

By doing community service with the P2WKSS group partners Sanan, Bawuran, Pleret, Bantul, Yogyakarta, the partners became more aware of the processing of products made from cassava. Partners are able to produce products, namely frozen cassava.

References

[1] W. Utami and L. Nugroho, “Going Concern Studies of Government Social Enterprise in Indonesia Going Concern Studies of Government Social Enterprise in Indonesia (2021) 012054 doi:10.1088/1742-6596/1823/1/012054”
Government Enterprises Case/Bumdes-Lebak Region, West Java Province-Indonesia),” Int. J. Entrep. Manag. Inq., vol. 3, no. 5, pp. 191–206, 2019, [Online]. Available: https://www.researchgate.net/publication/338215781.

[2] Dinas Kependudukan dan Pencatatan Sipil Yogyakarta, “Profil Kependudukan Kabupaten Bantul,” no. 0274, 2018.

[3] A. Czaikoski, R. L. da Cunha, and F. C. Menegalli, “Rheological behavior of cellulose nanofibers from cassava peel obtained by combination of chemical and physical processes,” Carbohydr. Polym., vol. 248, no. May, p. 116744, 2020, doi: 10.1016/j.carbpol.2020.116744.

[4] R. Hartanto and S. Prabawa, “Getuk Keju Frozen di Mojolaban Sukoharjo Jawa Tengah,” PRIMA J. Community Empower. Serv., vol. 3, no. 2, p. 38, 2019, doi: 10.20961/prima.v3i2.37803.

[5] B. Fu, Quality in Frozen Foods, no. January 1997. 1997.

[6] J. H. Han, A Review of Food Packaging Technologies and Innovations. Elsevier Ltd, 2013.

[7] Q. Liu, X. N. Guo, and K. X. Zhu, “Effects of frozen storage on the quality characteristics of frozen cooked noodles,” Food Chem., vol. 283, no. January, pp. 522–529, 2019, doi: 10.1016/j.foodchem.2019.01.068.

[8] A. A. Yudanto, T. Raharjo, and R. S. Ubed, “Pendampingan Pengembangan Produk Unggulan Kawasan Perdesaan Pada Usaha Berbasis Komunitas Desa Cibogo,” Din. J. Pengabdi. Kpd. Masy., vol. 2, no. 2, pp. 161–166, 2019, doi: 10.31849/dinamisia.v2i2.2297.

[9] D. Andriany, “Pengembangan Model Pendekatan Partisipatif Dalam Memberdayakan Masyarakat Miskin Kota Medan Untuk Memperbaiki Taraf Hidup,” no. c, 2015.

[10] Y. Njankouo Ndam et al., “Influence of cultivars and processing methods on the cyanide contents of cassava (Manihot esculenta Crantz) and its traditional food products,” Sci. African, vol. 5, 2019, doi: 10.1016/j.sciaf.2019.e00119.