ABDIMAS
Jurnal Pengabdian kepada Masyarakat
https://journal.unnes.ac.id/journals/abdimas/

Dissemination of Milkfish Processing Sterilization Equipment to Improve Quality and Marketing Reach

Fidia Fibriana[1], Nana Kariada Tri Martuti[1], Sunyoto[1], Danang Dwi Saputro[1], Nurdian Susilowati[1], Dewi Larasati[2]

[1]Universitas Negeri Semarang, Indonesia
[2]Universitas Semarang, Indonesia

Abstract
Milkfish processing is a superior product and a typical souvenir from Semarang City that requires serious attention because it has a significant impact on regional economic growth. Tambakrejo Village is a thematic village of Semarang City (Milkfish Processing Village) with the formation of the *Putri Laut Processing and Marketing Group (Poklahsar)* since 2017 with 21 members. Business actors in Poklahsar still face problems in production and marketing aspects. Partners in this PDTI are Poklahsar *Putri Laut* and Tambakrejo Village. In terms of production, the production capacity of presto milkfish is limited to only ± 50 kg / day. In addition, processed milkfish has a short shelf life so that technology needs to be applied. The reach of marketing aspects, product promotion is still lacking *,* In this community service activity, Retort pan facilities were provided, is one of the thermal food preservation techniques, which has many advantages, namely a shelf life of more than six months. The pressure cooker is a hybrid model specifically designed to make soft-boned milkfish effectively and efficiently. This presto milkfish cooker is a combination of innovations about soft-boned milkfish cookers with temperature and time control . The tool still uses LPG fuel and a soft-boned milkfish cooker with an electric heater.

Keywords: processed milkfish, pressure cooker, retort, production capacity

INTRODUCTION

This Technology and Innovation Dissemination Program is an implementation of technology that has obtained a Patent Rights owned by Semarang State University and is ready to be applied in the community. The technology and innovation are very suitable to be applied to target partners, namely milkfish processing business actors in Tambakrejo Village, Semarang City. The target partners are business actors who are members of Poklahsar *Putri Laut* located in Tambakrejo Village. There are two aspects of the problem that are solved, namely the production aspect and the marketing aspect. The problem in the production aspect is that the production capacity is still very limited and the short shelf life is overcome with food sterilization technology (pressure cookers and retorts) which are specifically designed to produce and sterilize processed milkfish.

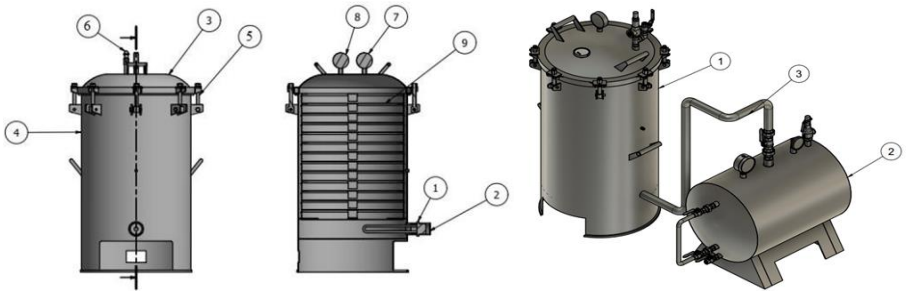

Figure 1. Design of food sterilization equipment (pressure cooker and retort)

The second aspect of the problem is the limited marketing reach that is overcome with community empowerment solutions related to digital marketing capabilities . The solution provided is marketing training with websites, Instagram, Tokopedia, and WA to expand the marketing reach of milkfish

products.

Initial Conditions of Partners and Problems Faced

Before implementing the activity, partners faced several main problems, namely:

1. Limited production capacity : Partners are only able to produce small quantities of processed milkfish due to limited equipment and technology.
2. Short product shelf life : Processed milkfish products spoil quickly due to the lack of adequate sterilization technology.
3. Lack of knowledge and skills : Partners lack understanding of efficient production techniques and digital marketing strategies.

Solutions Offered

To address these issues, several solutions have been implemented:

1. Increased Production Capacity : Partners are provided with pressure cookers and retorts to increase production capacity and product quality.
2. Equipment Usage Training : Intensive training is provided to partners on how to use and maintain the equipment.
3. Increasing Product Shelf Life : By using a retort, processed milkfish products can be sterilized so that they have a longer shelf life, namely up to 1 year.

METHOD

Community service activities for dissemination carried out in the Poklahsar Putri Laut group in Tambakrejo Village , Semarang City , were carried out using several methods . approach which is done in a certain way together , that is :

a . *Based on Group* , s e whole stage And type activity Which will This is done by all partners according to the field they are working on use group . By the way , pok used training program which includes : Training and implementation of tools , planning , implementation , and I 'm touring activity .

b . *Comprehensive ,* to improve the knowledge and skills of all service partners, which have an impact on skills in their respective fields, namely: education, health and disaster. This activity is carried out to develop existing natural resources and human resources, as well as to provide infrastructure facilities according to the needs of each field.

RESULTS AND DISCUSSION

As is known, the main product of the partner is processed food, in this case soft boned milkfish (pressed milkfish). This product is not only for direct consumption, but is widely sold as a souvenir or sent to other places far away, outside the city and can even be sold abroad (export). Therefore, the shelf life of the product must be considered, how the product is preserved for as long as possible. The main principle in food preservation is to slow down the activity or kill pathogenic bacteria in food. There are various types of food preservation techniques, including thermal, non-thermal, chemical, irradiation, and other processes. Retort is one of the thermal food preservation techniques, which has many advantages, namely a shelf life of more than six months [1], even up to 1 - 2 years [2]. In this retort process, food is heated at a temperature of 121-130 ° C for a certain time (about 15 minutes), using a special tube that is similar to a pressure cooker. In the retort process, if using direct steam injection to ensure the speed and uniformity of the incoming heat [3]. Therefore, in this Technology and Innovation Dissemination program, a specially designed retort tool where hot steam is produced from a steam boiler, was developed from a pressure cooker that has been patented with IDP Number 000058557 [4] and a steam boiler that has been patented with IDS Number 000003292 [5], where both tools are innovations from the implementing team. The design of the retort tool to be made is as in Figure 2. How to operate the retort has also been granted a Copyright for Demonstration Tools in the name of Fidia Fibriana, et al., with registration number 000543245 [6].

Figure 2. Pressure cooker and milkfish processing sterilization tool

Another technology provided is a hybrid pressure cooker specifically designed to make soft boned milkfish effectively and efficiently. This pressure cooker is a combination of innovations in soft boned milkfish cooking with temperature and time control that has obtained a patent number IDP 000058557 [7] , but still uses LPG fuel and a soft bone milkfish cooking tool with an electric heater which has received patent No. IDS 00002879 [8].

Some of the advantages of this pressure cooker include: 1) Higher productivity: in one process it can cook 40 - 60 kg of milkfish, 2) Cost-effective: in one process it only costs around Rp. 14,000,-, which is a maximum of 1 kg of LPG fuel (Rp. 6,000) and electricity consumption of 5 kwh (5 x Rp. 1,600 = Rp. 8,000), 3) Save time: in one process it only takes 2-3 hours, 4) Higher quality : 0% damage rate, no milkfish is damaged due to bending or flattening, because the diameter of the pressure cooker is 60 cm and in the arrangement of milkfish, layers are made, and the protein content remains high because the temperature is set lower (below 120 ° C), 5) Safer and more practical : the pressure cooker is equipped with temperature indicators, pressure, safety valve , temperature control and timer, making it safer and easier to operate.

Partners have been assisted in the use of tools and testing tools together with the service team. Counseling, lectures, and demonstrations have been carried out together with UD Putri Laut. Tool trials have also been carried out to test the production capacity and effectiveness of the sterilization machine.

Figure 3. Sterilization trial of processed milkfish products

Increasing marketing reach is done through several efforts such as: 1) Improving the quality of entrepreneur human resources through training on online product marketing. (digital marketing) which includes creating promotional flyers to be broadcasted via social media , 2) Carrying out product promotions in various ways, both online, which will be done through web development https://bandengputrilaut.com/ and social media platforms such as Whatsapp and Instagram, and 3) Expanding marketing networks and market segments such as in shops, supermarkets, souvenir centers, offices, both inside and outside the city of Semarang.

In this technology and innovation dissemination program, there are internal factors that provide advantages in the form of unique resources , namely UD Putri Laut partners who have the spirit to progress and have the will to be able to develop their business. In addition, partners have also been fostered by the Semarang City Government for a long time so that this program is facilitated. Another advantage is the special expertise of the R&D team for pressure cooker products and milkfish processing sterilization tools (retorts) from the community service who are experienced in making pressure cookers

and sterilization tools . Innovation and dissemination of the use of modern patented retorts and pressure cookers can increase product shelf life and production process efficiency. Adequate resources, namely the supply of fresh milkfish from farmers, greatly support the milkfish processing production process to meet market needs. Another supporting factor in this activity is the training and mentoring program for partners to help them carry out digital marketing and increase marketing reach . Improving the quality of human resources is carried out by holding training on online product marketing which includes making promotional flyers and using social media .

The challenge faced in the dissemination of this technology is to find strong vacuum plastic when treated in a retort, namely high pressure and temperature. In practice in the field, retort vacuum plastic experiences swelling so that sometimes leaks occur. This problem can be faced by experimenting with various types of plastic on the market to choose the best quality plastic.

CONCLUSION

The implementation of this program has successfully overcome the main problems faced by partners, namely limited production and marketing capacity. With the implementation of pressure cookers and retorts, production capacity has increased by 50%, product quality has improved, and product shelf life has reached up to 1 year. In addition, digital marketing training and the creation of websites and social media accounts have succeeded in increasing the reach of marketing and product sales by 40%. Partners also gain better knowledge and skills in the use of technology and marketing strategies.

ACKNOWLEDGEMENT

Community service activities of the Technology and Innovation Dissemination Program (PDTI) entitled "Empowerment of the Tambakrejo Region as a Smart and Disaster Resilient Village in Semarang City " are funded by the Directorate of Research, Technology, and Community Service, Directorate General of Higher Education, Research, and Technology, Ministry of Education, Culture, Research, and Technology , 2024. Therefore, the author would like to thank the Ministry of Education, Culture, Research, and Technology and LPPM UNNES who have funded and supported this community service activity, so that it can be completed properly and smoothly.

REFERENCES

[1] https://www.eatnow.id/soft-launch/teknologi-retort-eatnow/
[2] Estiasih T, Ahmadi, (2009), Teknologi Pengolahan Pangan, Jakarta: Bumi Aksara.
[3] Sunyoto dan Saputro, D D. (2020), Ketel Uap Industri Makanan dengan Sirip Pemanas untuk Mempercepat Pemanasan, https://pdki-indonesia.dgip.go.id/detail/SID201905094?type=patent&keyword=IDS000003292
[4] Sunyoto (2019), Alat Pemasak Bandeng Duri Lunak Dengan Kontrol Suhu Dan Waktu, https://pdki-indonesia.dgip.go.id/detail/P00201707206?type=patent&keyword=IDP000058557
[5] Fibriana, Fidia, dkk. (2023), Alat Peraga Sterilisasi Bandeng Duri Lunak. https://pdki-indonesia.dgip.go.id/detail/aad58af49347509d6a8b528f20d27ceb3a78298e6dafbcddd188ab45c39184f9?nomor=EC00202311029O&type=copyright&keyword=alat%20peraga%20sterilisasi
[6] Sunyoto, dkk (2020). Alat Pemasak Bandeng Duri Lunak Dengan Pemanas listrik, https://pdki-indonesia.dgip.go.id/detail/82bec4f01aa8f083f3e9ed462134761ed839b0a6f1e83eaf9cd018d5a67b1ac3?nomor=SID201904458&type=patent&keyword=alat%20pemasak%20bandeng%20duri%20lunak%20