

## Oyster Mushroom Production Capacity Development, Diversification, and Marketing Strategy Management Processed Oyster Mushroom Products

Yaya Hasanah \*

Nursa'adah

Dian Febriyani

Tengku Mika Hakinen  
Hamzah

Hanif Febrio

Department of Agrotechnology,  
Faculty of Agriculture, Universitas  
Sumatera Utara, Medan Sumatera  
Utara, Indonesia

email: [yaya@usu.ac.id](mailto:yaya@usu.ac.id)

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### Abstrak

Rumah Jamur Sadam merupakan salah satu produsen jamur di Medan Marelan dengan produksi jamur tiram 7-12 kg/hari dengan kapasitas 7.000 baglog. Hasil produksi jamur tiram hanya dipasarkan secara konvensional. Saat ini, mitra sudah bisa menghasilkan bibit jamur tiram secara mandiri, namun belum didukung dengan peningkatan kapasitas produksi jamur tiram dengan meningkatkan kemandirian mitra dalam hal sterilisasi baglog. Jamur tiram yang diproduksi perlu ditingkatkan diversifikasi serta strategi pemasaran produk olahannya agar pasarnya sebagai produk unggulan Medan Marelan bisa semakin luas. Berdasarkan hasil analisis dan observasi, permasalahan yang dihadapi mitra antara lain: kurangnya peralatan yang mendukung untuk meningkatkan kapasitas produksi jamur tiram, diversifikasi produk olahan jamur tiram yang masih kurang beragam, perlunya strategi pemasaran produk secara online untuk memperluas pasar produk olahan jamur tiram sebagai produk unggulan Medan Marelan. Solusi yang ditawarkan untuk memecahkan permasalahan tersebut yaitu introduksi barang alih teknologi, peningkatan diversifikasi produk olahan jamur tiram, dan edukasi strategi pemasaran produk olahan jamur tiram secara online untuk memperluas pasarnya.

### Abstract

Rumah Jamur Sadam is one of the oyster mushroom producers in Medan Marelan that produces 7-12 kg/day with a capacity of 7,000 baglogs. The oyster mushroom production results are only marketed conventionally. Currently, partners can produce oyster mushroom seeds independently, but increased oyster mushroom production capacity has yet to be supported by increasing partner independence in baglog sterilization. The oyster mushrooms produced need to be diversified, and the marketing strategy for their processed products needs to be improved so that their market as Medan Marelan's leading product can be even more expansive. Based on the results of the analysis and observation, the problems faced by partners include a lack of equipment to support increasing oyster mushroom production capacity, diversification of oyster mushroom processed products that are still lacking in variety, the need for an online product marketing strategy to expand the market for oyster mushroom processed products as Medan Marelan's leading product. The solutions to these problems are introducing technology transfer goods, increasing the diversification of oyster mushroom processed products, and educating oyster mushroom processed product marketing strategies online to expand their market.



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## PENDAHULUAN

The white oyster mushroom (*Pleurotus ostreatus*) is an edible mushroom commonly cultivated by Indonesians. This mushroom has a fruit body that grows to resemble a shell (oyster). Oyster mushrooms are highly nutritious because they contain 367 calories, 10.5-30.4 percent protein, 56.6 percent carbohydrates, 1.7-2.2 percent fat, 0.20 mg thiamin, 4.7-4.9 mg riboflavin, 77.2 mg niacin, and 314.0 mg calcium for every 100 g of mushrooms. The protein in mushrooms contains leucine, isoleucine, valine, tryptophan, lysine, phenylalanine, acid, and several other types of amino acids that are important for the body (Effiong *et al.*, 2024). Oyster mushrooms have antitumor activity and hypoglycemic effects in people with diabetes. The beta-glucan component in oyster mushrooms stimulates the body's immune system, so they have been proven effective

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and helpful in treating diabetes, cancer, microbial infections, and so on (Friedman, 2016 ; Valverde *et al.*, 2015). Mushrooms also have many nutraceutical properties, such as preventing or treating Parkinson's, Alzheimer's, hypertension, and stroke in people at high risk of stroke (Liang *et al.*, 2020 ; Krittanawong *et al.*, 2021)

One of the oyster mushroom producers in Medan Marelan is "Rumah Jamur Saddam," which produces mushrooms ranging from 7-12 kg/ day (Hasanah *et al.*, 2023). The mushroom house can accommodate 7,000 baglogs. The oyster mushrooms are marketed at the Marelan traditional market and vegetable stalls around the oyster mushroom agribusiness location, with a selling price of Rp. 20,000/kg. This mushroom house also has a mushroom processing business in the form of crispy mushrooms, mushroom pipes, mushroom satay, and mushroom tofu, with the brand name "Mushroom Kitchen," which has a halal certificate from the MUI (Figure 1). The processed products produced still have great opportunities for diversification. This processed product is only marketed conventionally and has not yet expanded to online marketing via social media and marketplaces.



Figure 1. Saddam's Mushroom House and his business diversification.

Rumah Jamur Saddam has begun to be independent in providing F0, F1, and F2 oyster mushroom seeds. However, this ability has yet to be supported by increasing oyster mushroom production capacity. One of the obstacles to increasing oyster mushroom production capacity is the limited supply of sterile baglog, so the partners' oyster mushroom production capacity is limited. These partners face obstacles due to the lack of adequate equipment to sterilize baglog, such as steamers since the existing steamers are no longer suitable for use (Figure 2).

The increase in mushroom consumption in the community has yet to be matched by an increase in production capacity, resulting in a deficit in demand for oyster mushrooms. Therefore, efforts need to be made to increase the production capacity of oyster mushrooms at Saddam's Mushroom House. Efforts that can be made include introducing technology transfer goods in the form of oyster mushroom baglog sterilization equipment because the available sterilization equipment can only accommodate 900 baglogs, while the requirement is 1,400 baglogs. Baglog is a planting medium for placing oyster mushroom seeds. The main ingredient for baglog is sawdust because oyster mushrooms are woody mushrooms. The baglog is wrapped in cylindrical plastic with a hole in one end. In this hole, oyster mushrooms will grow and stick out (Hasanah *et al.*, 2023)

Media sterilization is essential in cultivating oyster mushrooms because the media that has been made usually still contains many microbes, especially wild mushrooms. In cultivation, mushroom farmers must prepare superior mushroom planting media through sterilization to eliminate pathogenic microorganisms, including mold, yeast, and bacteria. Imperfect media sterilization processes cause many crop failures. Wild mushrooms still in the baglog will thrive and inhibit the growth of white oyster mushrooms if the sterilization process is not perfect. Several techniques can be used to sterilize oyster mushroom media. One sterilization method is by steaming the oyster mushroom media using a drum. In general, sterilization of mushroom media with efficiency reaching 59.57% uses steaming media (baglog) in a drum for 8 hours (2 hours of heating, 6 hours of sterilization) (Tranggono, 2021 ; Permatasari, 2017 ; Fauziyah, 2022 ; Laagu, 2024)



**Figure 2.** The old steamer is no longer suitable for use.

Based on the situation analysis and observation results, the problems faced by partners are:

1. Partners need additional baglog sterilization equipment, so they are still very dependent on baglog providers.
2. More diversification of processed oyster mushroom products produced by partners is still needed.
3. To increase sales turnover, partners still need to target the online market.

Based on the analysis of the partner's situation and problems above, the priority matters to be addressed include the introduction of appropriate technology in backlog sterilization so that it can increase partner oyster mushroom production, increase the diversification of processed oyster mushroom products, and online marketing strategy management to expand the market for oyster mushroom products. All priority efforts that will be carried out can increase partners' skills, welfare, and income while increasing the potential of oyster mushrooms as a superior product in Medan Marelan.

## METODE

Based on the problems partners face, it is necessary to develop oyster mushroom production capacity, diversification, and marketing strategies for oyster mushroom processed products online. The method of approach that will be carried out to support the realization of the community service program on partners is participatory empowerment, which includes lectures and discussions (training), mentoring, monitoring, and evaluation, as well as the introduction of technology transfer items that are useful for baglog sterilization in supporting the development of oyster mushroom production capacity.

### 1. Socialization

Conduct socialization with partners about community service activities and agree on the time and place for implementing these activities.

### 2. Lecture and Discussion (training)

#### a. Baglog sterilization as oyster mushroom growing media

Sterilizing growing media is one of the most critical processes in oyster mushroom cultivation. The growing medium used in oyster mushroom cultivation is baglogs made from wood sawdust, bran, grains or flour, minerals, and water. Sterilization is needed because the growth media usually still contains many unwanted microorganisms, so it is necessary to sterilize it so there are no more wild mushrooms other than cultivated oyster mushrooms. Therefore, less-than-perfect backlog sterilization can inhibit cultivated oyster mushrooms' growth. How to sterilize oyster mushroom baglogs as follows:

- Sterilization of oyster mushroom baglogs can be done using a large-capacity steamer.

- The sterilization process is carried out at a temperature of 1210C, a pressure of 15 psi, and for 60 minutes (Sujoko *et al.*, 2015 ; Irwansyah *et al.*, 2020)
  - b. Diversification of oyster mushroom nuggets and dumplings as a diversification of processed products  
Dapoer Jamur, owned by partners, already produces several processed products, but it has yet to venture into the frozen food sector. Frozen food can be stored longer than ready-to-eat oyster mushroom products. The menu taught to the surrounding community and partners included oyster mushroom nuggets and dumplings in frozen form.
  - c. Design, operations, and online marketing strategies on social media and marketplaces  
The training in this field focuses on optimizing search engines, using social media as a platform for promotion and selling, and decorating shops on social media and marketplaces to attract buyers' attention.
3. Hands-on practice  
The practice of making oyster mushroom nuggets and dumplings enriches the diversification of oyster mushroom-processed products. This practical activity involves demonstrating the making of oyster mushroom nuggets and dumplings. In addition, service participants were also involved in joint cooking activities.
4. Application of technology  
Some of the technology transfer tools provided to overcome partner problems include:
- Steamer: to increase oyster mushroom productivity by expanding the sterilization capacity of oyster mushroom blogs.
  - Meat grinder: This helps smooth the meat and oyster mushrooms, the raw materials used to make oyster mushroom nuggets and dumplings.

## HASIL DAN PEMBAHASAN

Activities that have been carried out in this community service program include:

### *Lectures and Discussions*

- a. Preparation Stage
  - Holding discussions with the community service team about the training plan and materials to be delivered.
  - Contacting and reconfirming the schedule and place of service implementation with partners (Rumah Jamur Saddam)
- b. Implementation Stage
  - The training was carried out with the following sequence of material delivery:
  - Training on baglog sterilization using a steamer.
  - Making oyster mushroom dishes (mushroom nuggets and mushroom dumplings).
  - Online oyster mushroom marketing training.
- c. Discussion and question and answer sessions were held with the training participants.

### *Direct practice of using a steamer to sterilize oyster mushroom baglogs*

The direct practice of using a steamer to sterilize oyster mushroom baglogs begins with the preparation and implementation stages.

- a. Preparation Stage of Activities
  - Holding a team discussion to formulate the preparation of training activities for the use of a steamer to sterilize oyster mushroom baglogs
  - Contacting and discussing with Mr. M. Saddam, the owner of the Saddam Mushroom House business, regarding the location for delivering the material and direct practice.
  - Determining the location of the activity for making training on the use of a steamer to sterilize oyster mushroom baglogs
  - Preparing tools in the form of a steamer, APAR, and gloves
- b. Implementation Stage



- Training on the use of a steamer and efforts to improve work safety
  - The needed tools are a steamer, heat-resistant gloves, and a light fire extinguisher (APAR). The materials required are backlogs.
- c. Implementation procedure:
- Sterilization of oyster mushroom baglogs
  - Insert oyster mushroom bags as much as the steamer capacity, which is 600 bags.
  - Oyster mushroom baglogs can be sterilized using a large steamer.
  - The sterilization process is carried out at a temperature of 121°C, a pressure of 15 psi, and was carried out for 60 minutes (Sujoko *et al.*, 2015) bfgb

#### ***Efforts to improve work safety in oyster mushroom baglog sterilization activities.***

- Efforts to improve work safety begin with preventive measures, namely by using a safe and suitable steamer. Replacing a steamer that is starting to break down and leak with a new steamer is an effort to prevent work accidents in the backlog sterilization process.
- The use of protective equipment, such as heat-resistant gloves, is also one preventive measure to improve work safety.
- Procurement of light fire extinguishers (APAR) is one of the preventive measures to anticipate fires because one of the possible work accidents in the form of fires can occur during the backlog sterilization process.



**Figure 5.** Steamer handover.



**Figure 6.** Safety steamer usage training.

#### ***Making oyster mushroom dishes (nuggets and dumplings oyster mushroom)***

The tools needed are a blender, gas stove, medium-sized steamer, knife, cutting board, covered container, basin, grater, spoon, plate, frying pan, spatula/tongs, and oil drainer/drain. The ingredients needed include oyster mushrooms, tapioca flour, wheat flour, cooking oil, powdered broth, salt, eggs, dumpling skins, carrots, shallots, garlic, spring onions, and chicken meat.

Based on the results of the implementation of socialization and cooking practice of oyster mushroom nuggets and dumplings with community service participants, the participants were very enthusiastic and interested in making oyster mushroom nuggets and dumplings again at their respective homes. Organoleptic tests were carried out on the taste of oyster mushroom nuggets and dumplings, and all participants liked the results very much. The results of this organoleptic test will certainly be a picture of the acceptance of this product diversification plan in the community.



Figure 7. Oyster mushroom dumplings making.



Figure 8. Community service activities.

### *Online oyster mushroom marketing training*

Oyster mushroom marketing carried out online has several objectives, including:

- Wider reach because it is not limited by geographic location
  - Cost-effective where promotion is cheaper compared to traditional methods.
  - A more specific target market so that it can reach consumers who are interested in fresh or processed oyster mushroom products.
  - Better data analysis by understanding consumer behavior and optimizing sales strategies.
  - Steps that can be taken for online oyster mushroom marketing are:
1. Create a website/online store with website design activities and adding e-commerce. Sellers must also create an attractive and easy-to-navigate website by including information about the types of oyster mushrooms sold, how to use them, and their benefits. Furthermore, e-commerce features should be added to allow direct purchases from the site.
  2. Create SEO (Search Engine Optimization) specific to the oyster mushroom products being sold. Use relevant keywords such as "fresh oyster mushrooms", "organic oyster mushrooms", or "selling oyster mushrooms online" in the website content. In addition, you can also add quality content, such as articles/blogs on how to cook oyster mushrooms or recipes for processed foods using oyster mushrooms.
  3. Use social media, including the right platforms such as Instagram, Facebook, and TikTok, to promote products, as social media is very good for product visualization. In addition, create exciting content by sharing photos of oyster mushrooms, recipe videos, or mushroom care tips. Use the stories and reel features to reach a wider audience.
  4. Using paid ads such as Google Ads (paid ads that appear when people search for oyster mushroom products and Social Media Ads (ads on Facebook and Instagram to target specific audiences based on interests and location).
  5. Posting customer reviews and testimonials: Sellers must encourage customers to leave positive reviews on their website or e-commerce platform and display customer testimonials on their website or social media to increase credibility.
  6. Creating good packaging and easy shipping. Sellers must ensure that oyster mushroom packaging is safe and attractive, namely using packaging that maintains the product's freshness. In addition, they must offer various shipping options to ensure that the product arrives in good condition.
  7. Conducting data analysis and marketing adjustments. Sales data analysis uses web analytics tools to track website performance and marketing campaigns. Furthermore, marketing adjustments are made based on the data obtained to determine the following marketing strategy to increase effectiveness.



**Figure 9.** Explanation of online oyster mushroom. **Figure 10.** Practice creating a website/online marketing.

The realization of this community service program expected to be able to foster an entrepreneurial spirit among partners and provide innovation (technology transfer) from the University (USU) to partners through partner empowerment (Saddam Mushroom House) by increasing mushroom production capacity with the introduction of steamer equipment, making oyster mushroom products (mushroom nuggets and mushroom dumplings) and online oyster mushroom marketing training.

## KESIMPULAN

There is an increase in community and partner knowledge regarding things that need to be considered in sterilizing baglogs and efforts to improve work safety in sterilizing baglogs. There is an increase in community and partner knowledge and skills regarding the diversification of new oyster mushroom processed products, namely oyster mushroom nuggets and dumplings. The community and partners participate in joint practice and are interested in remaking oyster mushroom nuggets and dumplings at their respective homes. The results of organoleptic tests of oyster mushroom nuggets and dumpling diversification products were well received by community service participants and partners with the category "Very Like". There is increased community knowledge in utilizing social media and marketplaces to expand the marketing of oyster mushroom processed products.

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