Warta Pengabdian, Volume 15, Issue 2 (2021), pp. 98-109
doi: 10.19184/wrtp.v15i2. 23214

Published online September 2021

Empowerment of Oyster Mushroom Farmers in KarangPring Village, Jember through Training on Making Oyster Mushroom Seeds F0, F1, and F2

Ayu Puspita Arum, Setiyono, Gatot Subroto
Faculty of Agriculture, Universitas Jember
ayu.puspita@unej.ac.id

Abstract
Oyster mushroom farmers in KarangPring Village, Sukorambi District, Jember Regency have implemented the appropriate oyster mushroom cultivation technique. However, the profit of fresh oyster mushroom sales is still low because the production cost is very high due to F1 oyster mushroom seeds from the supplier being costly. Therefore, it is required a piece of knowledge about the production of F0, F1, and F2 oyster mushroom seeds. So that oyster mushroom farmers can produce oyster mushroom seeds independently. It will have an impact on the reduction of oyster mushroom's production costs. So, the profit of fresh oyster mushroom sales can also be increased; farmers can be F0, F1, and F2 oyster mushroom seed suppliers for others. The method of sharing F0, F1, and F2 oyster mushrooms production was training. The activity result was that the oyster mushroom farmers in Karangpring Village were capable of independently producing F0, F1, and F2 oyster mushroom seeds. These activities can be expected to reduce F0, F1, and F2 oyster mushrooms supply production costs. So the oyster mushroom farmers in KarangPring Village, Sukorambi District, Jember Regency can increase their profit from fresh oyster mushroom sales.

Keywords: F0, F1, and F2 Oyster Mushroom Seeds

I. INTRODUCTION

Fungi are a group of eukaryotic organisms that form the world of fungi or fungal regnum. Fungi are generally multicellular. Fungi differ from other organisms in their diet, body structure, growth, and reproduction. Mushroom body structure depending on the type. There are one-cell fungi, and there are multicellular fungi that form large fruit bodies up to one meter in size, for example, wood fungi—a mushroom body composed of the essential components called hyphae. Hyphae form a network called the mycelium. The mycelium arranges pseudo links into a fruiting body. [1]

Mushrooms can bring both advantages and disadvantages to human life. The advantage of mushrooms can be used as food. However, from tens of thousands of mushrooms, only a few types have been cultivated, including rice mushrooms (Volvariella volvacea), oyster mushrooms (Pleurotus ostreatus), ear mushrooms (Auricularia polytricha), shiitake mushrooms (Lentinus edodes), maitake mushrooms (Grifolia frondosa). Furthermore, the very well-known one is the lingzhi mushroom (Ganoderma lucidum). [2]

[1] Nur Fadillah, *Tips Budidaya Jamur Tiram* (Yogyakarta: Genius Publisher, 2010).
[2] Unus Suriawiria, *Sukses Beragrobisnis Jamur Kayu: shitake, kuping, tiram* (Jakarta: Penebar Swadaya, 2001).

White oyster mushroom (Pleurotus ostreatus) is a vegetable ingredient that is starting to be in great demand in Indonesia. White oyster mushroom is included in the type of wood fungus most easily cultivated by the community. This mushroom can be harvested continuously throughout the year and does not depend on the season. This mushroom has a distinctive aroma because it contains muskorin and has several benefits, such as health benefits as a source of nutrition for the family and the environment to reduce the accumulation of agricultural waste around us, namely by utilizing sawdust, bran, and rice husk waste as a growing medium for oyster mushrooms.

Oyster mushrooms have a high nutritional content than other wood mushrooms. White oyster mushrooms can prevent various diseases, such as diabetes mellitus, cancer, influenza, cholesterol, etc. Sumarni (2006)[3] reports that the nutritional content in 100 g of oyster mushrooms is 19% -35% protein, 1.7% - 2.2% fat, 56.6% carbohydrates, 0.2 mg thiamine, 4.7 mg - 4 , 9 mg riboflavin, 72.2 mg niacin, 314 mg Calcium, 3.793 mg Potassium, 717 mg Phosphorus, 837 mg Sodium, 3.4 - 18.2 mg Iron and 7.5% - 87% fiber. Widyastuti et al. (2015)[4] found that P. ostreatus oyster mushroom extract has the potential to be developed as an immunomodulatory drug because it contains the active compound beta-glucan.

Oyster mushrooms are wood fungi that grow sideways on weathered logs. Fungal life takes up food that has been made by other dead organisms (saprophytes) because they do not have chlorophyll. All saprophytes - especially those that grow on wood - can be easily cultivated. [5] According to Gunawan (2001),[6] the characteristics of oyster mushrooms are thick, white, firm, but soft flesh on the part adjacent to the stalk, and the smell and taste are not stimulating. In addition, oyster mushrooms also do not have stalks or, if present, are usually short, sturdy, and not at the center of lateral (but sometimes at the center), 0.5-4.0 cm long, flat, dense, dry solid, and general hair or cotton wool at least at the base.

Furthermore, this fungus has a fruiting body that grows blooming to form a shallow funnel-like coral skin (oyster). The fruiting bodies of mushrooms have a hood (pileus) and a stalk (stipes or stalks). The pileus is shaped like an oyster shell measuring 5-15 cm, and the lower surface is layered like white and soft gills. In comparison, the stalk growth can be short or long (2-6 cm). This stalk supports the lateral (edge) or eccentric (slightly to the middle) hood. Clean oyster mushrooms (Pleurotus Florida and Pleurotus ostreatus) have a milky-white or yellowish-white hood with a 3-14 cm. [7]

The surface of the oyster mushroom is smooth and slightly oily when moist, while the edges are smooth and slightly wavy. If it is too old, the pulp will become

[3] Sumarni, "Botani dan Tinjauan Gizi Jamur Tiram Putih," Jurnal Inovasi Pertanian, 4, no. 2 (2006): 124–30.
[4] N Widyastuti dkk., "Studi Awal Potensi Jamur Tiram (Pleurotus ostreatus) sebagai imunomodulator dengan sampel sel limfosit," Pros Sem Nas Masy Biodiv Indos, 1, no. 6 (2015): 1528–31.
[5] N.M Djarijah dan A.S Djarijah, *Budidaya Jamur Tiram* (Yogyakarta: Kanisius, 2001).
[6] AW Gunawan, *Usaha pembibitan Jamur* (Jakarta: Penebar swadaya, 2001).
[7] Djarijah dan Djarijah, *Budidaya Jamur Tiram*.

rugged and tough. The spores are rod-shaped, measuring 8-11 × 3-4µm. Mycelium is white and can proliferate. [8] Oyster mushrooms have a plasma nucleus and spores in open or continuous cells to form hyphae and mycelium. At the meeting points of the mycelium branching, small spots called pinheads, or prospective mushroom bodies will form, which will develop into mushroom fruiting bodies. [9]

The lower surface of the hood of the young fruit body has blades (lamella). The lamellae of the body descend and attach to the stalk. In the lamellae, there are spore-forming cells (basidium) that contain basidiospores. Basidiospores are usually formed when the fruiting body is mature (experiencing maturity). As long as the edges of the hood are still folded, the fruiting body is said to be immature. If the edges of the hood are fully exposed, the fruiting bodies reach maturity and can be harvested. Ripe fruit bodies are usually brittle, and spores can be released. Oyster mushroom stalk or stalk is not right in the middle of the hood but slightly to the side. The fruiting body forms clumps that have many branches and are united in one medium. When it is old, the pulp will become rugged and tough. [10]

Jember Regency is one of the oyster mushroom-producing districts in East Java province. The production of Jember mushrooms has helped meet the needs of the local market to export. Jember routinely sends oyster mushrooms to Surabaya to be processed into mushroom chips and collaborates with exporters to be sent to Korea as raw material for instant noodle extract. [11]

The most difficult and most risky part of mushroom cultivation is making seeds. Failure to make seedlings will not result in mold growth. Many farmers have not mastered the technique of making oyster mushroom seeds. That is why many oyster mushroom farmers choose to buy oyster mushroom seeds that are ready to use for later cultivation because farmers only need to move the oyster mushroom seeds to the planting medium (backlog) and take care, then the oyster mushrooms will grow.

Cultivation of mushrooms is a real business opportunity so that in various areas, many agricultural businesses specifically cultivate and produce mushroom plants into products with high selling value. Oyster mushroom cultivation business opportunities can include several fields, namely producing seed generation (F0, F1, and F3), producing backlog (planting media), and producing white oyster mushrooms.

By looking at the opportunities that exist, we chose to carry out community service activities with several oyster mushroom farmers in Karangpring Village, Sukorambi district, Jember Regency. Mushroom farmers have carried out oyster mushroom cultivation activities since 2016 under the guidance of a lecturer at the Faculty of Agriculture, UNEJ, namely Ir. Setiyono, MP. And Ir. Gatot Subroto, MP. Then, in the following year, 2017, more intensive mushroom cultivation was developed

[8] Gunawan, *Usaha pembibitan Jamur*.
[9] Parjimo dan Agus Andoko, *Budidaya Jamur (Jamur Kuping, Jamur Tiram, Jamur Merang)*, t.t.
[10] Parjimo dan Andoko.
[11] Ihsan, "Jember Kembangkan Budidaya Jamur Tiram," UMKM JEMBER, 2020, http://umkm-jember.info/index.php/component/content/article/1-latest-news/105-jember-kembangkan-budidaya-jamur-tiram.

independently. It has five working partner groups (plasma), one of which is in Karangpring Village, Sukorambi District Regency. Jember. The oyster mushroom entrepreneur in the village is also used as a fieldwork practice and KKN for students of the Faculty of Agriculture, University of Jember.

Community service, which was carried out in 2019 through the Assisted Village Grant program with the title "Improving the Quality of Life with Oyster Mushroom Cultivation and Processing Training in KarangPring Village, Sukorambi District, Jember Regency." produces the following results:

1. The people of Karangpring Village, Sukorambi District, Jember Regency can cultivate white oyster mushrooms without any other fungal contaminants. This is evidenced by the soaking of the oyster mushrooms obtained for four months for each backlog; on average, there was an increase from 300 grams to 600 grams after training.
2. Cultivation of white oyster mushrooms is successful. With a count of 1000 backlog of mushrooms, each backlog of oyster mushrooms produces 600 grams of oyster mushrooms for four months or converted into kilograms, 1000 backlog of oyster mushrooms for four months produces 600 kilograms. Oyster mushroom farmers in the village sell fresh mushrooms for IDR 11,000 / kg to traders, so the gross income from selling fresh oyster mushrooms for four months is IDR 6,600,000. With a production cost of Rp. 3,000,000, the profit that oyster mushroom farmers get for four months from selling fresh oyster mushrooms is Rp. 3,600,000. Previously, the profit was only IDR 1,800,000 for four months.
3. With the "oil slicer," a grant tool for community service activities, oyster mushroom farmers can make and produce crispy mushrooms that are less oily and more durable.

Despite the success, the profit from selling fresh oyster mushrooms is still low. This is due to the very high production costs of oyster mushroom cultivation. Farmers cannot make oyster mushroom seeds themselves and have to buy F1 oyster mushroom seeds, which are very expensive. Oyster mushroom farmers need to master how to independently produce oyster mushroom seeds F0, F1, and F2 with this background. The hope is that farmers can reduce the production costs of oyster mushroom cultivation as low as possible to increase the profit from selling fresh oyster mushrooms. In addition, they will also have the potential to get additional income from the sale of oyster mushroom seeds F0, F1, and F2.

II. METHOD

The location of the activity is centered in KarangPring Village, Sukorambi District, Jember Regency. The location distance from UNEJ is about 12.5 km. This community service activity focuses on applying techniques for making F0, F1, and F2 oyster mushroom seeds. The steps taken are as follows:

a) Socialization about the technique of making oyster mushroom seeds F0, F1, and F2;
b) Preparation of materials and tools for making oyster mushroom seeds F0, F1, and F2
c) Conduct training on making oyster mushroom seeds F0, F1, and F2, as well as monitoring and evaluation.

III. DISCUSSION

This service activity is carried out in 3 stages. Namely, the first stage is a visit to mushroom farmers to see the conditions of oyster mushroom cultivation, the second stage is training in making oyster mushroom seeds F0, F1, and F2, and the third or final stage is an evaluation of the success of oyster mushroom farmers in making seeds. Oyster mushrooms F0, F1, and F2 every week.

In the second activity, training was conducted to make F0, F1, and F2 oyster mushroom seeds.

Figure 1. Oyster Mushroom Seed Making Training F0, F1, and F2

According to Sunarmi and Cahyo (2010),[12] the beginning of mushroom cultivation requires pure cultures that are free from contamination and have good genetic characteristics, namely in terms of quantity and quality. To produce good quality mushrooms, of course, it depends on the quality of the seeds, one of which is marked with the growth of mycelium that is evenly distributed throughout the growing media. The criteria for pure culture include mature mushrooms, healthy and free from pests, about four days old before developing into fruit bodies, free from physical abnormalities, significant in shape, thick and sturdy fleshy.

The first training in making Oyster mushroom F0 seeds in this activity aims to train farmers to make Oyster mushroom F0 seeds from simple and inexpensive ingredients. The stages start from the preparation of materials and tools. The ingredients prepared are potatoes, jelly, granulated sugar, fresh oyster mushrooms that

[12] Sunarmi dan Cahyo, *Usaha 6 Jenis Jamur Skala Rumah Tangga* (Jakarta: Penebar Swadaya, 2010).

are not too young and not too old, which have a very sturdy inward curving hood of oyster mushrooms, water, spirits, and alcohol. The tools prepared were bottles for oyster mushroom media, cotton, rubber, heat-resistant plastic, tweezers, pan, filter, and autoclave. For the manufacture of F0 generation media, this media is a PDA (Potato Dextrose Agar) medium containing a source of carbohydrates, namely 20% potato extract and 2% sugar. [13] PDA media is suitable for the growth of fungi such as molds and yeasts. However, it is not suitable for bacterial growth because PDA media has an acidic pH (pH 4.5 to 5.6). These conditions can inhibit the growth of bacteria that require neutral environmental conditions (pH 7.0). [14]

Furthermore, instant PDA media has the advantage of being ready to use. Its nutritional content is clear; while the drawback is that it is easily damaged because the PDA media is hygroscopic, the price is relatively high, and can only be found in certain places. To minimize expenditure, this medium is replaced by using boiled potato water mixed with agar. Potatoes are used as sources of nutrients and sugars (energy sources) needed for mushroom growth. [15] Making the media begins with washing the potatoes and peeling them. The peeled potatoes are then cut into small pieces and rinsed with water until clean. The clean potato slices are then boiled in one liter of aqua dest for one hour, and the cooking water is reduced by 50% (500 ml). If the remaining cooking water is less than 500 ml, it must be added with water until the volume becomes 500 and vice versa. After that, they were filtered with a thin cloth. Then, take the boiled water for potatoes and add sugar and jelly. Heat while stirring until it boils. After that, pour the liquid into the oyster mushroom media bottle. Then, cover the media bottle with cotton and aluminum foil and tie it with rubber until it is tight.

Covering with aluminum foil aims to protect the cotton from moisture during sterilization so that the cotton does not get wet. Wet cotton is one of the stimulants to grow contamination in the media. Oyster mushroom media sterilization by autoclaving for 1.5 hours. An autoclave is a double-walled steam room filled with saturated vapor free of air and maintained at a specified temperature and pressure for the desired period. This process will help kill microorganisms in an object. The time required for sterilization depends on the nature of the material being sterilized, the type of container, and the volume of the material. For autoclaving to be effective, moisture must be able to penetrate each sterilized device. Therefore, the autoclave should not be too full so that water vapor penetrates all areas. [16]

Furthermore, sterilization is the process of freeing the media from all living organisms (contamination). Autoclave sterilization is good at 1.5 atm vapor pressure conditions with a temperature of 121◦C for 1.5 hours. This process is one of the essential processes and determines the success of the pure culture. The growth media of oyster mushroom seeds F0, F1, and F2, sterilized, are then cooled for several hours. It is

[13] A. Soewarso Muracman dan H Nursyam, *Buku Panduan Praktikum mikrobiologi jilid 2* (Malang: FPIK. Universitas Brawijaya, 1995).
[14] Cappuccino, G. Sherma James, dan Natalie, *Manual Laboratorium Biologi* (Jakarta: EGC, 2013).
[15] Muracman dan Nursyam, *Buku Panduan Praktikum mikrobiologi jilid 2*.
[16] Muracman dan Nursyam.

intended that the mushroom growing media is spread on the inner test tube wall, and the growth of the oyster mushroom mycelium spreads, making it easier to take for the next stage of cultivation.

After sterilization, let the oyster mushroom media cool until it freezes at room temperature. Then, prepare to transfer the oyster mushroom spore body to the oyster mushroom media. Before planting explants, there are several criteria for oyster mushrooms that must be considered to be the parent, including mature mushrooms, healthy and free from pests, fungi about four days old before developing into fruit bodies, free from physical abnormalities, extensive in shape, thick fleshy and sturdy. This fungus criterion is crucial in determining the quality of the culture or seed that will be produced.

Isolation is the process of taking a specific part of the broodstock's body to be implanted into the PDA media. That part will grow into pure culture. Isolation must be carried out with great care and care as it determines the purity of the culture produced. The taking and planting of explants (inoculation) of the main seeds (F0) of oyster mushrooms consist of several processes: sterilizing tools and hands with 70% alcohol. Select and remove oyster mushrooms that meet the criteria, turn on a methylated spirit and blower, wash the oyster mushrooms with aqua dest until clean, spray or wash the oyster mushrooms with 70% alcohol, take the Kaplan with a sterile scalpel knife that has also been burned on top of the bunsen. Next, cut the oyster mushrooms vertically until they split into two parts. Take the explants by cutting some parts of the stalk (0.5x0.5 cm), inserting the explants into the PDA planting medium—direct removal of spore bodies from adult fungi/fungi (isolation). Adult white oyster mushrooms have many strips or bulkheads. Inside these blades, there is a section called basidia. At the end of the basidia, there is a sac that contains many spores, also known as basidiospore. A pure culture (F0) is a fungal mycelium grown from the fruiting body tissue or spores derived from the parent fungus. A pure culture is the first step or stage in the technique of making seeds.

This stage requires skill and high accuracy to isolate and inoculate the fungus to be cultured. In addition, an aseptic technique is needed at this stage because the possibility of contamination from other fungi is enormous. Therefore, in the manufacture of pure culture (F0), the aseptic conditions must be strictly maintained. This is following the statement of Parjimo and Agus (2013),[17] the process of taking certain parts of the mother's body must be done very carefully, and with great care, because it determines the purity of the culture produced and before starting isolation activities, you must wash your hands using 70% alcohol to make it more sterile. The spore body to the oyster mushroom media was carried out aseptically so that no contaminant fungi would grow on the oyster mushroom media. The oyster mushroom media, which already contains the oyster mushroom spore body, is left for 25-30 days until the oyster mushroom mycelium fills the bottle oyster mushroom media. Seedlings stored for more than one month will be too old, and their medium will soon run out.

[17] Parjimo dan Andoko, *Budidaya Jamur (Jamur Kuping, Jamur Tiram, Jamur Merang)*.

The media that runs out will stop the growth of the fungal mycelium so that the mushroom seeds are not suitable for use. Making F0 seedlings is successful when a white mycelium grows around the explants, and the mycelium is seen to spread evenly throughout the test tube. If what is growing is not white, it means failure has occurred. When that happens, the media must be discarded, and the incubation activity repeated. The following process is the second training in making F1 oyster mushroom seeds. The second stage of breeding or F1 breeding aims to increase the mycelium of fungi from pure F0 cultures. The second stage breeding steps are not much different from the first stage (F0). Only the media and body sites are different. This activity aims to train farmers how to make F1 Oyster Mushroom seeds from simple and inexpensive ingredients. The steps that must be taken to manufacture Oyster Mushroom F1 seeds are preparing the materials and tools. The materials that need to be prepared are dry shelled corn, oyster mushroom F0 seeds from the previous stage. Meanwhile, the tools that need to be prepared are bottles for oyster mushroom media, cotton, rubber, heat-resistant plastics, spatulas, pans, filters, and autoclaves.

The first generation media, namely F1 media, came from grains - usually corn kernels and sorghum. Media for mushroom cultivation must contain carbohydrates as a source of C and protein as a source of N to obtain the optimal C / N value needed to support the growth and development of mycelium. [18] F1 media using sorghum is better than corn. This is consistent with research conducted by Fitri (2008),[19] which states that the average growth rate of mycelium in sorghum media is 0.43 cm/day, while in maize media is 0.29 cm/day. The reason for using corn kernels in this cultivation is that it is easier to obtain maize than sorghum kernels. In addition, maize is cheaper than sorghum. Soak the corn kernels overnight to soften the corn, so it cooks faster. The soaked corn is steamed to prevent damage to the surface of the corn and avoid excess moisture content in the boiled corn kernels.

Meanwhile, making it starts by washing the dry shelled corn, and removing the floating part, then boiling it in water until cooked. Next, put the boiled shelled corn into the oyster mushroom media bottle, and then cover the media bottle with cotton and plastic tied with tight rubber. Oyster mushroom media sterilization by autoclaving for 1.5 hours.

Then, what needs to be remembered is that the preparation of the bottles in the sterilizer is one factor that determines the success of the sterilization process. The sterilizer needs to be equipped with a rack with a hole (angsang) so that the bottles can be neatly arranged. The hole in the rack (the hole in the angsang) functions as a hot steam line or the contact of hot steam with the oyster mushroom seedling growth media bottle, if the placement of the bottle is not neat, the capacity is minimal, so it needs to be neatly arranged so that it can accommodate many bottles of mushroom seedling growth media. Oysters, but also not too tight because if it is too dense, the

[18] E Sumiati dan Shopa G. A., "Aplikasi Jenis Bahan Baku dan Bahan Aditif Terhadap Kualitas Media Bibit In-duk Jamur Shiitake," Jurnal Hortikultura, 19, no. 1 (2009): 49–58.
[19] Fitri, *Pertumbuhan Miselia Jamur Tiram Pleurotus ostreatus Pada Tiga Macam Biji Serealia Sebagai Substrat Bibit Dengan Penambahan Larutan Mineral* (Bandung: ITB, 2008).

flow of hot steam cannot evenly hit the entire bottle, so that the result is that some bottles of growth media are not sterile. After sterilization, let the oyster mushroom media cool at room temperature. Then, prepare to transfer the F0 oyster mushroom seeds to F1 oyster mushroom media. Clean the floor with disinfectant, spray the room with 70% alcohol, and then let the bunsen burn for 10 minutes in the room before transferring the F0 oyster mushroom seeds to the oyster mushroom media.

If the room is sterile, prepare F1 oyster mushroom media, F0 Oyster mushroom seeds, bunsen, spatula, and 70% alcohol. Spray 70% alcohol onto your hands, into the air, and on a spatula. Then, burn the spatula before using it to take and transfer the F0 seeds of the oyster mushrooms to the F1 oyster mushroom media. Transfer of the F0 oyster mushroom seeds to the F1 oyster mushroom media was carried out aseptically so that no contaminant fungi would grow in the F1 oyster mushroom media. Then, let the F1 oyster mushroom media containing the F0 oyster mushroom seeds for 25-30 days until the oyster mushroom mycelium fills the F1 oyster mushroom media bottle. If the oyster mushroom mycelium has filled the oyster mushroom media bottle, it can be said that the F1 oyster mushroom seeds have been successfully made. The growing mycelium must be white. If it is not white, there has been a failure. When that happens, the media must be discarded, and the incubation activity repeated. F1 oyster mushroom seeds that will be used for F2 oyster mushroom seed culture materials must be oyster mushroom seeds that are between 25 to 30 days old. Do not use F1 oyster mushroom seeds. Seedlings stored for more than one month will be too old, and their medium will soon run out. The media that runs out will stop the growth of the fungal mycelium so that the mushroom seeds are not suitable for use.

Furthermore, the third training was making oyster mushroom F2 seeds. This activity aims to train farmers how to make Oyster mushroom F2 seeds from simple and inexpensive ingredients. The steps that must be taken to make F2 Oyster Mushroom seeds start from preparing materials and tools. The materials prepared are dry shelled corn, Oyster mushroom F1 seeds from the previous stage. Meanwhile, the tools prepared are bottles for oyster mushroom media, cotton, rubber, heat-resistant plastic, spatula, pan, filter, and autoclave.

The way of making it starts from washing clean, dry, shelled corn. The floating part is removed and boiled in water until cooked. Then, put the boiled shelled corn into the oyster mushroom media bottle, and cover the media bottle with cotton and plastic with a tight rubber tie. Oyster mushroom media sterilization by autoclaving for 1.5 hours. After sterilizing the oyster mushroom media, let the oyster mushroom media cool to room temperature. After that, prepare to transfer the oyster mushroom F1 seeds to the oyster mushroom media. Clean the floor with disinfectant, spray the room with 96% alcohol, and let the bunsen burn for 10 minutes in the room before transferring the oyster mushroom F1 seeds to the oyster mushroom media. If the room is sterile, prepare oyster mushroom media, F1 seeds of Oyster mushrooms, bunsen, spatula, and 96% alcohol. Spray 96% alcohol into your hands, into the air, and in a spatula. Then, burn the spatula before using it to take and transfer the Oyster Mushroom F1 seeds to the

oyster mushroom media. Transfer of the oyster mushroom F1 seeds to the oyster mushroom media was carried out aseptically so that no contaminant fungi would grow on the oyster mushroom media. The oyster mushroom media that already contains the oyster mushroom F1 seeds is left for 23-30 days until the oyster mushroom mycelium fills the bottle of the oyster mushroom media. When the oyster mushroom mycelium has filled the oyster mushroom media bottle, it can be said that the Oyster Mushroom F2 seeds have been successfully made.

The final stage of this service activity is evaluating community service activities, namely assessing the success of oyster mushroom farmers in Karangpring Village, Sukorambi District, Jember Regency in making F0, F1, and F2 oyster mushroom seeds. From this evaluation, the following results were obtained:

Table 1. Results of F0, F1, and F2 White Oyster Mushroom Seed Making Activities in Karangpring Village, Sukorambi District, Jember Regency

No.	Activities	Materials	Results
1.	Making Oyster Mushroom F0 Seeds	1 liter of potato agar	From the 40 F0 seedlings of oyster mushrooms grown in the media, only one medium was contaminated.
2.	Making Oyster Mushroom F1 Seeds	Media 5 kg shelled corn.	• From 1 Oyster mushroom F0 seedlings grown, 6 Oyster mushroom F1 seeds were grown so that the farmers made a total of 234 Oyster mushroom F1 seeds. • From 234 F1 seeds of oyster mushrooms, only 2 F1 seeds of oyster mushrooms were contaminated.
3.	Making F2 Oyster Mushroom seeds	Media 30 kg shelled corn.	• From 1 oyster mushroom F1 seed, six oyster mushroom F2 seeds can be made; so that the whole F2 oyster mushroom seeds produced is 1404 F2 oyster mushroom seeds. • Of the 1404 Oyster mushroom F2 seeds produced, only five were contaminated.

Figure 2. Oyster Mushroom Seeds F0, F1, and F2 made by Oyster Mushroom Farmers

The results of training in making F0, F1, and F2 white oyster mushroom seeds on oyster mushroom farmers went very well. Farmers can practice and make F0 seeds: F1 and F2 white oyster mushrooms to match. By utilizing raw materials from their gardens, farmers can make F0, F1, and F2 oyster mushroom seeds independently to reduce production costs, and the farmers get more profit.

IV. CONCLUSION

Oyster mushroom farmers in Karangpring Village can make F0, F1, and F2 white oyster mushroom seeds independently and precisely. Increasing the skills of these farmers can help reduce the production costs of oyster mushroom cultivation to increase profits.

V. THANK YOU NOTE

The author would like to thank the UNEJ Institute for Research and Community Service (LP2M) for providing support for funding activities through the 2020 Assistance Village Service Program grant.

VI. REFERENCES

Cappuccino, G. Sherma James, dan Natalie. *Manual Laboratorium Biologi*. Jakarta: EGC, 2013.

Djarijah, N.M, dan A.S Djarijah. *Budidaya Jamur Tiram*. Yogyakarta: Kanisius, 2001.

Fadillah, Nur. *Tips Budidaya Jamur Tiram*. Yogyakarta: Genius Publisher, 2010.

Fitri. *Pertumbuhan Miselia Jamur Tiram Pleurotus ostreatus Pada Tiga Macam Biji Serealia Sebagai Substrat Bibit Dengan Penambahan Larutan Mineral*. Bandung: ITB, 2008.

Gunawan, AW. *Usaha pembibitan Jamur*. Jakarta: Penebar swadaya, 2001.

Ihsan. "Jember Kembangkan Budidaya Jamur Tiram." UMKM JEMBER, 2020. http://umkm-jember.info/index.php/component/content/article/1-latest-news/105-jember-kembangkan-budidaya-jamur-tiram.

Muracman, A. Soewarso, dan H Nursyam. *Buku Panduan Praktikum mikrobiologi jilid 2*. Malang: FPIK. Universitas Brawijaya, 1995.

Parjimo, dan Agus Andoko. *Budidaya Jamur (Jamur Kuping, Jamur Tiram, Jamur Merang)*, t.t.

Sumarni. "Botani dan Tinjauan Gizi Jamur Tiram Putih," Jurnal Inovasi Pertanian, 4, no. 2 (2006): 124–30.

Sumiati, E, dan Shopa G. A. "Aplikasi Jenis Bahan Baku dan Bahan Aditif Terhadap Kualitas Media Bibit In-duk Jamur Shiitake," Jurnal Hortikultura, 19, no. 1 (2009): 49–58.

Sunarmi, dan Cahyo. *Usaha 6 Jenis Jamur Skala Rumah Tangga*. Jakarta: Penebar Swadaya, 2010.

Suriawiria, Unus. *Sukses Beragrobisnis Jamur Kayu: shitake, kuping, tiram*. Jakarta: Penebar Swadaya, 2001.

Widyastuti, N, I Sukarti, R Giarni, dan D Tjokrokusumo. "Studi Awal Potensi Jamur Tiram (Pleurotus ostreatus) sebagai imunomodulator dengan sampel sel limfosit," Pros Sem Nas Masy Biodiv Indos, 1, no. 6 (2015): 1528–31.