

Training on Oyster Mushroom Cultivation for Tadris Biology Students in Developing an Independent Entrepreneurial Spirit

Meyninda Destiara

UIN Antasari Banjarmasin, Indonesia
e-mail: meyninda.destiara@uin-antasari.ac.id

Nurul Himmah

UIN Antasari Banjarmasin, Indonesia
e-mail: nurulhimmah@uin-antasari.ac.id

Istiqamah

UIN Antasari Banjarmasin, Indonesia
e-mail: istiqamah@uin-antasari.ac.id

Article History: Received on 16 September 2022, Revised on 25 November 2022,
Published on 30 December 2022

Abstract

Oyster mushrooms (*Pleurotus ostreatus*) are a product related to conventional biotechnology where the product is a food that can be consumed. Oyster mushroom (*Pleurotus ostreatus*) cultivation training is a community service effort related to conventional biotechnology, which is a food that can be consumed. This training stage includes biotechnology and biological entrepreneurship courses, which aim to develop capabilities in developing biology-based businesses. With this training, it is hoped that you will gain knowledge about oyster mushroom cultivation, as a product related to conventional biotechnology, and know how to implement it in entrepreneurship.

Keywords: Cultivation, Entrepreneurship Biology, Oyster Mushroom

A. Introduction

Oyster mushrooms (*Pleurotus ostreatus*) are a product related to conventional biotechnology which is a food that can be consumed. According to (Nadzirah et al., 2022) white oyster mushrooms (*Pleurotus ostreatus* var *florida*) are a food that is safe to consume and are not poisonous, so they can be consumed with meals (Sohi et al., 2020). Oyster mushrooms have the benefit of being a fairly complete source of nutrition, including protein, fat, carbohydrates, vitamin B2 (riboflavin), and minerals such as calcium, phosphorus and iron (Samrath et al., 2020). Apart from that, oyster mushrooms can also be used in making other products such as nuggets, crackers, sausages and beef jerky (Koodagi et al., 2021). Based on research (Tjokrokusumo, 2015), oyster mushroom products (*Pleurotus ostreatus*) are a healthy food whose deliciousness can be compared to chicken meat as a basic ingredient for burgers. So research (Muchtadi, 2010) concluded that oyster mushrooms have high protein 17.5% - 27% with low fat, namely 1.6 - 8%, and high levels of dietary fiber, namely 8-1.5%, so they can be categorized as healthy food.

Oyster mushroom cultivation is related to the implementation of conventional biotechnology so that it can be an appropriate dish when applied during lectures on biotechnology courses (Thakur, 2020). Apart from that, another course that can be applied is biological

entrepreneurship. These course offerings are contained in the biology course at Antasari Islamic State University, Banjarmasin.

Tadris Biology is a new study program from Antasari State Islamic University which was founded in 2017. Based on observations, Tadris Biology already has three (3) batches of students with the number of enthusiasts increasing every year. In accordance with the curriculum book for the tarbiyah and teacher training faculty of Antasari State Islamic University (UIN) (2018), Tadris Biology has courses with a total of 103 credits, and has unique courses that are different from other study programs, namely in the biology entrepreneurship course section.

Based on an interview with the head of the Biology Department, the aim of presenting the Biology Entrepreneurship course is so that students have the characteristics of a product that will be implemented during biology-based entrepreneurship. Such as nata de coco businesses from coconut, nata de coco from aloe vera, tape, tempeh, tofu, oyster mushrooms and many more (Sari et al., 2022). Apart from that, based on the 2018 curriculum book, Tadris Biology prepares its graduates according to competency objectives, one of which is as an entrepreneur in biology-based fields and biology education. Therefore, the cultivation of oyster mushrooms is two applications of courses in biology, namely biotechnology and then the results can be marketed (a typical biological product) based on the biology entrepreneurship course. Apart from that, oyster mushroom cultivation has been widely carried out by the wider community with very good future prospects. In accordance with the statement by (Siti Umniyat, 2013) cultivating oyster mushrooms is very easy to do and can help improve the community's economy, especially for communities affected by the Merapi eruption in Pandan hamlet, Sleman, DIY.

Based on previous applications of oyster mushroom cultivation that have been carried out by several researchers using waste from agricultural production such as rice husks. According to (Suparti & Marfiah, 2015) regarding the productivity of white oyster mushrooms (*pleurotus ostreatus*) on waste media such as husks and dried banana leaves as an alternative medium, (Destiara et al., 2022) Cultivation of white oyster mushrooms (*Pleurotus ostreatus*) uses wood waste and rice husks, as well as research from (Destiara et al., 2022) on the effect of adding rice husks and bran on the growth and yield of white oyster mushrooms (*Pleurotus ostreatus*).

Based on the survey results, the location in Banjar Regency, Gambut District is an agricultural area that produces a lot of grain dregs in the form of mountains of rice husks but has never been used for oyster mushroom cultivation. For this reason, we, as Tadris Biology lecturers and facilitators, are interested in carrying out service to Tadris Biology students with the service title, namely "Training in Cultivation of Oyster Mushrooms (*Pleurotus ostreatus* var *Florida*) for Tadris Biology students as support for biotechnology and biological entrepreneurship courses".

B. Methods

The flow stages in the oyster mushroom cultivation service are as follows:

Counseling

Outreach activities were carried out online with an online webinar about oyster mushroom cultivation as an application of Biotechnology and Biological Entrepreneurship courses, attended by all Biology students and participants from the general public.

Preparation

Preparations were made by forming a committee for follow-up activities, namely training in oyster mushroom cultivation and implementation in entrepreneurship, namely 5 committees from lecturers as a team monitoring online activities and recruiting 13 Tadris biology students as training participants who live in Banjarmasin considering that the implementation was carried out during the Covid-19 pandemic. purchase tools and materials and arrange permits for the establishment of a "Mushroom House".

Implementation

Implementation activities are divided into two. The first was the implementation of oyster mushroom cultivation and the implementation of biotechnology courses which were attended by 13 students living in Banjarmasin who participated considering the implementation conditions during the Covid-19 pandemic. The second is the implementation of biology entrepreneurship courses by selling biological products such as raw oyster mushrooms, oyster mushrooms and the implementation of peer mentoring by a team of cadres at the mushroom house which is attended by 13 students who live in Banjarmasin assisting in this second implementation phase by providing peer mentoring to Tadris Biology student.

Monitoring

Monitoring and evaluation of activities: monitoring and evaluation of activities carried out by the Committee and facilitators as parties who assist with monitoring and evaluation who are also assisted by resource persons.

C. Results and Discussion

The activities were carried out during the Covid-19 pandemic, where these conditions required people to keep their distance, prioritize health protocols and avoid making crowd. Activities are carried out online (on the network) and offline (outside the network), with an online design starting from an online webinar whose participants consist of biology students and are open to the public. Then it continued offline, namely training with 13 student participants who live in the city of Banjarmasin.

13 participants were selected based on their location of residence and were required to be Biology students at UIN Antasari Banjarmasin. The aim of recruiting the 13 participants is: (1) to help care for oyster mushrooms in the mushroom house which will be established on the UIN Antasari campus as a means of learning biotechnology. (2) to help educate other students about how to cultivate oyster mushrooms properly and correctly. (3) to help train other students in oyster mushroom cultivation care. (4) to help develop oyster mushroom creations in the field of entrepreneurship. (5). to help manage oyster mushrooms in the oyster mushroom house. After the cadre stage took place, the participants were given 5-10 pieces of oyster mushroom baglog to be cultivated in their respective homes with care according to the instructions from the resource person. During cadre training, students are monitored via an online form to report the progress of the development of the oyster mushrooms they cultivate in their respective homes. Development progress is reported via the link once a week every Monday.

The training is carried out online and offline, the aim is to provide information about oyster

mushroom cultivation even during the Covid-19 outbreak. The description of the implementation carried out is discussed in detail as follows:

Online (in network)

The training began with online counseling via online webinars, with activities assisted remotely by Tadris biology students and Tadris biology lecturers. Recruitment of participants was carried out online with participants from undergraduate biology students and was open to the public. The aim of holding the online webinar is to provide information and an overview of the service theme, namely "training in oyster mushroom cultivation for Tadris Biology students as support for biotechnology and biological entrepreneurship courses". In accordance with this theme, sources were sought based on expertise, the sources were lecturers at UIN Antasari, lecturer in biotechnology courses, Mrs. Nida Humaida, M.Si, founder of oyster mushroom cultivation at the Heart Star Mushroom House, Mrs. Ir Yuniar Ellyana, with the keynote speaker from the head of UPT. Entrepreneurship and career development at UIN Antasari Banjarmasin, Mrs. Raden Yani Gusriani, SE., MM. The webinar will be held on Thursday, July 23 2020 at 10.00-11.30 with participants open to the public and required for undergraduate biology students. Before participating in the webinar, you must fill in the link for participant data collection. Participants varied from various backgrounds.

It was recorded that 175 participants registered for the oyster mushroom webinar training from various groups and various regions. When the webinar took place, it received a lot of responses from participants who wanted to discuss oyster mushroom cultivation and how to develop them into various preparations. The implementation of the webinar was assisted by 5 research assistants from lecturers and students. The aim of the webinar is to educate the wider community and Biology students as mandatory participants.



Figure 1 . Monitor the implementation of the webinar before continuing training offline

The photo is a presentation from the keynote speaker, namely Mrs. Raden Yani Gusriani. Before the speaker explained, he explained the importance of entrepreneurship among students, especially in the current conditions. After that, the activities explained by the resource persons continued. After the activity was completed, the certificates and souvenirs were handed over to the resource person, moderator and keynote speaker.

The following webinar activity was collaborated with the student association (HMJ) of the Tadris Biology study program, so that in the future when the mushroom house is built, it will be donated to HMJ to manage it with the assistance of a team of cadres. The next stage after the webinar is face-to-face training which is limited to only 13 students who live in the city of Banjarmasin. The training continued at one of the resource persons' homes, namely IR's mother. Yuniar Ellyana, whose name is the heart star oyster mushroom house, is located in

Offline (outside the network)

The main training was held at the resource location of the founder of the Bintang Hati oyster mushroom house, namely Mrs. Ir Yuniar Ellyana. The training was carried out after the online webinar was held.



Picture 2. Banner training

The conditions of the training venue are very supportive for very limited activities, equipped with health protocols and maintaining distance. As seen in the activity photo below:



Picture 3 . Photo activity training ongoing and Baglog mushrooms oyster ready for shared to participant

After the training activities were completed, baglogs of oyster mushrooms were distributed for the participants to cultivate in their respective homes with directions from the resource person. The number of baglogs treated is 5-10, to monitor activities from home, an instrument is distributed in the form of a form which participants will fill out once a week regarding the progress of the development of oyster mushrooms.

Continued Online Reporting of Activities

After completing the training, each participant cultivated oyster mushrooms in their respective homes by submitting reports online with the form that had been prepared. Reporting is carried out every week on Monday regarding the progress of monitoring oyster mushrooms. After the reporting stage, it will be analyzed and discussed in the WhatsApp group guided by facilitators and resource persons, while training at home there are problems and confusion. So this training activity is always evaluated every week regarding the progress of independent cultivation.



Picture 4 . Documentation Wrong One participant Which do cultivation in a way independent in House Just

Continuation of Service Implementation (Mushroom House)

The implementation of oyster mushroom training is carried out continuously by establishing oyster mushroom houses in the educational and teacher training faculties. The aim of establishing the mushroom house itself is as a place for biotechnology practicum and to continue cultivating oyster mushrooms to be donated to HMJ and then developed by a team of 13 people. Following up on the establishment of the oyster mushroom house, the team of facilitators met with superiors from the tarbiyah and teacher training faculties regarding permits to build land. After receiving recommendations, the facilitator team calculated predictions for building oyster mushroom houses. After completing the issuance of the permit, the facilitator team returned to measure and estimate the construction of the mushroom house with the help of the field team.

Outputs and Outcomes

Service is something related to output and outcome, as previously explained, the output carried out is counseling followed by independent oyster mushroom training and up to the implementation stage of establishing a mushroom house to facilitate students understanding biotechnology in the field of oyster mushroom cultivation. The outcomes obtained by webinar participants include useful knowledge, then continued with training which was carried out offline for 13 cadre teams. So that in the future, when the outbreak has subsided, they can guide other students to manage oyster mushroom houses.

Supporting and Inhibiting Factors for Activities

This service activity shows success if in the process there are changes in building knowledge and skills independently in implementing oyster mushroom cultivation. Several indicators of the achievement of this service activity are as follows: (1) The attendance of all participants in learning reaches 100%. (2) Active participation of most participants by asking substantive and technical questions in the learning process. (3) Involvement in offline training activities. (4) Monitor progress every week and discuss it again if there are any mistakes in caring for oyster mushrooms. Several supporting factors and obstacles experienced in implementing community service are as follows: (1) Implementation of oyster mushroom cultivation in the conditions of the Covid-19 pandemic so that implementation is only limited to students who live in Banjarmasin. (2) The implementation of monitoring is sometimes hampered by the busyness of each individual so that they forget to submit progress, but this is not a basic obstacle to activities. (3) There will be another online discussion with the monitoring team so as to increase the understanding of the cadre team in caring for oyster mushrooms properly and correctly.

Program sustainability

The sustainability of this oyster mushroom cultivation training program is to provide facilities in the form of a mushroom house for Biology Tadris students. The aim of establishing a mushroom house is to facilitate students in carrying out conventional biotechnology practices while being able to sell cultivated products by implementing the next service objective, namely biological entrepreneurship.

D. Conclusion

The implementation of study program-based community service was successfully carried out despite the Covid-19 pandemic, activities were carried out in 2 directions, namely online (in the network) by holding outreach through webinars and offline (outside the network) with limited participants and recruited as a team of cultivation cadres Oyster mushroom. This service also provides suggestions for follow-up training, namely holding large-scale oyster mushroom training for all generations of biology students with the hope of making innovations in oyster mushroom products in the future. Such as making oyster mushroom satay, oyster mushroom ice cream, and so on. So that in the future this training will not only be limited to cultivation but also major implementation of making renewable products.

Acknowledgment

Thank you to UIN Antasari Banjarmasin which has fully funded training community service activities based on funding from the Litapdimas 2020.

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