



Munich Personal RePEc Archive

Oyster Mushroom as Cash-Crop Fungus Cultivated

Dewi, Ai Suminarti

Agrotechnology Department, Univ. Winaya Mukti. Sumedang

2017

Online at <https://mpra.ub.uni-muenchen.de/80551/>
MPRA Paper No. 80551, posted 02 Aug 2017 09:33 UTC

Oyster Mushroom as Cash-Crop Fungus Cultivated

Ai Suminarti Dewi*

*Agroteknologi Universitas Winaya Mukti. Sumedang (asdewi@yahoo.com)

Abstract

Oyster mushroom (Pleurotus ostreatus) is a fungus that much-loved by the community. In addition to the delicious, oyster mushrooms are also very beneficial to the health of the body. High nutritional content with a variety of essential amino acids contained in it, Oyster mushrooms also contain other compounds that are important for the medical aspects. It is easily cultivated and derives income as cash for the farmer. In nature, oyster mushrooms grow only in certain seasons in limited quantities So the oyster mushroom has a good prospect to be cultivated. Oyster mushrooms can be grown in the wood powder media packed in plastic bags. In oyster mushroom cultivation activities include: preparation of tools and materials, preparation of raw materials, mixing media, composting, pasteurization, inoculation, incubation, growth and maintenance, harvesting, postharvest and marketing.

Key words : cash, *cultivated*, *income*, *marketing*.

Introduction

Mushrooms are plants that are easily found in the wild, for example in forests or gardens. Mushrooms can grow everywhere, especially in the rainy season. Mushrooms in nature is very diverse and each has different characteristics. Subandi (2014) said fungus belongs to microorganism in classification. Fungus is one of the microorganism, share in classification with other microorganisms as protozoa, bacteria, algae, and the super-microorganism the virus.

Mushrooms is one of horticultural commodities, it is cultivated around the farmer house. Cultivation of it is not requiring considerable capital and production in-put of means and it is saleable everywhere. Subandi (2011) said estate crops cultivation derives revenue as exporting commodity, while horticulture crops are easily deriving income in domestic market known as cash-crop..

Oyster mushroom (Pleurotus ostreatus) is a fungus that much-loved by the community. In addition to the delicious, oyster mushrooms are also very beneficial to the health of the body. High nutritional content with a variety of essential amino acids contained in it, oyster mushrooms also contain other compounds that are important for the medical aspects. In Japanese and Chinese society, the menu of foods made from mushrooms has become a hereditary menu for knowing the benefits are very good for the body. In Indonesia, the consumption of oyster mushrooms from year to year is known to increase along with the needs of the community will be healthy food products and affordable (ganeshamicsoft.indojamur.com, 2010).

According to the Directorate General of Horticulture of the Department of Agriculture in ganesha microsoft indo jamur (2010), nutritional content of oyster mushrooms consists of an average protein of 3.5-4% of wet weight. Means twice as high as asparagus and cabbage. When measured dry weight of protein content 19-35%. While rice only 7.3%, wheat 13.2%, 39.1% of soybean and cow milk 25.2%.

Mushrooms have high nutritional value, especially protein content 15-20% of dry weight. High calibration reaches 34-89%. The nutritional properties of amino acids possessed by mushrooms determine the nutritional quality. Fresh mushrooms generally contain 85-89% water. The fat content is quite low between 1.08-9.4% of the dry weight comprised of mono ditriglieserida free fatty acids, sterols and phoshpolipida (Jamurtiramputih's Weblog.htm .. 2008).

While the largest carbohydrates in the form of hexosan and pentosan polymer carbohydrates can be glycogen, chitine and an polymer N-acetyl glycosamine which is a structural component of fungal cells. Khitin is the main element of white fungus fiber (Jamurtiramputih's Weblog.htm., 2008).

Mushrooms are also a source of vitamins such as thiamin, niacin, biotin and ascorbic acid. Vitamin A and D are rare in mushrooms, but in white oyster mushrooms there is ergosterol which is a precursor of vitamin D. Mushroom is rich in mineral especially phosphor, and other minerals contained as iron (Fe) (Jamurtiramputih's Weblog.htm., 2008).

Literature Review

Tjitrosoepomo (2001), states that oyster mushroom (*Pleurotus ostreatus*) has a semicircular hood similar to an oyster shell with a slightly concave and white to creamy middle part, has a spriggly sideways stem, ostreatus, almost slippery surface, diameter 5-20 cm. The edge of the hood is smooth slightly curved. At a young age, the body of the fruit is covered by a universal velum. If the body is enlarged, stay membrane at the base of the fruit body stalk as the stock. From the edge of the body of the fruit to the stalk there is also a membrane covering the underside of the fruit body called velum partiale. If the body of the fruit is enlarged, then this membrane will tear and is a ring (annulus) on the top of the fruit body.

Subandi, M (2014). states that naturally, the fungus can multiply in two ways, namely asexually and sexually. Asexually done by division, that is by dividing cells to form two similar child cells, that is by way of a child's cells that grow from a small protrusion on the host cell or the formation of spores. This asexual spore serves to spread its species in large quantities by wind or water intermediaries.

Suriawiria (2000), states that for the life and development of fungi require nutrient or food sources in the form of chemical elements, such as nitrogen, phosphorus, sulfur, potassium, carbon that has been available in wood tissue, albeit in small quantities. Therefore, external

addition is required, for example in the form of fertilizer used as a mixture of the manufacture of plant substrates or mushroom growing medium.

Budiati (2010) a common form of fungus in the form of threads lined with rigid cell walls called hyphae. The hyphae branches form mycelium. Some unicellular fungi such as yeast (yeast) do not form mycelium. There are two types of mycelium, namely mycellum vegetatif / somatic function to absorb organic substances from the environment, while reproductive mycelium produces spores for breeding. Some types of fungi in unfavorable environmental conditions form a rounded mycelium that is resistant to environmental influences called sclerotia.

Material

- Stove
- Sterilizers
- Shelves
- PH meter
- Thermometer
- Ring
- Spiral lights
- Sawdust
- Wheat flour
- Chalk
- F3 Mushroom Seeds
- 95% alcohol
- Plastic bags are transparent
- Rubber bracelet
- Water
- Cassava flour
- Majun / Newspaper
- White sug

Setting up the kumbung (Housing Built)

Kumbung or mushroom house is a place to treat baglog and grow mushrooms. Kumbung is usually a building, filled with shelves to put bag-log. The building must have the ability to maintain temperature and humidity.

Kumbung is usually made of bamboo or wood. The wall of kumbung can be made from gedek or board. The roof is from tile or shingle. Do not use asbestos or zinc roofs, because the roof will bring heat. While the floor should not be plastered. In order for water used to flush the fungus can seep.

Inside the kumbung is equipped with a rack of grid made of storied. The shelf serves to compile a baglog. Rack frames can be made from bamboo or wood. Shelves lined up. Between the shelves one with the other separated by aisle for treatment.

The size of the height of the space between shelves should be not less than 40 cm, shelves can be made 2-3 levels. Width of shelf 40 cm and length of each segment 1 meter rack. Each rack segment of this size can contain 70-80 bag-log. The shelf requirements are adjusted to the number of bag-logs to be cultivated.

Before baglog put into kumbung, you should do the preparation first. Here are the steps:

- Clean up the kumbung and shelves to keep the bag-log from the dirt.
- Calcify and spray with fungicides on the inside of the kumbung. Let stand for 2 days, before baglog put into kumbung.
- After the odor is lost, enter the bag-log that is ready to be grown. The entire surface was covered with white fibers.

Set up a bag log

Bag-log is a planting medium where laying oyster mushroom seeds. The main ingredient of bag-log is sawdust, because oyster mushrooms include wood mushrooms. Bag-log wrapped in cylindrical plastic, where one end is given a hole. In the hole oyster mushrooms will grow poking out.

In the cultivation of large-scale oyster mushrooms, mushroom farmers usually make their own baglog. But for beginner farmers, or farmers with limited capital usually bag-log purchased from other parties. So farmers can focus on running a cultivation business.

- If you want to create your own bag-log, then the steps as follow:
- Prepare 2 large sacks of sawdust
- Saw the sawdust until smooth
- After sieving, put ½ kg flour, ½ kg cassava flour, white sugar ½ kg.
- Then mix well.
- After evenly, prepare the water.
- Then enter the lime of agriculture as much as 4 heads and white sugar ½ kg into the water.
- After stirring until evenly, then pour into sawdust that has been mixed with flour and cassava flour.
- Add enough water until the dough can be clenched.
- Insert the dough into a transparent plastic until solid, then cover with a ring (paralon pieces), then cover with the newspaper.

How to Plant a Seed

- Planting seeds should be done in a closed place / room
- Spray the contents of the room evenly using alcohol 95%
- Wear a glove in a room spray
- To be easier in planting seeds, Logs that will be inoculated in place in front near the left hand.
- Open the rubber on the log, cover paper, and also the Log cotton cover.
- Give 3 tablespoons of seedlings into every single media as log.
- In every spoon motion used, heated using fire from the metanol-lamp.
- Logs that have been given seeds are closed again using cotton.
- Logs that have been planted with seeds placed on the shelf.
- Let stand until the entire Log grows by itself mushroom mycelium.
- If the entire media log is overgrown with mycelium, the cotton cover and the ring at the top of the log are opened.
- To keep moisture awake, spray with sprayer using each log.
- Well, can be seen if the mushrooms grow with bloom and width, it is ready in the harvest.

How to take care of bag log

There are two ways of arranging bag logs in the rack, which are placed vertically where the baglog hole faces up. And horizontally, the bag log hole faces sideways.

Both ways have their respective advantages. Bag-logs arranged horizontally are safer than water spray. If watering is excessive, water will not enter the bag-log. In addition, to make harvesting easier. Only, the preparation of horizontal space more space.

Preparation of horizontal space more space.

The following ways of treatment of oyster mushroom cultivation is as follows:

- Before bag-log is compiled, first open the bag-logging ring and paper. Then let stand for 5 days. When the floor is made of soil do watering to add moisture.
- After that, cut the end of the bag-log to provide a wider growth space. Let for 3 days do not first watered. Just enough watering on the floor only.
- Sprinkle with sprayer. Watering should form a mist, not water droplets. The more perfect the better the better. The frequency of watering 2-3 times a day, depending on temperature and humidity kumbung. Keep the temperature in the range of 16-24°C.

Harvest cultivation of oyster mushrooms

When the bag-log used by its surface has been perfectly covered with mycelium, usually within 1-2 weeks of opening the lid of bag-log, the fungus will grow and can be harvested. Bag-log mushrooms can be harvested 5-8 times, if the treatment is good. Bag-log that weighs about 1

kg will produce mushrooms as much as 0.7-0.8 kg. After that bag-log removed or can be used as compost material.

Harvesting is done on mushrooms that have bloomed and enlarged. Precisely when the edges have been seen tapered. But the hood has not broken the color is still pure white. If the harvest period through half a day only then the color becomes a bit brownish yellow and tudungnya broke. When it's like this, the mushrooms will quickly wilt and not last long. The first harvest distance to the next harvest ranges from 2-3 weeks.

Result and Discussion

I conducted an experiment of oyster mushroom planting 2 times. The first experiments were not good because the seeds used were long after the purchase. In addition to seed problems, other constraints are the occurrence of contamination on some bag-log for after mixed materials are not directly packed in plastic. The second experiment results very well because it uses new seeds and there is no contamination happened.

Conditions Grow Oyster Mushroom

1. Temperature / Temperature For Oyster Mushroom Cultivation

Approximately temperatures between 23-28°C The "mycelium" fibers in oyster mushrooms will flourish well, so with Temperature interference the normal temperature is good as growth. Even so, Temperature below 23°C, White Oyster mushroom is still able to grow even though with a slow growth period.

In order to grow its fruit with the shape of oyster shells, must be in temperature temperature ranges from 13-15 ° C in a period of 2 up to 3 days.

If the low temperature results growth will not occur, with the result it can be concluded that if you want a good result of course temperature should be normal.

2. Humidity Factor

For the growth and development of this oyster mushroom in need a lot of water content on the subtract.

If the water in need is not appropriate or less then the growth of oyster mushrooms will be disturbed that will not grow, too much water was not recommended because it will quickly rot and destroy the fungi. The best way to provide water content in oyster mushroom subtract is by watering.

As we know that the fungus will quickly grow and grow if the condition of the place is in a humid state, but also water is not excessive resulting in the presence of puddles. Approximately

60% is needed on subtract agar in oyster mushroom mycelium grows well. But for stimulation of growth of shoots and also fruit body, moisture in need between 75-85%.

3. Lighting

In order for the growth of oyster mushroom mycelium grows optimally. Lighting also becomes one of the important elements in it, ie the rays are absent or in the dark. But to the contrary also the fruit body will not grow if the place there is no light or dark. Light is actually in need in stimulating the growth of fruit body. If you do not get watering then the stem of the fungus will grow small and the hood grows abnormal.

To note is that direct sunlight can also cause wood, and the growth of the hood will become dwarfed. The conclusion is that for the growth of mushrooms to be good then it only requires light that its nature spread. Therefore to anticipate this in need of a tree shade at mushroom cultivation.

4. Oxygen

Oxygen also plays an important role as a compound in growth for white oyster mushroom which is an aerobic facultative saprophyte plant. With a smooth air circulation will easily receive the oxygen well. So, if air oxygen where the cultivation of this Oyster Mushroom will lead to a lack of growth for the oyster mushroom.

Actually with minimal oxygen, the mushroom may grow, but in an abnormal state with a dwarf body, in addition to the place that lack of oxygen intake causes the fungus will easily wither and die. The point is the oyster mushroom fungus fresh air circulation for better growth. Therefore, it should be given a hole or ventilation for air circulation in the room where the cultivation is going well.

In addition to oxygen, carbon in the oxide was necessary once in the mushroom mycelium growth between 15% s / d 20%. With higher carbon dioxide will cause oyster mushroom growth to become disturbed and grow unusual or abnormal.

5. Degree of acidity (pH)

pH medium that has a slightly acidity between 5.0-6.5 white oyster mushroom mycelium will flourish with maximum. So what is needed in producing metabolism from white oyster mushrooms is by Medium pH, for example production on organic acids.

In acidic conditions that can occur the growth of mycelium is not optimum, growing parasites by other fungi. It can also cause dead oyster mushrooms to die. With a very high pH conditions (base), the system makes metabolism of white oyster mushrooms do not become effective and can happen rapid death. Then the conclusions can be from the results of the fruit body will grow at a maximum pH condition has a pH size of 6.8 s / d 7.0.

Medium for the White Oyster Mushroom

In a traditional way, the Japanese cherry country. Seeds of this fungus is planted in a hole or it could be on the line that is contained in dry wood. The drying can be carried out using electricity or by sunlight. If using modern methods, mushrooms will grow on the media in the form of wood sources, can be sawdust, sugar source (flour) P fertilizer and water.

Conclusion

Everyone can try oyster mushroom cultivation after understanding and understanding how the steps. If the first experiment has not succeeded, then we should look for the root of the problem and do not do it in the second experiment.

References

- Dwidjoseputro. 1998. Dasar-Dasar Mikrobiologi. Penerbit Djambatan. Jakarta.
- .Kaiser, G.E. 2004. Microbiology Home Page. <<http://student.Ccbe.edu>> [06-02-2005]
- Society for General Microbiology. 2014. Protozoa. <http://microbiologyonline.org.uk/about.spm>. Your Source for The latest research .
- Subandi, M (2011) .Budidaya Tanaman Perkebunan. Buku Daras. Gunung Djati Press.
- Subandi, M (2014). Mikrobiologi, Kajian dalam Perspektif Islam. Edisi Revisi. PT. Remaja Rosdakarya. Bandung. Pp.234
- Yaeger, Robert G. 1996. Medical Microbiology. 4th Edition. The University of Texas, Medical Branch at Galveston
- <http://alamatani.com/cara-budidaya-jamur-tiram-putih.html>
- <http://carabudidaya88.blogspot.com/2016/06/cara-budidaya-jamur-tiram-di-rumah.html>
- <https://kabartani.com/budidaya-jamur-tiram-sangat-mudah-dan-murah-dengan-hasil-yang-melimpah.html>
- http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=7&cad=rja&uact=8&ved=0ahUKEwiE5beQiuLUAhUFW5QKHeBPDOAQFgg9MAY&url=http%3A%2F%2Fwww.bestbudidayatanaman.com%2F2014%2F08%2Fcara-simple-budidaya-jamur-tiram-dengan.html&usq=AFQjCNGf7Rb_AvWCM17KXe_5dBYjWfGTCw
- <http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=14&cad=rja&uact=8&ved=0ahUKEwiE5beQiuLUAhUFW5QKHeBPDOAQFghoMA0&url=http%3A%2F%2Fblog.indonetnetwork.co.id%2Fcara-budidaya-jamur-tiram%2F&usq=AFQjCNFpXQrepcGIaNcxyRSK-AdJnP7Gww>
- <https://www.satujam.com/budidaya-jamur-tiram/>

<http://www.tandapagar.com/budidaya-jamur-tiram/>