UNIVERSITI PUTRA MALAYSIA

PRODUCTION OF OYSTER MUSHROOMS *(PLEUROTUS FLORIDA AND LENTINUS SAJOR-CAJU*) AT MUSHROOM HOUSE, FACULTY OF AGRICULTURE, UPM

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BY

NUR ASYIQIN OTHMAN

A final year project report submitted to the Faculty of Agriculture, Universiti Putra Malaysia in fulfilment of the requirement of PRT 4999 for the award of the Degree of Bachelor of Agricultural Science

Faculty of Agriculture

Universiti Putra Malaysia

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CERTIFICATION

This project paper entitled 'Production of Oyster Mushrooms (*Pleurotus florida* and *Lentinus sajor-caju*) at Mushroom House, Faculty of Agriculture, UPM' is prepared by Nur Asyiqin Othman and submitted to the Faculty of Agriculture in partial fulfilment of the requirement of PRT 4999 (Final Year Project) for the award of the degree of the Bachelor of Agricultural Science.

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Nur Asyiqin binti Othman

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Oyster mushrooms are edible mushrooms and are among the important cultivated mushrooms in the world. The growth and yield of these mushrooms are highly affected by temperature and humidity. This paper presents a study that was conducted on two different oyster mushrooms (*Pleurotus florida* and *Lentinus sajor-caju*) which was carried out in a mushroom house at the Department of Plant Protection, Faculty of Agriculture, Universiti Putra Malaysia from March to April. The objective of the experiment is to study the effect of temperature and humidity on the yield performance of oyster mushrooms. A total of 5 replications were used to cultivate each oyster mushroom. The temperature (°C) and humidity (%) of the mushroom house were measured by using a digital thermo-hygrometer daily. *Pleurotus florida* exhibited faster mycelial growth and primordial initiation compared to *Lentinus sajor-caju* in higher temperature and lower relative humidity. However, *Lentinus sajor-caju* showed higher yield and biological efficiency (BE%) compared to *Pleurotus florida*. Overall, temperatures and humidity affected the mycelial growth, primordial initiation and mushroom yields.

Keywords: Mushroom cultivation, oyster mushrooms, growth and yield, biological efficiency

ABSTRAK

PENGELUARAN CENDAWAN TIRAM (*PLEUROTUS FLORIDA* DAN *LENTINUS SAJOR-CAJU*) DI RUMAH CENDAWAN, FAKULTI PERTANIAN, UPM

Nur Asyiqin binti Othman

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Cendawan tiram adalah cendawan yang boleh dimakan dan merupakan antara cendawan ditanam penting di dunia. Pertumbuhan dan hasil cendawan ini amat dipengaruhi oleh suhu dan kelembapan. Kertas kerja ini membentangkan kajian yang telah dijalankan ke atas dua cendawan tiram yang berbeza (*Pleurotus florida* dan *Lentinus sajor-caju*) yang telah dijalankan di dalam rumah cendawan di Jabatan Perlindungan Tumbuhan, Fakulti Pertanian, Universiti Putra Malaysia dari bulan Mac hingga April. Objektif eksperimen ini adalah untuk mengkaji kesan suhu dan kelembapan prestasi hasil cendawan tiram. Sebanyak 5 replikasi digunakan untuk penanaman setiap cendawan tiram. Suhu (°C) dan kelembapan (%) di rumah cendawan telah diukur dengan menggunakan digital termo-hygrometer setiap hari. *Pleurotus florida* mempamerkan pertumbuhan miselia dan pengeluaran primordia yang lebih cepat berbanding *Lentinus sajor-caju* dalam suhu yang lebih tinggi dan kelembapan relatif lebih rendah. Walau bagaimanapun, *Lentinus sajor-caju* menunjukkan hasil dan kecekapan biologi (BE%) yang lebih tinggi berbanding *Pleurotus florida*. Secara keseluruhan, suhu dan kelembapan mempengaruhi pertumbuhan miselia, pengeluaran primordia dan hasil cendawan.

Kata kunci: penanaman cendawan, cendawan tiram, pertumbuhan dan hasil, kecekapan biologi

CHAPTER 1

INTRODUCTION

The production of mushrooms in the world market is increasing from year to year. This is reflected by the increase of total mushroom production worldwide. FAOSTAT (2015) reported the production of commodity in selected countries increases from 9.59 million tonnes in 2012 to 9.93 million tonnes in 2013. In addition, in Malaysia, the production of mushroom has shown a significant upward trend where 2,939.6 tonnes mushroom were produced in 2012 to 3,510.8 tonnes in 2013 (DOA, 2013).

Table 1. Summary of time series data on planted area and production of mushroom, Malaysia, 2012-2013

2012			**2013**		
Planted area (ha)	**Harvested area (ha)**	**Production (tonnes)**	**Planted area (ha)**	**Harvested area (ha)**	**Production (tonnes)**
142.9	124.2	2,939.6	189.6	174.3	3,510.8

Source: DOA, 2013

The mushroom industry in Malaysia is relatively small and new. However, it is expected to become one of Malaysia agricultural commodity towards 2020. Government as well has implemented several incentives as an encouragement for those who are involved in this industry. Recently in the Budget 2016, the Prime Minister has announced the extension of tax incentives for food production activities until 2020 which include rearing deer, cultivation of mushroom, coconut, seaweed,

honey bees and stingless honey bees and planting animal feed crops such as sweet potato and tapioca (MOF, 2015).

In Malaysia, *Pleurotus florida* and *Lentinus sajor-caju* (previously known as *Pleurotus sajor-caju*) are among of edible mushroom that are commonly cultivated due to its economic and ecological values. Plus, it also requires a shorter growth time in comparison to other edible mushrooms (Sánchez, 2009). They are generally called the oyster mushroom because of their shell-like pileus or cap.

Environmental stability is one of the problems affecting the production of mushrooms as it is difficult to be controlled. So, control of temperature and humidity, and the amount of water are among things that can solve the problem (Haimid *et. al*., 2013). In addition, temperature and humidity play a big role in this mushroom growth. They contribute to fast mycelial growth and improve of the mushroom crop (Chang & Miles, 2004).

Thus, the objectives of this project are to study the effect of temperature and humidity on the growth and yield of the oyster mushrooms and to compare their growth. Being among of the most cultivated and marketed mushrooms, these mushrooms are needed in perpetuity and in large quantity. Because of their value, more research on temperature and humidity effects on the growth of these mushrooms need to be done in order to produce high yield.

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