

Thesis Title	Domestication and Cultivation of Wild Strains of <i>Pleurotus</i> and <i>Lentinus</i> Species
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ABSTRACT

In this study, three wild mushrooms, namely *Lentinus connatus*, *L. roseus*, and *Pleurotus giganteus*, were studied for possibility of domestication. Fruiting bodies of the three mushrooms were collected from forests in northern Thailand and morphologically characterized. In this study, attempts were made to investigate the optimal *in vitro* culture conditions of the mycelia of these mushrooms. Of seven media tested, black bean agar, red bean agar and soy bean agar were best for the mycelial growth of *L. connatus*, *L. roseus* and *P. giganteus*, respectively. The mushroom mycelia were able to grow at temperatures ranging from 20-30°C, with an optimal temperature of 30°C for *Lentinus* and 25°C for *Pleurotus*. These mushrooms grew fairly well in mild acidic, neutral and alkaline conditions (pH 5.0 – 8.0). The best mycelial growth and density of *P. giganteus* were observed in acidic media (pH 5.0 - 6.5) whereas those of *L. connatus* and *L. roseus* were obtained in slightly acidic to neutral pH (pH 5.0 – 7.0). For spawn production, three wild mushrooms could grow in all five substrates (red bean, black bean, mung bean, soy bean, and sorghum) to a varying extent. Of these, sorghum was selected for use in spawn preparation.

Recently a method for the cultivation of *Pleurotus giganteus* at the experimental level using saw dust as a substrate has been developed. The strain was isolated from a fresh fruiting body of *P. giganteus* (MFLU10 0154) using a piece of cap tissue and cultivated on potato dextrose agar. The cultivation method involves in two steps; i) inoculating on a saw dust substrate in polypropylene bags as the preliminary step, and ii) casing with soil, which is very important for fruiting. The developed method of growing *P. giganteus* is fully described in this Thesis.

The cultivation methods of *Lentinus connatus* involved on a saw dust substrate supplemented with poor and enriched substrates. Results showed that the enriched substrate took less time than poor substrates. Furthermore, yield of the mushroom production obtained from enriched substrate was $16.37 \pm 1.71\%$, while the yield of poor substrate was $11.43 \pm 1.10\%$. However, both substrates could yield only one crop. Increased yields may be achieved by suitable substrate and conditions. Breeding methods may also result in high yields and this needs further study.

Lentinus roseus was also investigated on the fruiting bodies production in saw dust supplemented with poor and enrich substrates. Our results showed that, the mycelial growth occurred in both poor and enriched substrates but the enriched substrate took less time than poor substrates. In this study, however, *L. roseus* did not develop the fruiting bodies. A new strain might be chosen for the improvement on the cultivation methods.

Keywords: Casing/Cultivation/Enriched substrate/Mycelial growth/*Lentinus* species/*Pleurotus* species/Poor substrate