Ecological Recycling of Fruit Tree Wastes through Controlled

Cultivation of Lignicolous Mushrooms

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1. Introduction – All over the worl, the agricultural works related to the fruit tree growing as well as fruit processing have generally been matched by a huge formation of wide range of cellulosic and woody wastes that accumulate every year in the most orchards All these natural but redundant materials, composed of dried trunks, branches, leaves and even fruit seeds, could be recycled as main substrates for solid-state cultivation of lignicolous mushrooms [1]. The main aim of this work was to find the best eco-technology of recycling the fruit tree wastes by using them as growing sources for lignicolous mushrooms in order to extend the food chain in orchard ecosystems [2]. In this respect, in vitro experiments were carried out on testing and optimization of fruit tree wastes recycling through controlled cultivation of mushroom species Ganoderma lucidum and Pleurotus ostreatus, in order to get their carpophores to be used as food and the exhausted substrates as natural fertilizers.

2. Experimental - As mushroom culture substrates, there were set up three variants consisting of lignocellulosic wastes belonging to apple, plum and cherry trees, mixed with cereal grain wastes from milling industry, such as wheat and barley bran (Table I). After inoculation of substrates with the pure mushroom cultures of mentioned species, the inoculated plastic bags (three replicates for each strain/substrate) were placed in growth chambers to be kept at a constant temperature of 23 °C, during the incubation period lasting between 20 - 50 days, depending on the cultivated mushroom species.

3. Results and Discussion - During the whole processes of fruit body formation and development, the culture parameters were set up and maintained at the following levels depending on each mushroom species: air temperature 15–17 oC, the air flow volume 5–6 m3/h, air flow speed 0.2–0.3 m/s, the relative moisture content 90–95%, light intensity 500– 1,000 luces for 8–10 h/d.

4. Conclusions - After a period of mushroom growing lasting between 30-50 days, on the results showed a faster development and a better productivity of P. ostreatus than G. lucidum.

5. References [1] M. Petre and V. Petre, „Environmental Biotechnology", InTech Open Access Publisher, 2013 [2] A. Moser, Acta Biotechnology, 12, (1994), 2-6.