

AGRICULTURAL RECYCLING OF SPENT MUSHROOM COMPOST AFTER MICROBIOLOGICAL TREATMENT

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Besides good quality spawn and mushroom compost, the basis of the economic and efficient production of champignons (*Agaricus bisporus*) is the excellent quality casing material. In mushroom growing houses, the mushroom compost colonized by the mycelia of champignons is covered by the casing material, the role of which is primarily to ensure the fruiting body formation and provide high water retaining capacity. The nutrient-rich mushroom compost can be characterized by low water retaining capacity, which is compensated by the high water retaining capacity of the casing material. The depletion of peat mines in Hungary and Europe, as well as the environmental problems arising from peat mining lead to an emerging need for development of alternative options for the production of high-quality casing materials. Recycling of spent mushroom compost has been attempted in some cases by vermicomposting. Microbiological re-composting may be a possible alternative.

Due to the outstanding fiber content of the harvested mushroom compost it may serve as an excellent raw material for the development of casing materials. We select and characterize fungal and bacterial strains that can be used for the controlled exploration and transformation of spent mushroom compost, in this way recycling it to casing material. Microorganisms (bacterial strains including *Bacillus subtilis* and *B. licheniformis*, as well as fungi including *Aureobasidium pullulans*) were isolated from samples deriving from experimental re-composting process of spent mushroom compost and deposited in a strain collection after species-level molecular identification. The strains were subjected to further selection steps in ecophysiological and enzyme activity test as well as seed germination experiments. The spent mushroom compost is tested for use as casing layer in mushroom cultivation, as well as a plant growth medium.

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