

SUMMARY

Implementation of a sustainable production system for edible mushrooms, with a substrate free of *Trichoderma* spp.

Cultivation of edible mushrooms is projected as a strategy for economic development, food production, and the use of agricultural by-products. The self-heating substrate treatment system has recently been proposed, however, it has not been evaluated regarding the protection it offers against the contaminant *Trichoderma* spp., In addition to its efficiency in the production of mushrooms such as *Schizophyllum commune*. Therefore, the objective of this work was to evaluate an edible mushroom production system, which provides high protection to the substrate against *Trichoderma* spp. treatments were considered the lower, intermediate, and upper levels of a 1 m³ wooden box where pangola grass (*Digitaria eriantha*) was prepared. Oat straw (*Avena sativa*) was prepared in another box 0.73 m high, 1.20 m long, and 0.92 m wide. The development of two strains of *Trichoderma* spp. was evaluated, after 4 days of inoculation in pangola grass and oat straw in treatments by self-heating, alkaline immersion, and sterile. The productivity of the *Pleurotus pulmonarius* (IE 115), *P. djamor* (MXLD23, 598), and *S. commune* (MXLD26) strains was evaluated. Radial growth of the *Trichoderma* sp. strain was observed. (ECS-0622) of 10-12, 7.5, and 100% of the Petri dish, on the pangola substrate in the treatments by self-heating, alkaline immersion, and sterilization respectively. While the *Trichoderma* sp. (UV01) inoculated on oats had a radial growth of 7-13, 9.7, and 100% for these same treatments. The Biological Efficiency (BE), Production Rate (PR), and Yield (Y) were similar ($p \leq 0.05$) between drawer levels. *P. pulmonarius* showed a higher BE than *P. djamor* strains. Interestingly, *P. pulmonarius* and *P. djamor* showed a similar PR ($p \leq 0.05$). The *S. commune* strain cultivated in oat straw had an EB of 10.6 to 13.2%, PR of 0.48 to 0.52, and Y of 3.4 to 4.2%. It is concluded that the self-heating system provides high protection to the substrate against *Trichoderma* spp., and is technically feasible for the cultivation of *P. pulmonarius*, *P. djamor*, and *S. commune*.

Key words: Self-heating, alkaline immersion, *Pleurotus pulmonarius*, *P. djamor* and *Schizophyllum commune*.