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Utilization of locally available weed plant materials for cultivation of oyster mushroom

D. R. CHAMLE, S. NASREEN* AND B. JADHAV

Department of Botany, Dr. Babasaheb Ambedkar Marathwada University, AURANGABAD (M.S.), INDIA. (Accepted :September, 2006)

SUMMARY

During present investigation attempts were made to evaluate the efficiency of locally available weed plant materials viz., Aghada (*Achyranthes aspera* L.), Diwali (*Crotalaria notonii* Wt. and Arn.) and Unhali (*Tephrosia hamiltoni* Drumm.) as substrates for the cultivation of *Pleurotus sajor-caju*, along with rice straw. The rice straw gave highest yield of the mushroom.

Key words: Weed substrates, Pleurotus sajor-caju, Yield loss, Neurospora sp.

The history of mushroom cultivation is existed over hundreds of years and mankind has regarded it as valuable food for flavour and nutrition (Bahl, 1984). Mushroom provides an excellent substitute for meat as a source of protein in vegetarian diet. The nutritional value of mushroom as a food lies between meat and vegetables. They are ideally suited for diabetic and obese persons. For the cultivation of oyster mushroom, wheat and rice straw are generally used as substrates. Due to their value as cattle feed, it was thought worthwhile to evaluate suitability of weeds for the cultivation of oyster mushroom and to provide a replacement substrate.

In the literature review several workers have made efforts to exploit the potential of agricultural wastes for commercial production of mushrooms which includes paddy straw, wheat straw and banana pseudostem (Jandaik and Kapoor, 1975; Sivaprakasam et al., 1979), ragi, cotton and sugarcane baggasse (Diwakar et al., 1989), Chromolaena odorata and paddy straw (Abraham and Pradeep, 1995), soybean straw and wheat straw (Thakur et al., 2000), bajra, mothbean, sorghum, mughbean and grasses (Vyas et al., 2003), gulmohar pods, banana leaves and sugarcane wastes (Srinivasan et al., 2005). However, utilization of locally available weed plant materials for the production of oyster mushrooms have not been evaluated so far. Utilization of these weeds for mushroom cultivation may biologically control their effects on agriculture. In this investigation attempts were made to evaluate the efficiency of locally available weed plant materials for the cultivation of *Pleurotus sajor-caju*.

MATERIALS AND METHODS

The experiment was conducted in Plant Pathology laboratory, Department of Botany, Government Institute

of Science, Aurangabad during October to March, 2004 - 2005 by following polypropylene bag method. The weeds like *Achyranthes, Crotalaria* and *Tephrosia* were collected from different localities of Dr. Babasaheb Ambedkar Marathwada University, Campus. Freshly collected weed plant materials were dried, chopped into small (2 - 3 cm) pieces and transferred to gunny sacs. The weed substrates, used for the cultivation of the mushroom *P. sajor-caju* (Fr.) Singer, were used either individually or in combination (1:1:1) on dry weight basis.

The procedure described by Bahl (1988) was adopted for the cultivation of oyster mushroom. The substrates were soaked overnight (16 - 18 hrs.) in fresh water. The excess water was allowed to drain off and then the materials were sterilized. The sterilized substrates were spread on previously cleaned and sterilized floor. Then they were filled in polythene bags (45 x 60 cm) by alternate layering method. The spawn of mushroom was used at a rate of 100 gm/kg dry substrate. The bags were kept for incubation in a dark room with ambient temperature ranging from 22 to $28 \pm 1^{\circ}$ C and observations were recorded.

RESULTS AND DISCUSSION

The rice straw gave yield of mushroom while the weed substrates showed only growth of the mushroom mycelium. The highest growth of mushroom spawn was observed on mixed substrate, followed by *Crotalaria, Tephrosia* and *Achyranthes*. During the growth of mycelium *Neurospora* sp. was recorded as the contaminant, which could cover up all the weed substrates and simultaneously inhibited the mycelial run significantly. Development of mushroom fruit primordia

^{*} Author for corrospondence, Department of Botany, Government Institute of Science, AURANGABAD (M.S.), INDIA.