

## SUMMARY OF THE FINDINGS

### UGC-MINOR RESEARCH PROJECT

Project Title: **Studies on Nutritional Requirement and Improvement of Techniques on Commercial Cultivation of Oyster Mushrooms.**

UGC Approval No. and Date: **MRP(S)-607/09-10/KLKE009/UGC-SWRO**

Date of Implementation: **08-Jan.-2010**

Tenure of the Project: **18 Months**

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In Kerala, commonly cultivated mushrooms are Oyster ( *Pleurotus* spp.) and Milky (*Calocybe* spp.) types. Among these, oyster mushroom is the most widely cultivated type. Oyster mushroom cultivation is preferred due to low cost and high yield. *Pleurotus* is a genus with a number of distinct species and strains. Species of *Pleurotus* can be successfully cultivated in the state all round the year on a variety of agro-wastes like saw dust, banana leaves, vegetable and paper wastes, oil palm pericarp waste, straw etc. They grow well on different types of ligno-cellulosic materials, converting them into digestible and protein rich substances.

In this study, the objectives are to standardize the cultivation of *Pleurotus* on various substrates, to formulate a standardized cultivation practice suitable for mushroom cultivation in general and *Pleurotus* in particular, to find out the major problems exist in cultivation and to train the students in mushroom cultivation.

In the present study, three species of *Pleurotus* (*Pleurotus sajor-caju*, *Pleurotus florida* and *Pleurotus citrinopileatus* [CO<sub>1</sub>]) are taken into consideration and they are grown on various substrates like paddy straw, sugarcane bagasse, rubber sawdust, coconut fibres, dried rubber leaves, rice husk and different combinations of these substrates. We also adopted supplementation of the substrate with wheat powder.

Paddy straw, coconut fibre and sugar cane baggasse found to be better for *P. sajor-caju* due to early harvest. With respect to *P.floria*,. suagar-cane baggasse and its combination with paddy straw yielded better results and in the case of CO<sub>1</sub>, again paddy straw in combination with sugar cane baggasse was found to be obtain an early harvest. Interim period of primordial formation and harvesting varied remarkably in different substrates

The yield of the mushroom with various substratum indicated that the combination of paddy straw along with rubber saw dust and paddy straw alone were better compared to other substrates with respect to *Pleurotus sajor-caju*. For *P.floria* & CO<sub>1</sub>, paddy straw was found significantly superior than other substrates. In the present study some of the substrates used for production of mushroom showed contamination with varying degrees.

The present project open up a path of training programme on mushroom cultivation for students in our department. A list of 102 students participated in the training session during the period of the project. The training include a theory session of about 2 hours deals with the importance and applications of mushroom cultivation, various medium used for the cultivation of mushrooms, culture conditions and cultural practices, preparation of substratum, bagging, spawning, maintenance of beds & harvest practices etc and demonstration on culture of paddy straw mushroom. The demonstration of practice of cultivation was organized for three days, at CARD-KVK, Thelliyoor, on 18-09-2010, 19-2-2011 and 15-06-2011. The resource person was Sri. Alex John, Subject Matter Specialist,(Plant Pathology), CARD-KVK.

Mushroom cultivation is a low cost and labour intensive activity. Mushroom farming is becoming successful because of its very low inputs. In India, mushroom growing can be highly rewarding because of various climates. The technology can be profitably considered in areas where land is limiting factor and agricultural residues are abundantly available. Oyster mushroom is the most suitable fungal organism for producing food rich in vitamins and minerals. Commercial cultivation in the locality is traditionally using paddy straw for cultivation. In the present investigation the paddy straw, saw dust and combination of these two substratum along with sugarcane baggasse, rice husk, dried rubber leaves and coconut fiber were also used for cultivation to find out the potential medium. It is obtained from the yield that there is preferences

among the cultivators with substratum used. Among the *Pleurotus* spp. *Pleurotus sajor-caju* gives better yield than the other two varieties on the paddy straw and the combination of paddy straw with saw-dust as the substratum. The combination of paddy straw along with sawdust produce the highest yield in the present study.

The key factor for fruit body formation and yield in *Pleurotus* production are concentrated in the ecological factors, (climate, microclimate, air conditioning) and these can be controlled at will and altered during the harvest period. Different species of *Pleurotus* have different temperature requirement .Summer varieties can fructify at low temperature(*Pleurotus sajor-caju* and *Pleurotus citrinopileatus*), whereas winter varieties can not fructify at low temperature(*Pleurotus florida*).The growing temperature not only affects the yield but also the quality of produce. In this study less yield is obtained in case of *Pleurotus florida* compare to other two species due to temperature variation. Commercial production of oyster mushroom was largely determined by the availability and utilization of cheap materials of which agricultural ligno-cellulosic waste represents the ideal and most promising substrate for cultivation. The substrate used in this study can be considered practical and economically feasible due to their availability throughout the year at little or no cost in large quantities. Utilization of these agro-wastes for the production of oyster mushroom could be more economically and ecologically practical. Bio conversion of agro residues through mushroom cultivation offers the potential of using these residues for production of protein rich food.

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