Suitability of Shiitake mushroom [Lentinula edodes (Berk.)Pegler] for cultivation under Kerala conditions.

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Abstract

Six different strains of Lentinula edodes (Le 1 to Le 6) were cultivated on agricultural byproducts like sawdust, paddy straw and wood shavings of hardwood trees and their number of sporocarps, yield and biological efficiency were recorded. Teakwood sawdust gave higher yield of 325.8 gm with 70% biological efficiency for the strain Le 1. Twenty percent supplementation of wheat bran was the best among supplements tried. No significant yield was obtained from paddy straw alone.

Materials and Methods

- Substrates used for the study : sawdust of teak (Tectona grandis) and agricultural wastes like paddy straw and wood shavings of hardwood trees.
- Treatments: 1) 80% sawdust + 20 % rice bran. 2) 80% sawdust + 20% wheat bran. 3) 80 % sawdust + 10 % rice bran. 4) 80% sawdust + 10% wheat bran. 5) paddy straw + 20 % wheat bran. 6) paddy straw + 20 % rice bran. 7) paddy straw alone. 8) wood shavings + 20% rice/wheat bran.
- Substrates thoroughly mixed to adjust moisture content to 60% and filled in polypropylene bags @ 500 gm substrate per bag.
- The bags were sterilized at 121 °C and 15 lbs pressure for 2 hours. Substrates were inoculated with six strains of the fungus.
- Bags were kept in dark room for 90 days of spawn run (Relative humidity: 80-85%, Temperature: 25 °C).
- Bags were allowed to turn brown and opening of bags were done after complete browning and bumph formation had taken place in bags. 
- Cold water treatment in chilled water (4-10 °C) and kept for incubation at 16-18 °C and 85-95% relative humidity.

Background

Lentinula edodes (Berk.) Pegler also known as Shiitake is the second most important edible medicinal mushroom in the world and is rich in proteins, fibres, vitamins, minerals and low content of lipid specifically cholesterol. Mushroom sporocarps have been valued for its unique taste and flavor. The present study will help to add one more edible medicinal mushroom to mushroom flora of Kerala where agricultural byproducts like sawdust, paddy straw and wood shavings of hard wood trees are available in plenty.

Results and Discussion

- Teakwood sawdust produced maximum Biological efficiency of 70%.
- Yield of Le 1 strain ranged from 325.8gm / 500 gm of substrate.
- Yield of Le 2 strain ranged from 265.2 gm /500gm of substrate 20 % of wheat bran was the best among supplements used.
- Highest weight of fruiting bodies were obtained in Le 1 strain(75gm).
- Le 6 was the least productive strain with Biological efficiency 28%.
- Minimum yield was observed in paddy straw substrate.

Conclusion

Commercial production of Shiitake mushrooms is largely determined by the availability and utilization of cheap materials of which agricultural lignocellulosic waste represents the ideal and most promising substrates for cultivation. The present study thus explored the possibilities for cultivation of Lentinula edodes using largely available agroindustrial wastes in Kerala.

References