

Evaluation of Low Cost Growth Media for Mass Culture of Entomopathogenic Fungi - *Metarhizium* sp.

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Microbial insecticides are considered an effective and environmentally friendly alternative to synthetic pesticides. *Metarhizium* is one of the commonly found entomopathogenic fungal genera and economical mass rearing is essential when formulating as a microbial insecticide. The study was aimed to find more effective and economical media for mass production of *Metarhizium* sp. Further, the optimum temperature for culture growth and the best spore harvesting time were determined. The experiment was carried out to identify the effect of 7 different agricultural byproducts namely, parboiled rice, refused tea, disposable part of the maize cob (chaff, pith, and woody ring), ground maize, straw, saw dust and coir dust for mass culturing. The initial experiment setup was maintained using 25 g of each substrate and at two temperature levels; at room temperature (28 ± 2 °C) and 25 °C. Prepared fungal spore suspension (2.5 mL, 1.66×10^5 spores/mL) was inoculated into each sterilized substrate and thoroughly mixed and incubated at the two temperature levels. Experiment was continued for 6 weeks and spore concentration and the fungal growth were recorded at a two week interval. There was no significant difference ($P > 0.05$) in spore production at 28 ± 2 °C and 25 °C in all substrates. Spore production was significantly different among the tested media. The highest spore concentration was found in parboiled rice (14.40×10^5 spores/mL) at the 6th week. Refused tea, ground maize and disposable parts of the maize cob showed a mean spore production of 9.14×10^5 , 8.38×10^5 and 6.40×10^5 spores/mL, respectively. Maximum spore production was achieved at 28 days after inoculation in all substrates irrespective of the temperature. Based on the findings, the best medium, temperature and spore harvesting time can be identified as parboiled rice at room temperature and at 4 weeks after inoculation, respectively.

Keywords: Agricultural byproducts, Entomopathogenic fungi, Mass production, *Metarhizium* sp., Microbial insecticide

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