Evaluation of agro-based waste substrates for micropropagule formation in biocontrol fungi, Trichoderma asperellum and T. harzianum

ABSTRACT

Trichoderma species have shown efficiency on biocontrol of phytopathogens. For commercial application, it must be propagated in mass scale using a cost-effective method. As an alternative way to effectively deliver biocontrol fungi inoculum to the field; seven agro-based wastes including rice bran, biochar, empty fruit bunches, coconut fibre, compost, topsoil and mixed soil were used in this study for evaluating mass multiplication of Trichoderma species. Based on the evaluation of colony-forming units (cfu) among the agro-based waste media used, coconut fibre is the most suitable in promoting the sporulation of Trichoderma asperellum and T. harzianum. Trichoderma asperellum C1667 showed the higher micropropagule count through incubation period compared to T. harzianum C1675. After 120 days on the agro-based waste media, T. asperellum C1667 and T. harzianum C1675 produced the highest (7.717×105 cfu/g and 6.836±13.79×105 cfu/g) coconut fibres, respectively. Meanwhile, the mixed soil appeared with the lowest cfu. Coconut fibres were shown as a great biocomposting medium for both Trichoderma species. Findings of the present study are valuable for disease management using agro-based wastes as a cost-effective medium for biocontrol agents like Trichoderma species.

Keyword: Biocontrol agent; Mass multiplication; Shelf life