

A low cost mass culture medium for *Trichoderma* spp. to be used in the control of damping off disease of big onion (*Allium cepa* L.)

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Big onion (*Allium cepa* L.) is a condiment grown for its flavorful bulbs in Sri Lanka. The most common soil-borne seedling disease of big onion seen at the nursery stage is damping off caused by *Fusarium solani* which results in severe seedling mortality. As *Trichoderma* spp. are widely used bio control agents of many fungal pathogens, *Trichoderma* spp. present in fifty-five onion fields in Sri Lanka were isolated and identified with a view to use in the control of *Fusarium solani*. Frequently isolated *Trichoderma* spp. (*Trichoderma virens*, *Trichoderma asperellum*) were evaluated for their ability to control the growth of *Fusarium solani* using dual culture assays. Both tested *Trichoderma* spp. suppressed the mycelial growth of *Fusarium solani* significantly ($P < 0.05$). Two low cost mass culture media *i.e.* rice bran + saw dust, molasses + yeast were evaluated to mass produce the *Trichoderma* isolates for field applications. Both *Trichoderma* spp. showed a significantly ($P < 0.05$) high level of spore production in molasses + yeast medium 14 days after inoculation producing $1.15 \pm 0.05 \times 10^{10}$ and $1.36 \pm 0.03 \times 10^{10}$ spores/ml ($n=3$) for *T. virens* and *T. asperellum* respectively as compared to $1.92 \pm 0.07 \times 10^8$ and $2.23 \pm 0.23 \times 10^8$ spores/ml ($n=3$) in the rice bran + saw dust medium. The results obtained were analyzed using t test with Minitab 16. Data indicated that molasses + yeast medium is more suitable for mass production of the two *Trichoderma* spp. The mass cultured *Trichoderma* spp. were then added to a carrier medium consisting of Talc at a rate of 1: 2 (v/w). *Trichoderma asperellum* alone or *Trichoderma asperellum* and *Trichoderma virens* combination were inoculated as seed coating or soil treatment at a concentration of 10^7 CFU/g under greenhouse conditions and the inocula reduced the incidence of damping off disease significantly ($P \leq 0.05$) It could be concluded that the two *Trichoderma* spp. could be effectively used in the management of damping off disease.

Keywords: *Allium cepa*, Damping off disease, *Fusarium solani*, *Trichoderma virens*, *Trichoderma asperellum*

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