

### Growth enhancement of *Dracaena fragrans* 'Massangeana' using *Trichoderma* species

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*Dracaena fragrans* 'massangeana' is an ornamental monocot which belongs to the family Asparagaceae, having characteristic shiny green leaves with a yellow streak running down along the center. Although, foliage plant production is considerably large in Sri Lanka, diseases such as Botrytis blight, Fusarium root and stem rot and leaf spot can cause remarkable economic loss to the industry. Plant disease management as well as growth improvement using agrochemicals is not an ecofriendly approach. In this study, an attempt was made to investigate the disease control potential and growth enhancement of *Dracaena fragrans* 'massangeana' using *Trichoderma* spp. as soil amendments. Soil samples were randomly collected from Randenigala forest reserve in Central Province and Kottawa forest reserve in Southern province and soil fungi were isolated using soil plate method. Twelve *Trichoderma* spp. were isolated from forest soils. Three fast growing isolates were selected and two of them were identified up to the species level as *Trichoderma asperellum* strain CHI4, and *Trichoderma harzianum* strain ZWPUEB10 using macroscopic, microscopic and molecular characteristics. In this study, the effect of selected three *Trichoderma* spp. and two improved growth media [potting mixture (Coir dust: Sand: Top soil: Compost at a ratio of 1:1:1:1) and top soil] on the growth of *D. fragrans* 'massangeana' were investigated. Stem cuttings of *D. fragrans* 'massangeana' were grown under greenhouse conditions in two different potting media [potting mixture (Coir dust: Sand: Top soil: Compost at a ratio of 1:1:1:1) and top soil]. Plants were then separately treated with 5ml of spore suspension ( $1 \times 10^8$  spores/ml) of the three *Trichoderma* spp. Controls were maintained for each medium by treating the plants with distilled water (5ml). Six replicates were conducted for each treatments using a completed randomized design in the greenhouse. Number of roots and leaves, leaf length and width, lengths of roots, fresh and dry weights of plants of each treatment were evaluated as growth parameters. The data obtained for each parameter for *D. fragrans* 'massangeana' were analyzed using Tukey's multiple comparison with 95% confidence level using MINITAB (version 16) statistical software package. Potting mixture, treated with *Trichoderma asperellum* showed significantly higher growth rate as well as high foliage quality. Plants grown in potting mixture showed a significant increment in growth when compared to that in top soil. The findings suggest that *Trichoderma asperellum* can be used as a growth promoter of *Dracaena fragrans* 'massangeana' in potting mixture (Coir dust: Sand: Top soil: Compost at a ratio of 1:1:1:1). Regular measurements for color of the leaves, disease incidence and severity were taken for 6 weeks at 7 day intervals to detect any symptoms of diseases development. Disease symptoms were not observed in plants treated with *Trichoderma asperellum* when compared to other treatments.

**Keywords:** Biological control, *Dracaena fragrans* 'massangeana', Growth media, *Trichoderma* spp.