

Effect of *Trichoderma* Species on Nutrient Absorption and Growth Rate of Black Pepper (*Piper nigrum* L.)

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Abstract

A plant house experiment was conducted to determine the effect of *Trichoderma* species on vegetative growth and nutrient absorption of black pepper. The experimental plan was based on four treatments; 10 g of mass cultured tea refuse + potting mixture (T1), 20 g of mass cultured tea refuse + potting mixture (T2), un-inoculated tea refuse + potting mixture (T3) and potting mixture without tea refuse and inoculums (T4). The pots were arranged in a completely randomized block design with four replications per treatment. Under plant house conditions, the *Trichoderma* species remarkably enhanced plant height, leaf area, root volume, shoot and root dry weight, P and K uptake and available phosphorous content of soil compared to the control. The best growth performances (352.14 cm², 5.87 cm³, 0.276 g and 2.85 g / plant for leaf area, root volume, shoot dry weight, and root dry weight, respectively) were recorded from the plants inoculated with 20 g mass cultured tea refuse. P and K uptake by black pepper plants showed similar trend as growth parameters. Significantly (P < 0.05) higher P and K uptakes were observed in T₂ (2.05% and 2.82% for P and K respectively) whereas the lowest was observed in T₄ (0.19% and 0.52% for P and K respectively). However, available P in soil was significantly (P < 0.05) higher in T₁ (46.17 ppm) followed by T₂ (38.5 ppm). Based on the results, it could be concluded that *Trichoderma* species has great potential to be developed as biofertilizers to enhance plant growth and soil fertility. However, their performance under field conditions should be assessed before being recommended for commercial applications.

Key words: Black pepper, nutrient absorption, *Trichoderma* sp., vegetative growth

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