

Root alterations and nutrient uptake of mangosteen (*Garcinia mangostana* L.) seedlings in response to arbuscular mycorrhizal inoculation

ABSTRACT

Alterations to root system characteristics and nutrient uptake of mangosteen (*Garcinia mangostana* L.) seedlings in response to arbuscular mycorrhizal (AM) inoculation were studied. Weight-related parameters were unsuccessful in detecting small changes in infected roots. Tap-root penetration, root dry weight and root-to-shoot ratio were not influenced by AM inoculation. However, AM inoculation induced significant changes to length-related characteristics. In comparison with the uninoculated controls, AM inoculation increased root length density by 58687%, root branching density by 20630%, number of root tips by 22625% and number of laterals by 15626%. Positive alterations to root system were accompanied by tremendous increase in nutrient uptake. Uptakes of P, Zn and Cu were 67688, 50693 and 34637% higher in inoculated seedlings. These results indicate that improved growth and nutrient uptake of the AM-inoculated seedlings were due to positive alterations of root system characteristics by the symbiosis.

Keyword: Arbuscular mycorrhiza; Root alteration; Nutrient uptake; Mangosteen