Arbuscular Mycorrhizal Fungi (AMF) and NPK fertilisation rate on the growth of Soursop (Annona muricata L.) seedlings

ABSTRACT

Soursop (Annona muricata L.) has been increasingly cultivated in Malaysia. In view of the importance of the crop, there is a need to understand the effects of agronomic management such as NPK fertiliser application and the inoculation of arbuscular mycorrhizal fungi (AMF) on soursop growth and nutrient uptake. Therefore, this study aimed to determine the effects of AMF and fertiliser on the growth and nutrient uptake of soursop seedlings. The experiment was conducted under glasshouse condition in UPM, Serdang, Selangor, Malaysia using completely randomised design (CRD) with five treatments which comprised AMF inoculations with full and half dose of NPK 15:15:15 fertilisation. The treatments were: T1- Control (without AMF and NPK fertiliser); T2- AMF only; T3- AMF with 50% NPK fertiliser; T4- AMF with full amount (100%) NPK fertiliser; and T5- full amount (100%) NPK fertiliser only (without AMF). Plant growth, soil microbial population AMF development, 'nutrient' status of the plants and soils were determined after the 8th week of planting. Soursop seedlings grown in soils treated with 100% NPK 15:15:15 fertiliser (T5) had the highest chlorophyll content, root volume, N uptake and soil N and K. Surprisingly, inoculation of AMF (T2) had similar effects to that of NPK 15:15:15 fertiliser (T5) on plant P uptake. Mycorrhizal spore production even at low numbers (66 spores/10 g soil) indicated probable symbiotic interaction with soursop seedling roots at the nursery stage.

Keyword: Arbuscular mycorrhizal fungi; Fertiliser rate; Soursop; Seedlings; Symbiosis