

Effect of BioRichar amendment on growth, nutritional properties and biochemical changes of banana (*Musa acuminata*) cv. Berangan established in an ultisol soil at vegetative stage

ABSTRACT

Enrichment of soil fertility with organic amendment offers a new strategy for enhancing soil physical properties and improving soil fertility. Application of BioRichar can be a new alternative for adoption of organic banana cultivation in Malaysia. This study was conducted to determine optimum BioRichar rate for growth enhancement of banana cv. Berangan at vegetative stage. The BioRichar was mixed thoroughly with ultisol soil at 1.5, 3.0 and 4.5 t/ha, which were equivalent to 0.6, 1.2 and 1.8 kg/ polybag (size 16 x 16 inches), respectively. In the experiment, BioRichar at 3.0 t/ha and 4.5 t/ha improved plant growth characteristics significantly including plant height, pseudo-stem diameter, total leaf number and leaf area as compared to control. Application of 4.5 t/ha BioRichar changed total N, P, K, Ca and Mg significantly in leaves. Total N, P, K increased but Ca and Mg content decreased significantly, when BioRichar was applied at higher rate (4.5 t/ha). Meanwhile, proline and MDA contents in leaf tissue were higher in control as compared to BioRichar enriched plants. These findings suggested that optimum growth of banana cv. Berangan could be achieved with BioRichar at 4.5 t/ha applied at vegetative stages during acclimatization period prior to field transplanting.

Keyword: BioRichar; Growth; Nutrient content; Proline; Banana