Effects of mulching and fertilizer on nutrient dynamics of sand tailings growth with acacia hybrid.

ABSTRACT

Studies on the contribution of oil palm empty fruit bunch (EFB) mulch mat and its impact on fertiliser loss through leaching on sand tailings are lacking. Sand tailings in Malaysia formed through tin mining activities are problematic soils for agriculture and forestry. An experiment with two types of EFB mulch mat applied in combination with NPK (nitrogen:phosphorus:potassium) fertiliser was established in pots containing sandy tin tailing soil to assess their effects on soil nutrient enrichment and leaching. Application of mulch mat reduced leaching of fertiliser compared with treatments without mulch mats. Incorporating fertiliser inside the mulch mat at the production stage could be the best way of applying inorganic fertiliser on sandy soils as the amounts of N, P and K loss was reduced significantly compared with treatments without mulch. There was poor synchronisation between fertiliser input and plant nutrient demand. The amount of fertiliser applied seemed to be in excess of the uptake capacity by roots especially for highly mobile nutrients N and K. Application of mulch mat on sand tailings however did not ameliorate the soil nutrient properties after 16 weeks. This could be due to the porous nature of the sand tailings.

Keyword: EFB mulch; NPK fertiliser; Sandy soil; Soil leachate.