Soil compaction and oil palm (Elaeis guineensis) yield in a clay textured soil

Abstract

Problem statement: The impacts of soil compaction on crop yields have been studied extensively by soil scientists due to declining soil productivity associated with mechanisation. However, a relationship between machine-induced soil compaction and oil palm (Elaeis guineensis) yield is unclear. Therefore, the objectives of this study were to determine the effects of mechanization on soil physical properties and the influence on oil palm yield. Approach: The palms were planted in Bernam series soil which is clay textured. Compaction treatments were imposed for 6 consecutive years. Comparisons were made between the effects of soil compaction caused by different trailer weights and monthly transportation frequency. Results: The results showed a beneficial effect of soil compaction on the oil palm yield. It significantly increased the yield with increased mean soil bulk density. The transportation frequency played a greater role than the trailer weight. After six years of soil compaction, there was a positive relationship between mean soil bulk density, porosity and oil palm yield. Conclusion: Thus compaction may not often be a problem.