

Nutrient status of frond heaps and the underlying soils at an 18-year-old oil palm field in Central Pahang, Malaysia

ABSTRACT

In oil palm plantation, palm fronds are pruned off upon fruit bunch harvest and heaped up in-between palm trees, which is called as a frond heap. This study examined the amounts of nutrients contained in frond heaps and their influence on the underlying soil fertility at an 18-year-old oil palm field in Central Pahang, Malaysia. Based on biomass measurement and nutrient analysis, the amounts of C, N, P, K, Ca, and Mg in the frond heaps were estimated to be 697, 11.8, 0.810, 18.9, 8.05, and 2.73 g m⁻², respectively. Meanwhile, the surface soils below the frond heaps showed higher levels of pH, EC, total C, N, exchangeable Ca, Mg, and K than those at harvest path, which is operation path for workers to harvest, while available P was more accumulated at weeded circle, to which fertilizer is applied under the palm canopy. These tendencies were more obvious compared with our previous study conducted at a 10-year-old field located in the same region. This study reveals that the nutrients released from decomposing frond heaps could contribute to build-up of the major nutrients except for P in the underlying soils to be recycled by palm trees.

Keyword: Field management; Frond heap; Nutrients; Oil palm; Soil fertility