

Fertiliser Placement in Relation to Root Formation for Peat Soil Mounded Oil Palm

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In peat soils, leaning and toppling over of even healthy palms is a common feature. This can pose serious problems to estate operations, in addition to causing a significant decline in palm productivity and yield. To check this problem, some plantation companies in Indonesia have resorted to large scale soil mounding. In most cases, soil mounding is initiated when palms are six years old and above, having adequate trunk height and canopy clearance. Dimensions of individual soil mounds can range from 50 – 100 cm in height and 100 – 150 cm in radius. A common question often raised about soil mounded palms is where best to apply the fertiliser? Do you apply it on the mound or beyond the mound in the inter-row or inter-palm spaces? If it is to be applied on the mound, does the mound have sufficient newly developed roots to absorb the fertiliser? As maximum uptake efficiency is achieved when fertilisers are applied over the surface area that contains the highest density of feeder roots, an investigation was initiated to determine the distribution and spread of the roots of soil mounded palms.

The results from the current study found that the total root biomass in the mound comprised only 20 – 22 per cent of the total root biomass found within the mound and in the soil immediately below the mound or only 5 per cent of the total root mass occurring within a radius of 3.5 m from the palm bole. The low percentage of roots inhabiting the mound indicates that the main benefit of soil mounding is unlikely to be through enhancement of new root growth (anchorage), but mainly to physically prop-up the palms. The study also concurred with earlier findings that there was a significant decline in root biomass with increasing distance from the palm bole. On average, 83 per cent of all roots were found growing within the weeded palm circles (0-2.0 m radius) and only 17 per cent outside the latter (2.0 – 3.5 m).

As in previous studies, the horizontal distribution of the roots was strongly correlated with a fertility gradient especially potassium, which also declined in concentration away from the bole. The development of such a fertility gradient was attributed not to natural soil resources, but due to historical fertiliser placement practices. Based on current and previous findings, recommendations for the application of both macro and micro nutrient fertilisers for soil mounded oil palms are provided in this paper.

Keywords: *Fertilisers, oil palm, peat, roots, soil mounding.*