

Rachis nutrient concentrations of different oil palm genotypes as affected by irrigation and terrain

ABSTRACT

Four clonal oil palm materials namely AVROS, Yangambi, La Me and NIFOR, and two D × P hybrid Yangambi have been planted on terraced and non-terraced contours that are subjected to irrigated and non-irrigated conditions. Under favourable growing environment, i.e., through irrigation, and to some extent favourable terrain of undulating plain, the palms were able to retain higher rachis nutrient concentrations, and subsequently had larger petiole cross-section and exhibited higher rachis nutrient contents. There were significant differences in all rachis nutrient concentrations for all of the planting materials for both terrain and irrigation conditions except for sulphur (S) nutrient. Previous study revealed that leaf potassium (K) concentration for D × P hybrid Yangambi-DQ8 was consistently lower than AVROS-A122 by almost 15%-20% in all the growing conditions. In contrast, the rachis nutrient concentrations for both materials were comparable. In fact, D × P Yangambi-DQ8, retained higher rachis K content (by 22%) due to larger petiole cross-section (PCS) as compared to that of AVROS-A122. The poor yielding materials, appeared to contain lower nutrient concentrations particularly those of magnesium (Mg), chlorine (Cl) and calcium (Ca). The present fertiliser regime is able to sustain high yields and capable of producing more than 10.5 t ha⁻¹ yr⁻¹ of total economic product (TEP) without the need for additional fertiliser inputs. Therefore, the understanding of rachis nutrient behaviour on different oil palm genotypes is crucial to produce sustainable oil yield in the near future.

Keyword: Rachis nutrients; Irrigation; Terrain; Oil palm; Clones