

## **Influence of Agronomic Practices on the Yield of Oil Palm (*Elaeis Guineensis* Jacq.) Grown on Various Soil Management Groups**

### **ABSTRACT**

Compared to yields of 25-30 t ha<sup>-1</sup> per year obtained elsewhere, the annual fresh fruit bunch (FFB) yields of 11 t ha<sup>-1</sup> from oil palm plantations in Uganda are considered very low. Therefore, this study investigated the yield performance of oil palm progenies grown on various soil management groups (SMGs) in a large commercial plantation. A factorial randomized complete block design with two oil palm progenies planted in blocks of three replicates on six SMGs was used. Initially, the semi-detailed soil survey report of the plantation provided details about the SMGs. Rainfall records of 2012 to 2021 period were also documented. Site-specific agronomic techniques were implemented because of variations in the physicochemical sufficiency of the SMGs. Fresh fruit bunch data were collected every 10 days between 2016 and 2021 and subjected to analysis of variance using SPSS software version 20.0. Results showed that a change in the soil pH and cation exchange capacity (CEC) enhanced FFB yields across SMGs though in preceding years with uneven rainfall distribution, declines were experienced. However, the highest average yields were obtained from SMGs B (20.21 t ha<sup>-1</sup>), and A (19.46 t ha<sup>-1</sup>) and the lowest from Ait (18.03 t ha<sup>-1</sup>) and Bi (17.79 t ha<sup>-1</sup>). Also, the two progenies responded differently with the Deli x Ghana average yield being 19.98 t ha<sup>-1</sup> and 17.60 t ha<sup>-1</sup> for Guthrie D x P. Lastly, the highest average yield of 21.46 t ha<sup>-1</sup> was obtained in 2021 in contrast to that of 2016, which was only 16.12 t ha<sup>-1</sup>. Therefore, site-specific agronomic techniques contributed to an increase in FFB output from the plantation in 2021. This study provides a guide tool to managers to evaluate the influence of site-specific agronomic techniques for yield enhancement in the plantation towards attaining higher profit margins.