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## Early Performances of Topaz Gen-1 *Tenera* Clones in Clonal Trials and Commercial Plots in Indonesia

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*Asian Agri's oil palm research station's (OPRS-Topaz) breeding programme involves the complementary development of both seedling and clonal planting materials. From 2010-2018, a total of 18 clonal trials and 890 hectares of commercial clonal plots were established in two provinces (North Sumatra, Riau) and on three major soil types (volcanic, inland, peat). This paper reports on the early performances of the clones in the latter sites.*

*Comparatively, elite clones only achieved 82 per cent and 85 per cent of their ortet fresh fruit bunch (FFB) and crude palm oil (CPO) yields, respectively. Analysis undertaken in five of the oldest mineral soil trials indicated either a negative or very low positive correlation between clone and ortet FFB yield, but correlations of oil to bunch (O/B) and annual height increment (Hi) were positive and highly significant, confirming the better heritability of the latter two parameters and their suitability as criteria for ortet selection.*

*In clonal trials, the highest yields were obtained on inland soils in Riau province, with elite clones recording average peak FFB and CPO yields of 45.1 tonnes per hectare and 11.6 tonnes per hectare, respectively. Slightly lower yields were attained on volcanic soils (36.2 tonnes FFB/ha; 9.9 tonnes CPO/ha) and on deep peat (32.6 tonnes FFB/ha; 8.5 tonnes CPO/ha) in North Sumatra. However, as the latter two sites contained some younger trials, they may have yet to achieve their maximum potential.*

*O/B values also differed for the same clones planted on three different soil types. On average, oil content of clones planted on peat was approximately 3 percentage points lower than their counterparts planted on either inland or volcanic soils. In all nine trials which included DxP seedling controls, the top five clones recorded higher CPO yield over their seedling controls by 7-47 per cent. However, these results should be interpreted with caution as all the DxP seedling controls belonged to the same generation as the clones. Their true yield superiority can only be ascertained when evaluated against the latest improved Topaz Series 4 DxP crosses. Nevertheless, nine clones showed good potential for commercial scale propagation, having high CPO yield (9.5 tonnes/ha), O/B (32 %) and good adaptability and consistency in performance over a wide range of sites.*

*Performances of untested clones (directly planted in commercial plots without evaluation in clonal trials) followed the same trend as in clonal trials. Highest yields were recorded on inland soils (39.4 tonnes FFB/ha), followed by volcanic (30.8-36.0 tonnes FFB/ha) and peat soils (27.1-29.8 tonnes FFB/ha). Likewise, as some of the latter commercial plantings were only 5-6 years of age, it is likely that their peak yields have yet to be attained.*

*Census conducted from 2014 to 2016 indicated a low incidence of palms with mantled fruit, averaging 3.3 per cent in clonal trials and only 0.3 per cent in commercial plantings. Such acceptable to low abnormality levels are a reflection of the good quality control practices adopted by AA's tissue culture laboratory.*

**Keywords :** Clones, height increment, oil to bunch, oil palm, tissue culture.