

Influence of parental dura and pisifera genetic origins on oil palm fruit set ratio and yield components in their D × P progenies

ABSTRACT

This research was conducted to study the performance of biparental dura × pisifera (D × P) progenies and their parental genetic origins on fruit set and yield components. Twenty-four D × P progenies developed from 10 genetic origins were used for this study. Analysis of variance showed that there was genetic variability based on the evaluation of individual progenies. Deli Ulu Remis × Nigeria of progeny ECPHP500 recorded the highest bunch number (22.91), and fresh fruit bunch (184.62 kg palm⁻¹ year⁻¹) and Deli Banting dura × AVROS pisifera (ECPHP550) had the highest average bunch weight (10.36 kg bunch⁻¹ year⁻¹). Progenies PK4674 (61.12%) and PK4465 (60.93%) had the highest fruit set, and the highest oil yield of 52.66 kg bunch⁻¹ was noticed by progeny PK4674. Estimation of variance components, coefficients of variation, heritability, and genetic gain were calculated to establish the genetic variability. To validate the genetic disparity among the progenies, an unweighted pair-group procedure with arithmetic mean (UPGMA) and principal component was employed based on their quantitative traits. Through the UPGMA and principal component, the 24 progenies were clustered into 7 clusters, whereas cluster V had the highest fruit set (60.62%) and cluster IV had the highest oil yield (43.71 kg palm⁻¹ year⁻¹). For oil palm tissue culture and breeding programs, progeny PK4674 will be more useful for developing planting materials of high oil yielding with stable performance. However, we recommend that future studies incorporate molecular studies with conventional breeding.

Keyword: Genetic origin; Dura; Pisifera; Progeny; Fruit set; Yield component