

Genetic variability in yield and vegetative traits in elite germplasm of MPOB-Nigerian dura × AVROS pisifera progenies

ABSTRACT

Genetic variability study on vegetative and yield traits was carried out through long-term evaluation of eleven MPOB-Nigerian dura × AVROS pisifera (D × P) progenies at MPOB (Malaysian Palm Oil Board) research station located in Kluang, Johor, Malaysia. The D × P progenies were laid out in randomized complete block design in two blocks with 352 oil palm plants occupying a total area of 2.59 hectares. Data on both vegetative and yield traits such as plant height (HT), leaflet number (LN), leaflet length (LL), leaflet width (LW), rachis length (RL), petiole cross-section, leaf area (LA), leaf area index (LAI), fresh fruit bunch (FFB), average bunch weight (ABW), oil yield (OY), kernel yield (KY), mesocarp to fruit (MTF), kernel to fruit (KTF), oil to bunch (OTB), kernel to bunch (KTB) were collected over the years following the standard method. Analysis of variance of the data showed a significant variation among the progenies performance for both vegetative and yield traits, revealing their differences in their genetic origin. Also significant differences were observed for G × R interactions in all the traits collected except for PCR, KPY and ABW. The progenies plant height ranges from 1.53 (PUP1328) to 2.26 m (PUP1328). Also among the traits is PCS with highest value found in progeny PUP 1174 (32.16 cm²), while the lowest reading was found in PUP 1358 (20.54 cm²). The fresh fruit bunch weight for the progenies ranged from 121.03 to 175.16 kg/ palm/yr. Progeny PUP 1303 was found to have the highest value for FFB (175.16 kg/palm/yr), KPY (7.9 kg/palm/yr) and OPY (38.87 kg/palm/yr). From the correlation study, it was found that FFB, which is the most important yield trait, was positive and highly significant with all other yield and vegetative traits except for MTF, KTF, OTB and KTB where the association was non-significant. In this study, great variability has been found to be present among these progenies and this will be of immense benefit for improvement program. Progeny PUP 1303 and PUP 1246 have been identified as the potential parent and they have been selected for further evaluation trial.

Keyword: Fresh fruit bunch; Germplasm materials; Genetic variability; Oil palm; Progeny testing