

Pollen parameters estimates of genetic variability among newly selected Nigerian roselle (*Hibiscus sabdariffa* L.) genotypes

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Abstract

*Estimates of some pollen parameters were used to assess the genetic diversity among some newly selected Nigerian Roselle (*Hibiscus sabdariffa* L.). Standard procedures were used to determine the pollen parameters such as: percentage pollen fertility, percentage pollen sterility, pollen diameters as well as anther diameters. The cytological results revealed significant ($P \leq 0.05$) variation in the diameters of anther cap and pollen grains. Anther morphology and pollen grain morphology of the *H. sabdariffa* genotypes under light microscope showed fair diversity in the Anther and pollen grain sizes. The Roselle genotypes were grouped according to their anther sizes into small ($< 400 \mu\text{m}$), medium ($400\text{-}700 \mu\text{m}$) and large ($> 700 \mu\text{m}$); such character should be included in examining genetic diversity in this crop. The dendrogram produced from the cluster analysis of the different genotypes of the roselle based on diameters of the pollen grains and that of the anther cap-sizes also separate the genotypes into different groups. The results obtained in terms of percentage pollen fertility also showed some interesting variations. It is not untrue that larger pollen grain could serve as a better pollinizer than a smaller pollen grain; moreover, successes in crossing among such plants could be dependent on the sizes of the pollen. The pollen grain size variations obtained from this study is of good taxonomic value. The variation in the anther and pollen grain sizes could also be as a result of different genetic make of the Roselle genotypes and could serve as important diagnostic tool in differentiating Nigerian Roselle genotypes and achieving the cytotaxonomy of the crop. It is therefore concluded that there exist genetic variability among the pollen grains and anthers of the new selected Nigerian Roselle (*H. sabdariffa*) genotypes; these characters are good taxonomic parameters that could be used in evaluating genetic diversity of the crop in the study area. It is recommended that other pollen viability staining techniques should be employed to ascertain the level of the pollen fertility among the Roselle Genotypes. In addition, DNA-PCR technique should be used to further confirm the variability observed in this present study.*

Keywords: Anther Caps, Pollen diameters, Pollen fertility, Pollinizer, Variations, Dendrogram

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