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Genotyping Ghanaian maize varieties by simple sequence repeat markers

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Maize (*Zea mays* L.) is an essential cereal crop of different countries of the world. Undeniably, the concerted efforts of plant breeders and their breeding strategies have helped to increase the production and productivity to the tune of two to three folds in many crops including maize. Hybrid cultivars have played a vital role in increasing the acreage and productivity of maize. The success in identifying heterotic hybrid in maize hybrid breeding depends on the availability of genetically diverse maize inbred lines developed from the different heterotic gene pool. Hence, the generation of information on the variability of inbreds at a genotypic level has become necessary. Molecular markers have proven to be a valuable tool for assessing the genetic diversity in many crop species. Simple Sequence Repeats (SSR) are currently considered as the molecular markers of choice and are rapidly being adopted by plant researchers for precise estimation of diversity. SSR based molecular diversity analysis of Ghanaian maize genotypes (Mamaba, Etubi and GH 110) produced 48 polymorphic alleles from 8 markers with an average of 2.25 alleles per locus and mean polymorphic information content (PIC) of 0.5125. The dendrogram generated with Unweighted Pair Group Method with arithmetic mean (UPGMA) cluster analysis revealed two major clusters consisting of cluster one (Mamaba and Etubi) and cluster two (GH110) at 0.90 and 0.92 similarity coefficient respectively. The information on the diversity of genotypes generated in this study with an average of 0.833 would be much useful in developing heterotic hybrids as well as to increase the yield and other desirable traits of maize such as disease resistant varieties. Also, low heterozygosity obtained in this study with an average of 0.2917 shows low genetic variabilities among the varieties..

Biography

Joseph Asomaning is a student currently at his final year studying MSc Biological Science (specializing in Nutrition and Functional Foods), and he is 29 years of age from University of Camerino, Italy. He also holds a bachelor's degree from Kwame Nkrumah University of Science and Technology, Ghana.

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