Geographical patterns of phenotypic diversity in Oryza sativa landraces of Côte d'Ivoire

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Abstract

The knowledge of agro-morphological diversity and the distribution pattern of variation among conserved accessions could be an invaluable aid in germplasm management and crop improvement strategies. In this study, the geographical pattern of morphological variation of 880 landrace rice (Oryza sativa (L.)) accessions in Côte d'Ivoire was evaluated for 13 agro-morphological characters. Shannon –weaver diversity index indicated an overall mean of 0.47 ± 0.07 in the collection, with the greatest diversity from derived Savanna and north-west (H′ = 0.52 and 0.50) while the west-central had the lowest diversity (H′ = 0.41). Canonical discriminant analysis showed that traits such as panicle length, grain size (weight and length), tillering ability, number of days to heading and maturity were the main discriminatory characteristics. Result of the phenotypic frequency shows that, the landraces from the north and north-western zones were mostly tall, early heading and maturity, compared to those from the west and west-central which were mainly dwarf to medium height, late heading and maturing. This differential distribution of landraces with height, heading and maturity period reflected the distribution pattern of different Oryza sativalandraces in Côte d'Ivoire, which could be useful in germplasm management and breeding programs.

Keywords Canonical discriminant analysis - Côte d'Ivoire - Distribution pattern - Diversity index - Landrace and Oryza sativa