



T-5B/P-19

## Identification of male sterility maintainers for hybrid parent development within genetically diverse landrace sorghum in Nigeria

Angarawai I. Ignatius<sup>1\*</sup>, Willmar Leiser<sup>2</sup>, Baloua Nebie<sup>3</sup>, Yeye Y. Mary<sup>4</sup>,  
Aba A. Daniel<sup>4</sup> and Jonah Jerome<sup>1</sup>

<sup>1</sup>*International Crop Research Institute for Semi-Arid Tropics, Kano, NIGERIA;*

<sup>2</sup>*University of Hohenheim, Stuttgart, GERMANY;*

<sup>3</sup>*International Crop Research Institute for Semi-Arid Tropics, Bamako, MALI;*

<sup>4</sup>*Institute for Agricultural Research, Ahmadu Bello University, Zaria, NIGERIA*

*\*email: I.Angarawai@cgiar.org, angarawaijantiku@gmail.com*

Diversity in plant genetic resources (PGR) provides opportunity for plant breeders to develop new and improved cultivars with desirable characteristics. Exploration of the genetic diversity of Nigeria sorghum landraces is aimed at identifying and defining “functional” heterotic parental-pools for utilization in hybrid parent development and thus increase the productivity of sorghum to meet the increasing rural and industrial demands. With the advent of new biotechnological tools and techniques, the process of genetic manipulation is being accelerated, shortening the breeding cycles, carried out with more precision and fast-track manner thus facilitating the classical breeding techniques. A total of 288 West African sorghums landraces were genotyped with 20 SSR markers at the University of Hohenheim Germany. The Euclidean dissimilarity matrix was employed to cluster the 288 genotypes, using the UPGMA algorithm to develop the dendrogram. 40 randomly selected landraces from the 288 landraces mainly of 2015 collections were testcrossed to 2 male sterile lines (ICS38A and ICS24005A) to generate 388 testcrosses. These were evaluated for sterility maintainer using head to head cover at heading before anthesis at Bagauda Kano state Nigeria during 2016 cropping season. Result from the study revealed wide genetic diversity among the 288 genotypes with 5 major distinct clusters at 0.2 Euclidian distances. Result from the 388 testcrosses evaluation identified a total of 20 landraces used as parents, as potential sources of male sterility maintainers. Tracing to cluster groupings, 3 landrace parent sources were mapped to cluster 1, 13 to cluster 2, 1 to cluster 3 and 3 to cluster 5. Given that the collection areas are diverse with heterogeneous agro-ecologies, the landraces observed to be potential lines with high genetic diversity could serve as important sources of novel alleles for developing hybrid parents breeding. Furthermore, phenotypic evaluations are needed to select suitable agronomic traits associated with the genetic markers for breeding strategies.

