



## Genetics Structure and Diversity in Sorghum Bicolor

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### Introduction & Aim:

Sorghum *Sorghum bicolor* ssp *bicolor* L. Moench. is one of the major staple food and fodder crop in semi-tropical Africa and Asia maybe because of its unusual tolerance of hot and dry environments In Senegal, sorghum is one of the farmer's principal cereal crops The most important sorghum production areas according to are Kaffrine, Tambacounda, Sedhiou regions. Five major races or sorghum have been identified in the World according to panicle and spikelet morphology. *Sorghum bicolor* subsp. *bicolor* constitutes the cultivated form and exhibits great phenotypic variability. The cultivated form is mainly cross-pollinated..

Many studies in the world have investigated the patterns of genetic diversity among sorghum accessions. Some studies have demonstrated that genetic structuration is associated with geographic origin and racial classification However; other studies showed a lack of Association between genetic structure and geographic origin or racial groups unfortunately, such information is missing in Senegal. Until now, the prospection and collect of sorghum cultivars in Senegal concerned mainly the Sine Saloum, Casamance, Tambacounda, Ferlo and Senegal River, areas known since a long time as zones of sorghum production. A total of 242 accessions have mainly been collected in these regions between 1974 and 2002 and brought in genes bank at ICRISAT/India. This sampling has been an important action in landraces conservation. However, in this previous collection, there is only 1 sample from Thies, 2 from Kédougou. So, it is expected that a thorough sampling of sorghum landraces in Thies, Doorbell and Kédougou regions in Senegal could give additional information on this crop and allow extending the conservation action to landraces specifics to these zones. Indeed, the adoption of improved varieties is

generally limited in the country. The largest part of sorghum production comes from farmer-selected landraces, especially in marginal production lands. These landraces are adapted to the local environments. It is also well known that contrasting sorghums with contrasting adaptation are often grown in the rainy season and post-rainy season within the same geographic region Moreover, ethnic traditions, social organizations and food preferences also probably could contribute to the extent and structure of crop diversity in these regions The geographical distribution of landrace vernacular names, agro morphological types and genetic diversity on different spatial scales also provides valuable information to complement ex situ collections and establish relevant criteria to initiate and monitor in situ conservation programs. Genetic information on landraces prevalent in Senegal regions with low interest for sorghum cultivation will be an important input for further breeding programs and sorghum promoting projects interested in these areas. For these reasons, the study aims to characterize genetic diversity and spatial structure of sorghum landraces prevalent in Senegal zones with low interest for sorghum cultivation as the first step for future in situ conservation programs. The present study is part of global research activities at the national level since 2013 to improve major crops and to better manage germplasm resources in Senegal.

**Keywords:** sorghum, landraces, diversity, microsatellite markers, Senegal.