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Collection and Phenotypic Characterization of Some Nigerian Bambara Groundnut (Vigna subterranea (L.) Verdc.) Germplasm Using Seed Morphology

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Abstract : Bambara groundnut is an indigenous African legume with great potential to tackle the problem of food insecurity in Nigeria. A germplasm collection mission was carried out in collaboration with the Agricultural Developments Project (ADP) Extension officers of Nigeria between October and December 2014. Bambara groundnut seeds were collected from farmers in different States in Nigeria, such as Kaduna, Niger, Kogi, Benue, Plateau, Adamawa, Nasarawa, Jigawa, Enugu, and Federal Capital Territoy (FCT) Abuja. Some seeds were also collected from National Centre for Genetic Resources and Biotechnology (NACGRAB). The seeds were phenotyped using the descriptor list of Vigna subterranea produced by the International Plant Genetic Resource Institute. A total of 45 original seed lots were collected, which comprised of mixed seeds having different seed coat colours (15) and pure seeded accessions having the same seed coat and eye colour (30). After sorting, a total of 83 accessions were derived from the 45 original seed lots collected, and a total of 24 distinct seed morphotypes with varying seed coat colours and eye colours were identified from the collections. They include cream (cream ash eye, cream plain eye, and cream black eye), cream purplish spots, cream brown spots/stripe, cream black stripe, cream dark brown patches, cream light grey spots, cream black patches, black, red, light red, dark red, brownish red, brown speckled with black, red speckled with black, brown, brown with brown pattern below hilum, brown with black pattern below hilum, cream black, grey brown, grey black and variegated red. The highest number of accessions were collected from NACGRAB (11), followed by Niger State (10), and the lowest from Benue, Jigawa, and Adamawa States (2). Niger State also had the highest number of mixed seeds. The different seed phenotypes observed in the study are important for the field production of true-to-type lines and can be exploited for the genetic improvement of the Bambara groundnut.

Keywords : Bambara groundnut, characterization, collection, germplasm, phenotypic
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