

Evaluation of Genetic Potentials of Onion (*Allium Cepa* L.) Cultivars of North Western Nigeria

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Abstract : Onion (*Allium cepa* var. *cepa* L.) is the most important species of the *Allium* group belonging to family Alliaceae and genus *Allium*. It can be regarded as the single important vegetable species in the world after tomatoes. Despite the similarities, which bring the species together, the genus is a strikingly diverse one, with more than five hundred species, which are perennial and mostly bulbous plants. Out of these, only seven species are in cultivation, and five are the most important species of the cultivated *Allium*. However, *Allium cepa* (onion) and *Allium sativum* (Garlic) are the two major cultivated species grown all over the world of which the onion crop is the most important. North Western Nigeria (Sokoto, Kebbi and Zamfara States) constitute the major onion producing zone in Nigeria, which is primarily during the dry season. However, onion production in the zone is seriously affected by two main factors i.e. diseases and storage losses, in addition to other constraints that limits the cultivation of the crop during the rainy season which include lack of prolonged rainy season to allow for proper maturation of the crop. The major onion disease in this zone is purple blotch caused by a fungus *Alternaria porri* and currently efforts are on to develop onion hybrids resistant to the disease. Genetic diversity plays an important role in plant breeding either to exploit heterosis or to generate productive recombinants. Assessment of a large number of genotypes for a genetic diversity is the first step in this direction. The objective of this research therefore is to evaluate the genetic potentials of the onion cultivars of North Western Nigeria, with a view of developing new cultivars that address the major production challenges to onion cultivation in North Western, Nigeria. Thirteen onion cultivars were collected during an expedition covering North western Nigeria and Southern part of Niger Republic during 2013, which are areas noted for onion production. The cultivars were evaluated at two locations; Sokoto, in Sokoto State and Jega in Kebbi State all in Nigeria during the 2013/14 onion season (dry season) under irrigation. The objective of the research was to determine the genetic potentials of onion cultivars of north western Nigeria as a basis for breeding purposes. Combined analysis of the results revealed highly significant variation between the cultivars across the locations with respect to plant height, number of leaves/plant, bolting %, bulb height, bulb weight, mean bulb yield and cured bulb weight, with significant variation in terms of bulb diameter. Tasa from Warra Local Government Area of Kebbi State (V4) recorded the greatest mean fresh bulb yield with Jar Albasa (V8) from Illela Local Government Area of Sokoto State recording the least. Similarly Marsa (V5) from Silame Local Government Area recorded the greatest mean cured bulb yield (marketable bulb) with Kiba (V11) from Goronyo Local Government of Sokoto State recording the least. Significant variation was recorded between the locations with respect to all characters, with Sokoto being better in terms of plant height, number of leaves/plant, bolting % and bulb diameter. Jega was better in terms of bulb height, bulb yield and cured bulb weight. Significant variation was therefore observed between the cultivars.

Keywords : evaluation, genetic, onions, North Western Nigeria

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