

Diversity Assessment and Elite Line Selection of Brinjal Accessions Collected from Different Districts of Nepal

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Abstract

Brinjal is an important vegetable crop in Nepal, with a wide diversity among local accessions. However, there is a knowledge gap on its diversity and very few accessions are being conserved in long-term gene bank facilities. In this study, we aimed to assess the diversity among local brinjal accessions collected from different districts of Nepal and identify elite lines for future breeding program. A total of 19 brinjal accessions covering two species, *Solanum melongena* L. and *Solanum aethiopicum* L. were collected from 12 districts and characterized for agro-morphological, yield and pest resistance traits. The 19 brinjal accessions were laid out in randomized complete block design with two replications. Results showed a high level of agro-morphological diversity among the local accessions, with high diversity for flower and fruit-associated traits. The dendrogram constructed using agro-morphological markers revealed four major clusters, with the majority of accessions clustering according to their location of the collection, plant height, the period for 50% flowering and fruit size. Based on the agro-morphological, yield and pest resistance traits, ten elite lines (CO-3342, CO5036, CO-5239, CO-7538, CO 12319, CO-12489, CO-12563, CO-13628, CO-13518 and CO-14135) were identified and selected for further evaluation in field trials to explore their potential for breeding programs. Additionally, the current study guarantees the seed sources of all studied 19 brinjal accession including elite lines for the future breeding program.

Keywords: diversity, lines, traits, trials, accession.