Morphological Characterization and Genetic Diversity Mapping of Local Mango Genotypes in Western Nepal

Aashish Pandey[1], Bal Krishna Joshi[2], Rukmagat Pathak[1] and Puspa Raj Poudel[1]

[1]Department of Horticulture, Institute of Agriculture and Animal Science,

Tribhuvan University, Kirtipur, Nepal

[2]National Agriculture Genetic Resources Center (National Genebank),

NARC, Khumaltar, Lalitpur.

Corresponding author's e-mail: poudelpuspa@yahoo.com

Abstract

Mango is one of the important tropical and sub-tropical fruit of Nepal. The morphological characterization helps to identify and extract essential qualitative and quantitative traits, important for the conservation and utilization of mango genotypes. The current research aimed at finding diversity among mango genotypes from four sites of Lamjung District of Nepal viz. Kusunde, Timure, Gauritar and Talentar. A total of 44 mango genotypes were characterized using 63 traits (21 quantitative and 42 qualitative traits) of International Plant Genetic Resources Institute descriptors whereas only 15 mango genotypes were characterized along with fruit descriptors. High variability was found in tree and leaf descriptors of 44 mango genotypes. The leaf length ranged from 15.73 cm – 26.49 cm, the leaf width ranged from 4.35mm-6.86 mm whereas leaf blade shape ranged from elliptic to ovate. The Fruit weight was significantly positively correlated with fruit length, fruit diameter, fruit thickness, fruit skin weight, pulp thickness, pulp weight, stone length, stone width, stone thickness, stone weight, seed length, seed weight, seed thickness, seed weight. The fruit weight ranged from 42.50 gm to 104.48 gm along with 24 % coefficient of variation. The first four principal components explained 92.9 % of total variance. Morphological variation existed within mango genotypes of same location and between the mango genotypes of different locations. Different mango possessed good agronomical traits which can be used for further mango improvement program.

Keywords: Mango, Morphological characterization, Principal component analysis