

## Morphological Diversity in Twenty *Capsicum Chinense* Accessions

Y.A.R. Nishani<sup>1</sup>, H.A.P.A. Shamali<sup>2</sup>, D.M. Gamage<sup>1</sup> and A.L. Ranawake<sup>1\*</sup>

<sup>1</sup> Department of Agricultural Biology, Faculty of Agriculture, University of Ruhuna, Mapalana, Sri Lanka

<sup>2</sup> Agriculture Research Station, Department of Agriculture, Thelijjawila, Sri Lanka

### Abstract

Chili is a major spice crop in Sri Lanka with a per capita consumption of 2.84 kg. According to the field crop and development Institute in Sri Lanka, 49,928 Mt of Chili is imported annually to fill the gap between the demand and the production. The genus *Capsicum* consists of more than 25 species and out of them, five species are domesticated. In Sri Lanka, there are locally available *Capsicum chinense* accessions within a broad morphological spectrum. The *Capsicum chinense* accessions are not properly characterized yet because the greatest attention has been directed to *Capsicum annum*. In the present study, twenty *Capsicum chinense* accessions were collected from PGRC, Gannoruwa & Agricultural Research Station, Telijjawila and explored the morphological diversity of *Capsicum chinense* accessions. Twelve quantitative morphological traits and eighteen qualitative traits were considered to evaluate *Capsicum chinense* accessions in a protected house. Data were analyzed using IBM SPSS 22 statistical software. Two principle components (PC) exhibited more than 1 Eigen values. PC 1 and PC 2 explained 52.65%, 18.37% variability, respectively and cluster analysis showed that there were five major clusters at cluster distance 8 among the collected accessions. In 2D scatter plot diagram, tested chili accessions were dispersed in 3 quadrants suggesting that genetic variation among them was fairly wide. According to the frequency distribution of 18 qualitative traits, anther colour, corolla colour, and pod shape largely contributed to the variability within the accessions. The clustering pattern can be used for the selection of parental materials with diverse characteristics as this gives a picture of similarities and dissimilarities of individual *Capsicum chinense* accessions which are not familiar to the local farmers and researchers.

**Keywords:** *Capsicum chinense*, Cluster analysis, Genetic diversity, Morphological traits, Principal component analysis

\*Corresponding Author: lankaranawake@hotmail.com