

ABSTRACT

Morphological characterisation of a Caribbean germplasm collection of *Capsicum chinense* Jacq.**Sarah Marguerite Bharath**

Aromatic hot peppers belong to the species *Capsicum chinense* and are indigenous to the Caribbean and Latin American Basin. *Capsicum chinense* is the most important cultivated species of *Capsicum* in the Caribbean. Hot pepper production in the region is affected by numerous factors including the use of poorly characterised landraces by farmers. This study consisted of two components: (a) a survey of 200 hot pepper fields over 15 production variables in Trinidad and Tobago to determine the major constraints to hot pepper production and (b) an assessment of 56 morpho-physiological descriptors in 333 accessions of *Capsicum* held in the University of the West Indies (UWI) germplasm collection, over two trials (a field trial and a pot trial), with the objective of providing the basis for the exploitation of the landraces and other potentially useful varieties.

The field survey revealed that 60% of the fields with poor to moderate management had low yields while the remaining 40% with good management had correspondingly higher yields. The study identified a number of key constraints to improving productivity of which the unavailability of elite certified planting material was identified as an important one. The study revealed that the Caribbean germplasm showed considerable variation with respect to 54 of the 56 descriptor traits. A number of novel traits not previously included in the descriptor list were identified as useful in discriminating among *C. chinense* accessions including the presence of a tail-

like extension at the distal end of the fruit, extent of pericarp folding, pebbling on the fruit surface and fruit glossiness. The first two components in Principal Component Analysis and Multiple Correspondence Analysis did not explain very high levels of variation. However, shape at pedicel attachment, surface corrugation, cotyledon length, fruit weight and fruit width consistently accounted for much of the variation across both trials. Although geographical clustering was not strongly evident some trends were seen. The accessions from the Bahamas were distinct from the rest of the Caribbean accessions. This is the first extensive study of morphological descriptors in *C. chinense* in the Caribbean.

Keywords: *Capsicum chinense*; Caribbean germplasm; hot peppers; morphological descriptors; multivariate analysis; cluster analysis; Trinidad and Tobago