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“Bridging the gap between increasing knowledge and decreasing resources”

Determination of Stable Traits for Morphological Characterisation of Bitter Gourd (*Momordica charantia* L.) Accessions

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Abstract

Diversity of plant morphology is a result of interaction between genetic factors and environment. To identify the differences between accessions of bitter gourd (*Momordica charantia* L.), morphological characterisation were tested for its suitability. Quantitative, qualitative and pseudo-qualitative traits were evaluated for distinctness and the more stable traits resulted in accurate discernment in different growing conditions. The experiments were carried out in RCBD (randomized complete block design) for seven indigenous bitter gourds accessions collected in Vietnam in two different environmental conditions: greenhouse in Berlin, Germany and field in Binh Thuan, Vietnam. There were 28 characteristics evaluated for stability under both conditions. Measurements and visual assessment values were analysed using NTSYS-PC version 2.10. UPGMA (the unweighted pair group method with arithmetic mean) was applied to compare the diversity of accessions, and “double-centered” matrix allowed figuring out the stable characteristics. Among 28 assessed morphological characteristics, seven characteristics were firmly fixed (including number of leaf lobe; ridge of fruit; size of fruit warts; present of fruit spines; color of fruit skin at ripe stage; indentation of seed edge; and striation of seed coat) and four characteristics were less varying (including fruit weight; weight of 100 seeds; number of node up to node with first male flower, and time of first male flower flowering). The clustering patterns of seven accessions based on the above 11 traits were consonant in two growing conditions. These traits were appropriate for classifying the diversity of bitter gourd.

Keywords: Growing condition, *Momordica charantia*, morphological characterisation, stable traits