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Morphological characterization of a germplasm collection of cultivated cinnamon at mid-country research station, Dalpitiya

M.R. Prathibhani¹, R.A.A.K. Ranawaka², L. Jayasekara³, G.G. Jayasinghe⁴, G. Senanayake⁵ and S. Geekiyanage^{5*}

¹ Faculty of Graduate Studies, University of Ruhuna, Matara, Sri Lanka

² Department of Export Agriculture, Peradeniya, Sri Lanka

³ Faculty of Science, University of Ruhuna, Matara, Sri Lanka

⁴ National Cinnamon Research and Training Center, Thihagoda, Matara, Sri Lanka

^{5*} Faculty of Agriculture, University of Ruhuna, Kamburupitiya, Sri Lanka

Abstract

Sri Lankan cinnamon (*Cinnamomum verum* J. Presl) germplasm is diverse in morphology and chemical composition due to the cross-pollinating behavior of the crop. Most cinnamon cultivations are seed-derived, resulting in a mixture of chemical properties in the product. Products with specific chemical compositions are advantageous for niche markets of high price. Morphological characterization of germplasm provides representative accessions for chemical characterization for the above purpose. The germplasm collection, which is established at the Mid-Country Research Station, Dalpitiya, consists of 71 accessions of diverse morphology. Identification of accessions with distinct chemical compositions from the above collection is important to provide material for breeding purposes. Morphological characters of leaf length (LL), leaf width (LW), petiole length (PI), leaf arrangement (LA), leaf shape (LS), leaf apex (LAP), leaf base (LB), leaf venation (LV) and leaf margin (LM) were recorded in five mature leaves from 5th to 6th leaf of the tip of the branch using the Descriptors for Cinnamon (*Cinnamomum verum*) developed by Team of TURIS 2013 Project. The LL, LW and PI varied from 10.54-17.64 cm, 4.3-7.4 cm, 0.9-1.94 cm, respectively. LA of all accessions was either opposite or sub-opposite. The most common LS types were elliptic, narrowly elliptic, ovate, oval, and lanceolate, while only accessions 53 and 66 were of ovate-lanceolate and oblong-lanceolate, respectively. LS of broadly ovate was only recorded in *Sri Gemunu*. Variations of LAP and LB were acute, obtuse, acuminate, long-acuminate, narrowly acuminate, acuminate with broad acumen and acute, subacute, cuneate, rounded, subcordate, obtuse and obtuse, contracted into petiole, then shortly cuneate, respectively. LV of three-veined and three or five-veined was recorded from all accessions. Only accession 26 and *Sri Gemunu* were of entire LM, while all others were of undulate. The Principal Component Analysis followed by Cluster Analysis produced 6 clusters at a rescaled distance of 0.6. Accession 53 belonged to a unique cluster and *Sri Gemunu* clustered with accessions 22 and 57 in a separate cluster. *Sri Wijaya* is clustered with 36 accessions. Based on the above morphological diversity, it is suggested that the tested collection may be useful in future breeding programmes.

Keywords: *Cinnamomum verum* collection at Dalpitiya, Leaf morphology

***Corresponding Author:** sudarshanee@agbio.ruh.ac.lk