

**MORPHOLOGICAL AND MOLECULAR
CHARACTERIZATION OF NEWLY IMPROVED
TEA (*Camellia sinensis* (L) O. Kuntze)
CULTIVARS**

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ABSTRACT

Improved tea cultivars are one of the key determinants of the increasing productivity and sustainability of tea industry in Sri Lanka. At the inception of the plant breeding programme, tea breeding objectives were mainly centered on high yield only. Considering grower demands and global challenges new series of cultivars have been developed giving equal attention to yield potential, made tea quality, pest and disease resistance as well as drought tolerance. Series of multi- stage and multi-regional trials conducted spanning over 15 years new series cultivars are in the pipe line now. Therefore, an effort was taken to characterize newly improved cultivars for up country region using the guidelines proposed by IPGRI and UPOV and to determine their phenotypic variation.

Results of the diversity analysis revealed that among the qualitative morphological traits viz density of pubescence of bud, leaf blade shape and leaf pose were varied among the accessions. Further, all quantitative traits measured were significantly different among the accessions. Resultant dendogram was able to group accessions into distinct groups and accessions originated from TRI 777 were clustered together while others were grouped irrespective of the maternal parent. A preliminary cultivar identification guide prepared using 18 distinct morphological characters and validated by an expert panel is now available for easy identification of new improved cultivars.

This is the first attempt on using leaf architectural properties in cultivar identification in tea in Sri Lanka. Since, there were no distinct leaves architectural properties in minor venation patterns observed among cultivars studied and these properties are not useful in cultivar identifications.

Molecular diversity of new cultivars was assayed using SSR markers and since the accessions are derived from an open pollinated progeny, high polymorphic value was recorded and indicates more diversity among the accessions. Resultant dendogram enables clustering of new cultivars into three groups and each group accompanies at least one maternal parent. Maternal parents TRI 2043 and TRI 777 have a single origin and they were grouped together.

Keywords: new cultivars, SSR diversity, cultivar identification guide, phenotypic diversity