AI-03

Preliminary study of the segregating pattern of anthocyanin pigmentation as a marker to facilitate tea breeding

U. V. A. Buddhika[1], M. T. K. Gunasekare[2], S. Hettiarachi[1],
M. A. B. Ranatunga[2] and K. K. U. G. Hemamali[1]

[1] *Dept. of Botany, University of Ruhuna, Sri Lanka.*
[2] *Plant Breeding Division, Tea Research Institute, Talawakelle, Sri Lanka.*

Anthocyanin is one of the plant pigments that have been widely used as a morpho-chemical marker in characterization of several tea cultivars since it is an easily observable phenotypic trait. Hence, it has a potential to be used as a selection criterion in tea breeding program. This research was aimed at studying the segregating pattern of anthocyanin pigment using the population of tea which shows a great variation in the expression of the trait. A progeny consisted of 248 individuals generated from a cross between two parental clones TRI 2043 and TRI 2023, that shows extreme phenotypes for the anthocyanin pigment (pigmented and non-pigmented) was used in the study. All individuals of the progeny were characterized morphologically for presence or absence of purple pigments as well as intensity of the pigments using Royal Horticultural Society (RHS) colour chart for anthocyanin pigmentation. For the confirmation of this morphological characterization, anthocyanin content was determined by spectrophotometric method. According to the results, colour variation of tea shoots throughout the population confirms the highest segregation, a transgressive segregation for anthocyanin pigments. A continuous variation of the frequency distribution of anthocyanin concentration of individuals in the population revealed that there is no normal Mendelian segregation for the anthocyanin pigmentation. Therefore, there is no major gene inheritance of the trait, but a polygenic inheritance can be observed and this trait can be considered as governed by quantitative trait loci (QTL).

Keywords: tea breeding, morpho-chemical markers, segregating pattern, Mendelian segregation, anthocyanin pigmentation