

## ROADSIDE TREES FOR MITIGATING PARTICLE POLLUTION IN URBAN AREAS

P.A.P.M. Pallawala, S.A.E.C. Wijesinghe and K. Yakandawala

*Department of Horticulture and Landscape Gardening, Faculty of Agriculture and Plantation Management, Wayamba University of Sri Lanka, Makandura, Gonawila (NWP)*

Corresponding author: wijesingheerandi@yahoo.com

Air pollution is a growing environmental concern in major cities across the world and the presence of atmospheric particles in air is of considerable concern for public health. Urban trees can be used to reduce air pollution caused by particle matter. However, little information is available on suitable trees which can be used to intercept particulates present in the air. Thus, the objective of this study was to identify potential roadside trees that could be used to effectively reduce particles present in air. Six roadside trees *viz. Terminalia arjuna, Azadirachta indica, Tamarindus indicus, Khaya senegalensis, Thevetia peruviana* and *Cassia* spp. along the Puttalam Kurunagala main road were selected for the study. Quantitative morphological characters (*viz.* petiole length, inter nodal distance, length and width of leaf, leaf hair length and hair density) and qualitative morphological characters (*viz.* leaf arrangement, orientation, folding, pubescence and venation) which contribute to the particle interception were studied in detail. The quantitative data were subjected to ANOVA with Statistical Analysis System (SAS). Qualitative and quantitative morphological characters varied among species and a significant difference ( $P < 0.05$ ) was observed among trees for quantitative characters. Previous studies confirmed the presence of a dense canopy and coarse leaf texture contributes positively in the mitigation of air borne particle and it was interesting to note that *T. arjuna* and *Cassia* spp. possessed the highest number of morphological characters that contributes to a dense canopy and a coarse leaf texture. *T. arjuna* has shorter petioles and semi erect leaf orientation that contribute towards a dense canopy while crenate leaf margin increases the effective surface area available to trap particles. Whereas the presence of hairs on both leaf surfaces, longer hairs and prominent venation contribute towards a coarse leaf texture. In *Cassia* spp, spiral leaf arrangement, semi erect leaf orientation and carinate leaf folding contribute towards a dense canopy. Whereas the presence of hairs on lower leaf surface, longer hairs and prominent venation contribute towards a coarse leaf texture. Therefore, based on morphological studies, *T. arjuna* and *Cassia* spp. can be recommended over other species studied for roadside planting to mitigate air pollution caused by airborne particle matter.

**Keywords:** Air pollution, Morphological characters, Particulate matter, Roadside trees