

ABSTRACT

Higher levels of atmospheric pollution in the urban areas have now become a global issue which perils the human and plant's health along with urban environment and ecosystem. Plant species growing along roadsides and close to the pollution effected areas (areas with heavy traffic density and industrial effluents), serves as barrier for the emitted pollutants, being either sensitive or tolerant to the contaminants present in the air. Worldwide, different methods are used to assess the tolerant and sensitive behavior of plants towards atmospheric pollution. In this research work, two indices, Air Pollution Tolerance Index (APTI) and Anticipated Tolerance Index (API) are assessed to check the sensitivity level of trees to the atmospheric pollutants and their extent of performance in the highly polluted urban areas. For execution of this research work, fifteen different plant species; *Alstonia scholaris* Linn., *Bombax ceiba* Linn., *Callistemon lanceolatus* R.Br., *Dalbergia sissoo* Roxb., *Eucalyptus globulus* Labill., *Ficus benamina* L., *Ficus religiosa* L., *Melia azedarach* Linn., *Mimusops elengi* L., *Morus alba* L., *Murraya paniculata* Linn., *Nerium oleander* Linn., *Polyalthia longifolia* Sonnerat., *Tabarnaemontana divaricata* L. and *Rubia tinctorum* L. were elected from seven different sites of thick traffic flow of Lahore city. After the analyses and results of APTI and API, it was found that the highest APTI and API value was shown by *Eucalyptus globulus* which indicates its tolerance and excellent performance in the polluted environment respectively. Lowest APTI value was shown by *Melia azedarach* which showed its sensitivity towards atmospheric pollutants. Air Pollution Tolerance Index of selected plant species in decreasing order was *Eucalyptus globulus* > *Tabernaemontana divaricata* > *Ficus benamina* > *Ficus religiosa* > *Polyalthia longifolia* > *Rubia tinctorum* > *Murraya paniculata* > *Mimusops elengi* > *Nerium oleander* > *Alstonia scholaris* > *Callistemon lanceolatus* > *Bombax ceiba* > *Dalbergia sissoo* > *Morus rubra* > *Melia azedarach*. API analyses indicated that *Alstonia scholaris*, *Callistemon lanceolatus*, *Ficus religiosa*, *Mimusops elengi* and *Polyalthia longifolia* were found to be very good performers in the polluted environment. APTI results can be applied for classifying the plant species into pollution tolerant and sensitive, so the tolerant plant species can be used for urban greenbelt development and pollution mitigation while sensitive plant species can be used as bio-indicators of air quality while API assessment furthers highlights the level of performance delivered by the tolerant plant species in the polluted environment. This research work highlights the significance of urban greenbelt and forest development to manage the global issue of air pollution using bio-monitoring tool.