IJPS INTERNATIONAL JOURNAL OF PLANT SCIENCES
Volume 7 | Issue 2 | July, 2012 | 199-207

RESEARCH ARTICLE

Evaluation of anticipated performance index of some plants species for green belt development in an industrial area

■ D. SARALA THAMBAVANI AND V. PRATHIPA

SUMMARY

In the present study, the air pollution tolerance index (APTI) of six plant species collected from a residential, traffic and industrial area have been evaluated by analyzing important biochemical parameters. On the basis of air pollution tolerance index and some biological and socio economic parameters of plants, the anticipated performance index (API) of these plants were calculated. Among all the plants taken under consideration, *Azadiratca indica* and *Delonix elata* were classified into the good category. The most suitable plants species for green belt development in urban areas were identified and recommended. For green belt development it is necessary that plants used for green belt must be tolerance towards air pollution. Green belts are effective tools for mitigation of air pollution.

Key Words : Green belt, Air pollution, Anticipated performance index (API), Air pollution tolerance index (APTI), Biochemical parameters

How to cite this article : Thambavani, D. Sarala and Prathipa, V. (2012). Evaluation of anticipated performance index of some plants species for green belt development in an industrial area. *Internat. J. Plant Sci.*, **7** (2) : 199-207.

Article chronicle : Received : 07.01.2012; **Revised :** 28.03.2012; **Accepted :** 05.04.2012

Urban areas of many developing countries are suffering from various environmental problems arising from over population and lack of enough public facilities. Air pollution is one of the major problems in these areas. Air pollution control is more complex than most other environmental challenges. No physical or chemical method is known to ameliorate aerial pollutants. A suitable alternative may be to develop a biological method by green plants in and around industrial and urban areas (Agarwal, 1988; Santra, 1995; Thakre, 1995; Shannigrahi *et al*., 2003; Sivasamy and Srinivasan, 1996; Fukuoka, 1997; Ghose and Majee, 2001). Plants, the main green belt (GB) component act as a sink and as living filters to minimize air pollution by absorption, adsorption, detoxification, accumulation and for metabolization without sustaining serious foliar damage or decline in growth, thus, improving air quality by providing oxygen to the atmosphere (Sharma *et al.*, 1994; Rawat and Banerjee, 1996; Beckett *et al.*, 1998). Plants differ markedly in their responses to pollutants, some differ markedly in their responses to pollutants, some being highly sensitive and others hardy and tolerant(Singh and Rao, 1983; Sarala *et al.*, 2009).

An important factor in developing investigation, belt is that different plant species have a varying degree of sensitivity towards a particular stress or they can be categorized into 'sensitive' and 'tolerant'. Under the present investigation stress tolerant species (air pollution) were experimented from the study area. Since tolerant species can be used for green belt development. Tolerant plant species can function as pollution sink and therefore, a number of environmental benefits can be derived by planting tolerant species in affected areas (Rao *et al.*, 2004).

The evaluation of the tolerance level of plant species towards air pollution from leaf parameters requires empirical data used for calculation of the air pollution tolerance index (APTI), an index developed by Singh and Rao (1983). The parameters used in defining sensitivity or resistance of plants towards different air pollutant concentration are

MEMBERS OF THE RESEARCH FORUM

Author to be contacted :
D. SARALA THAMBAVANI, Department of Chemistry, Sri Meenakshi Government Arts College for Women (Autonomous), MADURAI (T.N.) INDIA
Email: sarala_dr@yahoo.in

Address of the Co-authors:
V. PRATHIPA, Department of Chemistry, P.S.N.A. College of Engineering and Technology, DINDIGUL (T.N.) INDIA
Email: sptprathipa@gmail.com