



A Monthly e Magazine
ISSN:2583-2212

April 2024 Vol.4(4), 1350-1355

Popular Article

Ornamental Plants to Combat Air Pollution

D.Sarvessh^{1*}, C. Ravindran², M.Keerthana³, K.Udhayakumar⁴, C.Praveen kumar⁵

¹ Research Scholar, Department of Floriculture and Landscape Architecture, HC&RI, TNAU, Periyakulam, 625604.

² Associate Professor & Head, H&FRS, TNAU, Kodaikanal. 624 103.

³ Research Scholar, Department of Floriculture and Landscape Architecture, HC&RI, TNAU, Periyakulam, 625604.

^{4,5} Research Scholar, Department of Fruit Science, HC&RI, TNAU, Periyakulam, 625604
<https://doi.org/10.5281/zenodo.10945776>

Introduction

Global warming and pollution - biggest menace for the survival of the biological species. By reducing our carbon footprint and protect our environment. There are various types of pollution e.g. air, water, soil, sound pollution. Earth was a beautiful landscape but man has ruthlessly exploited for his greed specially, in the last century. With rapid industrialization and random urbanization environmental pollution has become a serious problem. So, in addition to reducing, reusing and recycling, we can actively make a difference by planting trees.

Air Pollution

- Presence of one or more contaminants in the atmosphere in such a quantity and of such duration as is or trends to be injurious to human health of welfare, animal or plants or properties or would unreasonably interfere with enjoyment of life and property.

Causes Of Air Pollution

Natural causes

Volcanic activities, Winds and air currents, Wildfires, Microbial decaying processes, Radioactive decay processes, Increasing temperatures



Human activities

Mining and smelting, Industrial processes, Transportation, Coal Power Plants, Smoking, Construction and Demolition

Characters of plant species for pollution control

- ❖ Evergreen, Large leaved, stickier leaves, rough bark, ecologically compatible, Require minimum care, low water requirement, Habit, Pollution tolerance and dust scavenging capacity

Some Plant species for Air Pollution Control



Albizia lebbek



Acacia auriculiformis



Ailanthus excelsa



Terminalia arjuna



Tectona grandis



Polyalthia longifolia,



Delonix regia



Bombax ceiba



Cassia Siamea



Lagerstroemia indica



Cassia fistula



Air Pollution Tolerance Index (APTI)

- Tool to screen out plants based on their tolerance or sensitivity level to different air pollutants.
- **APTI = A(T+P) + R/10**
- A – Ascorbic acid content (mg/g)
- T = Total chlorophyll mg/
- P = pH of leaf extract
- R = Relative water content of leaf %

APTI Value	Response
30 to 100	Tolerant
29 to 17	Intermediate
16 to 1	Sensitive
<1	Very sensitive

Avenue Plantation

- Growing trees along roadside and the canal side to increase aesthetic value and to provide shade (Pongen,2015).
- Plantation of tolerant species, can mitigate air pollution to a certain level (Rai *et al.*,2013)
- Trees as greenbelt, act as sink and living filters to minimize air pollution by absorption, metabolization and also improve air quality.

Trees suitable for planting along roadsides



Albizzia lebbek



Acacia auriculiformis



Ailanthus excelsa



Terminalia arjuna



Tectona grandis



Polyalthia longifolia,





Albizzia lebbek



Acacia auriculiformis



Ailanthus excelsa



Terminalia arjuna



Tectona grandis



Polyalthia longifolia,

Reduction in urban heat island effect:

- Warming of built-up urban areas compared to nearby rural areas by an average of 1 to 3°C, but sometimes as high as 12°C in the evening (EPA, US, Heat Island effect).
- The presence of urban vegetation provides shade and evapo-transpiration, both of which lowers the surface and air temperatures, reducing the heat island effect (EPA, Heat island Mitigation, Trees and Vegetation).

Plants suitable for traffic island



Albizzia lebbek



Acacia auriculiformis



Ailanthus excelsa



Terminalia arjuna



Tectona grandis



Polyalthia longifolia,



Shrubs suitable for planting in central verge



Acalypha wilkesiana



Caesalpinia pulcherrima



Hibiscus rosa-sinensis



Duranta plumeri



Cassia surattensis



Bougainvillea spp

Indoor Air Pollution

- Degradation of indoor air quality by harmful chemicals and other materials.
- 10 times worse than outdoor air pollution.

Plants Suitable for Indoor Pollution Control

- **Aloe vera**
- It helps clear formaldehyde and benzene, which can be a byproduct of chemical Based cleaners, paints etc.

Chlorophytum comosum

With lots of rich foliage and tiny white flowers, the spider plant benzene, Formaldehyde carbon monoxide and xylene, a solvent used in the leather, rubber and Printing industries.

Gerbera jamesonii

- This bright, flowering plant is effective at removing trichloroethylene. It's also good for filtering out the benzene that comes with inks.

Epipremnum aureum

- Another powerful plant for tackling formaldehyde, this fast-growing vine will create a cascade of green from a hanging basket.

Sansevieria trifasciata

- This plant is one of the best for filtering out formaldehyde, which is common in cleaning products, toilet paper, tissues and personal care products .



Dracaena marginata

- The red edges dracaena is best for removing xylene trichloroethylene formaldehyde, which can be introduced to indoor air through varnishes and gasoline.

Conclusion

- Considering the present scenario of urban environmental pollution, there is need for changing the approach of planting trees and other plant species
- Inclusion of the ornamental plants having pollution mitigating ability in the landscape plan will serve the dual purpose of making the cities green and pollution free in the long run .
- Proper planting scheme will bring healthy life and colour in the cement concrete jungle of large congested cities.

