

Title	Assessment of Suitable Plant Characteristics for Improvement of Air Quality in Chiangmai's Moat Areas
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ABSTRACT

The aim of this study was to assess of suitable plant characteristics for air quality improvement in Chiangmai's moat areas and to be a guideline for the selection of plant species. Data were collected from 11 areas around the moat: Yupparaj school, Anuban Chiangmai school, Horpra school, Amphoe Mueang Chiang Mai district office, Chiangmai City Arts & Cultural Center, Chedi Luang temple, Phra Singh Temple, Phan Waen temple, Muenngenkong temple and Methang temple. The study was conducted from February to October 2013. Tree leave specimens were collected, and plant morphology characteristics such as height, canopy, deciduous and flowering periods were measured and observed for removing PM₁₀, CO₂, NO_x and O₃. In addition, a guideline for urban management aimed to increase the carbon storage and the ways to reduce air pollution were recommended.

It was found that there were 80 tree species belonging to 32 families with a total number of 1,968 trees. The highest tree density was found in the family Fabaceae (Legumonisae) with 539 trees (14 species). *Cassia fistula* L. is the most common tree and *Acacia mangium* Willd. is the least. The needle leaf species, *Casuarina* spp., was suitable for capturing PM₁₀. Twenty-two genera that suitable for decreasing ozone and nitrogen oxide such as *Calophyllum inophyllum* L., *Artocarpus heterophyllus* Lam and *Lagerstroemia cuspidata* Wall. The result of tree biomass and carbon stored show that *Ficus religiosa* L. had the greatest carbon storage of 4.70 tonne, respectively follow by *Samanea saman* (Jacq.) Merr. and *Casuarina junghuhniana* Miq. Overall, the total carbon storage of tree in study area were as 399.46 tonne. *Ficus religiosa* L. is the most suitable plant for air quality improvement in Chiangmai's moat area, followed by *Samanea saman* (Jacq.) Merr., *Casuarina junghuhniana* Miq. and *Mammea siamensis* Kosterm.

In addition, both air quality improvement and the criteria of urban tree planting *Mammea siamensis* Kosterm., *Couroupita guianensis* Aubl., *Lagerstroemia speciosa* (L.) Pers. and *Lagerstroemia macrocarpa* Wall. were the samples suitable for urban landscaping.

Keywords: air pollution, urban trees, environmental quality, Chiangmai's moat areas