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SCREENING THE SUBTROPICAL TREES FOR LOW ISOPRENE EMISSION IN TAIWAN

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Since isoprene may react actively with nitrogen oxides to produce ozone in urban atmosphere, the urban trees with high isoprene emission rate have recently obtained great concerns in Taiwan. It is on this purpose that Taiwan EPA initiated a project to screen the subtropical or tropical trees with low or no isoprene emission rate. A PP plastic bag enclosure method in combination with a GC-FID instrument installed with a Se-30 packing column was adopted in this study to quickly detect the tree gas emission. Totally 28 popular tree species were screened in the first stage in 2003. Among them seven species were found to be isoprene emitters. They are mango, Formosan sweet gum (Liquidambar formosana), sisso tree (Dalbergia sissoo), white bark fig (Ficus benjamina), rubber plant (Ficus elastica), poongaoil (Pongamia pinnata), and Ceylon olive (Elaeocarpus serratus), with emission rate of 39.5, 38.4, 41.4, 27.7, 21.1, 12.4, and 14.8 μg g-1 h-1, respectively. The results suggest that these species should be avoided or limited in urban reforestation, although there is no direct evidence showing that the emitted isoprene is the principal precursor responsible for the raised ozone level in four urban areas in Taiwan.