

**CO₂ UPTAKE BY AZADIRACHTA SIAMENSIS AND
PTEROCARPUS MACROCARPUS IN PLANTATIONS, THAILAND**

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ABSTRACT

Trees absorb CO₂ from atmosphere through photosynthetic process and can lower the ambient CO₂ concentration. Thus, forest plantation can be considered to mitigate the greenhouse gas. In Thailand, *Azadirachta indica* A. Juss. var. *siamensis* (Valeton) and *Pterocarpus macrocarpus* Kurz are widely planted throughout the whole country. This study examined the CO₂ uptake in *A. siamensis* which is a fast-growing tree species, and *P. macrocarpus* which is a slow-growing tree species. The field data were taken by the LI-6200 portable photosynthetic system. These trees were grown in Kanchanaburi province. The results showed that the diurnal courses of CO₂ uptake had similar patterns in the two species. However, the CO₂ uptake rate of *A. siamensis* was significantly higher than that of *P. macrocarpus* in the early dry season (December). The highest CO₂ uptake of *A. siamensis* was 13.86 mgCO₂.dm⁻².hr⁻¹ at around noon, whereas that of *P. macrocarpus* was only 8.68 mgCO₂.dm⁻².hr⁻¹. Nevertheless, in dry season (February) the CO₂ uptake did not differ in both tree species. Furthermore, the water use efficiency (CO₂ uptake per one unit of transpiration) of *A. siamensis* was lower than that of *P. macrocarpus* in the two periods. In conclusion, *P. macrocarpus* was the best water use efficiency but *A. siamensis* was the best CO₂ sink.