

C726707 INTER-DEPARTMENT OF ENVIRONMENTAL SCIENCE
 ## MAJOR MONTANE FOREST / PHOTOSYNTHESIS / SOIL WATER CONTENT
 KEY WORD: SASITORN POUNGPARN : EFFECTS OF SEASONAL VARIATIONS IN SOIL WATER CONTENT ON PHOTOSYNTHETIC RATES OF DOMINANT TREE SPECIES IN MONTANE FOREST, CHIANG MAI PROVINCE. THESIS ADVISOR : ASSI. PROF. PIPAT PATANAPONPAIBOON, Ph.D., THESIS CO-ADVISOR : WEERACHAI NA - NAKORN, Ph.D. 93 pp. ISBN 974-636-116-3

The study of effect of seasonal variations in soil water content on photosynthetic rates of the three dominant tree species in montane forest located at Queen Sirikit Botanic Garden, Chiang Mai province; Ko lim (Castanopsis indica), Ko yum (C. argyrophylla) and Champee paa (Paramichelia baillonii), showed that the highest net photosynthetic rate was observed ($2,213.3 \mu\text{mol m}^{-2} \text{day}^{-1}$) during late summer and the beginning of the rainy season (May). Net photosynthetic rate of P. baillonii was the lowest ($110.5 \mu\text{mol m}^{-2} \text{day}^{-1}$) in summer. The trend of photosynthesis was varied in response to seasonal change. It was found that photosynthetic rates of both C. indica and C. argyrophylla were decreased in summer (March) and increased at the beginning of rainy season (May). The lowest photosynthetic rates of both species were observed in rainy season (August). Net photosynthetic rates of both species of Castanopsis were significantly related with light flux density ($p \leq 0.05$). The seasonal photosynthetic rate of P. baillonii was decreased in summer and increased in rainy season because the photosynthetic rate of P. baillonii was insignificantly influenced by light flux density.

Soil water content in montane forest in summer and rainy season was significantly different ($p \leq 0.05$) (of C. indica and C. argyrophylla). The photosynthetic rates for these two species showed that insignificant levels of variance with soil water content ($p \leq 0.05$) whereas the photosynthetic rate of P. baillonii reversed significantly with soil water content ($p \leq 0.05$). It was concluded that both Castanopsis species had more efficiency of reduction of CO_2 ambient than P. baillonii.

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