

Effect of sago palm (*Metroxylon sagu* Rottb.) plantation on CH₄ and CO₂ fluxes from a tropical peat soil

Akira WATANABE, Ken-ichi KAKUDA, Benito H. PURWANTO, Foh-Shoon JONG, and Ho ANDO

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Abstract: Methane (CH₄) and carbon dioxide (CO₂) fluxes from tropical peat soils were compared between sago palm (*Metroxylon sagu* Rottb.) cultivation blocks with different plant ages (3, 5, and 7 years old) and their neighboring secondary forests. No significant variations in CH₄ and CO₂ fluxes were observed during the daytime. The mean values of CH₄ flux from sago palm soils and secondary forest soils were 25—44 and 23—30 $\mu\text{g C m}^{-2} \text{ h}^{-1}$, respectively. Methane emissions did not differ significantly between each sago palm block and the adjacent secondary forest. The number of years after sago palm transplantation and the development of sago palms were not major factors contributing to the spatial variation in CH₄ flux. The mean values of CO₂ flux from sago palm soils were 43—88 $\text{mg C m}^{-2} \text{ h}^{-1}$, and those from the secondary forest soils were 44—64 $\text{mg C m}^{-2} \text{ h}^{-1}$. The CO₂ emissions from a sago palm block with 3-year-old plants were larger than those from the adjacent forest soil. However, the CO₂ emissions from blocks with 5- and 7-year-old sago palms were smaller than those from the 3-year-old sago palm block and did not differ from the CO₂ emissions from the adjacent forest soils.