

**Diel changes in the CO₂ exchange rates of reproductive organs of the tropical tree
Durio zibethinus**

ABSTRACT

The daily variations in the in situ CO₂ exchange of the reproductive organs of *Durio zibethinus* trees, growing in an experimental field at University Putra Malaysia (UPM), were examined at different growth stages. Reproductive organs emerged on the leafless portions of branches inside the crown. The photon flux densities (PFD) in the chambers used for the measurements were less than 100 $\mu\text{mol m}^{-2} \text{s}^{-1}$ and were 40% of the PFD outside of the crown. The daytime net respiration rate and the nighttime dark respiration rate were higher at the time of flower initiation and during the mixed stages, when flower buds, flowers, and fruit coexist, than at the flower bud stage. The net respiration rate was lower than the daytime dark respiration rate at given temperatures, especially at the flower bud and fruit stages. Conversely, the net respiration rate was similar to the daytime dark respiration rate at the mixed stage. Photosynthetic CO₂ refixation reduced the daily respiratory loss by 17, 5, 0.3, and 24% at the flower bud, flower initiation, mixed, and fruit stages, respectively.

Keyword: Dark respiration; Flower; Flower bud; Fruit; Net respiration; Photosynthetic CO₂ refixation