



## Research project of counterparts funded at IPB

Name

Counterpart

Title

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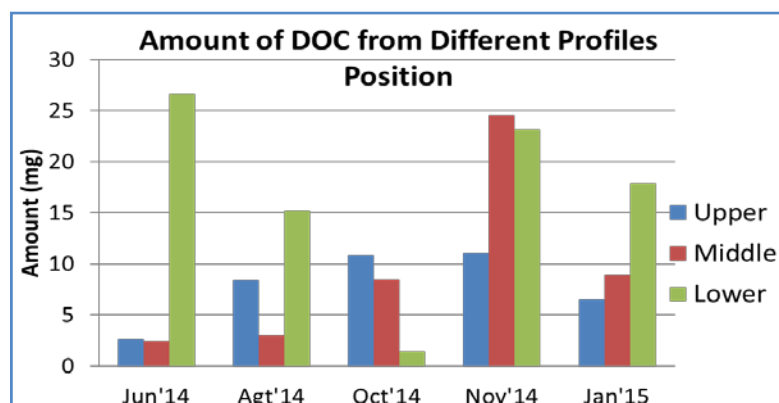
**A04**

Dissolved organic carbon in the Bukit Duabelas National Park and the relationship with the soil properties and its toposequence

In forest ecosystems, most of the organic matter supplied to the organic (O) horizon is mineralized to  $\text{CO}_2$ . However, a portion of organic matter is leached as dissolved organic carbon (DOC) as soil water percolates. The DOC transported to the mineral soil horizons may be mineralized, leached or adsorbed onto mineral surfaces. The objective of this research was to characterize the DOC in the Bukit Duabelas National Park and to reveal the effect of soil properties, soil depth and the landscape position on DOC fluxes.

Six sites with different landscape positions – namely two soil profiles at the top, two soil profiles at the middle of the slope, and two soil profiles at the foot of the slope (near a creek) – were selected in the Bukit Duabelas National Park. Soil samples were collected in the A, AB and Bt horizons. The selected soil properties – namely SOC, total N, cation exchange capacity (CEC), soil texture, dithionite-citrate-bicarbonate-extractable iron (Fe) and aluminium ( $\text{Fe}_d$  and  $\text{Al}_d$ ), oxalate-extractable Fe and Al ( $\text{Fe}_o$  and  $\text{Al}_o$ ), organically-bound Fe and Al ( $\text{Fe}_p$  and  $\text{Al}_p$ ) – were analysed. The soil solutions were collected beneath the A, AB and Bt horizons once per month during one year and DOC concentrations was determined.

The results showed that the concentration and amount of DOC in the soil profile on the lower slope were higher than those on the upper and the middle slopes. The concentration and amount of DOC in the AO horizon were higher than those in both the AB and Bt horizon. The result of Pearson correlation showed positive correlations between DOC fluxes with organic-C, total-N, and Cation Exchange Capacity (CEC), but negative correlations with pH, and Fe dithionite-citrate-bicarbonate (Fed) content. The results suggested that the increase of SOC, total N and CEC increased DOC and the increase of pH and Fed decreased DOC.



**Figure 1.** Cumulative dissolved organic Carbon (DOC) amount depending on landscape position.