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Dissolved Organic Carbon in the Bukit Dua Belas National Park and the Relationship with the Soil Properties and Its Toposequence

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In forest ecosystem, most of the organic matter supplied to the organic (O) horizon mineralizes to CO_2, but 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 effect of soil properties to the DOC dynamic has not been fully understood because oflimited data. The objective of this research is to characterize the DOC in Bukit Dua Belas National Park and reveal the effect of soil properties and the position in transect to the DOC.

Six soil profiles with different position in transect namely two soil profiles in the top, two soil profiles middle slope and two soil profiles in the foot slope (near the creek) were constructed in Bukit Duabelas National Park. The soil samples were collected in A, AB and Bt horizons. The selected soil properties namely total C, total N, cation exchange capacity (CEC), soil texture, dithionite-citrate-bicarbonate-extractable iron (Fe) and aluminum (Fe_d and Al_d), oxalate-extractable Fe and Al (Fe_o and Al_o), organically bound Fe and Al (Fe_p and Al_p) were analyzed. The soil solutions were collected in using tension-free lysimetes beneath the A, AB and Bt horizons. The lysimeters were installed horizontally in small soil pits by inserting the plates (200 cm^2) into precut opening and connecting them with tygon tubing to the collecting bottles. The soil solution samples were collected once per month during one year from the soil profiles and then total carbon in the soil solution were analyzed. Soil chemical properties were not completely analyzed yet. The results shows that the position and the horizon of soil profile affected the concentration of DOC. DOC consentration in A horizon is about 8.5 mg/liter, while AB aand Bt horizon are 2.5 and 1,0 mg/liter respectively. DOC consentration on the top of slope is about 10,0 mg/liter, while on the middle and foot slope are 12,0 and 16,0 mg/liter.