Name	Counterpart	Title
Kukuh Murtilaksono	A04	Dissolved organic carbon under oil palm plantation in the small catchment of PT Perkebunan Nusantara VI, Jambi

Introduction

Research on dissolved organic carbon (DOC) carried by surface water and stream water is still very rare, particularly in Indonesia. The carbon content of the soil can be successfully used to predict the mean concentration in stream water in a catchment (Aitkenhead et al. 1999). The OBJECTIVES of this study were to characterize the DOC of stream water under oil palm plantation in a small catchment (Bajubang) in PT Perkebunan VI, Jambi province.

Methodology

The research was carried out from June to December 2017 in the Bajubang catchment of 168 hectares under oil palm plantation. Water was sampled 27 times during five months at five sites along the course of the stream in the upper, middle, and lower regions of the catchment. The water samples were analysed for the concentration of Na by emission, PO4 using blue molibdate, and for Fe, Al, and Mn using atomic absorbtion spectrophometer. DOC was measured by spectrophotometer at an absorbance of 254nm. Data on daily precipitation was taken from a nearby weather station run by another research team. Correlation analysis was applied to DOC and other parameters to determine the hydrological characteristic of the catchment. The concentration of DOC at the outlet of the catchment was determined using stream discharge data.

Result and Discussion

DOC is highly and positively correlated with the concentrations of Al (r=0.88) and Fe (r=0.94), with PO4 (r=0.73) and, although slightly lower, with Mn (r=0.62). There was no or only low correlation between DOC and Na cation concentration (r=0.35). In the soil profile at Bukit Duabelas National Park, Jambi DOC was more highly correlated with Fe and PO4 than Na (Murtilaksono et al. 2016; Anwar et al. 2016).

DOC concentration is significantly and highly correlated with the discharge of the stream (r=0.94) (figure 1).

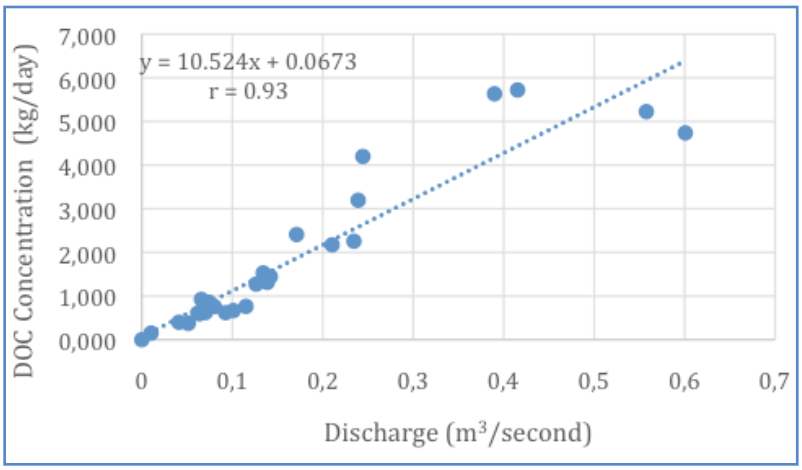

Figure 1. Correlation of dissolved organic carbon (DOC) concentration and stream discharge of the catchment Bajubang in PT Perkebunan VI, Jambi province.

The average DOC transported along the stream was 10.76 kg per day or 290.65 kg during the whole 27 days of sampling. Thus there is a large amount organic carbon that is dissolved in the water and washed out of the catchment.

References

[1] Anwar S, Murtilaksono K, Hartono A, Putra GS. 2016. Fluxes of dissolved organic carbon and nutrient leaching in a toposequent of Bukit Dua Belas National Park, Indonesia. International Journal of Advances in Science, Engineering and Technology(IJASEAT) Vol-4,Iss-4 (Spcl Iss- 2)

[2] Murtilaksono K, Anwar S, Hartono A, Sunarti, Kuzyakov Y. 2016. Dissolved organic carbon flux on a toposequent in Bukit Dua Belas National Park, Indonesia. International Journal of Advances in Science, Engineering and Technology (IJASEAT) Vol 4, Iss-4 : 45-47.