

## **Impacts of oil palm cultivation on soil chemistry in a Malaysian tropical peatland**

### **ABSTRACT**

Cultivation of oil palm on peat soil has greatly affected the environment and soil carbon in recent time, especially when such practice has been on for several years. This paper therefore considers the impacts of oil palm cultivation on the peat soil with depth and considering the heterogeneity of different ages of plantation. Soil analyses were carried out and the parameters considered in soil analyses are; pH, moisture content, carbon, nitrogen, sulphur, and some heavy metals like, manganese, zinc, iron, copper, and phosphorus. Heavy metals present in the soil were determined using the double acid method while carbon, nitrogen, and sulphur were determined using flash combustion method. The results of the soil analysis indicated strong correlations among carbon, nitrogen, sulphur, depth and pH. Carbon values ranged from the highest (50.08%) in the oil palm cultivated in the year 2000 to the lowest (33.20%) in 2010-cultivated oil palm at the same depth, which suggests that carbon content of peat soil might be decreasing with continuous oil palm cultivation. Hence the gradual loss of carbon content from the peatland with time is being attributed to the oil palm cultivation and this could also trigger climate change effects, if left uncontrolled. The same applies to other parameters analyzed but with either negative or positive correlation observed.

**Keyword:** Tropical peatlands; Oil palm plantation; Groundwater quality; Soil quality; Heavy metals