

Effect of cultivation in different age's oil palm plantation on selected chemical properties of peat swamp soils

ABSTRACT

Large-scale land conversion of peat for agricultural purposes requires clearance, drainage, fertilizer application, and liming to increase the pH and boost microbial activity. The objective of this present study was to compare the soil chemical properties of oil palm plantation one-three years oil palm planted and mature oil palm that were previously a secondary tropical peat swamp forest. Soil samples were collected randomly at difference age's oil palm plantation from a Young Oil Palm Plantation (YOPP) in one year period of time at same place and Mature Oil Palm Plantation (MOPP) another place from oil palm plantation in Batang Igan, Sibuluan, Sarawak, Malaysia. Approach: Forty eight soil samples were taken using a peat soil auger at 0-15 cm depths in every area. The samples were air dried and then sieved to pass 2 mm sieve. Soil pH in water and KCl, soil CEC, Organic Matter (OM), Organic Carbon (OC), Total Nitrogen (TN), Total Phosphorous (TP), Total Potassium (TK), carbon to nitrogen ratio and carbon to phosphorous ratio were determined using standard procedures. Statistical analysis showed that CEC, TC and OM content were statistically similar. Results: The soil pH_{water}, TN and C/N ration shows highly significant for all difference age's oil palm plantation. Difference with pH_{KCl} and TK content shows no significantly difference between YOPP 2 years and 3 years but both areas significantly higher with MOPP. For TP and C/P ratio content has no significant difference for YOPP (2 years) and MOPP but significantly difference with YOPP (3 years). Conclusion: Regardless of difference age's oil palm plantation, total carbon, organic matter and CEC was statistically similar to different ages of oil palm plantation, but soil acidity, nitrogen, phosphorus, potassium, C/N and C/P ratio was significantly higher between three areas weather YOPP (2 years), YOPP (3 years) and MOPP.

Keyword: Peat swamp forest; Soil acidity; Soil organic matter; Total carbon; Total nitrogen; Total phosphorus; Total potassium; C/N and C/P ratio