

Methane emission from pineapple cultivation on a tropical peatland at Saratok, Malaysia

ABSTRACT

Information on methane emission in pineapple cultivation on peatlands is scarce. Methane emission in pineapple cultivation is important as 90% of pineapples are grown on the peat soils of Malaysia. It is essential to determine methane emission in pineapple cultivation because pineapples are Crassulacean acid metabolism plants whose effects on methane could be different from other crops grown on tropical peat soils. Methane emissions from root respiration, microbial respiration, and oxidative peat decomposition were determined in a lysimeter experiment. There were three treatments: peat soil cultivated with pineapple, bare peat soil, and bare peat soil fumigated with chloroform. Methane emissions from peat soil cultivated with pineapple, bare peat soil, and bare peat soil fumigated with chloroform were 0.65 t/ha/yr, 0.75 t/ha/yr, and 0.75 t/ha/yr, respectively. The lower methane emissions are consistent with the general believe that methane emission from cultivated peat soils is lower than those of anaerobic or water logged peat soils. Soil methane emission was affected by nitrogen fertilization under pineapple cultivation but the converse was true for soil temperature nor soil moisture.

Keyword: Greenhouse gases; Land degradation; Lysimeter; Organic soils management; Peat soil