

Nitrous oxide emission of a tropical peat soil grown with pineapple at Saratok, Malaysia

ABSTRACT

Draining of peatland for agriculture could affect the release of nitrous oxide into the atmosphere. Presently, there is dearth of information on soil nitrous oxide emission from tropical peat soils cultivated with pineapples. Lysimeter and closed chamber methods were used to quantify nitrous oxide emission from root respiration, microbial respiration, and oxidative peat decomposition under controlled water table condition. Treatments evaluated were: peat soil grown with pineapple, uncultivated peat soils, and bare peat soil fumigated with chloroform. Cultivation of Moris pineapple on drained peat soils resulted in the higher release of nitrous oxide emission (15.7 t N₂O ha/yr), followed by fumigated peat soil with chloroform (14.3 t N₂O ha/yr), and uncultivated peat soil (10.2 t N₂O ha/yr). Soil nitrous oxide emission was affected by nitrate fertilization but emission was not affected by soil temperature nor soil moisture.

Keyword: Greenhouse gases; Land degradation; Lysimeter; Organic soils management; Peatland; Pineapple