Co-application of red gypsum and sewage sludge on acidic tropical soils.

ABSTRACT

The agroenvironmental impact of co-utilization of red gypsum and sewage sludge was investigated. Both laboratory and greenhouse studies were conducted. The treatments were soil + sewage sludge (5% w/w) + red gypsum (0, 2.5, 5, 10, 20, and 40%, w/w). Corn was grown in the greenhouse, and the highest rate of red gypsum application was excluded. The residual calcite in red gypsum was able to increase the pH of the red gypsum–sewage sludge acidic soil system. Hence, gypsum reduced the zinc (Zn) concentrations in the soil solution released by sewage sludge. Phosphorus (P) and potassium (K) were insufficient for corn growth. At the rate of 2.5% red gypsum and 5% sewage sludge application, no dry-matter reduction was observed compared to the control. The uptake of Zn, copper (Cu), and iron (Fe) by the corn plants decreased. Therefore, co-utilization of red gypsum and sewage sludge is a better option than using these by-products separately.

Keyword: Acidic soils; Corn; Heavy metals; Red gypsum.