

Economic viability of including crude humic substances, chicken litter biochar, and clinoptilolite zeolite in rice cultivation on acid soils

ABSTRACT

Chemical fertilizers are important for improving crop yield. However, fertilizers cost, concerns for sustainable soil and crop productivity, ecological stability, and economic viability have been expressed. A field study was carried out on Bekenu Series (Typic Paleudults) to determine the effects of (i) using conventional fertilizers, crude humic substances, chicken litter biochar, and clinoptilolite zeolite in rice cultivation on acid soils, and (ii) the economic viability of including the soil amendments in rice cultivation. Results revealed that long-term cultivation of rice based on conventional method is not economically sustainable. Regardless of cropping cycle, crude humic substances were economically viable. Farmers who include chicken litter biochar or clinoptilolite zeolite in their rice cultivation can breakeven in the second and third field planting cycles. Incorporating crude humic substances is the most economical practice in rice cultivation followed by chicken litter biochar or clinoptilolite zeolite.

Keyword: Acid soils; Biochar; Clinoptilolite zeolite; Economic viability; Humic substances

