

Rice growth improvement and grains bio-fortification through lime and zinc application in zinc deficit tropical acid sulphate soils

ABSTRACT

A two years field study was conducted to explain the effect of Zn and lime application on morphological characteristics, rice yield and yield components, and more broadly, grains bio-fortification (Zn and protein content (CP), and amino acid profiles). The lime and Zn interaction increased grains and straw yield more than two times (6.64 ton ha⁻¹) compared to the control (3.20 ton ha⁻¹). The maximum increase in the Zn content of grain, white rice and bran was obtained about 30% in whole grain, 42% in bran and 56% in white rice. Furthermore, CP increased by about 8% in bran, 12.3% in whole grain, and 27% in white rice compared to control. Also, the Zn and lime application and their interaction were significantly increased the amino acids, especially essential parts.

Keyword: Zinc; Acid sulphate soils; Rice; Lime; Amino acids; Biofortification