

Effects of applying ground basalt with or without organic fertilizer on the fertility of an acid sulfate soil and growth of rice

ABSTRACT

Rice yield grown on acid sulfate soils is very low because of Al^{3+} and/or Fe^{2+} toxicity. A study was conducted to determine the effects of applying ground basalt with or without organic fertilizer on the growth of rice. Results showed clear benefits of ground basalt as an amendment for acid sulfate soil infertility. The ameliorative effects were comparable with that of applying 4 t ground magnesium limestone (GML) ha⁻¹; however, basalt had an additional advantage over GML as it contained K and P besides Ca and Mg. But as basalt needs time to disintegrate and dissolve completely in the acid sulfate soil under submerged conditions, the best option is to apply ground basalt in combination with organic fertilizers a few months ahead of transplanting rice in the field. The organic fertilizers would then be able to partly reduce Al and/or Fe in the soil via the chelation process.

Keyword: Acid sulfate soil; Aluminum toxicity; Basalt; Iron toxicity; Organic fertilizer; Rice production