Effectivity of Soil Amelioration on Peat Soil and Rice Productivity

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ABSTRACT

Peat soil amelioration has important role on improvement of soil peat fertility such as on increasing soil pH, reducing organic acid and toxic ions, and also increasing nutrients availability. Soil amelioration with polyvalent cations (Fe Al Cu Zn) namely slag, lateritic soils, and river mud are effectively reducing harmful effect of phenolic acid. The objectives of the study were to determine the effect of soil amelioration on peat soil chemical properties, optimum temperature ameliorant tras and dolomite to increase Si concentration in peat soil, also to determine the effect of soil amelioration on increasing crop productivity (both biomass and yield). The study was consisted of two sets of experiments, namely soil incubation in the laboratory and greenhouse experiment with 4 replications of CRD (complete randomized design) plot design. The result of the study showed that the application of slag and dolomite are significantly different to increase pH, base saturation, and (Ca, Mg) content, meanwhile slag application was more complex and stable on improving chemical properties of peat soil. Slag was also improving pH, KB, and Ca, Fe content as well as silica and ash. Tras and dolomite burning were not significantly different on increasing silica in peat soil. Slag application was significantly increased both dried crop biomass and yield on rice. The best ameliorant was slag compared to tras, dolomite, and mixed tras dolomit with slag.

Keywords: Ameliorant, organic acids, paddy, peat soil

INTRODUCTION

Utilization of peatlands is needed to meet the increasing food needs in line with population growth.

It is important to support national food security. Currently, food production is decreasing due to decreasing productive agriculture land. Therefore extensification of agricultural land is necessary. Peatland is one of alternatives for agricultural land. Indonesia has the largest peatland among tropical countries, which is about 14.9 million ha, spread