SUMMARY

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Steel slag is one of the solid waste from the process of purifying molten iron in steel-making. Steel slag is formed through the reaction of iron ore and limestone. Steel slag contains some elements such as Ca, Mg, Mn, Fe, and Si. The content such elements, steel slag possible to be utilized for improving chemical properties of acid soils such as acid sulphate soil.

Acid sulphate soil had a low pH, low available P and base saturation (Andriesse and Sukardi, 1990). Due to those soil properties, the production of rice cultivated on acid sulphate soil was extremely low. Application of steel slag on acid sulphate soil was expected to improve the chemical properties of acid sulphate soil. The objectives of this research were to observe the effects of steel slag on soil chemical properties, rice growth and production as well as nutrients absorption by rice plants.

Research was conducted in green house (University Farm IPB) and soil analysis were conducted in Laboratory of Chemical and Soil Fertility, Department of Soil Science and Land Resources, IPB. Soil sample used in this research was acid sulphate soil taken from Rantau Rasau District, Tanjung Jabung Timur Regency, Riau Province. Steel slag was obtained from Sumitomo Metal Industry, Japan. Rice variety of Inpari-1 was used as indicator plant. Fertilizers of urea, SP-18 and KCl were used at standard rate, where as the rates of steel slag were 0 g/pot (T0), 15 g/pot (T1), 30 g/pot (T2) and 45 g/pot (T3), respectively.

The results showed that steel slag increased the pH, Ca, Mg, K, and P in the soil. The increase of pH value was due to the presence of CaO and MgO which are released from steel slag into the soil solution. Steel slag decreased Zn, Cu and Pb content in soil because of the increasing soil pH. In higher pH the elements of Zn, Cu and Pb are more precipitate in the soil solution. The addition of steel slag also increases the growth and production of rice up to 145%. This is due to indirect effect of steel slag addition which improve the chemical properties of soil.

Keywords: soil nutrients, plant nutrients, acid sulphate soil, steel slag.