

# **Integrated Nutrient Management on Acid Paddy Soil in Karang Tanjung Village, Padang Ratu, Central Lampung**

Antonius Kasno, Irawan, Husnain and Sri Rochayati

*Research Institute for Soil Jl. Tentara Pelajar No. 12 Cimanggu Bogor 16 114,  
e-mail: antkasno@gmail.com*

Received 02 January 2017/ accepted 21 April 2017

## **ABSTRACT**

Balanced fertilization is the key to improving the efficiency and effectiveness of fertilizer use, which combines inorganic and organic fertilization. Dosage of inorganic fertilizers is based on nutrient status of P and K and rice productivity. Research aims to improve balance fertilization that combines inorganic fertilization based on soil nutrient status and organic matter. The research was conducted in Karang Tanjung village, Padang Ratu sub-district, Central Lampung, in ry season 2009 until 2012. An experimental plot of one hectare using the farmer's original plot. Generally, every treatment belong three or more farmers. The treatments were set up for the dose of fertilizer management on lowland rice. The treatment consist of (1) farmer practice, (2) dose of Petrokimia fertilizer, (3) 75% of fertilizer dose which create based on the soil analysis combined with composed of straw, and (4) 75% of inorganic fertilizer combine with manure and Biofertilizer. At the fourth season was added with 100% inorganic fertilizer (NPK fertilizer). The results showed that the limiting factor of the soil used was C-organic, N and K nutrient, CEC soil. The compost of rice straw used as organic matter contains C-organic and total N higher than in manure. Organic matter application in the form of straw compost or manure can reduce 25% NPK with the production of rice remains high. Rice production based on soil nutrient status can improve fertilizer efficiency. Rice production di not differ between the treatment of 100% NPK with the farmer practice and the dosage of Petrokima fertilizer.

**Keywords:** Acid soil, efficiency fertilizer, nutrient management,

## **INTRODUCTION**

Fertilizer is an essential agricultural inputs needed by farmers to increase their farming yields. Fertilizer containing macro nutrients like N, P, and K is needed by plants. Nutrient balance is an important aspect in enhancing crop productivity. Balanced fertilization on paddy specific location can be determined based on soil nutrient status through soil analysis in a laboratory or by using a soil test instruments such as Rice Soil Test Kit (PUTS).

The use of fertilizers by farmers in paddy fields during the last decade has not been ballanced because of many reasons, such as the price of fertilizer is expensive or scarce, such as KCl and SP-36. Most rice farmers only use urea as a source of N because the price is relatively cheap and its effects can be directly seen in the vegetative growth of the plants. Meanwhile, the use of P and K

fertilizers are still not in accordance with the fertility of the soil and crop requirements.

Former research results showed the use of urea (250 kg ha<sup>-1</sup>), SP-36 (100 kg ha<sup>-1</sup>), and KCl (100 kg ha<sup>-1</sup>), respectively on paddy fields in Taman Bogo with levels of N, P, K, and organic-C were low could increase rice yields, significantly (Soelaeman *et al.*, 2010). Then fertilization of 200 kg urea ha<sup>-1</sup> and a dose of P and K based on soil test in some areas of paddy fields in Pantura, Java could increase the weight of dry grain and nutrient uptake of N and K (Hartatik and Adiningsih, 2003). Nitrogen fertilization increasing rice production at rainfed areas in Boyolali, Jakenan, and Cianjur, K fertilization can increase rice production in Jakenan, but P fertilization can't increase rice production (Kasno *et al.*, 2016).

Due to the lack of proper nutrient management and the non-use of organic matter as an farming input, there has been a decline in soil organic matter content in the paddy field. Research results by Kasno *et al.* (2003) showed that organic-C level on approximately 65% of the rice field in Indonesia was already below the critical limit (<2%). Soil organic