The Improvement of Soil Chemical Properties of Typic Hapludults by Organic and Inorganic Fertilizers

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Received 23 October 2016/ accepted 20 December 2016

ABSTRACT

Polyanthestuberosa L. is a potential flowering plant that will be developed in Jatinangor. However, the Typic Hapludults soil in Jatinangor has a clay texture, an acid soil reaction, and a high level of total-P, but there is a low available-P, which will make tuberose growth difficult. The aim of this study was to obtain the potential composition of organic and inorganic fertilizers for tuberose growth on Typic Hapludults. We used organic and inorganic fertilizers with different compositions and dosage recommendations (0/0; 0/1; 1/0; 0.5/0.5; 0.5/1; 1/0.5; 1/1.5; 1.5/0; 1.5/0.5, and 1.5/1 for organic/inorganic fertilizers, respectively). The combination of organic and inorganic fertilizers had a positive effect on soil reaction (pH), available-P, total-P, and fresh weight of tuberose on Typic Hapludults. The application of 50% organic + 50% inorganic fertilizers was an effective combination in increasing plant growth by improving the fresh weight up to 9240 g plant\(^{-1}\) or increasing the fresh weight by 39% compared with control.

Keywords: Fresh weight, inorganic fertilizer, tuberose, Typic Hapludults

INTRODUCTION

Indonesia has many large uplands, which could be used for agriculture. One soil type is Ultisols order. Ultisol covers the Java region and it is also found in Jatinangor, Sumedang - West Java. The soil in Jatinangor belongs to the order of Udults, the great group of Hapludults, and the sub-group of Typic Hapludults. It has a clay texture, acidic soil reaction, and a high level of total-P. In Typic Hapludults, soil structure is crumbly on the top but it has a clay texture on the below and its fertility is generally low because of high acidity of the soil. Ultisols is characterized by clay accumulation in soil horizon. It causes the less water infiltration and enhances the soil erosion. Typic Hapludults belongs to sub-group from Ultisols. The classification of this soil is Ultisolsorde, sub-order of Udults, great group of Hapludults, and sub- group of Typic Hapludults. Typic Hapludults has two syllables, the first syllable shows its primary type and the second ones is its great group name. Hapludults