

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*

ABSTRAK

Polyanthes tuberosa L. Merupakan salah satu jenis tanaman bias berbunga indah yang potensial untuk dikembangkan di Jatinangor. Namun, tanah tipe Hapludtyang umumnya berada di Jatinangor memiliki tekstur tanah yang liat, reaksi tanah asam, dan tingkat P-total yang tinggi, namun nilai P-tersedia yang rendah. Hal ini akan menghambat pertumbuhan tanaman sedap malam. Tujuan dari penelitian ini adalah untuk mendapatkan komposisi pupuk organik dan anorganik yang baik untuk pertumbuhan tanaman sedap malam pada tanah tipe Hapludult. Penelitian ini menggunakan pupuk organik dan anorganik dengan komposisi dan rekomendasi dosis yang berbeda (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, dan 1.5/1) untuk masing – masing pupuk organik/anorganik, masing-masing). Hasil menunjukkan bahwa kombinasi pupuk organik dan anorganik memiliki baik terhadap reaksi tanah (pH), P-tersedia, P-total, dan bobot segar tanaman sedap malam pada tanah tipe Hapludults. Pemberian kombinasi 50% pupuk organik dan 50% pupuk anorganik efektif meningkatkan pertumbuhan tanaman yang dapat meningkatkan bobot segar hingga 9.240 g tanaman⁻¹ atau meningkatkan bobot segar tanaman sebesar 39% dibandingkan dengan kontrol.

Katakunci: Bobot segar, Pupuk Anorganik, Sedap Malam, Tipe 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*