

**PENGARUH CARA APLIKASI BAKTERI ENDOFIT UNTUK
MENINGKATKAN PRODUKSI TANAMAN TOMAT**

(*Solanum lycopersicum L.*) PADA ULTISOL

SKRIPSI

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ABSTRAK

Penelitian Pengaruh Cara Aplikasi Bakteri Endofit Untuk Meningkatkan Produksi Tanaman Tomat (*Solanum lycopersicum L.*) Pada Ultisol telah dilaksanakan pada bulan Juli 2017 hingga Desember 2017. Tujuan penelitian untuk mendapatkan cara aplikasi bakteri endofit yang terbaik dalam peningkatan produksi tanaman tomat (*Solanum lycopersicum L.*) pada Ultisol. Penelitian dalam bentuk percobaan polybag dalam pola Rancangan Acak Lengkap (RAL) dengan lima perlakuan dan empat ulangan. Perlakuan terdiri dari kontrol, perendaman benih 50 ml, perendaman akar 50 ml, penyiraman pada tanah 50 ml, dan penyemprotan pada daun 50 ml. Pengamatan tanah awal meliputi pH, Al_{dd}, C_{Org}, N_{Tot}, Kapasitas Tukar Kation, K_{dd}, Ca_{dd}, Mg_{dd}, dan Na_{dd}. Pengamatan tanah setelah inkubasi meliputi pH, Al_{dd}. Pengamatan tanah awal dan setelah inkubasi di uji sesuai kriteria sifat kimia tanah. Pengamatan Tanaman meliputi tinggi tanaman, jumlah cabang, jumlah bunga, jumlah buah, bobot kering tanaman, angkutan hara N, P, K. Data pengamatan tanaman di lanjut dengan uji Duncan's New Multiple Range Test (DNMRT) pada taraf 5%. Hasil penelitian tanah awal mempunyai ciri pH H₂O (5,22), pH KCl (4,05), Al_{dd} (2,20 me/100g), C_{Org} (2,68%), C/N (5,58), N_{Tot} (0,48%), K_{dd} (0,28 me/100g), Na_{dd} (0,60 me/100g), Ca_{dd} (1,40 me/100g), Mg_{dd} (0,72 me/100g), KTK (12,97 me/100g). Pemberian kapur dapat meningkatkan pH dari (5,22) menjadi (5,64) dan penurunan Al_{dd} tanah dari 2,20 menjadi 1,48 me/100g. Aplikasi bakteri endofit *Serratia marcescens* ARI melalui perendaman benih memberikan hasil yang tertinggi terhadap pertumbuhan dan perkembangan tanaman tomat, angkutan hara serta produksi pada Ultisol.

Kata kunci : Tomat, endofit, produksi, serratia, ultisol

The Effect of Bacterial Endophyte Application Method in Improving Tomato (*Solanum lycopersium L.*) Production in Ultisols

Abstrack

A research on the effect of bacterial Endophyte application method in improving production of tomato (*Solanum lycopersicum l.*) in Ultisol was conducted from July until December 2017. The research was aimed to find out the best method to apply bacterial endophyte in order to get high tomato (*Solanum lycopersicum L.*) production in Ultisol. This research was in the form of pot experiment, consisted of 5 treatments (control, soaking seed, soaking root, watering soil, and spraying on the leaves by using 50 bacterial endophyte solution) with four replications. The experimental units were allocated based on Completely Randomized Design (CRD). Parameters analyzed were soil pH, Al-exchangeable, Organic C, Tot-N, CEC, K-, Ca-, Mg-, and Na-exchangeable (before incubation) and pH, Al-dd (after incubation). Crop parameters determined were plant height, number of branches, number of flowers, number of fruits, biomas, and N, P, K uptake. The data resulted were analyzed the variance using-F test and then continued using Duncan's of New Multiple Range Test (DNMRT) at the 5% level if F test > F-table. The results showed that soil characteristics were as follows the pH H₂O was 5.22, pH KCl was 4.05, Al-exchangeable was 2.20 cmol/kg, Org-C was 2.68%, C/N ratio was 5.58, Tot-N was 0.48%, K-exchangeable was 0.28 cmol/kg, Na-exchangeable was 0.60 cmol/kg, Ca-exchangeable was 1.40 cmol/kg, Mg-exchangeable was 0.72 cmol/kg, CEC was 12.97 cmol/kg. Application of bacteria *Serratia marcescens* endophyte AR1 through soaking the seeds gave the best results on growth, production, and nutrient uptake by tomato crop in Ultisol.

Key words: tomato, bacterial endophyte, production, *Serratia*, Ultisol

