EFEKTIVITAS MEDAN MAGNET 0,2 mT TERHADAP VIGOR DAN KARAKTER TANAMAN TOMAT (*Lycopersicum esculentum* Mill.) YANG DIINFEKSI *Fusarium* sp.

Oleh

Eko Nastiti

ABSTRAK

Medan magnet merupakan faktor eksternal yang diketahui dapat meningkatkan proses metabolisme sel tanaman sehingga mampu meningkatkan vigor tanaman. Belum banyak diteliti apakah peningkatan metabolisme akibat pemaparan medan magnet dapat juga mempertahankan mempertahankan resistensi tanaman tomat terhadap serangan layu fusarium. Penelitian ini, bertujuan untuk mengetahui 1) vigor tanaman tomat yang diberi perlakuan medan magnet 0,2 mT, 2) efektivitas pemaparan medan magnet 0,2 mT terhadap peningkatan vigor tanaman tomat, 3) peningkatan vigor tanaman tomat akibat kombinasi antara pemaparan medan magnet 0,2 mT dan infeksi *Fusarium* sp. dan 4) karakter spesifik tanaman tomat yang diberi perlakuan medan magnet 0,2 mT dan infeksi *Fusarium* sp. Penelitian disusun secara faktorial menggunakan desain Rancangan Kelompok Lengkap Teracak (RKLT) dengan dua faktor yaitu: 1) lama pemaparan medan magnet 0,2 mT terdiri dari M_7, M_{11}, M_{15} dan M_0 (kontrol) dan 2) infeksi *Fusarium* sp. (F_0 dan F_{60}). Setiap unit perlakuan diulang sebanyak 5 kali kecuali untuk parameter germinasi hanya diulang sebanyak 3 kali. Data dianalisis menggunakan Anara dan di lanjutkan dengan uji Tukey pada α=5% dan α=10%. Hasil penelitian menunjukkan 1) Perlakuan medan magnet 0,2 mT meningkatkan vigor tanaman tomat yang meliputi peningkatan persentase germinasi, panjang akar, tinggi tanaman, jumlah daun, berat basah tanaman, berat kering tanaman, dan aktivitas peroksidase 2) Pemaparan medan magnet 0,2 mT selama 7 menit 48 detik lebih efektif dalam meningkatkan vigor tanaman tomat, 3)Kombinasi antara pemaparan medan magnet 0,2 mT dan infeksi *Fusarium* sp. meningkatkan vigor tanaman tomat, dan 4) Tanaman tomat akibat perlakuan medan magnet 0,2 mT dan infeksi *Fusarium* sp. memiliki karakter spesifik yang berbeda dari pada kontrol.

Kata Kunci: Medan Magnet, *Fusarium* sp.Vigor dan Karakter Spesifik Tanaman Tomat (L. *esculentum* Mill.).

THE EFFECTIVENESS OF MAGNETIC FIELD 0.2 mT TO VIGOR AND TOMATO PLANT CHARACTER (*Lycopersicum esculentum* Mill.) INFECTED *Fusarium* sp.

By

Eko Nastiti

ABSTRACT

Magnetic field is an external factor that is known to increase the metabolism process in plant seed cells during germination so as to increase vigor and plant growth. Not much research has been done to find out whether the increase in metabolism due to magnetic field exposure can also defend the growth and production of tomato plants against *Fusarium* wilt attacks. The aim of this research is to know 1) vigor of tomato plants treated with magnetic field 0,2 mT; 2) the effectiveness of 0.2 mT magnetic field exposure to tomato plant vigor enhancement; 3) increased vigor of tomato plants due to a combination of 0.2 mT magnetic field exposure and *Fusarium* sp. And 4) the specific character of tomato plants treated with a magnetic field of 0.2 mT and infection of *Fusarium* sp.

The research was arranged factorially using a design of Completley Randomized Group Design (CRGD) with two factors: 1) duration of 0.2 mT magnetic field exposure consisting of M_7, M_{11}, M_{15} and M_0 (control) and 2) Fusarium sp. infection consists of no infection (F0) and infection for 60 minutes (F60). Each treatment unit was repeated 5 times except for the germination parameter repeated only 3 times. Data were analyzed variance at $\alpha = 5\%$ and followed with Tukey test at $\alpha = 5\%$ or $\alpha = 10\%$. The results showed: 1) 0.2 mT magnetic field treatment increased tomato plant vigor which can be seen from the increase of germination percentage, root length, plant height, leaf number, plant wet weight, dry weight of plant, and peroxidase activity; 2) 0.2 mT magnetic field exposure for 7 minutes 48 seconds is more effective in increasing vigor of tomato plants, 3) The combination of 0.2 mT magnetic field exposure and *Fusarium* sp. infection increase the vigor of tomato plants; And 4) Tomato plants from seeds treated with a combination of 0.2 mT magnetic field strength and Fusarium sp. infection has a specific character different from the control.

Keywords: Magnetic Field, Fusarium sp.Vigor and Specific Character of Tomato Plant (L. esculentum Mill.).