

ABSTRAK

Nuroh. 2020. Pengaruh Aplikasi *Plant Growth Promoting Rhizobacteria Bacillus subtilis* Hasil Penyinaran UV Terhadap Penyakit Layu *Fusarium oxysporum* f. sp *Lycopersici* Pada Tanaman Tomat. Di bawah bimbingan Muhammad Subandi dan Ida Yusidah.

Salah satu faktor yang menghambat peningkatan produktivitas tomat adalah adanya penyakit layu *Fusarium*. Penelitian ini bertujuan untuk mengetahui efektivitas dari aplikasi *Plant Growth Promoting Rhizobacteria* (PGPR) *Bacillus subtilis* hasil penyinaran UV dalam menghambat pertumbuhan *Fusarium oxysporum* f. sp *Lycopersici* secara *in vitro* dan *in vivo*. Penelitian dilaksanakan dari bulan Mei sampai bulan Agustus 2020. Tempat penelitian dilaksanakan di Balai Besar Peramalan Organisme Pengganggu Tumbuhan (BBPOPT) Jl. Raya Kaliasin Tromol Pos 1. Penelitian ini dilakukan secara *in vitro* dan *in vivo*. Metode yang digunakan untuk *in vitro* yaitu Rancangan Acak Lengkap satu faktoria dengan 4 perlakuan, kontrol (A), penyinaran UV 10 menit (B), penyinaran UV 20 menit (C), penyinaran UV 30 menit (D). Metode yang digunakan untuk *in vivo* yaitu Rancangan Acak Kelompok satu faktorial, kontrol (A), *Bacillus subtilis* 50 ml (B), *Bacillus subtilis* 100 ml (C), *Bacillus subtilis* reguler 100 ml (D). Aplikasi *Plant Growth Promoting Rhizobacteria* (PGPR) *Bacillus subtilis* hasil penyinaran UV efektif dalam menghambat pertumbuhan koloni *Fusarium oxysporum* f. sp *Lycopersici* secara *in vitro*. Perlakuan penyinaran selama 30 menit merupakan perlakuan terbaik dalam menghambat perkembangan *Fusarium oxysporum* f. sp *Lycopersici*. Aplikasi *Plant Growth Promoting Rhizobacteria* (PGPR) *Bacillus subtilis* hasil penyinaran UV efektif dalam menekan perkembangan penyakit layu *Fusarium* pada tanaman tomat. Perlakuan D (*Bacillus subtilis* reguler 100 ml) adalah perlakuan yang efektif dalam menekan perkembangan penyakit dan mempertahankan bobot buah pada tanaman tomat.

Kata kunci: Tomat, PGPR *Bacillus subtilis*, Penyinaran UV, *Fusarium*

ABSTRACT

Nuroh. 2020. The Effect of Application of Plant Growth Promoting Rhizobacteria *Bacillus subtilis* from UV irradiation on *Fusarium oxysporum* f. sp *Lycopersici* Wilt Disease in Tomato Plants. Under the guidance of Muhammad Subandi and Ida Yusidah.

One of the factors that inhibits the increase in tomato productivity is the presence of *Fusarium* wilt disease. This study aims to determine the effectiveness of the application of Plant Growth Promoting Rhizobacteria (PGPR) *Bacillus subtilis* from UV irradiation in inhibiting the growth of *Fusarium oxysporum* f. sp *Lycopersici* in vitro and in vivo. The research was conducted from May to August 2020. The research site was carried out at the Center for Forecasting Plant Pest Organisms (BBPOPT) Jl. Raya Kaliasin Tromol Pos 1. This research was conducted in vitro and in vivo. The method used for in vitro was a completely randomized design with 4 treatments, control (A), UV irradiation 10 minutes (B), UV irradiation 20 minutes (C), UV irradiation 30 minutes (D). The method used for in vivo was a randomized block design with one factorial, control (A), 50 ml *Bacillus subtilis* (B), 100 ml *Bacillus subtilis* (C), 100 ml regular *Bacillus subtilis* (D). The application of Plant Growth Promoting Rhizobacteria (PGPR) *Bacillus subtilis* resulting from UV irradiation was effective in inhibiting the growth of *Fusarium oxysporum* f. sp *Lycopersici* colonies in vitro. The radiation treatment for 30 minutes was the best treatment in inhibiting the development of *Fusarium oxysporum* f. sp *Lycopersici*. The application of Plant Growth Promoting Rhizobacteria (PGPR) *Bacillus subtilis* from UV irradiation was effective in suppressing the development of *Fusarium* wilt disease in tomato plants. Treatment D (regular 100 ml *Bacillus subtilis*) is an effective treatment in suppressing disease progression and maintaining fruit weight in tomato plants.

Keywords: Tomatoes, PGPR *Bacillus subtilis*, UV irradiation, *Fusarium*