

ABSTRAK

POTENSI METABOLIT SEKUNDER JAMUR *Fusarium* sp. SEBAGAI HERBISIDA GULMA *Asystasia gangetica* DAN UJI FITOTOKSISITASNYA PADA TANAMAN CABAI RAWIT (*Capsicum frutescens* L.)

Oleh

ALYA FAYZA

Keberadaan gulma dalam pertanian, termasuk di pertanian perkotaan, menjadi salah satu faktor penghambat produksi tanaman. Umumnya gulma dikendalikan dengan herbisida sintetik. Namun, penggunaan herbisida sintetik secara terus-menerus dapat menimbulkan pencemaran lingkungan, resistensi gulma, dan kerusakan tanah. Untuk itu, perlu dilakukan pengembangan herbisida yang ramah lingkungan. Berbagai jamur dilaporkan memiliki potensi untuk mengendalikan gulma (bioherbisida). Penelitian ini bertujuan untuk mengetahui potensi metabolit sekunder jamur *Fusarium* sp. sebagai herbisida pada gulma *A. gangetica* dan mengetahui fitotoksisitas metabolit sekunder jamur *Fusarium* sp. pada tanaman cabai rawit (*C. frutescens* L.). Penelitian dilaksanakan dari Januari sampai Mei 2024 di Laboratorim Ilmu Penyakit Tumbuhan dan Rumah Kaca, Fakultas Pertanian, Universitas Lampung. Penelitian dilakukan menggunakan Rancangan Acak Lengkap (RAL) dengan 3 perlakuan dan 5 ulangan. Perlakuan pada penelitian ini adalah: metabolit sekunder jamur *Fusarium* sp. 1, metabolit sekunder jamur *Fusarium* sp. 2, dan kontrol (tanpa aplikasi metabolit) sebagai pembandingan. Penelitian terdiri atas peremajaan dan produksi metabolit sekunder *Fusarium* sp., uji pratumbuh, uji pascatumbuh, dan uji pelukaan. Hasil penelitian pada gulma *A. gangetica* menunjukkan bahwa metabolit sekunder jamur *Fusarium* sp. mampu menghambat perkecambahan sampai 98% dan menyebabkan nekrosis pada daun, namun tidak menghambat pertumbuhan. Metabolit sekunder jamur *Fusarium* sp. tidak fitotoksik terhadap tanaman cabai rawit.

Kata kunci: *A. gangetica*, cabai rawit, *Fusarium* sp., gulma, metabolit jamur

ABSTRACT

THE POTENTIAL OF SECONDARY METABOLITES FROM FUSARIUM SP. AS A HERBICIDE AGAINST *Asystasia gangetica* AND THEIR PHYTOTOXICITY ON CHILI PEPPER (*Capsicum frutescens* L.).

By

ALYA FAYZA

*The presence of weeds in agriculture, including urban farming, is a significant limiting factor for crop production. Generally, weeds are controlled using synthetic herbicides. However, the continuous use of synthetic herbicides can lead to environmental pollution, weed resistance, and soil degradation. Therefore, there is a need to develop environmentally friendly herbicides. Various fungi have been reported to possess the potential for weed control (bioherbicides). This study aims to evaluate the potential of secondary metabolites from *Fusarium* sp. as herbicides against the weed *A. gangetica* and to assess the phytotoxicity of these secondary metabolites on chili pepper plants (*C. frutescens* L.). The research was conducted from January to May 2024 at the Plant Disease Science Laboratory and Greenhouse, Faculty of Agriculture, Universitas Lampung. The study employed a completely randomized design (CRD) with three treatments and five replications. The treatments in this study included: secondary metabolites from *Fusarium* sp. 1, secondary metabolites from *Fusarium* sp. 2, and a control (without the application of metabolites) as a comparison. The research comprised rejuvenation and production of secondary metabolites from *Fusarium* sp., pre-germination tests, post-germination tests, and wound tests. The results indicated that the secondary metabolites from *Fusarium* sp. were able to inhibit the germination of *A. gangetica* by up to 98% and caused necrosis in the leaves, although they did not inhibit growth. The secondary metabolites from *Fusarium* sp. were not phytotoxic to chili pepper plants.*

Keywords: *A. gangetica, chilli pepper, fungal metabolites, *Fusarium* sp., weed*