

RINGKASAN

Gulma merupakan salah satu Organisme Pengganggu Tanaman yang menghambat pertumbuhan, perkembangan dan produktivitas tanaman budidaya, seperti pada tanaman tomat dan bayam. Penggunaan senyawa metabolit sekunder yang terkandung pada jamur patogen merupakan salah satu cara untuk mengendalikan gulma. Penelitian ini bertujuan untuk mengetahui pengaruh metabolit sekunder jamur patogen (*Chaetomium* sp., *Fusarium* sp., *Curvularia* sp.) terhadap gulma daun lebar dan tanaman budidaya.

Penelitian dilaksanakan di *Experimental Farm* dan Laboratorium Perlindungan Tanaman Fakultas Pertanian, Universitas Jenderal Soedirman, Purwokerto. Penelitian dilaksanakan mulai bulan Oktober 2020 – Februari 2021. Rancangan yang digunakan yaitu rancangan petak terbagi. Petak utama terdiri atas metabolit sekunder jamur patogen *Chaetomium* sp., *Fusarium* sp., dan *Curvularia* sp. serta anak-petak terdiri atas gulma *Ageratum conyzoides* L., *Portulaca* sp. dan anak petak rancangan uji metabolit sekunder jamur patogen pada tanaman budidaya terdiri atas *Lycopersicum esculentum*, *Amaranthus tricolor*. Variabel yang diamati adalah masa inkubasi, intensitas penyakit, laju infeksi, *Area Under Disease Progress Curve* (AUDPC), tinggi tanaman, jumlah daun, bobot tanaman segar dan bobot tanaman kering.

Hasil penelitian menunjukkan bahwa metabolit sekunder tiga jamur patogen mampu menyebabkan kerusakan pada gulma daun lebar. Metabolit sekunder jamur patogen *Chaetomium* sp. virulen terhadap gulma daun lebar dengan masa inkubasi lebih cepat 56,04%, intensitas penyakit 67,56%, laju infeksi 48,42%, dan AUDPC 86,39% dibanding kontrol. Metabolit sekunder jamur dapat menekan pertumbuhan yaitu 18,02% tinggi tanaman, 38,75% jumlah daun, 26,08% bobot tanaman basah dan 8,85% bobot tanaman kering dibanding kontrol. Gulma *Portulaca* sp. rentan mengalami kerusakan akibat aplikasi metabolit sekunder dengan intensitas penyakit sebesar 50,79%. Interaksi antara metabolit sekunder jamur *Fusarium* sp. dengan *Portulaca* sp. dan *Curvularia* sp. pada *Ageratum conyzoides* L. menunjukkan intensitas penyakit tertinggi, masing-masing yaitu 58,73% dan 65,08%. Metabolit sekunder jamur patogen gulma tidak virulen terhadap tanaman budidaya tomat dan bayam.

SUMMARY

Weed is a part of crop pest organisms that inhibit the growth, development and productivity of cultivated plants, such as tomatoes and spinach. The use of secondary metabolite compounds contained in pathogenic fungi is one of the ways to control weeds. This study aims to determine the effect of secondary metabolite in pathogenic fungi (*Chaetomium* sp., *Fusarium* sp., *Curvularia* sp.) on broadleaf weeds and cultivated plants.

The research was conducted from October 2020 until February 2021 at the Experimental Farm and Plant Protection Laboratory of the Faculty of Agriculture, Jenderal Sudirman University, in Purwokerto. Split plot design, which is divided into main plots and sub-plots, was employed within this research. The main plot consisted of secondary metabolites of the pathogenic fungi, namely *Chaetomium* sp., *Fusarium* sp., *Curvularia* sp. and sub-plots consisted of weeds *Ageratum conyzoides* L., *Portulaca* sp. while the sub-plots of the secondary metabolite test of pathogenic fungi on cultivated plants consisted of *Lycopersicum esculentum*, *Amaranthus tricolor*. The variables observed were disease symptoms, incubation period, disease intensity, infection rate, Area Under Disease Progress Curve (AUDPC), plant height, number of leaves, plant fresh weight and plant dry weight.

The results showed that the secondary metabolites of three pathogenic fungi were able to infect broadleaf weeds. Secondary metabolites of fungus *Chaetomium* sp. virulent to broadleaf weeds with a faster incubation period of 56.04%, disease intensity of 67.56%, infection rate 48.42%, AUDPC 86.39% compared than control. Secondary metabolites were able to inhibit growth with 18,02% plant height, 38,75% number of leaves, 26,08% plant fresh weight and 8,85% plant dry weight compared to control. *Portulaca* sp. susceptible to damage due to the application of secondary metabolites with a disease intensity of 50.79%. The interaction between the secondary metabolites of *Fusarium* sp. on *Portulaca* sp. and *Curvularia* sp. in *Ageratum conyzoides* L. showed the highest disease intensity which respectively constitutes 58.73% and 65.08%. Secondary metabolic of weed pathogenic fungi were not virulent to tomato and spinach cultivation.