

RINGKASAN

Kakao (*Theobroma cacao* L.) merupakan salah satu komoditas perkebunan yang berperan sebagai sumber devisa negara, sumber pendapatan petani dan menyediakan lapangan pekerjaan. Produktivitas tanaman kakao mengalami penurunan, salah satu penyebabnya yaitu organisme pengganggu tanaman. Penyakit antraknosa daun kakao disebabkan oleh jamur *Colletotrichum gloeosporioides*. Penggunaan fungisida untuk mengendalikan patogen memiliki dampak negatif terhadap lingkungan, kesehatan manusia dan timbulnya patotipe baru. Oleh karena itu, perlu alternatif pengendalian yaitu menggunakan metabolit sekunder agensia pengendali hayati. Penelitian bertujuan mengkaji keefektifan metabolit sekunder isolat tiga isolat *Pseudomonas fluorescens* yaitu isolat P60, P20, dan P8 terhadap penyakit antraknosa daun kakao, serta pengaruhnya terhadap pertumbuhan tanaman kakao.

Penelitian dilaksanakan di perkebunan kakao rakyat, Dusun Plumbungan, Desa Putat, Kecamatan Patuk, Kabupaten Gunung Kidul, Yogyakarta, mulai November 2016 sampai Januari 2017. Penelitian menggunakan Rancangan Acak Kelompok dengan 4 ulangan dan 7 perlakuan terdiri atas kontrol, aplikasi metabolit sekunder *P. fluorescens* P60, *P. fluorescens* P20, *P. fluorescens* P8, kombinasi *P. fluorescens* P60+P20, *P. fluorescens* P60+P8 dan *P. fluorescens* P20+P8. Variabel yang diamati meliputi intensitas penyakit, laju infeksi, jumlah tunas sehat, dan kandungan senyawa fenol.

Hasil penelitian menunjukkan bahwa perlakuan metabolit sekunder *P. fluorescens* P60, P20 dan P8 secara tunggal dan gabungan mampu menekan intensitas penyakit berkisar 42,01-54,50%. Laju infeksi perlakuan metabolit sekunder *P. fluorescens* P60, *P. fluorescens* P20, *P. fluorescens* P8, kombinasi *P. fluorescens* P60+P20, *P. fluorescens* P60+P8 dan *P. fluorescens* P20+P8 berturut-turut 0,23; 0,25; 0,26; 0,26; 0,31; dan 0,24 unit/hari. Metabolit sekunder *P. fluorescens* P60 mampu meningkatkan jumlah tunas sehat sebesar 67,44%. Perlakuan *P. fluorescens* P60 mampu meningkatkan senyawa fenol (saponin, tanin dan glikosida) pada daun kakao.

SUMMARY

Cocoa (Theobroma cacao L.) is one of plantation commodities that role as a source of state foreign exchange, a source of farmers income and provide jobs. Cocoa productivity have been decreased, one of decreasing problems is a disturbing plants organisms. Cocoa leaves anthracnose is caused by Colletotrichum gloeosporioides. The fungicide application to control pathogens have negative impact on the environment, human health and appearance of new pathogens. Therefore, it is necessary to use alternative control using secondary metabolites of biological agents. This research aimed to study the effectiveness of secondary metabolites derived from three Pseudomonas fluorescens isolates toward cocoa leaves anthracnose, and their influence on the growth of cocoa plants.

The research was conducted at the cocoa plantations at Plumbungan hamlet, Putat Village, Patuk Sub-District, Gunung Kidul Regency, Yogyakarta from November 2016 up to January 2017. Randomized block design was used with four replicates and seven treatments consisted of control, application of secondary metabolite from P. fluorescens P60, P. fluorescens P20, P. fluorescens P8, combination between P. fluorescens P60+P20, P. fluorescens P60+P8 and P. fluorescens P20+P8. Variable observed were the disease intensity, the infection rate, the number of healthy shoots, and phenolic compound.

Result of the research showed that the secondary metabolite from P. fluorescens P60, P20 and P8 alone or in combination could suppress the disease intensity, in between 42.01-54.50%, the infection rate by metabolite secondary of P. fluorescens P60, P. fluorescens P20, P. fluorescens P8, combination between P. fluorescens P60+P20, P. fluorescens P60+P8 and P. fluorescens P20+P8 as 0.23; 0.25; 0.26; 0.26; 0.31; and 0.24 units/day respectively. The secondary metabolite of P. fluorescens p60 could increas the number of healthy shoots as 67.44 %. The secondary metabolite of P. fluorescens P60 could increas phenolic compound (tannin, saponin and glycosides) in cocoa leaves.