RINGKASAN

Pisang merupakan salah satu tanaman hortikultura yang disukai masyarakat Indonesia. Peningkatan produksi pisang di Indonesia masih banyak menghadapi kendala, salah satunya yaitu adanya serangan patogen *Colletotrichum musae*. Pengendalian penyakit antraknosa pada buah pisang sampai saat ini masih menekankan kepada penggunaan fungisida sintetis yang memiliki dampak negatif. Oleh karena itu, perlu dicari cara pengendalian lain yang efektif tetapi ramah lingkungan. *Pseudomonas fluorescens* adalah bakteri antagonis yang telah banyak digunakan dalam penelitian pengendalian hayati baik terhadap jamur maupun bakteri patogen dan mampu menghasilkan metabolit sekunder yang bersifat racun terhadap patogen. Penelitian ini bertujuan untuk mengetahui pengaruh metabolit sekunder dua isolat *P. fluorescens* dalam menghambat pertumbuhan *C. musae in vitro*, dalam mengendalikan penyakit antraknosa *in vivo*, dan mengetahui pengaruhnya terhadap mutu buah pisang lepas panen.

Penelitian dilaksanakan di Laboratorium Perlindungan Tanaman, Fakultas Pertanian, Universitas Jenderal Soedirman, Purwokerto pada bulan November 2015 sampai Februari 2016. Pada uji *in vitro* digunakan Rancangan Acak Lengkap, sedangkan pada uji *in vivo* menggunakan Rancangan Acak Kelompok, masing-masing diulang sebanyak enam kali. Perlakuan terdiri atas kontrol, metabolit sekunder *P. fluorescens* P60, metabolit sekunder *P. fluorescens* P32, serta gabungan *P. fluorescens* P60+*P. fluorescens* P32. Variabel yang diamati yaitu daya hambat, masa inkubasi, intensitas penyakit, luas serangan, tingkat kekerasan, kadar gula, serta uji organoleptik.

Hasil penelitian menunjukkan bahwa perlakuan metabolit sekunder *P. fluorescens* P60 mampu menghambat pertumbuhan *C. musae* sebesar 54%, dan perlakuan gabungan metabolit sekunder *P. fluorescens* P60+ *P. fluorescens* P32 sebesar 56%. Pada uji *in vivo* perlakuan gabungan metabolit sekunder *P. fluorescens* P60+ *P. fluorescens* P32 mampu menekan intensitas penyakit antraknosa sebesar 33,44%, dan metabolit sekunder *P. fluorescens* P60 secara tunggal sebesar 33,39%. Semua perlakuan metabolit sekunder *P. fluorescens* mampu menekan luas serangan (metabolit sekunder *P. fluorescens* P60 sebesar dan 26,15%, metabolit sekunder *P. fluorescens* P32 sebesar 14,20%, dan gabungan metabolit sekunder *P. fluorescens* P60+ *P. fluorescens* P32 sebesar 28,32%). Perlakuan metabolit sekunder *P. fluorescens* P60 dan gabungan metabolit sekunder *P. fluorescens* P60+*P. fluorescens* P32 memengaruhi mutu pada kadar gula dan warna buah pisang, namun semua perlakuan tidak memengaruhi kekerasan dan faktor organoleptis.

SUMMARY

Banana is one of the preferred horticultural crops for Indonesian society. Increased production of bananas in Indonesia still face many obstacles. One of the obstacles is the attack of Colletotrichum musae *plant pathogens causing anthracnose. Control of the anthracnose recently still emphasize the use of fungicides that have negative impact on the environment and health. Therefore, it is necessary to find other control methods that are effective but environmentally friendly. One of them is biological control using secondary metabolites of* Pseudomonas fluorescens. P. fluorescens *is antagonistic bacteria that has been widely used in biological control for fungal and bacterial pathogens and able to produce secondary metabolites that are toxic to pathogens. This research aimed to know secondary metabolites effect of two* P. fluorescens *isolates in inhibiting* C. musae *growth* in vitro*, controlling the disease* in vivo*, and affecting on quality of postharvest banana.*

The research was conducted at the Labolatory of Plant Protection, Faculty of Agriculture, Jenderal Sodirman University, Purwokerto, from November 2015 until June 2016. Completely Randomized Design was used in in vitro *test, while Randomized Block Design was used in* in vivo *test, each repeated six times with four treatments. The treatments were control, secondary metabolite of* P. fluorescens *P60, secondary metabolite of* P. fluorescens *P32, and secondary metabolite combination of* P. fluorescens *P60*+P. fluorescens *P32. Variables observed were inhibition zone, incubation periode, inhibition level, disease intensity, attack area, soften level, sugar content, and organoleptic test.*

Result of the research indicated that the secondary metabolite of P. fluorescens *P60 and the combination were able to inhibit the pathogen growth* in vitro *as 54 and 56%, respectively. In* in vivo *test, the secondary metabolite of* P. fluorescens *P60 and the combination could inhibit the disease intensity as 34.44 and 46.06%, respectively. All secondary metabolites of* P. fluorescens *could inhibit attact area as 28.3, 26.15, and 14,20%, respectively and increase fruit quality in sugar content and colour of banana fruit, but all treatments did not influence harderness and organoleptic factor.*