RINGKASAN

Padi (*Oryza sativa* L.) merupakan tanaman pangan yang sangat penting bagi separuh penduduk pupulasi dunia. Upaya peningkatan produksi padi di Indonesia menghadapi berbagai kendala, salah satunya yaitu penyakit blas yang disebabkan oleh pathogen *Pyricularia orizae* Cav. *Trichoderma harzianum* merupakan mikroba antagonis yang dapat dimanfaatkan sebagai pestisida hayati. Penelitian ini bertujuan untuk menguji kemampuan metabolit sekunder dua isolat *T. harzianum* yaitu isolat jahe dan bawang merah tunggal maupun gabungannya dalam mengendalikan penyakit blas serta pengaruhnya terhadap pertumbuhan dan hasil tanaman padi varietas Situ Bagendit di lapangan.

Penelitian bertujuan untuk mengkaji keefektifan metabolit sekunder dua *Trichoderma harzianum* isolat jahe dan bawang merah maupun gabungan terhadap (1) patogen blas *in vitro* dan penyakit blas *in vivo*; (2) pertumbuhan dan hasil tanaman padi, dan (3) kandungan senyawa fenol pada tanaman padi. Penelitian dilaksanakan di lahan sawah endemis penyakit blas di Desa Tambak Sogra, Kecamatan Sumbang, Kabupaten Banyumas. Penelitian menggunakan Rancangan Acak Kelompok (RAK) dengan 4 perlakuan dan 6 ulangan. Perlakuan terdiri atas kontrol, metabolit sekunder *T. harzianum* isolat jahe, bawang merah, dan gabungan jahe dan bawang merah. Variabel yang diamati yaitu masa inkubasi, intensitas serangan, tinggi tanaman, jumlah anakan, bobot brangkasan basah dan kering, bobot gabah basah dan kering per rumpun, analisis jaringan dan daya hambat *in vitro*.

Hasil penelitian menunjukkan bahwa metabolit sekunder *T. harzianum* isolat jahe, bawang merah dan gabungan mampu menghambat pertumbuhan patogen *Pyriculariia oryzae in vitro* masing-masing sebesar 45,99, 30,99 dan 36%; mampu menunda masa inkubasi masing-masing sebesar 10,50, 10,17, dan 21,38%; mampu menekan intensitas penyakit blas sebesar 43,75, 28,125, dan 33,34% dibandingkan kontrol. Metabolit sekunder *T. harzianum* isolat jahe, bawang dan gabungannya mampu meningkatkan bobot gabah basah pada masing-masing sebesar 27,21, 24,28 dan 27,07%. Perlakuan metabolit sekunder *T. harzianum* isolat jahe dan isolat bawang merah mampu meningkatkan kandungan senyawa fenol (saponin, tanin dan glikosida) di dalam jaringan tanaman.

SUMMARY

Rice (Oryza sativa *L is a very important food crop for half the world's population. The efforts to increase rice production in Indonesia face many obstacles that one of them is blast caused by the pathogen* Pyricularia orizae Cav. Trichoderma harzianum *is an antagonistic microbe which can be used as a biological pesticide. This study aimed to test the ability of* T. harzianum *secondary metabolites from two isolates (ginger and shallot isolates) alone and their combination in controlling the disease and its effects on the growth and yields of Situ Bagendit variety rice.*

This research aimed to study the secondary metabolites effectiveness of two Trichoderma harzianum isolates (ginger and shallot) and their combination (1) against blast disease both in vitro and in vivo; (2) on growth and yield; (3) the content of phenolic compound in rice. This research was started from October 2016 until February 2017 located in blast endemic paddy field at Tambak Sogra Village, Sumbang Sub-District, Banyumas Regency. Completely randomized design was used on in vitro assays and randomized block design on in vivo test with four treatments and six replicates. The treatment consisted of control, Trichoderma harzianum secondary metabolites of ginger, shallot and combined isolates. Variables observed were incubation period, disease intensity, plant height, number of tillers, weight of wet and dry stover, weight of wet and dry grain per clump, tissue analysis, and inhibition rate in vitro.

Result of the research showed that secondary metabolites of T. harzianum ginger, shallot, and combined isolates could inhibit growth of Pyricularia oryzae in vitro respectively as 45.99, 30.99, and 36%; could delay incubation period respectively as 10.5, 10.17, and 21.38%' could suppress blast disease intensity respectively by 43.75, 28.12, and 33.34% compared to control. Secondary metabolites of T. harzianum ginger, shallot and combined isolateswere able to increase weight of wet grain as 27,21, 24,28 and 27,07%, respectively. Secondary metabolites of T. harzianum ginger and shallots isolates could increase the content of phenolic compounds (saponins, tannins, and glycosides) in rice.