

RINGKASAN

Penanaman pinus di Indonesia dilakukan dalam skala yang cukup besar. Kendala utama dalam penanaman pinus yaitu penyakit lodoh pada persemaian yang umumnya disebabkan oleh patogen *Fusarium* sp. Salah satu upaya alternatif pengendalian yang dapat dilakukan adalah penggunaan jamur rizosfer yang mampu menghambat pertumbuhan patogen. Penelitian ini bertujuan untuk mengetahui genera jamur pada rizosfer persemaian pinus dan mengetahui potensinya dalam menghambat pertumbuhan patogen *Fusarium* sp. penyebab lodoh.

Penelitian dilaksanakan pada Oktober 2017 hingga Agustus 2018 di Laboratorium Mikologi dan Fitopatologi Fakultas Biologi Universitas Jenderal Soedirman. Pengambilan sampel dilakukan di lahan persemaian pinus Bagian Kesatuan Pemangkuan Hutan (BKPH) Karangobar, Banjarnegara dengan metode acak terpilih. Isolasi jamur menggunakan metode pengenceran bertingkat. Jamur diidentifikasi dan diseleksi lima isolat untuk diuji potensinya. Pengujian meliputi uji daya hambat, uji antibiosis metabolit volatil dan non volatil, serta uji mikoparasitisme menggunakan Rancangan Acak Lengkap (RAL) dengan lima kali ulangan. Persentase penghambatan jamur rizosfer terhadap patogen *Fusarium* sp. dan bobot kering miselium jamur rizosfer dianalisis menggunakan ANOVA pada tingkat kesalahan 5% dan 1%.

Hasil penelitian diperoleh 15 isolat jamur rizosfer dari 9 genera, yaitu *Acremonium*, *Aspergillus*, *Cylindrocladium*, *Eupenicillium*, *Fusarium*, *Gliocladium*, *Penicillium*, *Paecilomyces*, dan *Trichoderma*. Isolat jamur yang diuji yaitu *Acremonium* sp. (P5c), *Aspergillus* sp.3 (P5d), *Fusarium* sp. (P5f), *Gliocladium* sp. (P3c), dan *Trichoderma* sp. (P4a). Kemampuan daya hambat terbaik dimiliki oleh *Trichoderma* sp. (P4a), dibandingkan dengan empat isolat jamur lainnya. Isolat *Gliocladium* sp. (P3c), *Trichoderma* sp. (P4a), *Acremonium* sp. (P5c), dan *Fusarium* sp. (P5f) memiliki kemampuan antibiosis metabolit volatil yang lebih baik daripada *Aspergillus* sp.3 (P5d), sedangkan kemampuan antibiosis metabolit non volatil terbaik dimiliki oleh *Aspergillus* sp.3 (P5d). Kemampuan mikoparasitisme terbaik dimiliki oleh *Fusarium* sp. (P5f) dengan bobot miselium kering yang lebih tinggi dibandingkan dengan empat isolat lainnya.

Kata kunci: pinus, patogen *Fusarium* sp., lodoh, jamur rizosfer

SUMMARY

Pine cultivation in Indonesia is done in considerable number. The main obstacle in pine cultivation is damping-off disease in the nursery which generally caused by *Fusarium* sp. pathogene. One of alternative control that can be used is rhizosphere fungi that has pathogene growth inhibition ability. This study aims to dertermine the genera of fungi in rhizosphere of pine seedlings and to determine its potential in inhibiting the growth of *Fusarium* sp. causing damping-off disease.

The study was conducted since October 2017 until August 2018 at Mycology and Phytopathology Laboratory of Biology Faculty, Jenderal Soedirman University. Sampling was conducted in the pine nursery field of Bagian Kesatuan Pemangkuan Hutan (BKPH) Karangkoobar, Banjarnegara with purposive random sampling. Fungi were isolated using dillution method, after which identified and selected to test their potential in inhibiting the growth of *Fusarium* sp. causing damping-off disease. The test consisted of inhibition test, antibiosys test of volatile and non-volatile metabolites, and mycoparasitism test using completely randomize design with five replication. Inhibition percentage of rhizosfer fungi towards *Fusarium* sp. pathogene and dry weight of rhizosfer fungi mycelium were analyzed using ANOVA at 5% and 1% error level.

The result obtained 15 rhizosphere fungal isolates from 9 genera, e.g. *Acremonium*, *Aspergillus*, *Cylindrocladium*, *Eupenicillium*, *Fusarium*, *Gliocladium*, *Penicillium*, *Paecilomyces*, and *Trichoderma*. Tested isolates were *Acremonium* sp. (P5c), *Aspergillus* sp.3 (P5d), *Fusarium* sp. (P5f), *Gliocladium* sp. (P3c), and *Trichoderma* sp. (P4a). The best inhibition ability owned by *Trichoderma* sp. (P4a) compared to the other isolates. *Gliocladium* sp. (P3c), *Trichoderma* sp. (P4a), *Acremonium* sp. (P5c), and *Fusarium* sp. (P5f) have better antibiosys ability of volatile metabolites than *Aspergillus* sp.3 (P5d), while the best antibiosys ability of non volatile metabolites owned by *Aspergillus* sp.3 (P5d). Optimum ability of mycorapasitism by *Fusarium* sp. (P5f) with largest dry weight of mycelium compared to the other isolates.

Keywords: pine, *Fusarium* sp. pathogenene, damping-off, rhizosphere fungi