

**Respons Sengon (*Falcataria moluccana* (Miq.) Barneby & J.W. Grimes)
Provenans Papua dan Ras Lahan Jawa terhadap
Penyakit Karat Tumor**

INTISARI

Penyakit karat tumor yang disebabkan oleh jamur *Uromycladium falcatarium* merupakan penyakit berbahaya pada tanaman sengon (*Falcataria moluccana*) yang mampu menimbulkan kerusakan pada biji, semai, tanaman muda, maupun tanaman dewasa di lapangan, bahkan dapat mematikan semai dan menghambat pertumbuhan tanaman di lapangan. Penelitian bertujuan untuk mengevaluasi respons sengon provenans Papua dan ras lahan Jawa terhadap penyakit karat tumor di lapangan maupun pada semai. Penelitian dilakukan di pertanaman uji ketahanan sengon milik B2PBPTH di BKPH Candirotto, Temanggung umur 2,5 tahun. Pertanaman uji berisi 5 provenans berasal dari Papua dan 1 ras lahan Jawa yang menggunakan rancangan acak lengkap dengan 5 blok sebagai ulangan masing-masing berisi 6 plot berbentuk bujur sangkar dengan jarak antar tanaman $3 \times 2 \text{ m}^2$. Karakter yang diamati adalah diameter, bentuk batang, skor tumor pada batang untuk menghitung luas dan intensitas penyakit karat tumor. Evaluasi respons jaringan pada level semai dilakukan di Laboratorium Perlindungan dan Kesehatan Hutan UGM dengan metode inokulasi buatan menggunakan spora aktif berupa teliospora jamur karat *U. falcatarium* dengan kerapatan $3,9 \times 10^5$ teliospora/mL dimana 1 mL suspensi spora untuk setiap semai. Pengamatan mikroskopis dilakukan untuk menghitung persen perkecambahan teliospora, penetrasi, dan infeksi yang dilakukan setiap 1,2,3,4, dan 24 jam setelah inokulasi dengan metode sampel terbuang. Analisis data kuantitatif di lapangan maupun di laboratorium menggunakan analisis varians (Anava), sedangkan data yang bersifat kualitatif dianalisis secara kualitatif deskriptif.

Hasil evaluasi respons sengon di lapangan menunjukkan bahwa seluruh sumber benih menunjukkan respons yang relatif tahan dengan intensitas penyakit pada Wamena A = $0,57 \pm 0,32\%$, Wamena B = $0,17 \pm 0,12\%$, Nabire = $0,57 \pm 0,21\%$, Manokwari = $0,13 \pm 0,12\%$, Serui = $0,74 \pm 0,29\%$, dan ras lahan Jawa = $15,62 \pm 1,80\%$. Akan tetapi, berdasarkan hasil inokulasi buatan pada tingkat semai, seluruh sumber benih menunjukkan respons rentan (Wamena A = $60,6 \pm 3,90\%$, Wamena B = $64,4 \pm 3,84\%$, Candirotto = $59,0 \pm 3,98\%$, Subang = $65,8 \pm 3,07\%$, dan Kediri = $71,3 \pm 1,79\%$). Meskipun demikian, infeksi miselia pada jaringan semai sengon ras lahan Jawa menunjukkan lebih intensif dibandingkan dengan seluruh provenans yang berasal dari Wamena. Secara umum pada tingkat semai, sengon akan menunjukkan respons rentan terhadap jamur karat *U. falcatarium*, akan tetapi respons tersebut akan berubah setelah tanaman dewasa tergantung pada sifat genetik masing-masing sumber benih dan kondisi lingkungan yang mendukung.

Kata kunci: Penyakit karat tumor, Respons, Sengon, *Uromycladium falcatarium*.

**Response of Sengon (*Falcataria moluccana* (Miq.) Barneby & J.W. Grimes)
from Papua Provenances and Java Land Races
to Gall Rust Disease**

ABSTRACT

Gall rust disease which caused by *Uromycladium falcatarium* fungus is a dangerous disease suffered in sengon (*Falcataria moluccana*) that capable to bring damage on the seeds, seedlings, juvenile plants, or grown plants in the field, it is able to deceased the seedlings and inhibit the growth of crops in the field. This research aim to evaluate the response of sengon from Papua provenances and Java land races to gall rust disease on the field and on seedlings. The research conducted in sengon resilience crop trial which belong to B2PBPTH in BKPH Candioto, Temanggung, using plant with age of 2.5 years. Crop trial containing 5 provenances from Papua and 1 Java land races using completely randomized design with 5 blocks as repetition, each repetition containing 6 square plot with distance between plants are 3x2 m². Characterization observed in this research are diameter, stem form, gall score on stem to calculate the scope and intensity of gall rust disease. Response on tissue level evaluation conducted on the Laboratory of Forest Protection and Health UGM with artificial inoculation method using active spore in form teliospores of *U. falcatarium* fungus with density of 3.9x10⁵ teliospore/mL for 1 mL of spore suspension for each seedlings. Microscopic observations performed to calculate the germination percentage of teliospores, penetration, and infection, which performed every 1,2,3,4, and 24 hours after inoculation with the wasted sample method. Quantitative data in the field and in the laboratory analyzed by analysis of variance (Anova), while qualitative data was analyzed by qualitative descriptive.

Evaluation result of sengon response on the field shows that all seed sources relatively resistant to gall rust disease with disease intensity in Wamena A = 0.57 ± 0.32%, Wamena B = 0.17 ± 0.12%, Nabire = 0.57 ± 0.21%, Manokwari = 0.13 ± 0.12%, Serui = 0.74 ± 0.29%, and Java land races = 15.62 ± 1.80%. However, based on the results of artificial inoculation at the seedling stage, all seed source shows a susceptible response (Wamena A = 60.6 ± 3.90%, Wamena B = 64.4 ± 3.84%, Candioto = 59.0 ± 3.98%, Subang = 65.8 ± 3.07%, and Kediri = 71.3 ± 1.79%). Nevertheless, mycelial infection on the tissue level of Java land races is more intensive than the entire provenance originating from Wamena. Generally on seedlings level, sengon shows a susceptible response to *U. falcatarium* fungus, but the response change after maturity level, depends on the genetic characteristics of each seed source and environmental conditions.

Keywords: Gall rust disease, Response, Sengon, *Uromycladium falcatarium*.