

PENGARUH LINGKUNGAN TERHADAP TINGKAT PERMUDAAN ALAM GENERATIF BEBERAPA KELOMPOK INDUK CENDANA DI RASLAHAN IMOIRI

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INTISARI

Cendana (*Santalum album* Linn.) merupakan jenis endemik Indonesia bagian Tenggara yang juga merupakan *center of origin* seluruh cendana di dunia. Namun demikian saat ini termasuk dalam kategori rawan (*Vulnerable*) menurut IUCN *Red List*. Raslahan di Zona Barat Gunung Sewu, salah satunya Imogiri, memiliki arti penting karena keragaman genetik induk-induknya sangat tinggi, dan hingga saat ini diduga sebagai cendana tertua yang ada di Jawa. Cendana di raslahan Imogiri diharapkan dapat menjadi alternatif sumber genetik untuk kegiatan rehabilitasi dan reintroduksi. Namun demikian, kondisi lanskap pegunungan aluvium yang berjurang menjadikan sebagian raslahan terisolasi, sehingga terjadi keterbatasan individu berbunga, hambatan aliran gen, dan keterbatasan *seed bed* di alam. Hal ini mengakibatkan sangat sedikitnya permudaan cendana di alam. Hingga saat ini, belum pernah dilakukan pengkajian permasalahan yang menyebabkan terbatasnya permudaan alam cendana di Imogiri. Penelitian ini bertujuan untuk mengetahui pengaruh lingkungan terhadap tingkat permudaan alam generatif cendana di Raslahan Imogiri.

Penelitian ini dilakukan pada bulan November 2022 hingga Maret 2023 di Raslahan Imogiri yang terbagi menjadi lima kelompok induk cendana, yaitu Karangtengah, Kediwung, Mojo, Gumelem, dan Mangunan. Metode yang digunakan adalah sensus untuk penentuan pohon induk, pengambilan semai, dan pengunduhan biji, yang diikuti pengamatan kondisi lingkungan dan tapak. Pengamatan permudaan alam terdiri dari pengamatan jumlah pohon cendana, jumlah semai anakan alam, dan jumlah biji. Pengamatan parameter lingkungan terdiri dari intensitas cahaya, kelembaban udara, suhu udara, keasaman tanah, kedalaman tanah, kelerengan, dan ketebalan seresah. Data dianalisis melalui *stepwise analysis* dalam model regresi dua arah untuk mengetahui pengaruh lingkungan terhadap permudaan alam cendana di Raslahan Imogiri.

Hasil analisis menunjukkan bahwa permudaan alam yang ditemukan adalah semai sejumlah 264 batang dan biji sebanyak 103 butir. Variabel yang berkorelasi kuat terhadap jumlah permudaan alam adalah kelembaban udara, kelerengan, dan ketebalan seresah, Namun demikian, hanya ketebalan seresah yang berbeda signifikan. Persamaan yang dihasilkan dari *stepwise analysis* adalah $Y = -359,25 + 9,908X7 + 5,622X3$, dengan hanya variabel ketebalan seresah dan kelembaban udara yang mengisi model.

Kata kunci : permudaan alam, cendana, raslahan

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THE EFFECT OF ENVIRONMENT ON THE GENERATIVE NATURAL REGENERATION LEVEL OF SOME SANDALWOOD PARENT GROUPS IN IMOIRI LANDRACE

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ABSTRACT

Sandalwood (Santalum album Linn.) is an endemic species of Southeastern Indonesia which is also the center of origin for all sandalwood in the world. However, it is currently included in the vulnerable category according to the IUCN Red List. The Landrace in the West Zone of Mount Sewu, one of which is Imogiri, has significance because the genetic diversity of the parents is very high, and until now it is thought to be the oldest sandalwood in Java. Sandalwood in the Imogiri Landrace is expected to be an alternative genetic source for rehabilitation and reintroduction activities. However, the condition of the alluvium mountain landscape which is gorged makes some landrace isolated, resulting in individual flowering limitations, gene flow constraints, and limited seed beds in nature. This causes the least rejuvenation of sandalwood in nature. Until now, there has never been an assessment of the problems causing limited natural regeneration of sandalwood in Imogiri. This study aims to determine the effect of the environment on the level of generative natural regeneration of sandalwood in the Imogiri Landrace.

This research was conducted from November 2022 to March 2023 in the Imogiri sandalwood Landraces, which were divided into five groups of sandalwood broodstock, namely Karangtengah, Kediwung, Mojo, Gumelem, and Mangunan. The method used is census to determine mother trees, collect seedlings, and download seeds, followed by observing environmental and site conditions. Observation of natural rejuvenation consists of observing the number of sandalwood trees, the number of natural saplings, and the number of seeds. Observation of environmental parameters consisted of light intensity, humidity, temperature, soil acidity, soil depth, slope, and litter thickness. Data were analyzed through stepwise analysis in a two-way regression model to determine the effect of the environment on the natural rejuvenation of sandalwood in the Imogiri Landrace.

The results of the analysis showed that the natural regeneration found was 264 seedlings and 103 seeds. Variables that have a strong correlation with the amount of natural regeneration are humidity, slope, and thickness of the litter. However, only the thickness of the debris has a significant effect. The resulting equation from the stepwise analysis is $Y = -359.25 + 9.908X_7 + 5.622X_3$, with only the variable thickness of the debris and the moisture that fills the model.

Keywords: natural regeneration, sandalwood, landrace

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