Pengaruh Inang Intermediat Gude (Cajanus Cajan (L.) Millsp.) dan Kelor (Moringa Oleifera Lam.) pada Semai Cendana dengan Raslahan Berbeda di Persemaian
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# Pengaruh Inang Intermediat Gude (*Cajanus Cajan* (L.) Millsp.) dan Kelor (*Moringa Oleifera* Lam.) pada Semai Cendana dengan Raslahan Berbeda di Persemaian

Ageng Sisto Wijoyo[1], Yeni Widyana Nurchahyani Ratnaningrum[2], Eny Faridah[2]

## INTISARI

Cendana merupakan jenis kayu mewah asli Indonesia, yang saat ini keberadaannya makin terancam. Berbagai pertanaman telah dibangun sebagai upaya konservasi dan pemuliaan cendana. Permasalahan yang dialami saat pemapanan di lapangan adalah tingkat survival yang rendah, terutama ketika tidak ada pemberian inang; walaupun materi pertanaman telah berasal dari genotipe-genotipe terseleksi. Penelitian ini dimaksudkan untuk meningkatkan performa semai cendana dari tiga raslahan terbaik (Nglanggeran, Petir dan Imogiri) melalui pemberian dua macam inang intermediat (gude (*Cajanus cajan* (L.) Millsp.) dan kelor (*Moringa oleifera* Lam.)) hingga berumur 4 bulan di persemaian. Tujuan penelitian adalah mengetahui pengaruh (1) perbedaan dua macam inang intermediat, (2) perbedaan asal raslahan, dan (3) interaksi dua macam inang intermediat dengan asal raslahan, terhadap performa pertumbuhan dan perakaran semai cendana hingga berumur 4 bulan di persemaian. Parameter performa pertumbuhan yang diamati adalah persen hidup semai, pertambahan tinggi dan diameter, jumlah cabang, kekokohan semai, indeks mutu semai, dan *top-root ratio*. Parameter performa perakaran meliputi jumlah dan panjang akar primer, akar sekunder, dan akar tersier, dimensi perakaran (kedalaman perakaran dari pangkal batang dan diameter perakaran), serta produksi haustoria.

Tingkat keberhasilan hidup berkisar antara 53,33% (Nglanggeran-krokot-Kelor) hingga 80% (Imogiri-krokot-Kelor). Interaksi perlakuan raslahan x inang menghasilkan perbedaan sangat nyata terhadap riap tinggi semai ($p$ = 0.020). Pertambahan tinggi terbaik dicapai dari kombinasi Nglanggeran-krokot-Gude (29,57 cm); sedangkan yang terendah pada kombinasi Nglanggeran-krokot-Kelor (13,75 cm). Perlakuan inang intermediat dan interaksi raslahan x inang memberikan perbedaan sangat nyata terhadap parameter Indeks Mutu Semai ($p$ inang = 0.000; $p$ interaksi raslahan x inang = 0.024). Indeks Mutu Semai tertinggi (IMS 3,79) dicapai ketika raslahan manapun dipasangkan dengan inang gude dengan inang krokot, dibandingkan inang kelor dengan inang krokot (IMS 1,85). Indeks Mutu Semai tertinggi dicapai pada kombinasi Imogiri-krokot-Gude (IMS 4,80), diikuti Nglanggeran-krokot-Gude (IMS 4,07); dan yang terendah pada kombinasi Imogiri-krokot-Kelor (IMS 1,77) dan Nglanggeran-krokot-Kelor(IMS 1,50). Interaksi raslahan x inang intermediat menghasilkan total panjang akar sekunder yang berbeda sangat nyata ($p$ = 0,000). Total panjang akar sekunder tertinggi dicapai pada kombinasi Imogiri-krokot-Gude (709,44 cm), diikuti Petir-krokot-Gude (420,38 cm). Inang kelor dengan inang krokot, dipasangkan dengan raslahan manapun, menghasilkan total panjang akar sekunder yang lebih pendek (215 cm - 359 cm). Kombinasi Imogiri-krokot-Gude menghasilkan jumlah akar tersier dan total panjang akar tersier tertinggi (94 akar tersier dengan total panjang 2.275 cm), dibanding kombinasi lainnya (45 hingga 57 akar tersier, dengan total panjang 546,87 cm - 989,08 cm). Perlakuan inang intermediat menghasilkan perbedaan sangat nyata terhadap parameter jumlah haustoria terhubung ($p$ = 0,001) dan persentase haustoria terhubung ($p$ = 0,000). Jumlah total haustoria yang terhubung dengan inang gude adalah 23 - 57 haustoria (31% - 49%); jauh lebih tinggi dibanding yang terhubung dengan inang kelor yaitu 6 - 9 haustoria (9,6% - 14,5%).

Kata kunci: inang intermediat; raslahan cendana; performa pertumbuhan; performa perakaran

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# The Effects of Gude (*Cajanus Cajan* (L.) Millsp.) and Kelor (*Moringa Oleifera* Lam.) as the Intermediate Hosts for Sandalwood Seedlings of Various Landraces in the Nursery

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## *ABSTRACT*

Sandalwood is a fancy wood species native to Indonesia, which recently experienced the excalating threat level. Various plantations have been established for conservation and improvement purposes. The problems encountered during field establishment were mainly due to a low survival, especially when planting were conducted without host plants; even when the planting materials were derived from selected genotypes. This study was intended to improve the performance of sandalwood seedlings from three of the best landraces (Nglanggeran, Petir, and Imogiri) by providing two types of intermediate hosts (gude, *Cajanus cajan (L.) Millsp.* and kelor, *Moringa oleifera Lam.*) up to 4 months old in the nursery. The aim of this study was to determine the effects of (1) the difference between two types of intermediate hosts, (2) the difference in landraces, and (3) the interaction between the two types of intermediate hosts and landraces, on the growth and root performance of sandalwood seedlings up to 4 months old in the nursery. The growth performance parameters comprise the percentage of seedling survival, height and diameter increments, number of branches, seedling vigor, seedling quality index, and top-root ratio. The rooting performance parameters include the number and length of primary roots, secondary roots, and tertiary roots, root dimensions and the production of haustoria.

The survival rate ranged from 53.33% (in Nglanggeran-krokot-Kelor) to 80% (in Imogiri-krokot-Kelor). The interaction of landrace x intermediate host resulted in significantly different seedling height increment ($p = 0.020$). The highest height growth was achieved by the Nglanggeran-krokot-Gude (29.57 cm); while the lowest was the Nglanggeran-krokot-Kelor (13.75 cm). Both the host and landrace x intermediate host interaction produced very significant differences in Seedling Quality Index (p host = 0.000; p landrace x host = 0.024). The highest Seedling Quality Index (3.79) was achieved when any landrace was paired with the gude host and krokot host, in compared to the kelor host dan krokot host (1.85). The highest Seedling Quality Index was achieved by the Imogiri-krokot-Gude (4.80), followed by Nglanggeran-krokot-Gude (4.07); and the lowest was the Imogiri-krokot-Kelor (1.77) and Nglanggeran-krokot-Kelor (1.50). The interaction of landrace x host gave a very significant effect on the total secondary root length ($p = 0.000$). The highest total secondary root length was achieved by the Imogiri-krokot-Gude (709.44 cm), followed by Petir-krokot-Gude (420.38 cm). The kelor host, paired with any landrace, had shorter lengths of secondary root (215 cm - 359 cm). The Imogiri-krokot-Gude produced the most abundant tertiary roots and total tertiary root length (94 tertiary roots with a total length of 2,275 cm), in compared to other combinations (45 to 57 tertiary roots, with a total length of 546.87 cm - 989.08 cm). The plant intermediate host treatment gave significant effects on the number of connected haustoria ($p = 0.001$) and the percentage of connected haustoria ($p = 0.000$). The total number of haustoria connected to the gude host were 23 - 57 (31% - 49%), which were significantly higher than those connected to kelor host, with only 6 - 9 (9.6% - 14.5%).

Keywords: intermediate hosts; sandalwood landraces; growth performances; rooting performances

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