Pengaruh Kombinasi Giberelin dan Sitokinin terhadap Pertumbuhan dan Karakter Fisiologis Semai Sengon
(Falcataria falcata (L.) Greuter & R. Rankin)
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PENGARUH KOMBINASI GIBERELIN DAN SITOKININ TERHADAP PERTUMBUHAN DAN KARAKTER FISIOLOGIS SEMAI SENGON (*Falcataria falcata* (L.) Greuter & R. Rankin)

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INTISARI

Sengon (*Falcataria falcata* (L.) Greuter & R. Rankin) merupakan tanaman kehutanan yang banyak dibudidayakan di Indonesia karena pertumbuhannya yang cepat (*fast-growing*) dan berperan penting dalam rehabilitasi lahan marginal. Jenis ini dipakai dalam pengembangan hutan produksi karena kemudahan tumbuh dan mempunyai umur tebang relatif singkat, yaitu 5–7 tahun. Oleh karena itu, peningkatan pertumbuhan tanaman sejak fase awal di persemaian menjadi sangat penting untuk mendukung produktivitasnya. Penelitian ini bertujuan untuk mengevaluasi pengaruh pemberian hormon giberelin dan sitokinin terhadap pertumbuhan bibit sengon. Penelitian ini menggunakan metode Rancangan Acak Lengkap (RAL) yang terdiri atas lima perlakuan kombinasi giberelin (G) dan sitokinin (S) dengan konsentrasi G0 S_0; G_{50} S_{500}; G_{100} S_{1000}; G_{200} S_{1500}; dan G_{300} S_{2000} ppm; dengan 2 benih sengon yang berbeda, yaitu benih sengon dari Wamena (P1) dan hasil persilangan alam (P2). Parameter yang diamati meliputi tinggi semai, diameter batang, jumlah cabang utama daun, kadar klorofil dan karotenoid daun, aktivitas nitrat reduktase, kadar lignin, serta kerapatan stomata daun. Data dianalisis menggunakan Analisis Varians *One-Way ANOVA,* dilanjutkan dengan uji *Duncan Multiple Range Test* (DMRT) pada tingkat signifikansi 95%. Hasil penelitian menunjukkan bahwa perlakuan G_{100} S_{1000} ppm cenderung memberikan peningkatan pada tinggi semai dan kadar klorofil a dan klorofil total daun (sengon P1); kadar klorofil a, klorofil b, klorofil total daun, dan kadar karotenoid daun (sengon P2); serta kerapatan stomata epidermis bawah daun (sengon P1 dan P2). Perlakuan G_{200} S_{1500} ppm cenderung memberikan peningkatan pada jumlah cabang utama daun sengon dan aktivitas nitrat reduktase daun (sengon P1 dan P2); kadar karotenoid daun (sengon P1). Perlakuan G_{300} S_{2000} ppm (konsentrasi tertinggi) cenderung meningkatkan tinggi semai sengon (sengon P2) dan diameter batang semai (sengon P1 dan P2).

KATA KUNCI: giberelin, pertumbuhan, sengon, sitokinin

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EFFECTS OF THE COMBINATION OF GIBBERELLIN AND CYTOKININ ON GROWTH AND PHYSIOLOGICAL CHARACTERISTICS OF SENGON SEEDLINGS (*Falcataria falcata* (L.) Greuter & R. Rankin)

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Abstract

Sengon (*Falcataria falcata* (L.) Greuter & R. Rankin) is a forestry tree species widely cultivated in Indonesia due to its rapid growth and its important role in the rehabilitation of marginal lands. This species is therefore established as a plantation for forest production due to the short rotation period of 5–7 years. Thus, enhancing plant growth during the early nursery stage is crucial for supporting productivity. This study aimed to evaluate the effects of gibberellin and cytokinin application on the growth of sengon seedlings. The experiment employed a completely randomized design (CRD) with five treatment combinations: G_0 S_0, G_{50} S_{500}, G_{100} S_{1000}, G_{200} S_{1500}, and G_{300} S_{2000} ppm, incorporating 2 seed sources of sengon, P1 (Wamena) and P2 (open-pollination seed). The observed parameters included seedling height, stem diameter, number of main leaf branches, leaf chlorophyll and carotenoid content, nitrate reductase activity, lignin content, and leaf stomatal density. Data were analyzed using one-way Analysis of Variance (ANOVA), followed by Duncan's Multiple Range Test (DMRT) at a 95% confidence level. The results show that treatment with G_{100} S_{1000} ppm tended to increase the height of the seedlings and the content of chlorophyll a and total chlorophyll in the leaves (sengon P1); the content of chlorophyll a, chlorophyll b, total chlorophyll in the leaves and carotenoid content (sengon P2); and the density of stomata in the lower epidermis of the leaves (sengon P1 and P2). The G_{200} S_{1500} ppm treatment tended to increase the number of primary leaf branches and the nitrite reductase activity of the leaves (sengon P1 and P2); the carotenoid content of the leaves (sengon P1) The G_{300} S_{2000} ppm treatment (the highest concentration) tended to increase the height of the sengon seedlings (sengon P2) and the diameter of their stems (sengon P1 and P2).

KEYWORDS: cytokinin, gibberellin, growth, sengon