

EVALUASI PERTUMBUHAN BIBIT SENGON SOLOMON (*Falcataria falcata*) DENGAN PERLAKUAN MEDIA DAN MIKROORGANISME MENGUNTUNGKAN DI PERSEMAIAN PT SUPRABARI MAPANINDO MINERAL

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INTISARI

Kegiatan penambangan batubara terbuka menyebabkan kerusakan lahan yang serius, termasuk penurunan kualitas fisik, kimia, dan biologi tanah. Revegetasi menggunakan tanaman pionir seperti sengon solomon (*Falcataria falcata*) menjadi salah satu langkah pemulihan lahan. Penelitian ini bertujuan mengevaluasi pengaruh komposisi media tanam dan inokulasi mikroorganisme simbiotik Fungi Mikoriza Arbuskular (FMA) dan *Rhizobium* terhadap pertumbuhan bibit sengon solomon di persemaian PT Suprabari Mapanindo Mineral. Penelitian menggunakan Rancangan Acak Lengkap (RAL) dua faktor, yaitu media tanam (50% tanah + 50% kompos dan 75% tanah + 25% kompos) dan lima perlakuan mikroorganisme (tanpa inokulasi, FMA A, *Rhizobium*, FMA A + *Rhizobium*, dan FMA B), dengan sepuluh kombinasi perlakuan dan sepuluh ulangan. Parameter yang diamati meliputi pertambahan tinggi, jumlah daun, panjang akar, bobot basah dan kering tajuk, bobot basah akar, serta rasio tajuk:akar. Hasil analisis menunjukkan bahwa media tanam berpengaruh sangat nyata terhadap seluruh parameter, dengan media 75% tanah + 25% kompos (M2) menghasilkan pertumbuhan terbaik. Inokulasi mikroorganisme memberikan pengaruh positif meskipun tidak selalu signifikan. Perlakuan kombinasi M2V3 (FMA A + *Rhizobium*) menghasilkan pertumbuhan terbaik pada hampir seluruh parameter, serta menunjukkan keseimbangan alokasi biomassa antara tajuk dan akar. Hasil ini menunjukkan bahwa pengurangan dosis kompos tetap efektif jika dikombinasikan dengan inokulasi mikroba yang sesuai, dan berpotensi meningkatkan efisiensi produksi bibit di persemaian.

Kata kunci: Sengon solomon, fungi mikoriza arbuskular (FMA), *Rhizobium*, media tanam, pertumbuhan bibit, persemaian

Evaluation of Solomon Sengon (*Falcataria falcata*) Seedling Growth with Media and Beneficial Microorganism Treatments in the Nursery of PT Suprabari Mapanindo Mineral

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ABSTRACT

Open-pit coal mining activities cause severe land degradation, including a decline in the physical, chemical, and biological quality of the soil. Revegetation using pioneer species such as *Falcataria falcata* (Solomon sengon) is one of the key efforts in land rehabilitation. This study aimed to evaluate the effects of planting media composition and symbiotic microorganism inoculation Arbuscular Mycorrhizal Fungi (AMF) and *Rhizobium* on the growth of sengon seedlings at the nursery of PT Suprabari Mapanindo Mineral. The experiment was arranged in a two-factor Completely Randomized Design (CRD), consisting of two media compositions (50% soil + 50% compost and 75% soil + 25% compost) and five microbial treatments (no inoculation, AMF A, *Rhizobium*, AMF A + *Rhizobium*, and AMF B), resulting in ten treatment combinations with ten replications each. Growth parameters observed included height increment, leaf number, root length, shoot fresh and dry weight, root fresh weight, and shoot-to-root ratio. The results showed that planting media had a highly significant effect on all parameters, with 75% soil + 25% compost (M2) yielding the best growth. Microbial inoculation showed positive trends, although not always statistically significant. The M2V3 treatment (AMF A + *Rhizobium*) produced the best overall growth and demonstrated a balanced biomass allocation between shoot and root. These findings indicate that reducing compost to 25% remains effective when combined with suitable microbial inoculation, offering a potentially efficient approach to seedling production in the nursery.

Keywords: Solomon sengon, arbuscular mycorrhizal fungi (AMF), *Rhizobium*, planting media, seedling growth, nursery