

**PENGARUH INOKULASI MIKORISA (MVA), FRANKIA
DAN BAHAN ORGANIK OST TERHADAP PERTUMBUHAN
SEMAI CEMARA LAUT (*Casuarina equisetifolia* Linn.)**

oleh :

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INTISARI

Cemara laut (*Casuarina equisetifolia* Linn.) merupakan spesies eksotik yang sukses digunakan di luar sebaran alamnya dan bersifat multi guna antara lain sebagai penahan angin (*windbreaker*), penghasil kayu bakar, meningkatkan kestabilan agregasi pasir dan koservasi tanah. Penelitian ini bertujuan untuk mengetahui pengaruh perlakuan inokulasi mikorisa (MVA), inokulasi *Frankia* dan pemberian bahan organik OST terhadap pertumbuhan semai cemara laut.

Penelitian ini dilaksanakan di Fakultas Kehutanan, Fakultas Geografi dan Fakultas Kedokteran, Universitas Gadjah Mada, Yogyakarta selama 11 bulan. Penelitian menggunakan rancangan faktorial berblok acak lengkap (*Randomized Complete Block Design*) dengan 3 faktor. Faktor 1 adalah inokulasi mikorisa *Vesicular Arbuscular* (MVA) yang terdiri dari 3 level yaitu (1) tanpa inokulasi MVA (2) inokulasi MVA isolat 100 (3) inokulasi MVA isolat 70. Faktor 2 adalah inokulasi *Frankia* yang terdiri dari 2 level yaitu (1) tanpa inokulasi *Frankia* (2) inokulasi *Frankia* 4 ml. Faktor 3 adalah pemberian bahan organik OST yang terdiri dari 2 level yaitu (1) tanpa pemberian bahan organik OST (2) pemberian bahan organik OST 10 gr. Masing-masing perlakuan diulang 7 kali (sebagai blok) sehingga jumlah tanaman uji dalam penelitian ini adalah 84 tanaman uji (semai). Pasir dari pantai Samas seberat 1,7 kg/kantong plastik digunakan sebagai media tanam. Parameter yang diamati pada penelitian ini adalah pertumbuhan tinggi semai, pertumbuhan diameter semai, jumlah bintil akar *Frankia* dan prosen infeksi MVA. Hasil pengamatan dianalisis dengan analisis sidik ragam (ANOVA) dan untuk mengetahui pengaruh rata-rata perlakuan digunakan *Duncan's Multiple Range Test* (DMRT).

Perlakuan terbaik pada penelitian ini dicapai oleh perlakuan interaksi MVA isolat 100-*Frankia* (ViFiBo) untuk pertumbuhan tinggi semai yaitu setinggi 58,04 cm (1,6 x kontrol) dan prosen infeksi MVA sebesar 0,94 (7,83 x kontrol). Perlakuan interaksi MVA isolat 70-*Frankia* (V₂FIB₀) merupakan perlakuan terbaik untuk pertumbuhan diameter semai sebesar 3,71 mm (1,6 x kontrol) dan jumlah bintil akar *Frankia* sebanyak 313 buah (75,6 x kontrol).

Kata kunci : cemara laut, MVA, *Frankia*, bahan organik OST

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THE EFFECT OF INOCULATION OF VAM, *FRANKIA* AND ORGANIC SOIL TREATMENT (OST) TO THE GROWTH OF CEMARA LAUT (*Casuarina equisetifolia* Linn.) SEEDLING

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Abstract

Cemara laut (*Casuarina equisetifolia* Linn.) is an exotic species which known as multi function species such as windbreaker, fuelwood, stabilizing sand aggregation and land conservation but it is least studying about this species. The objective of this research is to know the effect of mycorrhiza (VAM), *Frankia* and OST organic matter to the growth of cemara laut seedling.

This research was conducted in several places namely Faculty of Forestry GMU, Faculty of Geography GMU and Faculty of Medical GMU and was done during 11 months. *Randomized Complete Block Design* (RCBD) was used to this research with three treatments. First treatment was inoculation of *Vesicular Arbuscular Mycorrhiza* (VAM) that consist of three levels as (1) without inoculation of VAM denoted by V_0 (2) inoculation of VAM isolate 100 denoted by V_1 and (3) inoculation of VAM isolate 70 denoted by V_2 . Second treatment was inoculation of *Frankia* that consist of two levels as (1) without *Frankia* inoculation denoted by F_0 (2) inoculation of *Frankia* of 4 ml solution denoted by F_1 . Third treatment was OST organic matter that consist of two levels as (1) without OST organic matter denoted by B_0 and (2) with OST organic matter of 10 gr denoted by B_1 . Each treatment both single or interaction was replicated by 7 times (as blocking), so this research using 84 seedlings as unit experiment. Sandy soil which 1,7 kg/plastic bag weight from Samas beach was used as medium. Height and diameter growth, sum of *Frankia* root nodule and percentage of infection of VAM were measured as parameters. Data was analyzed by analysis of variance (ANOVA) and *Duncan's Multiple Range Test* (DMRT).

This research concluded that optimum result can be reached by interaction of VAM isolate 100-*Frankia* ($V_1F_1B_0$) by 58.04 cm (1.6 x control) on height growth and by 0.94 (7.83 x control) on percentage of VAM infection. Interaction of VAM isolate 70-*Frankia* ($V_2F_1B_0$) as the optimum result by 3.71 mm (1.6 x control) on diameter growth and by 313 (75.6 x control) on sum of *Frankia* root nodule.

Key words : cemara laut, VAM, Frankia, organic soil treatment (OST)

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