

ABSTRACT

Engineering of Coastal Sand Growing Media with Organic Matter Amendment for Shallot (*Allium ascalonicum* L.) Cultivation

By

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This study investigated the effects of incorporating rice husk biochar, cocopeat, and cow manure compost into beach sand-based growing media on the growth performance and productivity of shallot (*Allium cepa* L. var. *aggregatum*). Additionally, the study evaluated crop water requirements and water productivity under each media treatment. A Completely Randomized Design (CRD) was employed, comprising four media treatments with three replications, yielding a total of 12 experimental units. The treatments included: P1 = 100% beach sand (control), P2 = beach sand and rice husk biochar (1:1), P3 = beach sand and cocopeat (1:1), and P4 = beach sand and cow manure compost (1:1). Data were analyzed using one-way analysis of variance (ANOVA) at a 5% level of significance. When significant differences were detected, treatment means were compared using the Least Significant Difference (LSD) test at the same significance threshold. The results demonstrated that the incorporation of cow manure compost (P4) significantly enhanced vegetative and yield-related parameters, including plant height, number of leaves, fresh biomass, bulb weight, and bulb diameter. The highest water requirement was observed in the P4 treatment, amounting to 2,158.9 mL/plant clump, which fluctuated in response to varying climatic conditions during the growing period. Moreover, the highest mean water productivity was also recorded in the cow manure compost treatment, with a value of 6,03 g/L/ plant clump.

Keywords: shallot, beach sand, cow manure compost, water productivit

ABSTRAK

Rekayasa Media Tanam Pasir Pantai dengan Penambahan Bahan Organik untuk Tanaman Bawang Merah (*Allium Ascalonicum* L.)

Oleh

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Penelitian ini bertujuan untuk menganalisis pengaruh penambahan sekam bakar, cocopeat dan kompos kotoran sapi terhadap pertumbuhan dan produktivitas tanaman bawang merah, serta menganalisis kebutuhan air tanaman dan produktivitas air tanaman bawang merah di media pasir dan campurannya. Penelitian ini menggunakan Rancangan Acak Lengkap (RAL) dengan 4 taraf perlakuan dan 3 ulangan sehingga terdapat 12 satuan percobaan. Taraf perlakuan yang digunakan ialah P1 = 100% media pasir pantai, P2 = pasir pantai dan sekam bakar (1:1), P3 = pasir pantai dan cocopeat (1:1), P4 = pasir pantai dan kompos kotoran sapi (1:1). Data hasil penelitian dianalisis menggunakan analisis sidik ragam (anova) pada jenjang nyata 5%. Perlakuan yang berbeda nyata diuji lanjut dengan BNT pada jenjang nyata 5%. Hasil penelitian menunjukkan kombinasi terbaik terjadi pada penambahan kompos kotoran sapi pada parameter tinggi tanaman, jumlah daun, bobot segar tanaman, bobot umbi, dan diameter umbi tanaman bawang merah. Kebutuhan air tanaman tertinggi terjadi pada penambahan kompos kotoran sapi yaitu sebesar 2158,9 ml/rumpun tanaman dan cenderung fluktuatif akibat kondisi cuaca. Rata-rata produktivitas air tertinggi terdapat pada kombinasi penambahan kompos kotoran sapi sebesar 6,03 g/L per rumpun tanaman.

Kata kunci: bawang merah, pasir pantai, kompos kotoran sapi, produktivitas air