

PENGARUH ABU SEKAM TERHADAP PERTUMBUHAN VEGETATIF DAN STRUKTUR ANATOMIS DAUN PADI MERAH (*Oryza sativa* L.) 'SEGRENG' PADA CEKAMAN KEKERINGAN

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INTISARI

Padi 'Segreng' merupakan satu dari berbagai jenis beras dengan kandungan gizi tinggi meliputi karbohidrat, protein, beta karoten, dan zat besi, namun produktivitas padi merah masih rendah. Cekaman kekeringan merupakan faktor utama yang membatasi produktivitas padi karena menurunkan produksi fotoasimilat melalui fotosintesis. Salah satu upaya peningkatan produktivitas padi pada cekaman kekeringan yaitu penggunaan abu sekam padi sebagai pupuk. Kandungan Si dalam abu sekam padi berperan penting dalam meningkatkan ketahanan tanaman padi terhadap cekaman kekeringan. Penelitian ini bertujuan mempelajari pengaruh abu sekam padi terhadap pertumbuhan vegetatif dan struktur anatomi daun padi merah 'Segreng' pada cekaman kekeringan. Penelitian ini dilakukan dengan rancangan acak lengkap dua faktor dengan tiga ulangan. Faktor pertama kapasitas lapang terdiri dari empat taraf yaitu 100%, 75%, 50%, dan 25%. Faktor kedua dosis abu sekam padi terdiri dari empat taraf yaitu 0 ton/ha, 4 ton/ha, 8 ton/ha, dan 12 ton/ha. Hasil penelitian menunjukkan bahwa kapasitas lapang 25% menyebabkan semakin rendahnya pertambahan tinggi tanaman, jumlah daun, jumlah anakan, berat basah tanaman, volume akar, berat kering tanaman, tebal tulang daun, tebal helaian daun, tebal sel bulliform, diameter metaxilem tulang daun, dan diameter metaxilem helaian daun. Pemberian abu sekam padi dosis 4-12 ton/ha pada kapasitas lapang 25% meningkatkan tinggi tanaman, berat basah tajuk, dan volume akar, tebal tulang daun, tebal helaian daun, tebal sel bulliform, diameter metaxilem tulang daun, dan diameter metaxilem helaian daun. Berdasarkan penelitian dapat disimpulkan bahwa pemberian abu sekam padi meningkatkan pertumbuhan vegetatif tanaman padi yaitu tinggi tanaman, berat basah tajuk, dan volume akar serta meningkatkan tebal tulang daun, tebal helaian daun, tebal sel bulliform, diameter xilem tulang daun, dan diameter xilem helaian daun pada cekaman kekeringan.

Kata kunci: padi 'Segreng', kekeringan, abu sekam, pertumbuhan vegetatif, anatomi daun

THE EFFECT OF RICE HUSK ASH ON VEGETATIVE GROWTH AND LEAF ANATOMY STRUCTURE OF RED RICE (*Oryza sativa* L.) 'SEGRENG' ON DROUGHT STRESS

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ABSTRACT

Rice 'Segreng' is one cultivar rice with high nutritional content, including carbohydrates, protein, beta carotene, and iron, but the productivity is still low. Drought stress is a main factor for limiting productivity of rice because decreased photoassimilate production through photosynthesis. One effort to increase rice productivity in drought stress is the use of rice husk ash as a fertilizer. Si content in the rice husk ash has an important role in enhancing rice plants' resistance to environmental stress such as drought stress. This research aims to study the effect of rice husk ash on the vegetative growth and the anatomical structure of the rice leaf 'Segreng' on drought stress. The design of this research was a completely randomized design with three replications of two factors. The first factor was the field capacity consisting of four levels, i.e. 100%, 75%, 50% and 25%. The second factor was the dose of rice husk ash which consists of four levels, i.e. 0 ton/ha, 4 ton/ha, 8 ton/ha and 12 ton/ha. The results showed that the field capacity of 25% decreased plant height, numbers of leaves, numbers of tillers, plant fresh weight, root volume, plant dry weight, leaf midrib thickness, leaf blade thickness, bulliform cell thickness, and the metaxylem diameter of leaf midrib and leaf blade. Application of rice husk ash dose of 4-12 ton/ha on field capacity of 25% increased plant height, shoot fresh weight, and root volume, leaf midrib thickness, leaf blade thickness, cell bulliform thickness, and the metaxylem diameter of leaf midrib and leaf blade. Based on research, it can be concluded that the application of rice husk ash has proven to improve vegetative growth of rice plants in plant height, shoot fresh weight, and root volume and improving of leaf midrib thickness, leaf blade thickness, bulliform cell thickness, and the metaxylem diameter of leaf midrib and leaf blade on drought stress.

Keywords: rice 'Segreng', drought, rice husk, vegetative growth, leaf anatomy