PENGARUH ABU SEKAM PADI TERHADAP RESPON FISIOLOGIS TANAMAN PADI (*Oryza sativa* L. 'SEGRENG' DAN 'CEMPO MERAH') PADA CEKAMAN KEKERINGAN

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ABSTRAK

Penurunan produktivitas akibat penanaman padi pada lahan sawah tadah hujan memiliki resiko tinggi untuk mengalami kekeringan. Penambahan unsur hara *beneficial* seperti silika meningkatkan ketahanan tanaman pada kondisi cekaman kekeringan. Penelitian ini mengkaji pengaruh penambahan abu sekam padi (ASP) terhadap respon fisiologis dua tanaman padi merah dengan status toleransi yang berbeda yaitu 'Cempo Merah' yang intoleran terhadap kekeringan dan 'Segreng' yang toleran terhadap kekeringan. Penelitian ini menggunakan Rancangan Acak Lengkap (RAL) faktorial dengan tiga faktor yang meliputi 1) dua kultivar yaitu 'Segreng' dan 'Cempo merah', 2) ketersediaan air pada KL 100%, 50% dan 25% hingga akhir fase reproduktif, dan 3) dosis ASP 0 ton/ha, 4 ton/ha, dan 8 ton/ha. Variabel penelitian yang diukur meliputi parameter pertumbuhan, fisiologi, anatomi, dan hasil, selanjutnya data yang diperoleh dianalisis dengan ANOVA, dilanjutkan dengan uji DMRT pada taraf kepercayaan 95% dan kemudian dilakukan analisis pearson untuk mengetahui korelasi antar parameter. Hasil penelitian menunjukkan bahwa penambahan ASP meningkatkan pertumbuhan, dan serapan silika kedua kultivar pada kondisi stres kekeringan. Penambahan ASP meningkatkan persentase KAR, kadar klorofil a, b dan total klorofil, serta kadar gula terlarut, namun menyebabkan penurunan pada kadar ABA dan kadar prolin akar dan daun. Berat kering akar tajuk meningkat dengan penambahan ASP namun menyebabkan penurunan pada rasio akar tajuk tanaman. Penambahan ASP juga mampu memperpendek umur berbunga dan meningkatkan hasil pada kedua kultivar yang mengalami penurunan selama kekeringan.

Kata kunci: *silika, pertumbuhan, respon fisiologi, cekaman kekeringan, tanaman padi merah.*

EFFECT OF RICE HUSK ASH IN THE PHYSIOLOGICAL RESPONSES OF RICE (*Oryza sativa* L. 'SEGRENG' AND 'CEMPO MERAH' UNDER DROUGHT STRESS

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ABSTRACT

Decreasing of rice productivity is caused by rice cultivation in rainfed areas which has a high risk of drought. Addition of silica as beneficial nutrient especially from rice husk ash is known to improve plant resistance under drought stress condition, but the study about the effect of silica in the physiological responses of two cultivars of red rice which have a different tolerance status, 'Cempo Merah' (intolerant of drought stress) and 'Segreng' (tolerant of drought stress) under drought stress condition is still lack. The research used Factorial Complete Randomized design with three factors, 1) two different cultivars were used 'Cempo Merah' and 'Segreng', 2) drought stress treatments of 100%, 50% and 25% of field capacity, and 3) rice husk ash (RHA) doses included 0 ton/ha, 4 ton/ha, and 8 ton/ha. Variables observed in this research were growth, physiology, anatomy and yield parameters, then data obtained were analyzed using ANOVA, continued with DMRT analysis (with $\alpha = 0,05$) and Pearson analysis to know the correlation between parameters. The results showed that RHA treatment increased growth and silica uptake under drought stress. RHA treatment increased RWC (Relative Water Content), chlorophyll a, b and total chlorophyll content, and also soluble sugar content, but decresed ABA and proline of root and leaves. Shoots and roots dry weight increased because of RHA treatment but root shoot rasio decreased. RHA treatment shortened flowering time and increased yield of both cultivars under drought stress.

Key words: *silica, growth, physiological responses, drought stress, red rice plant.*