RESPONS KETAHANAN FISIOLOGIS TANAMAN PADI (*Oryza sativa* L.) TERHADAP PATOGEN HAWAR PELEPAH (*Rhizoctonia solani* Kühn.) DENGAN PEMBERIAN PUPUK SILIKAT

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INTISARI

Cendawan *Rhizoctonia solani* Kühn merupakan patogen penyebab hawar pelepah seringkali menyebabkan penurunan hasil panen padi yang signifikan. Ketahanan tanaman terhadap patogen dapat ditingkatkan dengan aplikasi pupuk silikat. Penelitian ini bertujuan untuk mengetahui pengaruh pemberian pupuk silikat terhadap respons ketahanan fisiologis secara struktural dan biokimia pada tanaman padi dalam menghadapi patogen hawar pelepah *R.solani*. Sampel terdiri dari tanaman padi 'Pandan Wangi', 'Cisadane' dan 'IR64' yang diberi perlakuan 3 dosis pupuk S0 = 0 kg/ha, S1 = 200kg/ha dan S2 = 400 kg/ha dengan perlakuan inokulasi dan tanpa inokulasi sebagai kontrol. Hasil persentase *Relative Lession Height* (RLH) menunjukkan bahwa pemberian pupuk silikat dan faktor kultivar berpengaruh signifikan mengurangi gejala lesi. Perlakuan pemberian pupuk silikat, perbedaan kultivar dan perlakuan inokulasi berpengaruh signifikan terhadap beberapa parameter yaitu parameter fisiologis (kadar klorofil dan kandungan air relatif), pertumbuhan (tinggi tanaman dan jumlah daun), anatomis (diameter pelepah dan ketebalan kutikula), serta parameter biokimiawi berupa kandungan lignin berdasarkan hasil Uji ANOVA dengan tingkat kepercayaan 95%. Hasil uji Duncan menunjukkan bahwa pada 'Pandan Wangi' dosis pupuk 200 kg/ha merupakan perlakuan yang paling berpengaruh terhadap persentase RLH. Pada 'Pandan Wangi' dosis pupuk silikat 200 kg/ha tanpa inokulasi berpengaruh positif terhadap tinggi tanaman dan diameter pelepah sedangkan 'Pandan Wangi' dosis pupuk silikat 400 kg/ha tanpa inokulasi paling berpengaruh terhadap kandungan air relatif. Pada 'IR64' dosis pupuk silikat 200 kg/ha tanpa inokulasi merupakan tanaman yang paling berpengaruh terhadap ketebalan kutikula secara anatomis dan kadar lignin pada pelepah padi.

Kata kunci: Hawar pelepah, *Rhizoctonia solani*, ketahanan fisiologis, pupuk silikat, kultivar

PHYSIOLOGICAL RESISTANCE RESPONSES OF RICE PLANT (*Oryza sativa* L.) TO SHEATH BLIGHT DISEASE (*Rhizoctonia solani* Kühn.) WITH APPLICATION OF SILICATE FERTILIZER

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ABSTRACT

Sheath blight disease caused by the fungus Rhizoctonia solani Kühn generally leads to the reduction of rice yields. The resistance of plants to pathogens can be increased by the application of silicate fertilizers. This research aimed to determine the effect of silicate fertilizer application on the physiological resistance responses structurally and biochemically in rice plants to defend the rice sheath blight pathogen R. solani. The sample of rice plants consists 'Pandan Wangi', 'Cisadane', and 'IR64' which were treated with 3 doses of silicate fertilizer S0 = 0 kg/ha, S1 = 200kg/ha dan S2 = 400 kg/ha with inoculation and without inoculation as a control. Relative Lesion Height (RLH) percentage showed that silicate fertilizer application and cultivar factor had a significant effect on reducing lesion symptoms. Application of silicate fertilizer, cultivar, and inoculation treatment had a significant effect on several parameters such as physiological parameters (chlorophyll content and relative water content), growth parameters (plant height and number of leaves), anatomical parameters (leaf sheath diameter and cuticle thickness) and lignin content as a biochemical parameter based on ANOVA test with 95% confidence level. Duncan's test results showed that a 'Pandan Wangi' dose 200 kg/ha had the most effect on the percentage of RLH. 'Pandan Wangi' dose 200 kg/ha silicate fertilizer without inoculation had a positive effect on the plant height and leaf sheath diameter anatomical. 'Pandan Wangi' with dose 400 kg/ha silicate fertilizer without inoculation had the most effect on relative water content. 'IR64' dose 200 kg/ha silicate fertilizer without inoculation had the most positive effect on anatomical cuticle thickness and lignin content.

***Key words**: rice sheath blight disease, Rhizoctonia solani, physiological resistance responses, silicate fertilizer, cultivars*