

PENGHAMBATAN *Rhizoctonia solani* Kühn PENYEBAB HAWAR PELEPAH PADI MENGGUNAKAN BAKTERI RHIZOSFER ASAL SAWAH ORGANIK DAN NONORGANIK

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INTISARI

Rhizoctonia solani Kühn merupakan salah satu patogen penting penyebab penyakit hawar pelelah pada padi dan paling sulit untuk dikendalikan. Pengendalian hayati merupakan salah satu solusi untuk mengendalikan penyakit tersebut yaitu dengan menggunakan bakteri rhizosfer. *Plant Growth Promoting Rhizobacteria* (PGPR) merupakan bakteri rhizosfer yang dapat digunakan untuk meningkatkan pertumbuhan tanaman. Sifat kimia tanah yang mempengaruhi fisiologi tumbuhan dan pola eksudasi akar dapat mempengaruhi komposisi Rhizobakteri. Perbedaan antara PGPR dan potensinya yang terdapat pada akar tanaman padi di sawah organik dan nonorganik penting untuk diketahui. Penelitian ini bertujuan untuk mendapatkan spesies rhizobakteri yang memiliki aktivitas PGPR dari sawah organik dan nonorganik serta kemampuannya dalam menekan pertumbuhan *R. solani*, serta mengidentifikasi isolatnya berdasarkan gen 16S rRNA. Strain ISO 6, ISO 11, ISO 15, ISN 2, ISN 3, dan ISN 7 dipilih untuk menguji aktivitas PGPR dan aktivitas antagonis in vitro yang diinfeksi *R. solani*. Isolat ini menghasilkan IAA berkisar 43,42-75,23 ppm, memiliki kemampuan pelarutan fosfor, fiksasi N₂, kitinase dan aktivitas penghasil selulosa. Aktivitas penghambatan *R. solani* yang tinggi adalah isolat ISO 6 dan ISN 7 berkisar 54,66% dan 83,33% setelah 7 hari inkubasi, penghambatan perkecambahan sklerotium sebesar 100% dan 7-11% terdeteksi lesi daun pada daun. Analisis urutan 16S rRNA menunjukkan isolat ISO 6 dan ISN 7 teridentifikasi sebagai *Citrobacter freundii* dan *Pseudomonas aeruginosa*.

Kata Kunci: *Citrobacter freundii*, Plant Growth Promoting Rhizobacteria, *Pseudomonas aeruginosa*, *Rhizoctonia solani*, Hawar pelelah padi, gen 16S rRNA.

INHIBITION OF *Rhizoctonia solani* Kühn THE CAUSAL AGENT OF RICE SHEATH BLIGHT USING RHIZOBACTERIA FROM ORGANIC AND NONORGANIC RICE FIELD

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ABSTRACT

Rhizoctonia solani Kühn is one of the important pathogen causing sheath blight disease on rice and one of the most difficult diseases to control. Biological control is one of the solutions to control this disease with use Rhizobacteria. *Promoting Rhizobacteria Plant Growth* (PGPR) is a rhizosphere bacterium that can be used to enhance plant growth. Chemical characteristics of the soil that affect plant physiology and root exudation patterns can affect the composition of the Rhizobacteria. It is important to determine the differences between the original PGPR and the potential found in the roots of rice plants in organic and non-organic rice fields. This research aimed to obtain the spesies of rhizobacteria with the PGPR activity from organic and nonorganic rice field and their capability in *R. solani* growth suppression, and to identify their isolates based on the 16S rRNA gene. Strains ISO 6, ISO 11, ISO 15, ISN 2, ISN 3, and ISN 7 were selected to test PGPR activity and *in vitro* antagonistic activity infected with *R. solani*. These isolates produced IAA ranging from 43.42-75.23 ppm, possessed phosphorus solublization capability, N₂ Fixation, chitinase and cellulose-producing activity. High activity of inhibition *R. solani* are ISO 6 and ISN 7 isolates ranging 54.66% and 83.33% after 7 days incubation, sclerotia inhibition of *R. solani* were 100% and 7-11% detected leaf lesions on the leaves. Analysis of 16S rRNA sequence revealed ISO 6 and ISN 7 isolates were identified as *Citrobacter freundii* and *Pseudomonas aeruginosa*.

Keywords : *Citrobacter freundii*, Plant Growth Promoting Rhizobacteria, *Pseudomonas aeruginosa*, *Rhizoctonia solani*, Sheath blight, 16S rRNA gene