

## RINGKASAN

Penyakit hawar pelepas merupakan penyakit yang sangat merusak pada tanaman padi, yang disebabkan oleh jamur *Rhizoctonia solani* Kuhn AG1- 1A yang dapat berkembang pada daerah subtropis dan tropis. Kehilangan hasil padi akibat gangguan penyakit hawar pelepas rata-rata di beberapa negara penghasil beras dunia berkisar 20 sampai 35%. Kehilangan hasil padi akibat gangguan penyakit hawar pelepas di Indonesia sebesar 20%. Bakteri endofit merupakan bakteri yang hidup di dalam jaringan tanaman yang bersifat netral atau bermanfaat bagi tanaman inangnya. Peran bakteri endofit dalam meningkatkan pertumbuhan tanaman didukung oleh kemampuan bakteri tersebut dalam menghasilkan hormon tumbuh, meningkatkan pertumbuhan tanaman melalui penambatan nitrogen, pelarut fosfat, dan meningkatkan ketahanan tanaman terhadap hama dan patogen.

Penelitian dilaksanakan pada bulan Desember 2021 sampai dengan Juni 2022 secara *in vitro* di Laboratorium Perlindungan Tanaman Fakultas Pertanian Universitas Jenderal Soedirman Purwokerto dan *in planta* di Rumah Kasa Desa Tambaksari Kidul, Kembaran, Banyumas. Penelitian pada uji *in vitro* menggunakan Rancangan Acak Lengkap (RAL) dengan jumlah 6 perlakuan, 4 kali ulangan, sedangkan penelitian *in planta* menggunakan Rancangan Acak Kelompok (RAK) dengan jumlah 6 perlakuan, 4 kali ulangan dengan 3 tanaman setiap perlakuan sehingga diperoleh 72 tanaman. Perlakuan meliputi kontrol + *R. solani* (P0), isolat bakteri A5 + *R. solani* (P1), isolat bakteri A6 + *R. solani* (P2), isolat bakteri KR4 + *R. solani* (P3), isolat bakteri KR7 + *R. solani* (P4) dan isolat bakteri SB3 + *R. solani* (P5).

Hasil menunjukkan karakter biokimia bakteri isolat A5, A6, KR4, KR7, dan SB3 mampu sebagai penghasil IAA, siderofor, enzim protease, dan pelarut fosfat secara kualitatif. Semua isolat bakteri endofit memiliki potensi yang sama dalam menghambat pertumbuhan jamur patogen *R. solani* namun pada perlakuan isolat A5 dapat menurunkan bobot kering miselium *R. solani*. Bakteri endofit pada perlakuan isolat A6 mampu mengendalikan hawar pelepas padi, memiliki nilai intensitas penyakit terendah sebesar 12,07% dengan efektivitas 63,43% dan AUDPC sebesar 215,31%.hari. Bakteri endofit belum mampu dalam memacu pertumbuhan padi, namun pada perlakuan isolat KR4 dapat meningkatkan tinggi tanaman padi.

## SUMMARY

*Sheath blight is a damaging disease of rice plants caused by the fungus Rhizoctonia solani Kuhn AG1-1A, which can occur in subtropical and tropical environments. The average loss of rice yields due to sheath blight in several world rice-producing countries ranges from 20 to 35%. Meanwhile, the rice yield loss due to sheath blight in Indonesia is 20%. Endophytic bacteria dwell in plant tissues that are either neutral or beneficial to the host plant. The role of endophytic bacteria in increasing plant growth is supported by their ability to produce growth hormones, increase plant growth through nitrogen fixation, phosphate solubilizing, and increase plant resistance to pests and pathogens.*

*The research was carried out from December 2021 to June 2022. The in-vitro research was performed at the Plant Protection Laboratory, Faculty of Agriculture, Universitas Jenderal Soedirman, Purwokerto while in-planta research was conducted at the Screen House, Tambaksari Kidul Village, Kembaran, Banyumas. The research on in vitro study used a completely randomized design (CRD) with 6 treatments, 4 replications. Meanwhile, research on planta used a randomized block design (RBD) with 6 treatments, 4 replicates and 3 plants for each treatment. Therefore, 72 plants were obtained from the research. The treatments included control + R. solani (P0), A5 bacterial isolate + R. solani (P1), A6 bacterial isolate + R. solani (P2), KR4 bacterial isolate + R. solani (P3), KR7 bacterial isolate + R. solani (P4) and SB3 bacterial isolate + R. solani (P5).*

*The study's findings demonstrated that the biochemical properties of the isolates A5, A6, KR4, KR7, and SB3 could produce IAA, siderophores, protease enzymes, and phosphate solubilising. All isolates of endophytic bacteria had similar potential in inhibiting the growth of the R. solani pathogenic fungus. However, A5 isolate significantly reduced the dry weight of the mycelium of R. solani. A6 Endophytic bacterial isolate controlled the rice sheath blight with a disease intensity value of 12.07%, effectiveness of 63.43 %, and an AUDPC of 215.31%.day. Endophytic bacteria haven't been able to promoting rice growth. However, the KR4 isolate increased the height of rice plants.*