

RINGKASAN

Upaya peningkatan produksi padi selalu mengalami kendala salah satunya meningkatnya serangan organisme pengganggu tanaman (OPT) yang disebabkan oleh penyakit hawar daun bakteri. Penggunaan bakteri endofit sebagai agens hayati menjadi pendekatan yang ramah lingkungan dalam pengendalian penyakit hawar daun bakteri dan berperan sebagai *Plant Growth Promoting Endophytic Bacteria* (PGPE) dalam meningkatkan pertumbuhan tanaman. Penelitian ini menyelidiki pengaruh aplikasi bakteri endofit *B. subtilis* NPSB3 dalam formula cair air kelapa. Penelitian ini bertujuan untuk mengetahui efektivitas formula cair bakteri endofit *B. subtilis* NPSB3 sebagai pengendali hawar daun bakteri padi dan mengevaluasi perlakuan formula cair bakteri endofit *B. subtilis* NPSB3 terbaik dalam pertumbuhan padi. Penelitian ini terdiri atas aplikasi bakteri endofit *B. subtilis* NPSB3 dengan cara perendaman dan penyemprotan terhadap komponen patosistem dan pertumbuhan padi.

Penelitian ini dilaksanakan di Laboratorium Perlindungan Tanaman, Fakultas Pertanian, Universitas Jenderal Soedirman dan di *Screenhouse* Desa Tambaksari Kidul Kecamatan Kembaran, Kabupaten Banyumas. Waktu penelitian dimulai pada bulan Oktober 2024 - Maret 2025. Penelitian ini dilakukan dengan menggunakan metode eksperimental dengan rancangan acak lengkap (RAL) yang terdiri atas 5 perlakuan, yakni kontrol (P0), *B. subtilis* NPSB3 dalam formula cair air kelapa dengan cara perendaman (P1), *B. subtilis* NPSB3 dalam formula cair air kelapa dengan cara penyemprotan pada umur 15 HST, 25 HST, 35 HST, dan 45 HST (P2), Bakterisida berbahan aktif *copper hydroxide* dengan cara perendaman (P3) dan Bakterisida berbahan aktif *copper hydroxide* dengan cara penyemprotan pada umur 15 HST, 25 HST, 35 HST, dan 45 HST (P4). Setiap perlakuan diulang sebanyak 4 kali sehingga terdapat 20 unit perlakuan dan tiap unitnya terdapat 3 *polybag* yang masing-masing berisi 2 tanaman sehingga terdapat 120 tanaman.

Hasil penelitian menunjukkan bahwa perlakuan bakteri endofit *B. subtilis* NPSB3 dalam formula cair menunjukkan efektivitas pengendalian penyakit hawar daun bakteri sebesar 51,70% yang tergolong cukup mampu dan setara dengan efektivitas pengendalian bakterisida. Aplikasi perlakuan formula cair bakteri endofit *B. subtilis* NPSB3 tidak memberikan hasil terbaik dibanding kontrol.

SUMMARY

*Efforts to increase rice production always face obstacles, one of which is the increased attack of plant-disturbing organisms (Pests and Diseases) caused by bacterial leaf blight. The use of endophytic bacteria as a biological agent has become an environmentally friendly approach in controlling bacterial leaf blight disease and serves as Plant Growth Promoting Endophytic Bacteria (PGPE) in enhancing plant growth. This study investigates the effect of applying the endophytic bacterium *B. subtilis* NPSB3 in a coconut water liquid formula. This study aims to determine the effectiveness of the liquid formula of the endophytic bacterium *B. subtilis* NPSB3 as a control for bacterial leaf blight in rice and to evaluate the best treatment of the liquid formula of the endophytic bacterium *B. subtilis* NPSB3 on rice growth. This research consists of the application of the endophytic bacterium *B. subtilis* NPSB3 through soaking and spraying methods on the components of the pathosystem and rice growth.*

*This research was conducted at the Plant Protection Laboratory, Faculty of Agriculture, Jenderal Soedirman University, and in the Screenhouse of Tambaksari Kidul Village, Kembaran District, Banyumas Regency. The research period started in October 2024 and ended in March 2025. This research was conducted using an experimental method with a completely randomized design (CRD) consisting of 5 treatments, namely control (P0), *B. subtilis* NPSB3 in a coconut water liquid formula by soaking (P1), *B. subtilis* NPSB3 in a coconut water liquid formula by spraying at 15, 25, 35, and 45 days after planting (P2), a bactericide with an active ingredient of copper hydroxide by soaking (P3), and a bactericide with an active ingredient of copper hydroxide by spraying at 15, 25, 35, and 45 days after planting (P4). Each treatment was repeated 4 times, resulting in 20 treatment units, with each unit containing 3 polybags, each holding 2 plants, totaling 120 plants.*

*The research results show that the treatment with the endophytic bacteria *B. subtilis* NPSB3 in liquid formula demonstrates an effectiveness of 51.70% in controlling bacterial leaf blight, which is considered quite capable and equivalent to the effectiveness of bactericides. The application of the liquid formula of the endophytic bacterium *B. subtilis* NPSB3 did not provide the best results compared to the control.*