

ABSTRACT

Nadia Puspa Dewi. 24020219140084. Exploration of Bacteria from East Nusa Tenggara as Growth Promoters and Antagonistic Microbes for Soil-Borne Pathogens. Under the guidance of Sri Pujiyanto and Ana Feronika Cindra Irawati.

Agriculture plays a crucial role in the economy, society, and environment but faces major challenges in meeting the growing global food demand due to population growth. One of the primary threats to agriculture is soil-borne plant diseases, which can cause significant crop yield reductions. While chemical control of diseases is effective, it can have negative impacts on the environment and human health. Therefore, biological control approaches have become an eco-friendly alternative. This study aims to isolate endophytic bacteria from coastal plants in East Nusa Tenggara as biological control agents against soil-borne pathogens and to explore their potential as growth-promoting bacteria. The isolation method employed was the Community-Based Culture approach, aiming to observe the interactions among bacteria within their environment. The isolated endophytic bacteria were analyzed for their growth-promoting potential using the radicle emergence (RE) method on rice seeds. The results showed that 10 isolated endophytic and rhizosphere bacteria were proven to enhance rice seed growth based on Vigor Index (VI), average wet weight, and dry weight. These ten bacterial consortia were then purified and tested against the pathogens *Fusarium* sp. and *Ralstonia* sp. The endophytic and rhizosphere bacteria showed no antibiotic activity against fungal or bacterial pathogens. Further research is needed to investigate other mechanisms of endophytic and rhizosphere bacteria as biocontrol agents.

Keywords: endophytic bacteria, rhizosphere bacteria, biotic stress, PGPR, bacterial consortium