

Growth performance, yield, and antioxidant enzyme activity of djulis (*Chenopodium formosanum* Koidz.) and rice (*Oryza sativa*) inoculated with the purple non-sulfur bacterium (*Rhodopseudomonas palustris*) under field conditions

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Abstract

Feeding the growing population while tackling the impact of climate change is the number one priority of agriculture in the 21st century. Practices such as crop rotation and the use of micro-organisms in crop production show the potential to support this priority. The plant growth-promoting bacteria (PGPB), such as the purple non-sulfur bacteria (PNSB), have recently gained much attention in crop production due to their ability to accumulate higher value compounds that are highly beneficial to crops. However, with the lack of scientific evidence and contradictory results, the true potential of PNSB and its application in crop production is still unclear. Therefore, this research is designed to examine the potential of PNSB and crop rotation on the growth, yield, and antioxidant enzyme activity of two different crops under field conditions. The preliminary results of the first trial indicate that the PNSB has the potential to improve rice growth. However, no significant effect on the antioxidant enzyme activity of rice was observed under PNSB inoculation. The results of this study are still insufficient and incomplete to make any conclusions, and as such, further trials are needed to confirm these results and research hypotheses.

Keywords: Antioxidant enzyme activity, Climate change, Crop rotation, Plant growth-promoting bacteria, Purple non-sulfur bacteria

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