

V. CONCLUSIONS AND RECOMMENDATIONS

5.1. Conclusion

Based on the results of this study, the following conclusions can be drawn:

1. The application of *Bacillus* sp. at various population densities was able to inhibit the growth of *Pyricularia oryzae* *in vitro*, as indicated by the presence of antagonistic activity against the pathogen. Treatment Bc9, with a population density of 10^9 CFU/ml, exhibited the highest inhibitory zone diameter of 9.58 mm, followed by Bc8 with an inhibitory zone diameter of 7.5 mm, and treatment Bc7 with an inhibitory zone diameter of 5 mm.
2. A *Bacillus* sp. population density of 10^8 CFU/ml was not significantly different from the 10^9 CFU/ml treatment. Both treatments were able to suppress the severity of blast disease caused by *Pyricularia oryzae* in rice plants *in vivo* compared to a *Bacillus* sp. density of 10^7 CFU/ml and the control treatment. Thus, the treatment with a population density of 10^8 CFU/ml was more efficient.
3. The *Bacillus* sp. population densities of 10^7 , 10^8 , and 10^9 CFU/ml did not differ significantly among treatments in terms of promoting rice plant growth, whereas the *Bacillus* sp. population density of 10^9 CFU/ml did not differ significantly from the *Bacillus* sp. population densities of 10^7 and 10^8 CFU/ml. However, there was no significant difference compared to the control treatment in terms of increasing the number of leaves.

5.2. Recommendations

Future research is recommended to examine the production of secondary metabolites produced by *Bacillus* sp. to determine their role in inhibiting the growth of *Pyricularia oryzae*, so that the mechanism of antagonism that occurs can be explained in detail.