

**UTILIZATION OF THE BIOLOGICAL CONTROL AGENT *Aspergillus niger* TO CONTROL BLAST DISEASE (*Pyricularia oryzae*)
IN PADDY PLANTS**

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ABSTRACT

Blast disease, caused by the fungus *Pyricularia oryzae*, is one of the factors contributing to reduced rice crop productivity. Control of blast disease still relies on chemical fungicides, which have the potential to negatively impact the environment. This study aims to determine the potential of the biological agent *Aspergillus niger* in controlling blast disease, as well as its effects on rice plant growth and yield. The study was conducted from June to December 2025 through laboratory and field trials. The laboratory trials used a completely randomized design with *Aspergillus niger* concentrations of 10^7 , 10^8 , and 10^9 CFU/ml, while the field trials compared the application of *Aspergillus niger* with a fungicide containing the active ingredient propineb. The parameters observed included inhibitory activity assay, the incidence and severity of blast disease, plant growth, and weight of paddy. The results showed that *Aspergillus niger* was able to inhibit the growth of *Pyricularia oryzae* at a concentration of 10^9 CFU/ml by 16%, making it a treatment capable of suppressing blast disease outbreaks. In field trials, the application of *Aspergillus niger* reduced disease incidence by up to 73.3% at the end of the observation period (71 days after planting) and resulted in a lower infection intensity (20.70%) compared to propineb (40.30%), with a statistically significant difference. The *Aspergillus niger* treatment also resulted in higher early plant growth at 36 days after sowing (54.10 cm) and 43 days after sowing (60.47 cm) compared to propineb. Grain weight for both treatments showed no significant difference, but the *Aspergillus niger* treatment had a higher value (39.05 grams) compared to the propineb treatment (30.75 grams). Thus, *Aspergillus niger* has the potential to serve as an environmentally friendly alternative for controlling blast disease in rice plants.

Keywords: *Aspergillus niger*, blast disease, Paddy, *Pyricularia oryzae*