

**EVALUATION OF BOTANICALS, BIOAGENTS AND
FUNGICIDES FOR MANAGEMENT OF BAKANAE
DISEASE OF RICE**

**MS THESIS
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A Thesis

Submitted to

Bangladesh Agricultural University, Mymensingh

In Partial Fulfilment of the Requirements for the Degree of

Master of Science (MS)

in

Plant Pathology

By

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Roll No.: 19P.Path.JJ-3M

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ABSTRACT

The efficacy of bio-agents, fungicides and botanicals were evaluated to inhibit the growth of *Fusarium moniliforme*, the casual organism of bakanae disease. Experiments were conducted both in the laboratory and net house maintains artificial inoculated conditions. Different bioagents viz. *Trichoderma* sp., *Bacillus subtilis*, *Pseudomonas fluorescens* and *Achromobacter* sp. were evaluated for their inhibitory effect against *F. moniliforme*. Among all bioagents of *Bacillus subtilis* isolates, BS21 was found most effective in suppressing *F. moniliforme* (71.61% inhibition). Similarly, *Trichoderma* spp., *Achromobacter* sp. and *P. fluorescens* isolates were evaluated for growth inhibition of *F. moniliforme*. Among all bioagents of *P. fluorescens* isolates, PF9 exhibited the highest percent inhibition (57.77%). Chemical fungicides viz. Nativo, Tabia, Unisaaf and Blastin showed 100% growth inhibition. Nativo + *Bacillus subtilis* (7.28%) and Nativo + *Achromobacter* sp. (4.62%) showed the highest compatibility. Ethanol extracted garlic showed the complete growth inhibition at the lowest (5%) concentration. Similarly, Methanol extracted garlic also showed complete growth inhibition at 5% concentration. Ethanol extracted garlic and methanol extracted garlic showed the best results in inhibition of *F. moniliforme*. Based on *in-vitro* study 13 treatments were set for *in-vivo* study. These were T₀ (Control- *F. moniliforme*), T₁ (Nativo 75 WG @ 0.06%), T₂ (Tabia 30 EC @ 0.02%), T₃ (Unisaaf 75 WP @ 0.2%), T₄ (Blastin 75 WG @ 0.1%), T₅ (*Trichoderma* spp.), T₆ (*Bacillus subtilis*), T₇ (*Pseudomonas fluorescens*), T₈ (*Achromobacter* spp.), T₉ (Nativo 75 WG @ 0.06% + *Bacillus subtilis*), T₁₀ (Nativo 75 WG @ 0.06% + *Achromobacter* spp.), T₁₁ (Ethanol extracted garlic @ 5%), T₁₂ (Methanol extracted garlic @ 5%). The lowest disease incidence was found in T₉ (15.92%) at 40 DAS. The highest disease inhibition (85.57%) was observed in T₉ (Nativo 75 WG @ 0.06% + *B. subtilis*) followed by 82.88% in T₁₀ (Nativo 75 WG @ 0.06% + *Achromobacter* spp.). It can be concluded that combined application of fungicides with bio-agents viz. Nativo 75 WG @ 0.06% + *B. subtilis*, Nativo 75 WG @ 0.06% + *Achromobacter* spp. might be better management strategy for controlling bakanae disease of rice which might reduce the chemical fungicides.

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