# 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**

**Registration No.: 43138, Session: 2014 - 2015**

**Department of Plant Pathology**

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Approved as to style and contents by

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***The Author***

# 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 aginst *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 $T_0$ (Control- *F. moniliforme*), $T_1$ (Nativo 75 WG @ 0.06%), $T_2$ (Tabia 30 EC @ 0.02%), $T_3$ (Unisaaf 75 WP @ 0.2%), $T_4$ (Blastin 75 WG @ 0.1%), $T_5$ (*Trichoderma* spp.), $T_6$ (*Bacillus subtilis*), $T_7$ (*Pseudomonas fluorescens*), $T_8$ (*Achromobacter* spp.), $T_9$ (Nativo 75 WG @ 0.06% + *Bacillus subtilis*), $T_{10}$ (Nativo 75 WG @ 0.06% + *Achromobacter* spp.), $T_{11}$ (Ethanol extracted garlic @ 5%), $T_{12}$ (Methanol extracted garlic @ 5%). The lowest disease incidence was found in $T_9$ (15.92%) at 40 DAS. The highest disease inhibition (85.57%) was observed in $T_9$ (Nativo 75 WG @ 0.06% + *B. subtilis*) followed by 82.88% in $T_{10}$ (Nativo 75 WG @ 0.06% + *Achromobacter* spp.). It can be concluded that combined application of fungides 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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