Potential of mold mites (Acari: Acaridae) as a biocontrol agent of *Ustilaginoidea virens*

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With 7 figures and 4 tables

**Abstract:** *Ustilaginoidea virens* fungi which is a causal agent of rice false smut results in poisoning the live stock and humans who consume rice grains contaminated by fungal mycotoxins. Such grain is also often infested by storage mites. Mite interactions with the wild and transformed rice false smut fungi were studied. *Tyrophagus putrescentiae* were able to feed and reproduce on both tested *U. virens* fungi and destroyed mycelium after three weeks of intense grazing. In addition, a much lower amount of the growing mycelia was observed on a rice panicle inoculated with fungus and incubated with the *T. putrescentiae* mites than on the control. Also, the number of eggs produced increased proportionally during the two weeks time of feeding which suggest that these astigmatid mites have potential for the biological control of a disease caused by the rice false smut fungus. Anatomical observations of *T. putrescentiae* living specimens feeding on the GFP-tagged *U. virens* showed the GFP signal under the epifluorescence microscopy which testify an intense consumption.

**Keywords:** Biocontrol; Feeding; GFP-tagged; Microscopic fungi; *Tyrophagus putrescentiae*; *Ustilaginoidea virens*

1 Introduction

Acaridid mites are believed to be derived from an ancestral fungivorous species which previously inhabited soil and gradually penetrated into human habitats through the nests of birds and rodents. Accordingly they also changed their feeding habit from fungal based to utilization of debris and dust (O’Connor 1979, 1982). They can be