



Endophytic and entomopathogenic strains of *Beauveria* sp to control the bovine tick *Rhipicephalus (Boophilus) microplus*

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ABSTRACT. Pathogenicity of strains of the entomopathogenic fungus *Beauveria bassiana* and endophytic strains of *Beauveria* sp against the bovine tick *Rhipicephalus (Boophilus) microplus* was tested in laboratory bioassays and under field conditions. Suspensions containing 10^5 , 10^7 and 10^9 conidia/mL were prepared of each fungal strain for laboratory bioassays. The ticks were maintained at 28°C, $90 \pm 5\%$ relative humidity, and the following variables were evaluated: initial female weight, egg weight, hatching percentage, reproductive efficiency, and percentage control. For tests under field conditions, a *Beauveria* suspension containing 10^6 conidia/mL was sprayed on tick-

infested cows. After 72 h, the ticks were collected to estimate mortality under field conditions. Laboratory bioassays showed a mortality of 20 to 50% of the ticks seven days after inoculation with 10^7 *Beauveria* conidia/mL. Under field conditions 10^6 *Beauveria* conidia/mL induced 18-32% mortality. All *Beauveria* strains were effective in biological control of *R. (Boophilus) microplus* under laboratory and field test conditions. This is the first demonstration that endophytic fungi can be used for biological control of the cattle tick; this could help reduce environmental contamination by diminishing the need for chemical acaricides. Two endophytic strains were isolated from maize leaves and characterized by molecular sequencing of 5.8S rDNA ITS1 and ITS2 and morphological analyses of conidia. We found that these two endophytic *Beauveria* isolates, designated B95 and B157, are close to *Beauveria amorpha*.

Key words: Fungal acaricides; *Rhipicephalus (Boophilus) microplus*; *Beauveria amorpha*; *Beauveria bassiana*; Endophytic fungi