In this study, biological activity of entomopathogenic fungi (4 strains) isolated from the Colorado potato beetle and the commercial biopesticides containing entomopathogenic fungi; Priority® (Paecilomyces fumosoroseus), Nibortem® (Verticillium lecanii), Nostalgist® (Beauveria bassiana), Bio-Magic® (Metarhizium anisopliae), Bio-Nematon® (Paeciliomyces sp.) and plant extracts; Nimbedicine EC® (Azadiractin) were determined against Leptinotarsa decemlineata under laboratory conditions. An Imidacloprid active ingredient commercial insecticide was also used to compare the insecticidal activity and distilled water was used as control.

The biological control agents were applied to 2nd-3rd larval instars, 4th larval instars and adults with spray and leaf dipping methods. Single concentration (10^8 conidia/mL^-1) of entomopathogenic fungi and recommended dose of bioinsecticides were prepared for application. The number of dead insects were determined at 3, 5, and 7 days after applications. Experiments were conducted at 25 ±1° C and 60% ±5 relative humidity with 16:8 h light: dark conditions.

Entomopathogenic fungi and bioinsecticides were found to be more effective on larval stage than 4th larval instars and adults. In spray methods, Bio-Magic®, Nibortem®, and Nostalgist® caused 96.4%, 92.9% and 82.1% mortality on 2nd larval instars and 20%, 36.7% and 33.3% mortality on adults, respectively. All local fungal isolates (B. bassiana) applied on 2nd and 4th larval instars caused 100% mortality. Adults showed 58.6-86.2% mortality.