

Scientific note

SUSCEPTIBILITY OF *CALLITEARA PUDIBUNDA* L. ON *BEAUVERIA BASSIANA* (Bals.) Vuill. ROMANIAN STRAINS

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Abstract: The paper presents the results of some infectivity tests that aimed the evaluation of the insecticidal potential of some *Beauveria bassiana* indigenous strains against the *Calliteara pudibunda* larvae. Under laboratory conditions, indigenous *B. bassiana* strains isolated from different hosts and geographic zones were tested: two strains isolated from adult beetles (*Ips typographus* and *Tanymecus dilaticollis*) and one strain isolated from a lepidopteran larva (*Lymantria dispar*). The test methodology included the application of fungal conidia formulated as a powder, respectively as aqueous suspension ($\times 10^9$ conidia/ml), on *Prunus cerasifera* leaves, administered as food to *C. pudibunda* larvae.

Considering the current interest in the development of biological means of pests control aiming to ensure a responsible forest management, the purpose of the paper was to evaluate the susceptibility of *Calliteara pudibunda* larvae to native *Beauveria bassiana* strains usable as biological control agents.

The success of plant protection strategies using microbial biological control agents is conditioned by the use of indigenous strains of microorganisms; compared with exotic strains, the indigenous ones are ecologically compatible with local insect species and have a low risk on non-target organisms. Knowledge of the composition, distribution and spectrum of local entomopathogenic fungi provides insight into the microorganisms biodiversity of plant protection interest. In this respect, the identification of the action spectrum of the fungal strains of agricultural and forestry interest from the Collection of entomopathogenic microorganisms within the Research-Development Institute for Plant Protection is a major objective.



Five instar larvae of *C. pudibunda* were collected from infested beech wood from Covasna County in October 2019; in laboratory conditions the larvae were maintained at $25 \pm 2^\circ\text{C}$ and 50-55% RH



and natural daylight conditions. *C. pudibunda* was fed with fresh leaves of *Prunus cerasifera*. The isolates used in the experiment belong to the Fungal Collection of Entomopathogenic Microorganisms maintained at the Research-Development Institute for Plant Protection, Romania. The origin of the *B. bassiana* strains (habitat and host insect) is presented in the following table:

| <i>B. bassiana</i> strain | Native habitat | Host insect |
|---------------------------|--|-------------------------------------|
| BbIt | Norway spruce forest (Botoşani County) | <i>Ips typographus</i> adult |
| BbTd | Corn crop (Tulcea County) | <i>Tanymecus dilaticollis</i> adult |
| BbLd | oak forest (Vrancea County) | <i>Lymantria dispar</i> larva |

Aqueous conidial suspensions were obtained by flooding fresh cultures of fungus with sterile distilled water and filtering on cotton wool. Propagules (blastospores) of the isolates used in bioassay were produced by inoculating 250ml of Goral media (NaNO₃ 5g/l, KH₂PO₄ 5g/l, Mg SO₄ 2g/l, corn syrup 0,8g/l) in 500 ml Erlenmyer flasks with the aqueous conidial suspension to obtain a final concentration of 1x10⁶ conidia/ ml, followed by incubation on a rotary shaker at 150 rpm at 25°C. After five days of incubation, the flasks were stored at 4°C until use. Before treatment application, the propagule concentration was adjusted with distilled water to a concentration of 6 x 10⁹ propagules/ml. Powder conidia resulted by scraping the sporulated mycelium grown on potato-dextrose-agar medium.



To evaluate the susceptibility of *C. pudibunda* to *B. bassiana* strains, the larvae were transferred on fresh leaves. Before the transfer, the leaves were inoculated *in situ* with fungal propagules by direct application until complete covering. Dead insects were placed into humid chambers and incubated to encourage fungal sporulation, allowing confirmation of infection by *B. bassiana*.

After 5 days from the application of the treatments, the symptoms of mycosis induced by the *B. bassiana* strains were evident.



This scientific note represents the first record of the susceptibility of *C. pudibunda* larvae to *B. bassiana* Romanian strains.