

O. GORGADZE, M. LORTKIPANIDZE

THE INVASION OF COLORADO BEETLE (*LEPTINOTARSA DEZEMLINEATA* SAY) BY USING THE NEMATODE *STEINERNEMA THESAMI* (*STEINERNEMATIDAE*)

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ABSTRACT. The paper presents the results of experiments made in both laboratory and field conditions. As a result of application of the nematode *Steinernema thesami* in laboratory experiments mortality rate of *Leptinotarsa dezemlineata* imagos and its worms made 97.4% and 68.1% correspondingly. 62.3% of pests perished as a result of invasion by nematodes in field experiments. © 2004 Bull. Georg. Acad. Sci.

Key words: *Leptinotarsa dezemlineata*, *Steinernema thesami*, biological control, nematode, invasion, entomopathogenicity, titre, migration.

The researches carried out earlier have shown, that entomopathogenic nematode *Steinernema thesami* revealed in Georgia can cause the invasion and death of many species of pest insects [1-4]. Due to this the species of nematodes can be considered the perspective agents in biological control of pest insects.

Harmfulness of the Colorado beetle and the damage done by it to potato plantings is well-known [5].

Among methods of controlling the pests throughout the world special attention is paid to the use of biopreparations.

Our aim was to examine the efficacy of entomopathogenic nematode *S. thesami* [6] on Colorado beetle (imago) and on its worms. The experiments were made in laboratory and field conditions.

Materials and methods. Laboratory experiments. Colorado beetles and their worms were collected in the potato plantings of the private sector plot of the village Thesami (Mtskheta region). Cultivation of nematodes was carried out at the Institute of Zoology of Georgian Academy of Sciences on the worms of both insects *Bombyx mori* and *Galleria mellonella* [7,8].

The experiments were carried out in four variants. In the first two variants the nematode suspension was tested on adult forms of Colorado beetle. In the third and fourth variants the suspension was applied to the beetles of the second and third instars. 50 specimens of the pests were fixed in 0.5 litre vessels together with the potato leaves. Each variant had five repetitions. Every experimental vessel was treated with the 5 ml of nematode suspension (by the Bobrov manual apparatus). Both the beetles and worms were treated by two different kinds of nematode suspension (titre – 700 ± 45.7 and 1000 ± 95.5 nematodes in 1 ml of water). The experiments were carried out in conditions of $22-23^{\circ}\text{C}$ temperature and 87-89% relative humidity of the air. The registration of the pests death-rate was made on the fifth day of the sprinkling the nematode suspension using the rules accepted in Entomology [9,10]. Simultaneously we kept observation on the four control vessels, each containing 50 specimens of the adult beetles or worms. The control pests were treated with the tap water only.

Results. The results of the experiments carried out in laboratory conditions, are given in Table 1, where the efficacy of the nematode *S. thesami* to the Colorado beetle imagoes and its worms is evident. Comparatively high percentage indicator was marked within the experiments