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A PREDATORY BUG *Orius majusculus* AS A BIOLOGICAL CONTROL AGENT OF THE INVASIVE *Echynothrips americanus*

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In the Republic of Moldova, the predatory bug *Orius majusculus* (Reut) is widespread on various wild and cultivated plants. The bugs are mass-reared for use in greenhouses against thrips and other insectoacaricide-resistant arthropods. *Echinothrips americanus* (Morgan) is native in subtropical regions of the southeastern United States and Central America. In the late 1990s, thrips invaded greenhouses in many countries of Western and Eastern Europe, Russia, the United States, Canada, and China. In RM, the first invasion of insecticide-resistant *E. americanus* was found in the greenhouses of the Chisinau Botanical Garden in 2013 (Muntyan et al., 2022). When vegetable seedlings are cultivated in greenhouses, pests can cause significant economic damage to grown outdoors cucumbers, beans, peppers, pumpkins, and melons in Moldova.

The goal of this research was to study the developmental characteristics (developmental time duration and lifespan) and predation rate of a laboratory colony of *O. majusculus* feeding on larvae and adults of *E. americanus.* Second-instar nymphs or one-day-old adults were released into containers with pepper leaves containing thrips larvae or adults. The age of the bug nymphs and the number of killed thrips were recorded every 24 hours. The experiments were conducted in eight to ten replicates at a temperature of 25 ± 1°C and under a photoperiod of 16:8 (L:D). The data was processed statistically using Student's t-test.

All of the bug nymphs completed successfully their development when they were fed *E. americanus*. The average duration of the immature stage of the bug development was 10.0 ± 0.33 days. The complete development of the pest, from egg to adult, took 15.0 ± 0.7 days, which is comparable to the ontogenetic duration of the

pest itself (16.0 ± 1.3 days) (Sukhoruchenko et al., 2016). The maximum lifespan of adult bugs that fed on thrips was 34 days. The daily predation rate of *O. majusculus* at the immature stage of development (6.73±0.42 thrips/day) is significantly lower than the predation rate on *T. urticae* eggs (16.2±1.4 eggs/day) (Muntyan et al., 2022). Adult bugs are capable of killing more than 10.22 ± 0.62 thrips per day. At the same time, bugs destroyed three times more spider mite eggs (29.5±1.1 eggs/day). These differences may be due to the varying mobility of the preys. When hunting thrips, especially adults, bugs encounter greater difficulties in comparison with feeding on mite eggs.

Thus, *O. majusculus* which had been reared in the laboratory for over 25 generations developed successfully on *E. americanus* thrips. The bugs retained their predation capacity and destroyed thrips at both the immature and adult stages. The relatively low voracity of Orius on thrips than on mites is likely related with the size and energy value of these preys. *E. americanus* are easily multiplied in the laboratory on beans, pepper, or melon, making this thrips species highly suitable as live food for predator mass rearing. The predator and thrips are characterized by similar values of ontogenetic duration and comparable fecundity values of 86.1 ± 1.2 and 99.7 ± 13.8 eggs, respectively (Saprykin et al., 2010; Mouratidis et al., 2022). If outbreaks of *E. americanus* are observed *O. majusculus* can be recommended for the control of this invasive pest.

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