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LIOTRYPHON PUNCTULATUS – THE ECTOPARASITE OF CODLING MOTH

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ABSTRACT

The article describes the seasonal expeditions in the orchards of Kashkadarya according to the seasons, eggs of Liotryphon punctulatus, Four-toothed ascogaster, Red-footed microdus Braconidae were collected from the external parasites of the main pest of the garden, codling moth, and studied in the laboratory. According to laboratory results, the most dominant species is Liotryphon punctulatus.

KEYWORDS: *Population, Pests, Entomophagous, Ichneumonoidea, Red Foot Microdus, Parasite, Fungus.*

INTRODUCTION

In reducing the pest population size of entomophagous use reduces their number of species to a certain extent. According to the article, according to the seasons of 2020, seasonal expeditions were carried out in the gardens of Kashkadarya. According to the scientific research results, the collected entomophages were analyzed in collaboration with experts from the Institute of Zoology of the Academy of Sciences of Uzbekistan entomology laboratory. As an analysis result, the parasite *Liotryphon punctulatus* was recorded as a dominant species. Therefore, we

have studied the parasite development as follows. During the winter, under the old bark of the apple tree, 350 pieces of adult larvae of the apple worm, which had crawled into the cocoon, were stored in the laboratory. Observations continued. As a result, 214 liotryphon parasites flew out of the cocoon. The analysis showed that the parasite overwinters in the larval phase of the adult larvae. Laboratory observations show that the parasite larvae can withstand winter temperatures up to 20°C. The most common external parasite of apple caterpillars (ectoparasite), the oligophagous parasite overwinters in the larval stage of the adult apple caterpillar and turns into a fungus in February next year. Wintering larvae of ichneumonoide also tolerate temperatures down to -20^{0}C. In Uzbekistan, liotryphon flies from mushrooms, mainly in late March to early April. The flying ichneumonoidea codling manages to infect the wintering worms of the moth. Ichneumon idea lays its eggs on or next to the codling moth. One worm can lay up to seven eggs, but only in one of them does the larva develop fully, in the rest, the larvae die by injuring each other.

The laid eggs can be fertilized or unfertilized, females in fertilized eggs; only male ichneumon idea develops from unfertilized. Liotryphon flies out of the fungus before puberty. In the fungi, first the males of the parasite and then the females emerge. After the females are fed with flower nectar and the hemolymph of the host, its eggs mature and begin to lay eggs in 5-6 days. Females that consume protein and carbohydrate supplements live 30 to 40 days, while male insects live 15 to 20 days. The female liotryphon lays up to 120-130 eggs.

Fig.1. Liotryphon punctulatus

In the laboratory, one ichneumonoidea was found to have paralyzed up to 118 codling moth worms. During the growing season, liotryphon reproduces up to 6 times.

Four-toothed ascogaster – Ascogaster quadridentatus (Hymenoptera group, Braconidae family). Codling moth is an effective parasite that kills at the expense of eggs and worms. Codling moth is found in all regions where it is widespread. In Uzbekistan, the emergence of ascogaster codling moth worms in the first half of May coincides with the mass laying period of apple butterflies. They begin to lay eggs when they are sexually mature or after 5-6 hours. Askogaster searches for the apple caterpillar's egg and lays an egg in it. Only male insects develop from unfertilized eggs. In the laboratory, it was found that the female lays up to 700

eggs. The larva of the parasite flies out of the host embryo and stops developing and the master worm feeds vigorously with its inner head during cocoon wrapping. After feeding, the host worm wraps itself around the cocoon and turns into a mushroom. The 520laid eggs flew.

Fig 2. The parasite propagated in the laboratory

It takes 30 to 34 days for Ascogaster to fully develop, during the growing season braconid gives 3–4 generations.

Red foot microdus - Microdus rufipes Ness. (Hymenoptera turkumi, Braconidae oilasi). A common parasite of codling moth worms and several other butterfly worms overwinter inside the codling moth worm cocoon during the larval phase in the microdus range. The parasite flies a few days earlier than the codling moth worm before it reaches sexual maturity and needs to be fed extra carbohydrate food. 2–4 days later, the female lays eggs in the first and second year larvae of the codling moth under the skin and core of the microdus apple and at the age of 4, the parasite larvae emerge from the larvae and feed on its remains after the codling moth worm has hatched into an internal parasite (endoparasite) up to the larval stage inside the master cocoon, the cocoon wraps around the cocoon and turns into a mushroom. Microdius develop synchronously with its master, the apple worm, and the parasite reproduces as many generations as the pest does. Out of the 500 eggs bred in the laboratory, 357 were hatched.

Research results

Parasites types	**Number of eggs laid in the laboratory (pcs)**	**The number of parasites hatched from eggs in the laboratory (pcs)**	**Parasite damage In %**	**Damaged codling moth (pcs)**
Liotryphon – *Liotryphon*	350	214	61.14%	131

punctulatus				
Four-toothed ascogaster – *Ascogaster quadridentatus Wesm.*	700	520	19%	98
Red foot microdus- Microdus rufipes Ness	500	357	25.2%	90

According to the scientific research results conducted in the laboratory, the damage rate of codling moth was 131 pieces and it was found to be high.

Liotryphon *– Propagation of Liotryphon punctulatus in the laboratory and distribution to apple orchards before the start of each phase of codling moth gives high efficiency.*

Rezyume

Olib borilgan tadqiqot natijalaridan kelib chiqib codling mothga qarshi quyidagi turlar o`rganildi ***Liotrifon*** *– Liotryphon punctulatus,* ***To'rttishli askogaster*** **–** *Ascogaster quadridentatus,* **Qiziloyoq mikrodus-** Microdus rufipes bu turlar orasida *Liotryphon punctulatus* ustun tur sifatida aniqlandi.

Резюме

По результатам исследования на яблоневых садах изучены следующие виды:

Liotrifon – Liotryphon punctulatus, квадридентатус– Ascogaster quadridentatus,

Qiziloyoq mikrodus- Microdus rufipes. Среди этих видов Liotryphon punctulatus был определен как доминирующий вид.

Resume

Based on the results of the study, the following species such as Liotrifhon - Liotryphon punctulatus, Quaternary ascogaster - Ascogaster quadridentatus and Red-footed microdus - Microdus rufipes were studied against apple orchards. Among these species, Liotryphon punctulatus has been identified as the dominant species.

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