



CHARACTERISTICS OF BIOECOLOGICAL DEVELOPMENT OF THE COMSTOCK WORM (PSEUDOCOCCUS COMSTOCKI KUV V.) IN THE CONDITIONS OF KARAKALPAKSTAN

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ANNOTATION

The article presents characteristics of bioecological development of the comstock worm (Pseudococcus comstocki kuv v.) in the conditions of Karakalpakstan.

KEY WORDS: *insects, phytophages, entomophages, ticks, agroecosystem, insect fauna, sucking pests.*

INTRODUCTION

Comstock worm (Pseudococcus comstocki Kuv v.) is a widespread, omnivorous insect belonging to the subfamily Coccinea. It can be found in almost all fruit and ornamental trees, woody plants and some herbaceous plants.

The Comstock worm infects more than 350 different plants. The damage of the Comstock worm causes the branches to become crooked, the leaves turn yellow and dry, swelling and cracks form in the tree trunk, roots and branches, and the tree loses its strength. A mulberry leaf contaminated with worm dung is harmful to silkworms. In addition to mulberry, the Comstock worm damages peaches, catalpa, pomegranate, corn, potatoes, carrots, beets, cabbage, tomatoes, pumpkin, melons, watermelons, and quite a few other woody and herbaceous plants. Comstock worm slows down the growth of all plants when it multiplies, makes the branches of trees and shrubs crooked, reduces the yield and quality of fruit crops, tubers. The fruits of infected plants are small and tasteless. And potato fruits develop poorly.

The Comstock worm can be found in any tree, lives in a shelter, its biological characteristics are very complex, and it is very difficult to fight against it due to its rapid spread in nature.

Comstock worm is spread in all countries of Central Asia and there is a risk of widespread spread to all regions.

It is necessary to know the characteristics of bioecological development of the pest in order to carry out measures to control the Comstock worm.

THE PURPOSE OF THE RESEARCH

To study the characteristics of bioecological development of Comstock worm (Pseudococcus comstocki Kuv v.) in orchards in the conditions of Karakalpakstan.

In 2022-2023, stationary and route research was conducted in the southern and northern districts of the Republic of Karakalpakstan.

METHODS OF THE RESEARCH

All methods used in general entomology and agricultural entomology: observational, entomological, phenological, zoogeographical, ecological methods were used in the research.

The Comstock worm overwinters in the egg stage under the bark, on the trunk of trees, on the roots of plants, among mosses, in wall cracks and in the soil. Eggs are laid 5 to 16 cm deep in the soil and rarely 30 to 40 cm deep. Overwintering eggs are very resistant to cold. One female worm lays 250 to 600 golden-yellow eggs in a waxy white bag. This bag is produced by the wax glands of the female worm. Eggs are packed inside this white sac.



Comstock worm usually accumulates in large numbers in the active stage or in the form of eggs in and near trees in October-November. Both adult females and larvae survive the winter, but die in cold weather and heavy rainfall. As soon as the cold falls, the worms and their females die completely. Many of the eggs in poorly protected areas will also die over the winter. All the eggs left for the winter will die. Only when the winter is good and warm, 5-15 percent of Comstock worm eggs survive in the wild. Therefore, the first generation of Comstock worms is usually very small.

The period of emergence of caterpillars from overwintered eggs coincides with the time of budding and the appearance of the first leaves of the trees, that is, about the end of March and the beginning of April. Hatched worms stay in a waxy bag for the first 2-3 days, then crawl and cling to the underside of the leaves, along the veins. Temperature and humidity are the main factors affecting the development of the Comstock worm.

This pest goes through three larval ages. Depending on the temperature, the development of first-instar worms lasts 12-16 days. For the first few days after shedding, most worms feed near the molting pods, then roam around for 5-7 days. Although the larvae of the first age ("brodajka") crawl in all directions from the place of emergence, the worm can only actively move within a short distance within a branch of a tree or neighboring branches. It spreads to new plants mainly passively: seedlings, leaves, twigs, wood, vehicles, clothes, animal fur, bird (especially sparrows) paws, stream water (comstock worm does not drown in water and can live without food for several days), the worm can also be spread by agricultural tools and vegetables and fruits.

The Comstock worm is omnivorous and can live on 350 species of wild and cultivated plants, especially mulberry, catalpa, blackberry and ivy. The Comstock worm eats all parts of the plant: the trunk, stems, branches, leaves, buds, pods, flowers, fruits, and penetrates the soil at a depth of 5-6 cm and sucks the upper part of the roots. In some cases, it is found at a depth of up to 40 cm. The worm usually feeds along the veins on the underside of the leaf.

In the conditions of Karakalpakstan, the Comstock worm reproduces three times a year, and partially reproduces a fourth time. But as soon as the cold falls, the fourth generation dies.

In the conditions of Uzbekistan, the development of the first generation of the Comstock worm lasts from the beginning of April to the end of May.

The development of the second generation lasts from the middle of May to the beginning of June.

The third generation lasts from the beginning of July to the middle of September. The third generation lays eggs for wintering in September-November. These waxy bags are firmer and denser than the ones in summer. The development of one generation lasts from 42 to 65 days, depending on the temperature.

The Comstock worm gives birth about once every month and a half. Gives three, sometimes four offspring throughout the summer. The female starts laying eggs 10-30 days after the last moult. The first generation of an insect usually lays 200-350 and a maximum of 670 eggs, the second generation 250 and a maximum of 435, and the third generation 200 and a maximum of 350 eggs. The female worm lives 15-36 days in total. Adult worms and larvae live in dark places; it dies in 3 minutes at a temperature of 38°C in direct sunlight.

Egg laying, hatching of worms, moulting, and formation of male worm cocoons take place at night.

In nature, the Comstock worm is destroyed by several predators; one of them *Leusoris bona* Rohd. is more important, its larvae often kill 80-90% of overwintering worms. Although it produces 5-6 offspring per year, it is still few in spring and summer and reproduces only at the end of the growing season. The Comstock worm is eaten by the larvae of goldeneyes (especially *Chrysopa vulgaris* Schr.) and button beetles (Coccinellidae).

A parasite called pseudoficus (*Pseudapcus malinus* Gah.) specially brought from abroad plays an important role in the elimination of the Comstock worm.

CONCLUSIONS

In the article, the characteristics of the bioecological development of the Comstock worm (*Pseudococcus comstocki* Kuv v.) in fruit orchards in the conditions of Karakalpakstan were studied.



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