



SPECIES OF ARMORED SCALE INSECTS (DIASPIDIDAE) IN THE CONDITIONS OF KARAKALPAKSTAN, CHARACTERISTICS OF BIOECOLOGICAL DEVELOPMENT

Bekbergenova Z.O., Menlimuratova S.J.

Karakalpakstan Institute of Agriculture and Agrotechnologies

Article DOI: <https://doi.org/10.36713/epra14522>

DOI No: 10.36713/epra14522

ANNOTATION

The article presents species of armored scale insects (Diaspididae) in the conditions of karakalpakstan, characteristics of bioecological development.

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

INTRODUCTION

It is an insect belonging to the family of armored scale insects (Diaspididae), order Nemeptera, and there are many species that damage fruit and ornamental crops. There are more than 4000 species of armored scale insects in the world fauna, more than 500 species in the CIS countries, and more than 120 species in Uzbekistan (Insects of Uzbekistana, 1993).

A characteristic sign is the appearance of red spots on the fruits, branches, and bark of branches of plants infected with armored scale insects. Armored scale insects weaken trees by sucking sap, often killing some branches, especially young ones, and sometimes completely withering trees. Armored scale insects stain the fruit and reduce its quality. It is widely polyphagous and damages plants belonging to many families.

In the fruit orchards of Karakalpakstan, there has been an increase in the number of armored scale insects in recent years, and it has been found that it cracks the tree bark, dries the branches and even whole trees, and causes damage by sucking sap from the fruits, and it has been proven that it is especially harmful to trees, the number of such places is increasing.

In the conditions of Karakalpakstan, it is important to make recommendations on the introduction of a scientifically based control method to production based on the study of the affected center of the pest and the determination of its bioecological characteristics.

THE PURPOSE AND TASKS OF THE WORK

To study the species of armored scale insects (Diaspididae) and bioecological development 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. The fauna and taxonomic analysis of the armored scale insects found in fruit and ornamental trees in the conditions of Karakalpakstan were studied.

METHODS OF THE RESEARCH

Researches were carried out on the basis of methods adopted in general entomology, applied entomology and agrotoxicology. In the researches, in order to identify the armored scale insects that are more common in fruit and ornamental trees, the lower, middle and upper layers of the plant were examined, and it was determined what stage of development the armored scale insects are at the same time during the wintering period and in the fodder plant.

Collection and storage of the collected armored scale insects was carried out based on the methodology of N.S.Borghsenius.

The collection materials were kept in separate boxes in the case where armored scale insects were cut from 10-15 cm long branches of the food plant, and the leaf samples were kept in the herbarium.



The study of the biological characteristics of armored scale insects began in the spring and was systematically monitored every week. Observations were made using the method of bioimaging (once a day) in selected model trees, the distribution, density, and number of changes of the armored scale insects based on the arrangement of the armored scale insects on the plant trunk, branches and seedlings, fruits and leaves. In addition, when taking samples from the armored scale insects, it was tried to take the circular sides of the parts of the trees at the same height from the ground. Changes in the number of armored scale insects in modular trees, their life processes, egg-laying, hatching of larvae, emergence of males were also studied. Morphological and classification features of armored scale insects were studied on the basis of a number of identifiers and scientific sources related to the field.

In the study of the biological characteristics of armored scale insects, first of all, their wintering period, hatching of larvae from eggs in spring, gradual transition of larvae from first to second instar, molting, turning into young female or male individuals were taken into account. In addition, male insect larvae were separated and kept in test tubes, and the duration of emergence of males was determined in laboratory conditions. Also, the processes of egg-laying of females and emergence of larvae from eggs were constantly monitored.

The development of armored scale insects was monitored in selected and isolated model tree trunks, where continuous observations were made. Samples were cut from plants infested with armored scale insects, labeled and studied under laboratory conditions. The samples taken during the observation work in field conditions were numbered and recorded in a notebook. When taking samples from different ecological areas, 10 control plants were selected from each of the four sides of the area, and 10 samples were taken from them. Controlled trees were conditionally divided into three tiers, and it was decided to place armored scale insects along the tiers. Attention was paid to the number of control bushes, the age and composition of their populations. The length of the sampled branches was 10 cm. A part of the samples (bark, branch, leaves, fruit) was cut and placed in a special box with fluffy cotton under it, and a part was put in 70% alcohol and fixed, and the species composition was studied in the laboratory.

As a result of the research, a taxonomic analysis of the armored scale insects encountered in fruit and ornamental plants in the conditions of Karakalpakstan was determined.

According to the taxonomic structure of the fauna of armored scale insects found in the fruit and ornamental plants of the Republic of Karakalpakstan, they belong to the *Diaspididae* family in the fauna: *Diaspidiotus perniciosus* (Comstock, 1881), *D. elaeagni* (Borchsenius, 1939), *D. salicis* (Lupo, 1953), *D. transcaspensis* (Marlatt, 1908), *D. slavonicus* (Green, 1934), *D. prunorum* (Laing, 1931), *D. turanicus* (Borchsenius, 1935), *D. leguminosum* (Archangelskaya, 1937), *Diaspis bromeliae* (Kerner, 1778), *Dynaspidiotus ephedrarum* (Lindinger, 1912), *Unaspis euonymi* (Comstock, 1881), *Shansiaspis ovalis* (Chen, 1983), *Salicicola archangelskyae* (Lindinger, 1929), *Parlatoria oleae* (Colvée, 1880), *P. ephedrae* (Lindinger, 1911), *Lepidosaphes turanica* (Archangelskaya, 1937), *L. juniperi* (Lindinger, 1912), *L. ulmi* (Linnaeus, 1758), *L. pistaciae* (Archangelskaya, 1930), *Leucaspis gigas* (Maskell, 1879), *Aulacaspis rosarum* (Borchsenius, 1958), *Aonidia isfarensis* (Borchsenius, 1962), *Chionaspis salicis* (Linnaeus, 1758), *Chio etrusca* (Leonardi, 1908), *Chlidaspis asiatica* (Archangelskaya, 1930), *Prodiaspis tamaricicola* (Malenotti, 1916), *Mercetaspis halli* (Green, 1923), *Carulaspis juniper* (Bouché, 1851), *Rhizaspidotus canariensis* (Lindinger, 1911), *Pseudaulacaspis pentagona* (Targioni Tozzetti, 1886) were recorded for the first time for the fauna of Karakalpakstan.

CONCLUSIONS

As a result of our research, in the case of Karakalpakstan, According to the taxonomic composition of the fauna of the shields found in fruit and ornamental plants of the Republic of Karakalpakstan, the number of genera in the *Diaspididae* family in the fauna is 18, and the number of species is 30.

LIST OF USED LITERATURE

1. Aytimov I. Development and damage of California armored scale insects in the conditions of Karakalpakstan // *Agroilm*, 2019, No. 3(59).
2. Borchsenius N.S. Determinant of worms and armored scale insects of (Coccidae) Armenia. - Yerevan, 1949. - 130 p.
3. Mirzaeva S., Joraeva Kh.. Harm of california armored scale insects in apples // *Agrochemical protection and plant quarantine*, 2021, special issue.
4. Murodov B.E., Ortikov U.D., Yakhyoev J.N. Bioecology and development of Californian armored scale insects (*Quadraspidotus perniciosus* Comst.) in Uzbekistan // *EUROPEAN UNION (ESU)*. - 2020. - 5 (74). - p. 39-40.
5. Ortikov U., Murodov B., Yahyoev J., Murodov M. Harm of purple armored scale insects (*Parlatoria oleae* col.) in seed orchards // *Agroilm*, 2019, No. 5(59).
6. Shukurov H., Hasanov A. Phenology of purple armored scale insects (*Parlatoria Oleae Goltv*) // *Agrochemical protection and plant quarantine*. No. 6, 2019.