ACADEMICIA
An International Multidisciplinary Research Journal
(Double Blind Refereed & Peer Reviewed Journal)

DOI: 10.5958/2249-7137.2021.00754.0

THE DEVELOPMENT CYCLES OF NUT APHID GENERATION UPPER LEAVES IN THE CENTRAL AND MOUNTAIN SURROUNDING PLAINS OF FERGANA VALLEY

Shoxistakhon Qobiljonovna Yuldasheva*

*Associate Professor,
Department of "Biology", Candidate of Biological Sciences,
Fergana State University, UZBEKISTAN

ABSTRACT

In this article it is given information about development cycles of nut aphid generation upper leaves in the central and mountain surrounding plains of Fergana valley. From wintering eggs of nut aphids hatching of initiator individual larua depends on the temperature and relative dampness of spring. The amount of wintering eggs depends on the age and rising of nut trees and amount of one year's branches. The hot temperature of spring, coarsening of nut trees and other factors cause the depression of nut aphids upper leaves in central plains and mountain surrounding zones.

KEYWORDS: *Vermin, Linear Colony, Founder, Amount Consistence, Winged Alive Female, Larua, Aphid Generation, Depression.*

INTRODUCTION

There are two types of nectar in the walnut plant. Leaf upper walnut sap - *Panaphis juglandis*forms linear colonies on the upper side of walnut leaves, around the central root of the leaf. Walnut sap (*Chromaphis juglandicola*) lives by absorbing tissue fluid from the underside of the walnut tree leaves [2]. The underside of the walnut leaves protects this juice from sunlight and precipitation.

Walnut sap lives on the leaves of this tree and feeds on tissue fluid. In many cases, these insects multiply in young shoots, causing them to dry out, shedding young leaves due to absorption of tissue fluid. Therefore, the study of the biology and ecology of walnut sap such as *Panaphis juglandis*(Goeze) and *Chromaphis juglandicola*(Kalt.) Will undoubtedly serve to form the ecological basis of measures to protect walnut trees from their effects.

THE MAIN FINDINGS AND RESULTS

The emergence of larvae of the founding individuals from wintering eggs depends on the spring air temperature and relative humidity. Therefore, their emergence from wintering eggs in the central lowlands occurs earlier, in the foothills and later in the lower mountain regions [1].

Object of research. Walnut sap lives in walnut trees during spring, summer, and fall. These species spend the winter in the form of eggs. The amount of wintering eggs depends on the age and development of the walnut tree and the number of more or less annual branches [2].

When the walnut sap on the top of the leaf has multiplied in large numbers, the live-bearing females begin to fly to other walnut trees. Their larvae move along the leaf axils, branches, and begin to form colonies on new leaves [3].

The contribution of ants in the spread of walnut sap along the branches is large. They help the sap from dense colonies migrate to the young leaves [4]. At the time of mass multiplication, walnut sap completely occupies the young seedling leaves.

Early emergence of wintering eggs of the founders of *Panaphis juglandis*(1st generation) - walnut sap on the leaves is recorded on March 25–26. Their late appearance is observed on April 10-14 (1998).

In the foothills of the Fergana Valley, the emergence of larvae of the founding individuals of *Panaphis juglandis*on walnut trees occurs in late March - early April (28.03-1.04). In the central lowlands, their development begins 2-3 days earlier than in the foothills (26.03-28.03) [4].

1st generation larvae develop and mature in 16-20 days. During this period, they shed their skin 4 times and become winged founding individuals (13-18.04).

Founding individuals reproduce parthenogenetically and larvae begin to reproduce. The larvae of the live-born female individuals (2nd joint) that develop from them place their larvae around the central vein at the top of the leaves. The larvae of these winged live-born female individuals are born on April 13, and the late emergence period is in late April (26.04). Among the larvae of the 2nd joint can be found the larvae of the founders, which appeared later than the egg, as well as the larvae with delayed development.

Humidity is strongly influenced by the growth and development of walnut sap. At the level of light and heat, when the humidity is high, the sap begins to multiply actively. Reproduction of this species is observed from mid-spring [130].

The maturation of the 2nd joint larvae is accelerated by a slight entrapment of air. They can develop in 12-14 days (16-30.04, Fergana city; 18.04-2.05, Fergana district). Larvae of mature winged live-bearing females, in turn, begin to give birth to larvae after 1 day.

The average birth time of 3rd generation larvae occurs in late April - early May (30.04-2.05). In walnut trees, the onset of proliferation of winged live-bearing females occurs at the expense of 2–3 joints.

The maturation of the 3rd joint larvae occurs in mid-May (10.05–14.05). At this time, the leaf-top walnut sap colonies often consist of 1–2 mature winged live-bearing female individuals and 15–20 larvae.

The 4th generation larvae of live-breeding females begin to give birth in the 2nd decade of May (11.05-15.05). The period of birth in the foothills in 2008 coincided with the end of this month (26.05-27.05). The birth of 4-joint larvae causes an increase in the quantitative density of this species in walnut trees.

As the air temperature rises, the maturation period of walnut juices shortens. When the average air temperature is + 220S degrees, relative humidity is 73%, atmospheric pressure is 712 mm, the number of juices actively increases. They form sparse colonies on large leaves and thick colonies on small leaves [133].

It takes 9-10 days (11.05-22.05) for *Panaphis juglandis*4th generation larvae to develop and mature.

5th generation larvae begin to give birth in late May - early June. The larvae of this joint develop and mature in 9-10 days. Their maturation occurs in early June. The mature forms of the 5th joint are recorded in the central lowlands and in equal periods in the foothills (3.06).

The birth of the 6th joint larvae occurs in early summer (3.06-6.06). The development and maturation of the 6th joint larvae and the beginning of larval birth occurs in mid-June (14.06-16.06).

The first individuals of the 7th generation larvae of this species are born on June 13 in the central lowlands, while the later emergence in the foothills occurs on June 27. The birth dates of these joint larvae are recorded in mid-June (13.06-16.06).

The birth rate of the 7th joint larvae is lower than that of the previous joints. Their development and maturation coincide with the beginning of the summer dormancy period of the walnut sap on the leaves. At the same time, their development and maturation are protracted. This opens up a wide range of possibilities for the species to survive in adverse conditions. The summer dormancy period can be seen as an example of the pre-preparation of leaf top walnut juice for adverse conditions.

In walnut trees growing in different conditions, regions and reliefs, the summer dormancy period in the life of leaf sap may or may not manifest itself. In nuts in the cool shade of thickly planted trees, low temperatures, precipitation and high humidity in the first months of summer prevent depression in the life of leaf sap and have a positive effect on the biology of leaf sap.

The birth of the 8th joint larvae occurs in the third decade of June (26.06-28.06).

The hot summer temperatures, the roughness of the walnut leaves, and other factors lead to a depression of the walnut sap in the central lowlands and in the foothills. However, *Panaphis juglandis*does not disappear completely in walnut trees, and a small number of its individuals are preserved throughout the summer [3].

The onset and duration of the depression depend on the arrival of hot summer temperatures, where nuts grow in the open and among trees.

In a walnut tree growing in a cool place, the amount of *Panaphis juglandis*continues to grow without depression. In mid-June (14–15.06, First, Vodil), *Panaphis juglandis*individuals continue to develop normally even in the walnut groves of the lower mountain regions [3].

In the foothills, early departure from the summer break is observed on August 5, and late departure - on August 20. Release from depression occurs in mid-August (15.08-18.08).

The birth of the 9th joint larvae is observed in the 1st decade of July (7.07-8.07). At this time their number decreases (7 larvae were found on the three leaves of a 10 cm long branch on the east side of a walnut tree, 3 larvae on the leaves of a 10 cm long branch on the south side. They were not found at all on the leaves of branches on the north and west sides).

In the foothills, the development of the 9th joint larvae occurs in the 3rd decade of July (21.07-23.07).

In trees where depression has been observed, the 11th joint larvae go through a developmental period and become the genus that gives birth to the genital joint. Birth of Polonos larvae occurs on the 1st decade of October (6.10-10.10).

The 12th joint is composed of polonoscae that form the genitalia; the larvae that give birth develop in the central lowlands for 16 days (10.10-26.10) and in the foothills for 18 days (05.10-23.10) and form the genitalia.

Egg-laying female walnut sap from representatives of the 13th (amphibian) joint is found in walnut trees until early November (5.11-6.11. Fergana district; Fergana).

The 14th-generation larvae, which begin to emerge in early September, are composed of polonosca-forming. The maturation period of these articular larvae is 18–20 days (3.09–21.09) and the female, which gives birth to the genital joint larvae, turns into a live-born female polonoska leaf sap. At this time, the amount of walnut sap on the top of the leaf decreases in walnut trees [4].

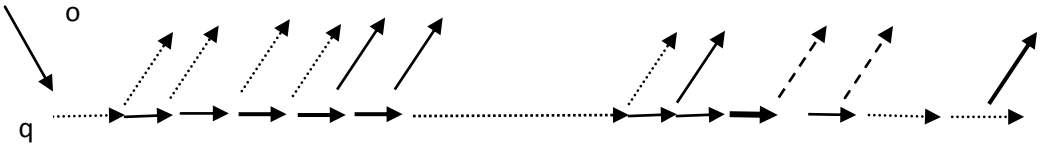
The larvae, which give birth to the leaf sap (polonoska) that forms the genital joint, develop in 20-22 days and develop into adult winged male and wingless egg-laying female saplings (13.10-16.10). After 3–4 days of feeding, the egg-laying females begin to lay their eggs on the three young branches of the walnut, between the leaves and flower buds.

The first eggs are laid in the foothills and central plains in early October (3.10–5.10).

CONCLUSION

The occurrence of sexual joints in walnut trees takes place in different years, depending on the early or late arrival of autumn. After the eggs of the walnut sap on the top of the leaf have overwintered, the following year the founding larvae emerge, initiating their next joints.

*Panaphis juglandis*are mountainous in spring, summer and autumn, and in the central lowlands form a different number of joints according to the different conditions of the environment, the early or late arrival of the seasons.



III	IV	V	VI	VII	VIII	IX	X	XI

Life cycle of*Panaphis juglandis juice.*

Here: o - eggs; f - founder; $v_{2,3}$ ... - joints of live offspring; O - egg-laying females.

REFERENCES

[1] Mukhamediev A.A., Yuldasheva Sh.K. (2005) On the biology of walnut aphids (Homoptera, Aphidinea) of the Fergana Valley // Journal. *Natural and technical sciences*. – Moscow. No. 2 (16).

[2] Yuldasheva Sh.Q. (2011) *Morpho-biological and ecological properties of walnut juices in the conditions of Southern Fergana*: a Dissertation for the Degree of Candidate of Biological Sciences. Abstract. – Tashkent.

[3] Yuldasheva Sh. (2004) On the ecological properties of large walnut juices in the conditions of the Fergana Valley // The role of young scientists in the development of science. *Proceedings of the scientific-practical conference*. – Fergana.

[4] Yuldasheva Sh., Sharipova A. (2001) On the biology of large walnut juice in the conditions of Southern Fergana // *Proceedings of the scientific-practical conference*. – Fergana.–p. 41.

[5] Yuldasheva Sh. (2020) Characteristics of distribution of aphis craccivora aphid in the vertical regions of southern Fergana. *International Scientific Journal*. USA. – pp. 852-854.

[6] Yuldasheva Sh. (2020) Characteristics of vertikal regional distribution of sapin in nature. *Akademicia an International Multidisciplinary Research Journal*.