Biology of Pomegranate Pests, Control Measures and First Aid in Case of Pesticide Poisoning

Makhpuza Yusupova*, *Shakhnoza* Irisova, and *Otabek* Numonov

Namangan Institute of Engineering and Technology, Namangan, Uzbekistan

Abstract. Pomegranate (Punica granatum L.) is a shrub up to 5 m tall, belonging to the family Pomegranate. It is a subtropical plant, native to Israel, Iran and Asia Minor, and widely grown in the Caucasus. There are more than 40 varieties in Uzbekistan. The article discusses the biology of pomegranate plant pests, control measures and effective first aid solutions in case of pesticide poisoning.
Keywords: Pomegranate, pest, control, pesticide, comstock worm, biological properties.

1 Introduction

Pomegranate fruits are consumed by the population, and the demand for it in the domestic and foreign markets is growing [1]. In recent years, the demand for pomegranate fruits grown in our country is growing in China, Japan, South Korea and a number of European countries [2]. Due to this, great importance is attached to the cultivation of pomegranates in the country, and the area under crops is expanding. Pomegranate fruits contain vitamins and minerals that are good for health. When consumed, it increases hemoglobin in people's blood, lowers blood pressure, is considered one of the number one benefits for patients with diabetes, and pomegranate juice is an appetite suppressant, diuretic, analgesic, effective anti-inflammatory agent. In addition to the implementation of agro-technical technologies in the production of abundant and high-quality crops from existing anoraks, it is important to carry out measures against their pests, diseases and weeds [3-4]. In the conditions of the republic pomegranate is seriously damaged by pests such as ordinary spiders, pomegranate juice, comstock worm, pomegranate fruit. A simple spider. Damaged leaves first turn yellow, then turn brown, when the tree is severely damaged, the yield is small, poor quality and low, the yield can be reduced by 25–30%. The canals become very hot in the second half of the summer, causing great damage to the gardens. Such trees give low yields the following year and become frost-resistant [5].

Coccinea belongs to the subfamily Coccinea, a subfamily of sucking insects, and is a dangerous domestic quarantine insect. It can be found in almost all fruit and ornamental trees, shrubs and some herbaceous plants (even near mulberry rows, cotton). Pomegranates, apples, pears, peaches, as well as mulberries from fruit trees are severely damaged.

* Corresponding author: maxpuza-70@mail.ru

Comstock worms can be found in any tree, live in shelters, have a lot of biological properties, and are very difficult to control due to their rapid spread in nature [6].

Comstock worm has spread to all Central Asian Republics, including Kazakhstan, as well as Georgia, Armenia, and Azerbaijan. Although it has been in existence for 75 years since its entry into Uzbekistan, it has been spreading despite strict quarantine measures. Today, in the CIS countries, there is a risk that the Comstock worm will spread to all regions. In order to protect Komstock worm-free areas from it, it is necessary to follow all quarantine rules in the import and export of seedlings and plant products, and to carry out a wide range of control measures. A good knowledge of the time of biological development of the Comstock worm and methods of control against it will ensure the successful completion of this task [7].

Distribution. The Comstock worm is native to Japan and China, and entomologist S. Kuvan described the worm in 1902 and named it Comstock in honor of the American entomologist Komstock. By 1920, reports began to circulate in the press about the emergence of its new furnaces.

Currently, comstock worms are found in many countries in Asia, Africa, Australia, America and Europe. Comstock worms were first detected in the CIS in August 1939 in large-leaved mulberry seedlings imported from Japan at the Jarariq Experimental Farm of the Central Asian Silk Institute near Tashkent. In Uzbekistan, comstock worms have spread throughout the irrigated part of the Tashkent region, and then spread to other regions of the country. Comstock worm was found in 1947 in Fergana region. The spread of worms here was faster than in Tashkent region.

In 1953, the Comstock worm had spread throughout the Fergana region. The abundance of gardens, woods, thick mulberry groves, and ditches helped the worms spread quickly. In 1953-1957, comstock worms spread very quickly in all districts of Andijan region. The pest spread in 1957 in Zaamin, Jizzakh region, Ishtikhan district and Samarkand city of Samarkand region, in 1960 in Bukhara, Navoi regions and in 1961 in Surkhandarya region bordering Afghanistan. It appeared in Khorezm and Urgench in 1962, in the territory of the Republic of Karakalpakstan in 1964. In recent years, Comstock worms have been spreading throughout Uzbekistan.

2 Materials and methods

Morphological features. Males and females differ sharply in appearance. The female is flat-shaped, wingless, less mobile, and 5 mm long, covered with white waxy spots . On the side of the body there are 17 pairs of waxy protrusions, the tail part being considerably elongated. The mustache has eight joints.

Comstock worm has 1 pair of transparent wings, motile, reddish-brown in color, 1-1.5 mm long, with 10 joints of whiskers. The length of the egg is 0,3 mm, oval in shape, tapered by one. The color is yellow-orange, covered with a thin white guard. Comstock worms pass through the age of three larvae, which differ from each other in body size and length of the tail.

First year: worms 0.3–0.6 mm long, no tumors on the sides, a distinct tumor on the tail. The body is yellowish-red, with no unsightly coating, and the unsightly coating appears gradually after it has been nourished.

Second year: worms 0.9–1.2 mm long, with short growths on the sides, a quarter of the body is a tail tumor. After the first-year worms hatch, the second-year-olds appear and are wrapped in a noticeably unsightly coating. The mustache has six joints. The presence of a large number of discarded skins indicates that the worm has entered its second year.

Third age: the worms are 1.7–2.5 mm long, resembling the male, with 16 pairs of lateral tumors, shorter than those of the female. One-third to two-thirds of the body is composed of

a tail tumor up to 1.5 mm. Therefore, large worms entering the third age can be easily confused with young female worms.

They can always be separated according to the mustache joint [8]. The mustache of the third young worm has 7 joints, while that of the adult female worm has 8 joints. In addition, the appearance of white elongated female worm cocoons of 1, 2 -1.5 mm in length in or near the colony indicates the appearance of the third young worms.

Biological properties. In Uzbekistan, comstock worms reproduce 3 times a year, and partially reproduce 4 times a year. But with the onset of cold weather, 4 generations will perish. Comstock worms overwinter in the egg stage. One female worm lays 250 to 600 yellowish-orange eggs in a waxy white pouch. This sac is made by the female worm's wax-secreting glands. The third generation lays eggs for wintering in September-December. These waxy pockets are harder and denser than their summer ones. The development of a generation lasts from 42 to 65 days, depending on the temperature. In Uzbekistan, the development of the first generation of comstock worms lasts from early April to late May, the second generation from mid-May to early July, and the third generation from early July to mid-September [9].

Tree branches, trunks, root joints, cracks, bark cracks, hollows, fallen leaves on the ground, cuttings, cracks in cracks in cotton and wooden walls, under house wall plasters and other places near the trees where comstock worms are found. 'Planned areas look good. The eggs are laid at a depth of 5 cm to 16 cm in the soil and rarely at a depth of 30 to 40 cm. Wintering eggs are very resistant to frost. Comstock worms are also common in countries with temperatures as low as -30 ° C (Pennsylvania, Ohio, Indiana, USA). Usually comstock worms also accumulate in October-November in trees and near them in the active phase or in the form of eggs. With the onset of frost, worms and females are completely killed. All the eggs laid for the winter are destroyed. In the open, they are blown away by the wind, dying during the rain washout. The root joint of the tree, under the migrated bark, cracks in the walls and pores, the eggs under the wall plasters are well preserved. Even in the root joints of weeds, a lot of eggs are preserved. However, if there is an excess of moisture in these places, the laid eggs are often killed by soprophytic fungi, which kill wild mosquito worms. Temperature and humidity are the main factors influencing the development of comstock worms. Only when winter comes well and it is warm will the comstock worm eggs in nature survive 5-15 percent. Therefore, the first generation of the comstock worm is usually very small. The period of worm emergence from the overwintered egg coincides with the time of mulberry emergence and the appearance of the first leaves, ie approximately the end of March and the beginning of April. The worms that hatch from the eggs stay in the waxy sac for the first 2-3 days, then crawl and cling to the base of the leaves, along the veins. The first generation of the worm, which develops in the spring, coincides with the time when the weather is not stable, the hot days are replaced by cold days. It often rains and winds during this time. The heat of February and March also affects the opening of the Comstock worm in the spring. Its opening in the spring lasts 1-1, 5 months. Eggs that are exposed to the sun open earlier. On the windward side, in deep moist pits, in the root joint, the laying of eggs under the soil is far behind. First -year worms do not stay in one place for long. They slowly crawl along the leaves, twigs and stop just to feed. First, stop for a few minutes and then stick for a much longer time.

The female comstock worm hatches three times in its entire life. Depending on the temperature, the development of worms in the first year takes 12–16 days. In the first days after hatching, most worms feed near their shed skins, then crawl for 5-7 days. This causes the temperature to drop in late August, especially at night.

male comstock worm until the second age is similar to that of the female worms. Male and female worms of the first age do not differ from each other both in appearance and behavior. At the age of two, the male worm begins to become restless [10]. It leaves the

colony and crawls in search of a deserted place, where it is surrounded by a waxy transparent, elongated cocoon that develops until it opens.

The second exodus of the male worm occurs inside the cocoon, where they lose their oral organs. The pre-worm stage lasts 2-3 days and then turns into a worm. Male worms develop in 2 to 6 days. When they grow up, they leave the cocoon and join with the female. Its revelation usually coincides with the time when the female worms are sexually mature [11]. It is very difficult to find adult male worms in nature. In the laboratory, they accumulate in windows and around light bulbs. The development of male worms takes the same amount of time as that of female worms. 'lib passes. Male worms are exceptional in mating and mating. These processes take place mainly in the morning.

Damage. Comstock worms cause a lot of damage to certain crops in different countries. In Japan, for example, it causes great damage to the mulberry. In China, it damages tea plantations, bananas in the United States, and apple trees in Korea.

Comstock worms infect 300 different plants. They settle in large colonies on the trunk, branches and leaves of the tree and absorb the sap of the tree, drying out its medicine and weakening its growth. In severely damaged trees swells appear, young branches dry out and the leaves fall off. Peaches, quinces, pears, apples, grapes, maples, maples, and potatoes are also rare. It is very rare in Pennsylvania ash, sagebrush, apricot, white acacia, pine, glean, willow, American maple, cotton, melons, vegetables, and legumes.

In mulberry, in many ornamental trees and shrubs, the comstock worm feeds on the underside of leaves, buds, twigs of blue twigs, as well as on tree trunks and branches. Comstock worms love to gather around flowerbeds and fruit clusters on fruit trees, avoid leaves and do not develop much on twigs. Comstock worms develop in the roots and twigs of pomegranate bushes in spring and summer, and in autumn they penetrate into the fruit cups. It is distributed in the leaf layers of vegetable crops and in the upper part of the roots. In potatoes, this worm damages the root joint and the potato itself. In nurseries, it often develops on the roots of apples, peaches, plums and ash. In greenhouse plants do not grow well [12].

Countermeasures. A number of control measures have been developed to successfully combat Comstock worms. Quarantine can stop the harmful activity of the worm and prevent its further spread only if the measures are taken. These include the following quarantine measures: inspection of seedlings and the use of agro-technical, biological and chemical methods of control of comstock worms.

3 Results and discussion

1. organizational, agro-technical, biological and chemical methods, to create unfavorable conditions for its further development and to take measures to directly protect the tree and fruit.

2. biological control, pseudoficus can be propagated in laboratory and field conditions. To do this, mummified comstock worms are collected in the wild in the fall, brought to the laboratory and stored in refrigerators from -3 to $+6^{0}$ until spring. In March-April, it is released back into the wild, into the trees where the comstock worms are found.

3. chemical control , trees and plants with komstock worms are treated with the following insecticides: cyperphos - 0.1%, dursban - 0.1%, karate, talstar - 0.05%, benzophosphate - 0.3%, mospilan - 0 , 02%, confidor - 0.03%, cypermethrin - 0.03%.

4. Quarantine measures. Every year, experts inspect mulberry, pomegranate seedlings and other tree and field crops, weeds, to find out the foci of Comstock worms, to determine the extent of the spread and to determine the extent of control.

3.1 First aid in case of pesticide poisoning

Even in case of mild poisoning with pesticides, a doctor should be called immediately. First aid measures can also be performed by the people themselves before the doctor arrives [13].

Remove the suffocating clothing on the poisoned person, remove it from the affected area into the open air, and remove the contaminated clothing and respirator. When breathing is difficult, nasal alcohol is inhaled, if breathing is stopped, clothing buttons are loosened, saliva is wiped, and the blocked tongue is removed, followed by rapid artificial respiration. (Figure 1)

Fig. 1. First aid in case of pesticide poisoning

The stomach is forced to record drinking a few glasses of warm water or a light pink solution of potassium permanganate to wash away the pesticides that have entered the intestinal tract. After recording, drink half a glass of water with 2-3 tablespoons of activated charcoal, then add 20g of magnesium sulfate in a ratio of 1: 2 and drink as an extract.

4 Conclusion

If a substance that has a rapid effect on the stomach, such as formalin, is ingested, the covering means are ingested a starch solution. Milk, alcohol, fatty drinks should not be consumed. When pesticides come into contact with the skin, wipe it with a cotton ball or bandage and wash with a solution of 2% soda in hot water or soap and water without rubbing anything. In case of contact with the pesticide, it should be washed with boiled water or 2% solution of boric acid. When blood comes from the nose of the victim, the head is raised and leaned back, something cold is placed on the back of the head, and a cotton swab soaked in hydrogen peroxide is inserted into the nostril. Even when bleeding from the skin is stopped by pressing a cotton ball soaked in hydrogen peroxide.

When the first-degree burn from the heat is red and slightly swollen, the burn should be rubbed with ethyl alcohol or potassium permanganate solution for a long time. In case of 2nd and 3rd degree burns, the burns should be covered with a clean cloth, leaving a clean sterilized bandage.

In places where pesticides are used, a first-aid kit must be kept in the pharmacy for first aid. In case of any poisoning, regardless of the severity of the poisoning, it is necessary to consult a doctor.

Medicines stored in first aid kits:

1. aspirin 30 tab.
2. besallol and / or becarbon, bellalgin 60 tab.
3. boric acid 60g.
4. 1 tube of available vaseline
5. magnesium sulfate 300g.
6. validol 30 tab.
7. mustard powder 200g.
8. carbolenactivated charcoal 100g.
9. starch 200g.
10. potassium permanganate 20g.
11. 10% iodine solution 50ml.
12. 5% iodine solution 50ml.
13. valerian tincture 30ml.
14. nashatir alcohol 25ml.
15. 3% hydrogen peroxide 100g.
16. pyramidone / amidopyrine / 20tab.
17. baking soda 200g.
18. 1% sesame tincture zelyonka 100ml.
19. table salt 200g.
20. unsterilized bandage 10pcs
21. sterilized bandage 10pcs
22. hygroscopic cotton 150g.
23. elastic band or binder 1pc
24. first aid personal packages 5pcs
25. airbag 2pcs
26. handkerchief 2pcs
27. 15cm leukoplastir 5dona
28. scissors 2pcs
29. medical glove 3 pairs
30. drug drip 10pcs
31. sterilized napkins 10pcs
32. mesh or wire thermometer 10 pcs

Pomegranate is a subtropical plant and is grown in many areas of Uzbekistan, including Andijan, Fergana, Namangan regions, Kuva, Kitab, Denau, Sarosiya districts. Pomegranates are planted on 85,000 hectares around the world, producing 800,000 tons of pomegranates a year. The results were based on the results of research conducted in some areas of the Fergana Valley, in particular, in the pomegranate orchards of the Pomegranate Farm of Kuva district and Said Ahmad ota farm in the Uzbek district.

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