

## BIOECOLOGY AND DEVELOPMENT CHARACTERISTICS OF MAIN PESTS OF STRAWBERRY

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### ABSTRACT:

Based on the achievements of advanced science and advanced experience in the cultivation of products from the population of the Republic of Uzbekistan, from year to year achieve high and high yields of rhizomes. But this is not at the level of demand for the harvest, because part of the crop is lost due to disease.

To date, about 4,000 varieties of strawberries have been created, which differ in morphological features, biological properties and uses.

Strawberry pests include, first of all, root-eating weevils, tailed calf head, gamma nightshade, root sap, as well as mucous worms. But there are also pests that adapt to this berry fruit plant. Examples are the strawberry leaf and the strawberry long nose.

**Keywords:** morphology, biology, damage, development, research.

### INTRODUCTION:

Berries are characterized by rapid fruiting. Strawberries have a special place among the fruit and berry plants grown in the gardens of Uzbekistan. Large-fruited strawberries are superior to many other fruit and berry plants. The fruits of this plant are very tasty and medicinal. As a dietary product, it is a valuable raw material in the canning and confectionery industry. Freshly picked berries are very tasty and fragrant, contain 4-11% sugar, 0.28-1.6% acids, 37-130 mg % vitamin C, easily digestible iron, phosphorus, potassium, calcium salts. , contains folic acid (vitamin B). As

a result of vitamin B deficiency, blood circulation in the human body is disrupted, anemia develops, which leads to the development of other diseases. When strawberries are ripe, we are saturated with vitamin V9 and our blood composition is significantly renewed. The physiological norm of consumption of strawberry fruit is not much, but the effect on the body is very large. It contains organic acids, sugars, mineral salts, additives, various vitamins and has a positive effect on human life.

Zenga-Zengana, Kulver, Dilbar, Muto, Tashkent, Schroeder, Uzbek varieties of strawberries are grown in Uzbekistan.

### MATERIALS AND METHODS:

Entomological calculations and observations were carried out by V.Yakhontov, G.Ya.Bey-Bienko, N.V.Bondarenko, A.A.Zakhvatkin, S.A.Murodov, O.T.Eshmatov; Density of pests is carried out on the basis of Sh.T.Khojaev's methods. The degree of damage of insects is determined by the method of VI Tansky. In laboratory and field experiments, biological efficacy is determined according to the V.S.Abbot formula, which takes into account the control option. The explanation for this formula is that the experiment is stopped when the natural extermination of pests in the control exceeds 30%. The obtained results are analyzed mathematically and statistically using the methods of K.Gar, B.A.Dospekhov and G.F.Lakin.

### RESULTS AND DISCUSSION:

**Galerucella tenella.** The leaf-eaters of the beetle family belong to the Chrysomelidae family. Distribution. Occurs in Kazakhstan and

Uzbekistan in the foothills of Tashkent region. Living life. Beetles hibernate in and around strawberry bushes under the remains of various plants. In the spring, waking up in April, it clings to the shoots of strawberries, biting the leaves. In the second or third decade of April begins to lay eggs: it lays mainly on the underside of 4–6 leaves. In years when the pest has multiplied, each plant lays 35-40 eggs. In the spring, after 10–12 days, the larvae emerge and begin to spread and feed on the plant. They damage the leaf skeleton. After 20–25 days, they fall to the ground and germinate, and after another 10–15 days, new joint beetles appear. It develops in Uzbekistan with 2 joints per year. Damage. Beetles and larvae eat the plant leaf and part of the fruit, leaving it out of normal development.



Figure 1. *Galerucella tenella* L.



**Anthonomus terreus.** The long-nosed beetle belongs to the family Curculionidae. The pest is distributed in the foothills of Kazakhstan from the Altai to the northern Tien Shan. In 1998, this insect struck the farms of Kibray and Bostanlyk districts of Tashkent region and seriously damaged the strawberry crop. Living life. The beetles hibernate among the hawks under the namatak plant in the foothills. When the beetles, awakened in April, are partially fed with the young shoots of namatak, they fly to the strawberry, and this plant begins to bite and damage the leaves and flowers. When the strawberries begin to sprout, they usually hatch and lay one egg in the gnawed hole next to each

comb (this happens in May-June). After closing the hole in which the egg is placed, the comb partially eats away the band. As a result, after 3-4 days, the comb dries and breaks. The larval period (inside the hive) lasts an average of 16 days, then after 4–7 days the fungus turns into a beetle and flies out. Young beetles are partially fed on strawberry leaves and fly to wintering grounds. It develops by giving one joint a year.



Figure 2. *Anthonomus terreus* Gyll.

**Tarsonemus pallidus.** It belongs to the class of arachnids, acariformes to the family Acariformes, and various claws to the family Tarsonemidae. Distribution. Common in the northern regions of Kazakhstan and Uzbekistan. Definition. The adult breed has an elongated-oval shape, whitish color, length 0.15-0.25 mm, has 4 pairs of legs. Living life. The female overwinters under the remains of various plants and in the leaf axils. In April, it wakes up with a strawberry plant. Soon the female lays 15–20 eggs one by one on the young leaves. The larvae feed by sucking and become nymphs and mature. In the northern districts of Tashkent region, strawberry cane develops 6-7 joints per season. Damage. The young leaves of the affected plants become undeveloped, the overall color of the plant changes, it becomes “stunted”. As a result, productivity decreases sharply.

**Aphis idaei.** Small insects up to 2.5 mm long. Located at the tips of the leaves and leaf stalks, raspberry juice forms large colonies. Flowers on

damaged buds are underdeveloped and often wither. Leaf raspberry juice does not form large colonies, unlike bud raspberry juice. They are found alone or in small groups on the underside of raspberry leaves. Eggs of raspberry leaf sap overwinter near the buds. Larvae appear during the budding stage. They settle on the young leaves of raspberries and cause damage by sucking. During the summer, shea gives several generations. In addition, according to scientists, by feeding strawberry seedlings increase the ability of plants to withstand flour-dew disease. for example, S.E. Ashurov (1990) concluded that the growth of plants fed with nitrogen and phosphorus mineral fertilizers on seedlings of autumn strawberries not only accelerates, but also leads to a delay of 5-7 days of plant disease with flour-dew disease. B.F Peresvenkin (1990), A.I. Dementeva (1991) and Y.S. Dvyako (1992) confirmed this idea through their experiments.



Figure 3. *Aphis idaei*.

**Agriolimax agrestis.** Infects strawberries and raspberries. It belongs to the class of mollusks or mollusks, the class of amphibians. There are many types. Two of these are revenge on field crops and flowers: field mucous worm-*Agriolimax agrestis* L. and nettle-worm-*A. Reticulatus* Mill. In addition to strawberries, both pests strongly damage cabbage, potatoes, carrots, beets, wheat and other crops. Mucous worms gnaw the leaves of the plant and leave a deep mark on the fruit. As a result, the fruits rot and the overall yield decreases. It feeds mainly

at night and hides under leaves and leaves during the day. Mucous worms multiply twice a year. They are in the form of eggs, the larvae and mature offspring of some of which gather and overwinter in saxaul, undergrowth and shelter. In the spring, as the day gradually warms up, the mucous worms begin to feed out of their nests. Low temperatures (6-15o) are the most acceptable. Mucous worms are moisture-loving creatures that congregate in thick grass and saxaul soils. Where it crawls, its shiny mark remains. In drought years, mucous worms decrease.



Figure 4. *Agriolimax agrestis* L

*Galerucella tenella* and *Agriolimax agrestis* occupy the highest level of pest control in strawberry crops, ie 43.7% *Galerucella tenella*, 39.8% *Agriolimax agrestis*, 19.2% strawberry *Anthonomus terreus*, 12.9% *Aphis idaei*, 10.3% *Tarsonemus pallidus*, while the remaining species accounted for 9.1% (Fig. 5).

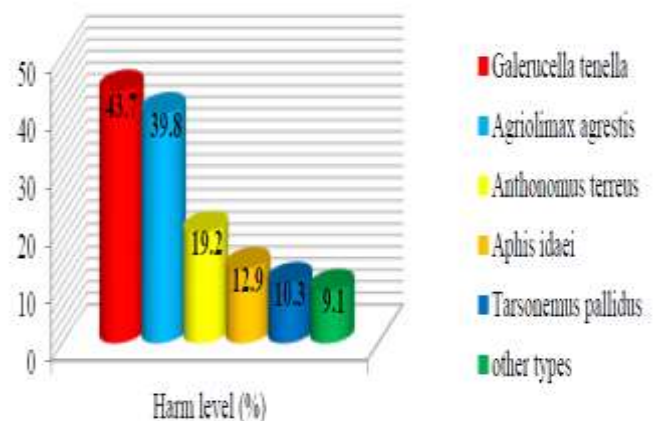


Figure 5. Level of damage of various pests in the strawberry crop (Tashkent region, 2020-2021).

Infection of *Galerucella tenella* was studied in the strawberry crop in spherical, isabella, victorian and black prince varieties. During the observations, 12.8% of the spherical variety, 10.1% of the isabella variety, 10.9% of the Victoria variety, and 9.7% of the black prince variety were studied to be infested by *Galerucella tenella* (Fig. 6).

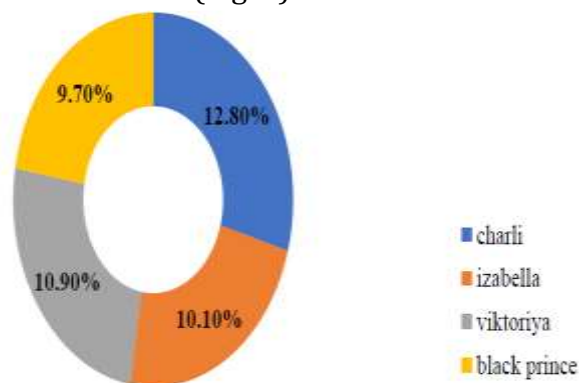


Figure 6. Infestation of varieties *Galerucella tenella* in strawberry crops (Tashkent region, 2020-2021).

#### CONCLUSION:

*Galerucella tenella* and *Agriolimax agrestis* occupy the highest level of pest control in strawberry crops, ie 43.7% *Galerucella tenella*, 39.8% *Agriolimax agrestis*, 19.2% strawberry *Anthonomus terreus*, 12.9% *Aphis idaei*, 10.3% *Tarsonemus pallidus*, while the remaining species accounted for 9.1%.

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