

Bioecology and Development of California Scale (Quadraspidotus Perniciosus Comst.) in Uzbekistan

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Annotation: It is widely used in Uzbekistan are common dangerous coccids. Among them is the quarantine pest Californian scale. It damages many plants. It damages apple, pear, plum, quince, peach, almond, hawthorn, elm, poplar and others. It overwinters diapausing first-stage larvae covered with a dark gray or black shield. In the spring, it feeds intensively, molts and forms a shield similar to that of an adult female. After the second molt, adult females are formed. After mating, the female gives birth to larvae-vagrants, which crawl along branches and leaves, and can also settle on fruits. It gives rise to the next generation.

Keywords: Female, male, larva, phase, cycle, molting.

Literature Review: California Scale *Quadraspidotus destructive Comst.* – one of the serious pests of fruit, greenhouse, ornamental crops, forests and parkland in Uzbekistan. In the republic, it is an object of internal quarantine. To date, the biology, ecology, harmfulness, distribution of the Californian scale insect and measures to combat it in the republic have not been sufficiently studied. The harmfulness of the Californian scale insect is very high [3].

In Uzbekistan, the pest most intensively reproduces on apple, quince, pear, plum, cherry plum, cherry, peach, apricot, walnut, willow, lilac and rose hips. During mass reproduction, the

Californian scale inhabits all above-ground parts of trees: trunks, branches, leaves and fruits. On the leaves, mainly male nymphs and larvae are found 1st and 2nd stages, all stages develop on the fruits. Small red spots form on the infested fruits as a result of scale insect feeding. Fruits infested at early stages acquire an ugly shape [4,5]. As a result of the Californian scale insect feeding, the growth and development of trees slows down, the annual growth and the number of growing shoots decrease; individual branches dry up, and young trees aged 2–5 years, heavily infested with scale insects, die completely. Observations have shown that the scale insect has a selective ability in relation to different varieties of apple and pear [1,2].



Figure 1. 1-year-old strays

Figure 2: Damage of California fruit borer on fruits

Purpose of the study: The pest in Uzbekistan develops in three generations. It overwinters in the larval stage 1st under a dense large black shield on the bark of tree trunks and branches. Overwintered larvae awaken in the spring at a temperature of ± 10 – 15°C with the onset of sap flow in plants. The pest population is significantly affected by climatic conditions. The air temperature of the winter and spring periods is a determining factor in the pest's life cycle, shifting the timing of the onset of stages in one direction or another within ± 8 – 12 days. In the conditions of the Tashkent region, the onset of molting of larvae 1st of the wintering generation occurs in the middle of the second decade of March at an average daily air temperature of ± 12 – 15°C . The bulk of the larvae 2nd turn into females at the beginning of the first ten days of April. They feed intensively, their body increases in size and mate at the beginning of the second ten days of April. In the middle of the third ten days of April, there is a mass flight of males.

A month after mating, at the beginning of the second ten days of May - until the middle of the first ten days of June, females give birth to larvae of 1st generation. By the beginning of the second decade of June, larvae of 1st are found in nature in large numbers. 1st and single larvae 2nd generation. The development of the second generation of scale insects begins in the first ten days of July. At the end of the second ten days of July, numerous colonies of larvae are noted on branches, leaves and fruits (apple, pear and plum) 1st of the second generation. In the third decade of July, the larvae move into the second age, and at the beginning of August they turn into females. Rebirth of larvae of the third generation of wanderers occurs at the end of the second decade of August and lasts until the end of the first decade of September. The beginning of the molt of larvae 1st is observed in the first decade of September and continues until the middle of the third decade of the month. Larvae 2nd turn into females at the end of the second decade of September. The flight of males occurs at the beginning of the third decade of September. At the beginning of the first decade in October, females begin to give birth to larvae, and it lasts until the end of the second decade of October. At the end of the first decade of November, larvae are found in large numbers in nature (on the leaves of apple and plum trees) 1st and 2nd stages, which then go into hibernation.

Results and conclusions: Thus, the development of the first generation of the pest lasts from the first ten days of April to the middle of the third ten days of June, the second generation - from the second ten days of June to the second ten days of August, the third generation - from the second

ten days of August to the end of the first ten days of November. The full development cycle of the first generation takes place within $\pm 43-53$ days, the second generation $\pm 42-45$ days and the third generation $\pm 66-82$ days. The fertility of females of the first generation is $\pm 75-95$, the second generation $\pm 125-155$, the third generation $\pm 110-130$ larvae of wanderers. It should be noted that the first and second, the second and third generations develop in parallel for a long time. Non-simultaneous rebirth larvae leads to overlapping development periods of different generations. In this regard, in the summer, simultaneous development of all stages of the scale insect is observed. Therefore, insecticides that destroy all stages of the pest can be effective during this period. The California scale insect spreads mainly with planting and grafting materials. In addition, the larvae of the wanderer can be carried by wind, water, birds, or disperse actively through nearby trees.

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