
BIOECOLOGY OF CALIFORNIA SHIELD (*DIASPIDIOTUS PERNICIOSUS* COMST.) IN UZBEKISTAN

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Abstract: Dangerous coccids are widespread in Uzbekistan. Of these, the californian shield insect is a quarantine pest. It damages many plants. It damages apple, pear, plum, quince, peach, almonds, hawthorn, elm, poplar and others. Diapausing larvae of the first age overwinter, covered with a dark gray or black shield. In spring, it feeds intensely, molts and forms a shield similar to that of an adult female. After the second molt, adult females are formed. After mating, the female spawns larvae of strollers, which spreads along branches and leaves, and can also settle on fruits. It gives rise to the next generation.

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

Introduction

California shield insect (*Diaspidiotus perniciosus* Comst.) - One of the serious pests of fruit, greenhouse, ornamental crops, forests and parklands in Uzbekistan. In the republic, it is subject to internal quarantine. To date, biology, ecology, harmfulness, the spread of California shield insects, and measures to combat it in the republic are not well understood. The harmfulness of California shield insects is very high [3].

Material and methods of research

In Uzbekistan, the pest most intensively propagates on apple, quince, pear, plum, cherry plum, cherry, peach, apricot, walnut, willow, lilac and rosehip. During mass reproduction, the Californian shield insects populate all the aerial parts of trees: boles, branches, leaves and fruits. On the leaves, mainly nymphs of males and larvae of the 1st and 2nd ages are found, on the fruits all stages develop. On populated fruits, small red spots form as a result of feeding on the insects. Fruits populated in the early stages acquire an ugly shape [4,5].

Due to the nutrition of California shield insects, the growth and development of trees slows down, annual growth and the number of growing shoots decrease; individual branches dry up, and young trees aged 2–5 years, heavily populated by a scab, die completely. Observations showed that the scabbard has a selective ability in relation to various varieties of apple and pear [1,2].

Research results and discussion

The pest in Uzbekistan is developing in three generations. Winters in the stage of 1st-instar larvae under a dense large black shield on the bark of tree trunks and branches. Wintered larvae awaken in spring at a temperature of $\pm 10\text{--}15^{\circ}\text{C}$ with the beginning of sap flow in plants. The pest population is significantly affected by climatic features. The air temperature of the winter and spring periods is a determining factor in the life cycle of the pest, shifting the timing of the onset of the stages in one direction or another within $\pm 8\text{--}12$ days. In the conditions of the Tashkent region, molting of 1st-instar larvae of the wintering generation begins in the middle of the second decade of March with an average daily temperature of $\pm 12\text{--}15^{\circ}\text{C}$. The bulk of larvae of the 2nd age turns into females at the beginning of the first decade of April. They eat intensely, their body grows in size and mates at the beginning of the second decade of April. In the middle of the third decade of April, a massive flight of males takes place. A month after mating, at the beginning of the second decade of May - until the middle of the first decade of June, females hatch the larvae of strollers. By the beginning of the second decade of June, larvae of the 1st age and single larvae of the 2nd age are found in mass in nature. The development of the second generation of shield insects begins in the first decade of July. At the end of the second decade of July, numerous colonies of larvae of the first age of the second generation are observed on branches, leaves and fruits (apple, pear and plum). In the third decade of July, the larvae pass into the 2nd age, and in early August turn into females. Hatching of larvae of vagrants of the third generation occurs at the end of the second decade of August and lasts until the end of the first decade of September. The beginning of molting of larvae of the 1st age is observed in the first decade of September and lasts until the middle of the third decade of the month. Larvae of the 2nd age turn into females at the end of the second decade of September. The flight of males takes place at the beginning of the third decade of September. At the beginning of the first decade of October, females begin to hatch larvae, and it lasts until the end of the second decade of October. At

the end of the first decade of November in nature (on the leaves of apple and plum), larvae of the 1st and 2nd ages are found in mass, which subsequently go to winter.



Female III age

Conclusion

Thus, the development of the 1st generation of the pest lasts from the 1st decade of April to the middle of the 3rd decade of June, the 2nd generation - from the 2nd decade of June to the 2nd decade of August, the 3rd generation - from the 2nd decade of August to the end of the 1st decade of November. The full cycle of development 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 strollers. It should be noted that I and II, II and III generations have been developing in parallel for a long time. The simultaneous hatching of larvae leads to an imposition of developmental periods for different generations. In connection with this summer, the simultaneous development of all stages of shield insects is observed. Therefore, during this period, insecticides that destroy all stages of the pest can be effective. California shield insects are distributed mainly with planting and grafting materials. In addition, stroller larvae can be carried by wind, water, birds, or actively spread through nearby trees.

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