

UDC 632.9  
AGRIS H01

<https://doi.org/10.33619/2414-2948/90/22>

## ***Malus* PESTS AND DISEASES**

©**Muminova R.**, Tashkent State Agrarian University,  
Tashkent, Uzbekistan, [rano.muminova@tdau.uz](mailto:rano.muminova@tdau.uz)

## **ВРЕДИТЕЛИ И БОЛЕЗНИ ЯБЛОНИ**

©**Муминова Р.**, Ташкентский государственный аграрный университет,  
г. Ташкент, Узбекистан, [rano.muminova@tdau.uz](mailto:rano.muminova@tdau.uz)

*Abstract.* The *Malus* is a deciduous tree of the Rosaceae family, which is actively used in horticulture. In order to maintain healthy, productive trees and fruits, it is necessary to know what pests and control measures exist. The paper presents a review of modern literature on the means and methods of combating diseases and pests of the apple tree. In conclusion, practical conclusions are given about the most effective methods of struggle.

*Аннотация.* Яблоня — лиственное дерево семейства розоцветных, которое активно используется в садоводстве. С целью сохранения здоровых, продуктивных деревьев и плодов, необходимо знать, какие вредители и меры борьбы с ними существует. В работе представлен обзор современной литературы по средствам и методам борьбы с болезнями и вредителями яблони. В заключении даются практические выводы о наиболее эффективных методах борьбы.

*Keywords:* *Cydia pomonella*, Tetranychidae, *Eriosoma lanigerum*, Buprestidae.

*Ключевые слова:* яблонная плодожорка, паутинные клещи, шерстистая яблонея тля, златки.

The *Malus* is a deciduous tree of the Rosaceae. It can take 6 to 10 years to develop and start bearing fruit, and small to medium-sized trees can grow to a height of 5 to 10 meters. To maintain healthy, productive trees and fruit, producers should recognize what pests to look for, understand pest biology, use appropriate preventive measures, and apply timely controls when needed. Weed control is essential to keep newly planted trees from competing with weeds, and mowing is sufficient for controlling ground cover plants. The percentage of flawless fruit you want will determine whether and how to spray apple trees for disease and insect pests. The most common apple disease is apple scab, which can be prevented by starting protection when buds open and green tissue emerges, renewing protection every seven days or every two inches of rain until about two weeks after the flower petals fall. Multifunctional home fruit tree spray products are a great option for backyard apple trees, as they make it easier to combine spray solutions. However, it is not recommended to use the spray during the tree's bloom, when honeybees and other pollinators are present. Apple maggot, codling moth, and plum curculio are the principal fruit-damaging insects, and multipurpose spray up until bloom, with a spray just before blossoms open, and then returning with a spray soon after the blossoms fall, will give sufficient control for a backyard apple tree.

Control of the major insect pests of apples for commercial production sometimes involves



timely insecticide applications. Unlike some crop pests, pests of apples can be very elusive, and damage can often occur without individual pests being seen [1]. To maintain healthy, productive trees and fruit, producers should recognize what pests to look for, understand pest biology, use appropriate preventive measures, and apply timely controls when needed. The apple tree is a deciduous tree of the Rosaceae family that is planted for its apples. One of the most popularly grown fruits worldwide is the apple. It can take an apple tree 6 to 10 years to develop and start bearing fruit once it is planted from a seed. Small to medium-sized trees, apple trees can grow to a height of 5 to 10 meters. They have a central trunk that splits into multiple branches. Oval in shape, apple tree leaves can grow up to 13 cm (5.1 in) long and 7 cm wide.

Apples are a delightful fruit that, regrettably, do not only draw people. To lay their eggs and feed, aphids, maggots, beetles, leafhoppers, mites, and thrips attack the apple tree. These pests all have the trait of laying their eggs in various locations on the tree or the fruit, which results in spots or holes on the fruit, fruit drop, and leaf damage. They are capable of skeletonization, defoliation, and plant leaf bending and yellowing. Let's now discuss the specific illnesses, pests, and remedies for controlling them that affect apple trees [2-4].

To keep newly planted trees from competing with weeds, weed control is essential. After the trees are established, mowing is sufficient for controlling ground cover plants in a home orchard. It is not advisable to keep the soil surrounding an apple tree's base bare since ground cover insulates the area from cold winter soil temperatures [5].

What percentage of flawless fruit you want will determine whether and how to spray apple trees for disease and insect pests. More than ten feet tall trees make spraying physically demanding and time-consuming. The most typical apple disease is apple scab. It's extremely possible that an apple tree will be susceptible to scab unless you are certain that it is a scab-resistant variety. The cultivar is either scab-resistant or fortunate to have an extraordinarily low inoculum of scab in the area if the tree was left unprotected the previous year and did not develop brown patches, dead leaves, or rough corky marks on the apples. Starting protection when buds open and green tissue emerges (late April to early May in the majority of Maine) and renewing protection every seven days or every two inches of rain until about two weeks after the flower petals fall are necessary for susceptible varieties to achieve high levels of scab control. Mid-June arrives two weeks after petal fall in central Maine [6].

For backyard apple trees, multifunctional home fruit tree spray products are a fantastic option because they make it easier to combine spray solutions rather than having to deal with various fungicides and insecticides that must be bought separately and in concentrate form. The packing size is also suitable. It is advisable to only purchase what will be utilized this growing season and start new each year, even though the majority of goods may be stored over the winter if kept unfrozen, cool, and dry (for powder formulations) [7].

Due to the fact that the multifunctional treatments contain both an insecticide and a fungicide, it is not recommended to use the spray during the tree's bloom, when honeybees and other pollinators are present. While applications performed after dusk, when bee activity slows for the day, are less harmful, it is preferable to completely avoid applying the product while the tree's open blossoms are present. If perfection is not the goal, using multipurpose spray up until bloom, with a spray just before blossoms open, and then returning with a spray soon after the blossoms fall, will give sufficient control for a backyard apple tree [8].

Apple maggot, codling moth, and plum curculio are the principal fruit-damaging insects. Reduce damage from codling moth and plum curculio by using a home fruit spray product that contains an insecticide when 95+% of the apple blossoms fall off the tree and again around ten days

later. These two sprays also lessen damage from leafrollers, round headed apple tree borer, and European apple sawfly. Spraying the trunk should be done in addition to treating the foliage for the management of borer.

For protection against apple maggot, a second treatment of a multipurpose spray product is typically not necessary until mid-July. The second-generation codling moth and apple maggot are often controlled with one of two further applications at two-week intervals beginning (i. e. repeat sprays on July 30 and August 15). Early harvested cultivars may not require a final spray in mid-late August, but cultivars harvested later may need one (i. e. those that ripen in late September and October). The sooty blotch and flyspeck fungus, which stain fruit, are less likely to develop on late cultivars as a result of the late spray.

Surround can also keep apple maggot flies away from apples, but if you use it that late in the summer, the fruit will still have clay power residue on it when it comes time to harvest. Bt does not function against apple maggots, and Pyganic, an insecticide containing pyrethrin, degrades too quickly to provide sustained control. Entrust is a powerful organic insecticide for apple maggot, but a one-pound box of it costs hundreds of dollars and is more than most home orchards will ever require. Several home spray products contain Spinosad, the active ingredient in Entrust, however those products can also contain other substances that prevent them from being certified organic [9].

When people spray their trees with the proper product at the appropriate times, the biggest issue that results in pest control failures is not applying enough water to deliver the proper amount of insecticide. For multipurpose fruit tree pesticide treatments, the mixing directions are based on spraying the tree to run-off, that is, until the leaves are saturated with water and adding more water would only cause a run-off. This type of spray is known as “dilute”. The goal is to spray just enough water to reach the “run-off” point when any additional water would just run off the tree. There won’t be enough fungicide and insecticide in the spray if it is only misted on, which won’t provide the appropriate level of protection.

*Codling Moth* (*Cydia pomonella* (Linnaeus, 1758)). The adults of the typical “worms” that infest apples are called codling moths (Figure 1). These moths lay their eggs on or close to maturing fruits as they emerge from their wintering locations in the spring. From early spring through late summer, there are up to three generations per season [10].



Figure 1. Codling moth and spider mites



Figure 2. Woolly apple aphid and flatheaded borers

*Spider mites* (Tetranychidae). These tiny arthropods known as mites are more closely related to ticks than to other insects (Figure 1). Spider mites are adults that overwinter at the foot of trees or in ground cover. In the middle and late summer, when the weather is hot and dry, they can become a nuisance because they reproduce quickly. They strip leaves of their sap and chlorophyll, giving them a stippling appearance.

*Woolly apple aphid* (*Eriosoma lanigerum* (Hausmann, 1802)). The woolly apple aphid spends the winter on roots and in the canopy's protected regions (Figure 2). They emerge from the roots as the temperature warms, and colonies in the canopy begin to expand. Late in June, sticky, cottony colonies at the base of leaves, on old pruning cuts, or in cracks and crevices are the first signs of them. Galls are produced by their nibbling on twigs and roots (shown lower right). Most aphids that overwinter in the tree canopy will die during really cold winters.

*Flatheaded borers* (Buprestidae). Beetles with flat heads, like the one on the right, are typically only an issue on apples that are under stress from drought or when pest populations are high (Figure 2). The larvae of the beetle can damage limbs and trees and girdle trunks. Throughout June and July, mature beetles are active.

#### References:

1. Witzgall, P., Stelinski, L., Gut, L., & Thomson, D. (2008). Codling moth management and chemical ecology. *Annu. Rev. Entomol.*, 53, 503-522. <https://doi.org/10.1146/annurev.ento.53.103106.093323>
2. Kadoić Balaško, M., Bažok, R., Mikac, K. M., Lemic, D., & Pajač Živković, I. (2020). Pest management challenges and control practices in codling moth: A review. *Insects*, 11(1), 38. <https://doi.org/10.3390/insects11010038>
3. Migeon, A., Nouguiet, E., & Dorkeld, F. (2010). Spider Mites Web: a comprehensive database for the Tetranychidae. In *Trends in acarology: Proceedings of the 12th international congress* (pp. 557-560). Springer Netherlands. [https://doi.org/10.1007/978-90-481-9837-5\\_96](https://doi.org/10.1007/978-90-481-9837-5_96)
4. Pallini, A., Janssen, A., & Sabelis, M. W. (1999). Spider mites avoid plants with predators. *Experimental & applied acarology*, 23, 803-815. <https://doi.org/10.1023/A:1006266232714>
5. Beers, E. H., Cockfield, S. D., & Fazio, G. (2007). Biology and management of woolly

apple aphid, *Eriosoma lanigerum* (Hausmann), in Washington state. *IOBC WPRS BULLETIN*, 30(4), 37.

6. Gontijo, L. M., Cockfield, S. D., & Beers, E. H. (2012). Natural enemies of woolly apple aphid (Hemiptera: Aphididae) in Washington State. *Environmental entomology*, 41(6), 1364-1371. <https://doi.org/10.1603/EN12085>

7. Gindin, G., Kuznetsova, T., Protasov, A., Yehuda, S. B., & Mendel, Z. (2009). Artificial diet for two flat-headed borers, *Capnodis* spp.(Coleoptera: Buprestidae). *European Journal of Entomology*, 106(4), 573.

8. Tirkey, P., Chandrashekharaiyah, M., Rathore, M. S., Singh, R. K., Sinha, R. B., & Sahay, A. (2019). Studies on level of infestation of flat headed borer and bark eating caterpillar on terminaliaarjuna and their management using insecticides. *Int. J. Curr. Microbiol. App. Sci*, 8(1), 598-605. <https://doi.org/10.20546/ijcmas.2019.801.067>

9. Morton, A., & Garcia-del-Pino, F. (2009). Virulence of entomopathogenic nematodes to different stages of the flatheaded root borer, *Capnodis tenebrionis* (L.)(Coleoptera: Buprestidae). *Nematology*, 11(3), 365-373. <https://doi.org/10.1163/156854109X446962>

10. McGraw, B. A., & Koppenhöfer, A. M. (2008). Evaluation of two endemic and five commercial entomopathogenic nematode species (Rhabditida: Heterorhabditidae and Steinernematidae) against annual bluegrass weevil (Coleoptera: Curculionidae) larvae and adults. *Biological control*, 46(3), 467-475. <https://doi.org/10.1016/j.biocontrol.2008.03.012>

#### Список литературы:

1. Witzgall P., Stelinski L., Gut L., Thomson D. Codling moth management and chemical ecology // *Annu. Rev. Entomol.* 2008. V. 53. P. 503-522. <https://doi.org/10.1146/annurev.ento.53.103106.093323>

2. Kadoić Balaško M., Bažok R., Mikac K. M., Lemic D., Pajač Živković I. Pest management challenges and control practices in codling moth: A review // *Insects*. 2020. V. 11. №1. P. 38. <https://doi.org/10.3390/insects11010038>

3. Migeon A., Nouguiet E., Dorkeld F. Spider Mites Web: a comprehensive database for the Tetranychidae // *Trends in acarology: Proceedings of the 12th international congress*. Springer Netherlands, 2010. P. 557-560. [https://doi.org/10.1007/978-90-481-9837-5\\_96](https://doi.org/10.1007/978-90-481-9837-5_96)

4. Pallini A., Janssen A., Sabelis M. W. Spider mites avoid plants with predators // *Experimental & applied acarology*. 1999. V. 23. P. 803-815. <https://doi.org/10.1023/A:1006266232714>

5. Beers E. H., Cockfield S. D., Fazio G. Biology and management of woolly apple aphid, *Eriosoma lanigerum* (Hausmann), in Washington state // *IOBC WPRS BULLETIN*. 2007. V. 30. №4. P. 37.

6. Gontijo L. M., Cockfield S. D., Beers E. H. Natural enemies of woolly apple aphid (Hemiptera: Aphididae) in Washington State // *Environmental entomology*. 2012. V. 41. №6. P. 1364-1371. <https://doi.org/10.1603/EN12085>

7. Gindin G., Kuznetsova T., Protasov A., Yehuda S. B., Mendel Z. Artificial diet for two flat-headed borers, *Capnodis* spp.(Coleoptera: Buprestidae) // *European Journal of Entomology*. 2009. V. 106. №4. P. 573.

8. Tirkey P., Chandrashekharaiyah M., Rathore M. S., Singh R. K., Sinha R. B., Sahay A. Studies on level of infestation of flat headed borer and bark eating caterpillar on terminaliaarjuna and their management using insecticides // *Int. J. Curr. Microbiol. App. Sci*. 2019. V. 8. №1. P. 598-605. <https://doi.org/10.20546/ijcmas.2019.801.067>

9. Morton A., Garcia-del-Pino F. Virulence of entomopathogenic nematodes to different stages of the flatheaded root borer, *Capnodis tenebrionis* (L.)(Coleoptera: Buprestidae) // *Nematology*. 2009. V. 11. №3. P. 365-373. <https://doi.org/10.1163/156854109X446962>

10. McGraw B. A., Koppenhöfer A. M. Evaluation of two endemic and five commercial entomopathogenic nematode species (Rhabditida: Heterorhabditidae and Steinernematidae) against annual bluegrass weevil (Coleoptera: Curculionidae) larvae and adults // *Biological control*. 2008. V. 46. №3. P. 467-475. <https://doi.org/10.1016/j.biocontrol.2008.03.012>

Работа поступила  
в редакцию 30.03.2023 г.

Принята к публикации  
07.04.2023 г.

---

Ссылка для цитирования:

Muminova R. *Malus* Pests and Diseases // Бюллетень науки и практики. 2023. Т. 9. №5. С. 175-180. <https://doi.org/10.33619/2414-2948/90/22>

Cite as (APA):

Muminova, R. (2023). *Malus* Pests and Diseases. *Bulletin of Science and Practice*, 9(5), 175-180. <https://doi.org/10.33619/2414-2948/90/22>