

INSECT PESTS OF MENTHOL MINT

Sandeep K*, Manoj Kumar and Shashank D U

*Dr. Rajendra Prasad Central Agricultural University, Pusa – 848125, Bihar, India

*Corresponding author: sandeep158k@gmail.com

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Introduction

Menthol Mint (*Mentha arvensis*) is a medicinal and aromatic herb renowned for its high menthol content (75-80%), is extensively cultivated in northern India, serving as a crucial source of menthol for various industries, cultivated on approximately 60,000 hectares in India, yielding around 12,000 tonnes of mint oil and accounting for 75% of the country's menthol mint production. Its economic significance lies in its extensive application across pharmaceuticals, cosmetics, and food industries, with a preference for natural over synthetic menthol. Effective management of insect pests such as Aphid Cutworm, Tobacco caterpillar, Mealy bug, red pumpkin beetle, and mint flea beetle is crucial for maintaining crop quality and yield. Strategies including pesticide use, crop rotation, intensive scouting, and non-chemical measures are essential to ensure high-quality mint oil production (Srivastava et al., 2002; Kedar et al., 2023).

Major Insect Pests of Menthol Mint

1. Aphids: *Myzus persicae*

Myzus persicae, commonly known as the green peach aphid, greenfly, or peach-potato aphid, is a small, highly polyphagous aphid belonging to the order Hemiptera. This species, which ranges in color from green to pale yellow and pink, is typically found on the underside of leaves and can disperse to neighboring plants when crowded. It has a complex life cycle, overwintering on plants like peach or nectarines and migrating to summer hosts such as peas, sugar beet, and brassicas (Capinera, 2005). *Myzus persicae* causes significant damage to mint crops by feeding on plant juices, leading to decreased growth, leaf shriveling, and tissue death. At high densities, these aphids cause leaves and plants to wilt, turn yellow, and deform, resulting in premature leaf senescence and stunted growth. Indirectly, they contaminate fresh products with honeydew and sooty mold, compromising the health and

quality of the mint crop. Additionally, as vectors of over 100 plant viruses, green peach aphids further emphasize the necessity of effective pest management to protect mint crops and ensure high-quality yields (Al-Antary and Belghasem, 2017).

2. *Cutworms: Agrotis spp.*

Cutworms, specifically *Agrotis spp.*, are noctuid moth larvae that pose a significant threat to mint crops due to their destructive feeding behavior. These caterpillars, which are typically grey, green, or brown with longitudinal stripes, cut through plant stems at or just below ground level, leading to severe crop damage and loss. Measuring 4-5 cm in length, cutworms are active at night and curl into a 'C' shape when disturbed. They live in the top few centimeters of soil, feeding on developing plants, roots, and tubers. Symptoms of cutworm damage include plants cut off at the soil surface, lower foliage with ragged holes, and severed stems, resulting in wilted plants and reduced stands. The severity of damage is influenced by the growth stage of the mint plants and the amount of foliage present, making the management of these pests essential for maintaining the health, yield, and quality of mint crops (Jorgensen, 1978; Mehta *et al.*, 2022).

3. *Tobacco caterpillar: Spodoptera litura*

Tobacco caterpillar, is a major pest in Asia, affecting over 120 plant species including lettuce, cabbage, cotton, and tomatoes. Adult moths, measuring 15-20 mm, have gray to reddish-brown forewings and grayish-white hind wings, while the larvae are bright yellow with green stripes, turning brown as they mature (Sharma, 2022). In mint crops, infestations can be severe, causing skeletonization of leaves and feeding holes in roots, making the crop nearly unmarketable. The caterpillar's voracious feeding habits significantly damage mint plants, impacting their growth, development, and overall health (Zhou, 2009).

4. *Mealy bug: Planococcus citri*

The citrus mealybug is a highly polyphagous insect pest that significantly threatens various plants, including mint crops. Adult citrus mealybugs, measuring approximately 3mm in length, possess soft bodies and piercing, sucking mouthparts used to extract plant juices, often congregating on plant parts. Their feeding activity results in wilting, stunted growth, deformation, and leaf yellowing, adversely affecting the overall health and productivity of mint plants. They excrete excess sugars as honeydew, promoting the growth of dark sooty molds like *Cladosporium spp.*, which further damage the plants. Identification of *P. citri* involves features such as anal filaments less than one-eighth the body length and irregular egg masses beneath the female's body (Rajagopal and Gowda, 2000; Rao *et al.*, 2006).

5. Flea beetle: *Longitarsus ferrugineus*

The Flea beetle, a prominent pest of mint crops, is characterized by its small size and tan or bronze color, making it difficult to detect within the plant canopy. Adult beetles emerge in early July, feed briefly, and lay overwintering eggs at the plant base. These eggs hatch in spring, with larvae feeding on the roots and main underground stem, causing damage evident in spring. This leads to stunted growth, red discoloration, and localized plant death due to larval tunneling. Flea beetles create small, irregular holes in leaves and stems, reducing plant vigor and causing aesthetic damage. Larval feeding on roots further stresses the plants, leading to yield loss (Weller *et al.*, 2000; Bukejs, 2010).

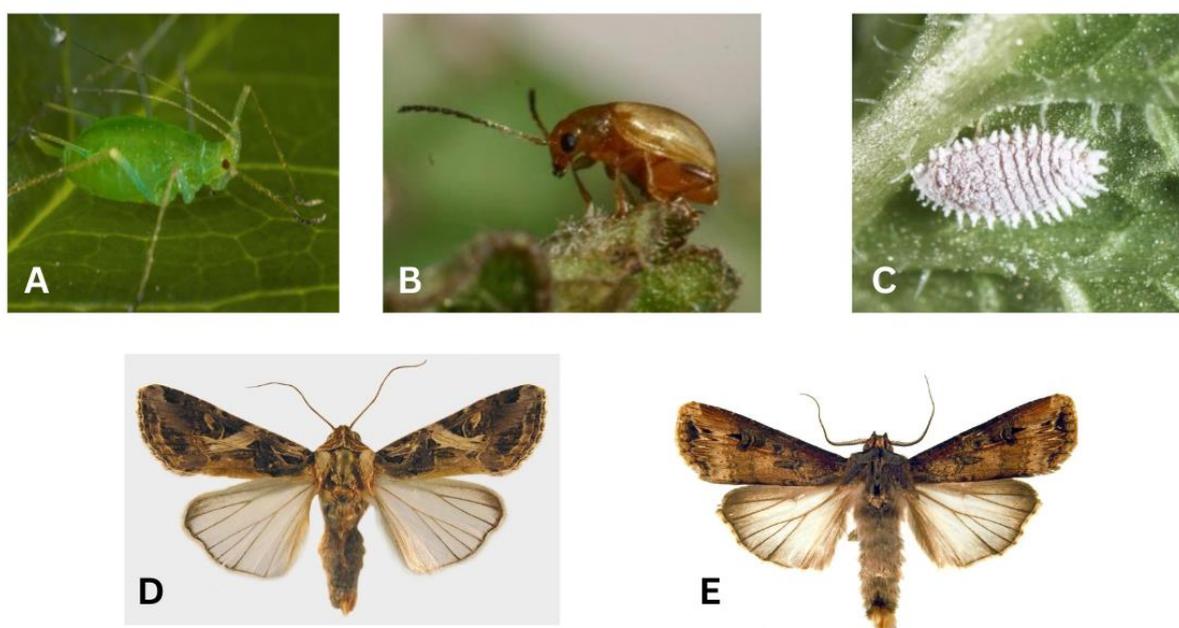


Fig 1: Insect pests of menthol mint; A. *Myzus persicae* (Source: David Cappaert, Bugwood.org), B. *Longitarsus ferrugineus* (Source: Eric Coombs, Oregon Department of Agriculture, Bugwood.org), C. *Planococcus citri* (Source: Charles Olsen, Charles Olsen Insect Collection, USDA APHIS PPQ, Bugwood.org), D. *Spodoptera litura* (Source: Natasha Wright, Braman Termite & Pest Elimination, Bugwood.org) E. *Agrotis spp.* (Source: Robert J. Bauernfeind, Kansas State University, Bugwood.org).

Conclusion

Insect pests pose a significant threat to menthol mint cultivation, impacting crop quality and yield. Common pests include aphids, mint bud mites, cutworms, tobacco caterpillars, citrus mealybugs, and flea beetles. These pests can cause wilting, yellowing, stunted growth, and yield losses. Effective pest management strategies, such as pesticide use, crop rotation, and intensive scouting, are crucial for protecting menthol mint crops and

ensuring high-quality yields. Integrated Pest Management (IPM) plays a pivotal role in safeguarding the Menthol mint from the detrimental impact of insect pests, particularly due to the high economic significance of mint oil derived from this herb.

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