



Integrated Pest and Pollinators Management-IPPM

Avocado Pests and Diseases and their Management



BMZ



Federal Ministry
for Economic Cooperation
and Development



Avocado Pests and Diseases and their Management

Avocado, *Persea americana* (Lauraceae), is a tree native to South America. Avocado trees flourish in tropical climates. The fruits have a green-skinned, fleshy body that may be pear-shaped, egg-shaped, or spherical.



Figure 1: Healthy avocado tree and sliced fruits

Avocado is affected by numerous pests and diseases. The following are common pests in avocado.



Figure 2: Spider mites

Spider mites

Spider mites cause brown spots covered by dense webbing on leaves and fruits. They increase leaf fall.

Management and control

Proper pruning is necessary to maintain control of spider mites. Wash the leaves with water using high-pressure hoses to reduce the populations. Irrigate and fertilize infested trees adequately to maintain the flush of new growth that occurs after leaf shedding due to spider mite attacks. Cut off the infested branches immediately.

Avocado insect borers

Borers tunnel into avocado trees, where they lay eggs. This causes branches to weaken and fall off.



Figure 3: Scales

Scales

Scales are small, stationary, brown, greenish insects which suck sap from avocado leaves. They do not cause internal damage, but may lead to rejection of fruit, especially if grown for export.

Management and control

Conserving natural enemies such as parasitic wasps and ladybirds is of importance in reducing populations of scales.



Figure 4: Fruit fly

Fruit flies

Fruit flies lay eggs under the skin of ripe, old and young fruit. When the developing fruit grows, a lesion appears as a slight puncture mark surrounded by a white substance. As the fruit develops, the lesion becomes dry and turns into a distinct star-shaped crack on the skin surface.

Management and control

Field sanitation, pest monitoring, mass release of parasitoids and predators, soil drenching with biopesticides, male annihilation, and foliar spraying with protein-based baits (applied baits) help to control fruit flies.



Figure 5: Bait station for fruit fly control



Figure 6: Fruit fly block



Figure 7: Biopesticide



Figure 8: Stink bugs

Bugs (coconut bugs, lace bugs, stink bugs)

Coconut bugs cause necrotic bruise-like depressions resulting in a hard lump in the fruit. Lace bugs cause leaf damage. Stink bugs puncture the fruit, causing local necrosis, which eventually results in fruit spotting and deformation.

Management and control

Farmers are advised to conserve natural enemies such as weaver ants for the management of bugs.



Figure 9: Thrips

Thrips

Thrips cause scars on fruit, making them develop a leathery brown skin. They may also cause damage to the leaves. The affected parts become whitish or silvery and covered by dark-coloured droppings.

Management and control

Organic mulch is recommended to discourage the survival of thrips. Conserving natural enemies may also help.



Figure 10: False codling moth

False codling moths

Female moths lay eggs on the skin of avocado fruit. Larvae gnaw through the fruit skin, producing lesions, and exit days afterwards to pupate in the soil. The fruit produces a white exudate (frass) after the larvae exit.

Management and control

Delta-shaped traps, soil drenching with biopesticides, and sex-pheromone bait stations help to control codling moths. Sprays of *Bacillus thuringiensis* are very effective and conserving natural enemies also helps.



Figure 11: Ladybird (predator)



Figure 12: Parasitoid (*Cotesia plutellae*)



Figure 13: Last call FCM (attract & kill technique)



Figure 14: Use of delta traps for false codling moth monitoring



Figure 15: Use of traps for fruitfly monitoring



Figure 16: Biopesticide

The following are common avocado diseases.

A. Fungal diseases



Figure 17: Avocado root rot

Avocado root rot

This is the most common and most serious avocado disease, causing pale, wilted leaves and very small fruit. The disease, which is caused by the fungal pathogen *Phytophthora cinnamomi*, thrives in moist, poorly drained areas.

Management and control

Measures such as hot water treatment of seeds and grafting can help prevent avocado root rot.



Figure 18: Scab

Scab

This disease is caused by *Sphaceloma perseae* fungus and attacks fruit, twigs and leaves. The symptoms are oval or irregular spots on the fruits. Poor drainage causes the disease to spread.

Management and control

Remove dead branches, twigs, as well as fallen rotten fruit from the field. Apply copper-based fungicides pre-flowering, at fruit formation, and after harvest.



Figure 19: Anthracnose

Anthracnose

This is caused by the pathogen *Colletotrichum gloeosporioides*, which affects the fruit, flowers and leaves, leaving dark spots and defoliation.

Management and control

Pruning the dead branches before fungi produce spores and maintaining the correct conditions for the harvested fruits controls anthracnose.

Avocado black streak: This tree infection causes black streaks on the bark. The disease can be prevented by adhering to proper fertilization and irrigation practices.



Figure 20: *Cercospora* fruit spot

Cercospora fruit spot

Pseudocercospora purpurea fungi affects fruit, leaving small, light yellow spots that eventually turn brown.

Management and control

This disease mainly occurs with poor sanitation. Field/orchard sanitization will help control it.

B. Viral diseases



Figure 21: Algal leaf stain

Algal leaf stain

This is caused by the virus *Cephalosporium virescens* which affects the trees and red spots are visible on the leaves, twigs and branches.

Management and control

Correct weeding and pruning.



Figure 22: Sunblotch

Sunblotch

This is a serious condition as once contracted, it cannot be cured. It causes stunted growth, discolouration of fruit and leaves, and reduced yields.

Management and control

Proper sanitation is key. In addition, since sunblotch can be transmitted via grafting, farmers must ensure that they purchase certified seedlings.

C. Bacterial diseases

Bacterial soft rot

This causes a dark, stinking rot on the fruit.

Management and control

Once contracted, the disease cannot be cured. For this reason, farmers must buy seeds that have been certified and maintain a high level of sanitation in all agricultural procedures.

Wilts and blights

Wilts and blights are characterized by dead areas in trees, especially when only a part of the tree is affected. Wilts cause sudden wilting of leaves and death in branches.

Management and control

Pruning the symptomatic tissues from trees and providing good support can help your avocado tree recover.

IPPM Project partners



Kenya Agricultural & livestock Research Organization

Kaptagat Rd, Loresho Nairobi Kenya

Email: info@kalro.org

Tel: +254 722 206 986

Contact person:

Dr. Muo Kasina, Center director/Insect Bioresources

Email: muo.kasina@kalro.org

Tel: +254 073 819 9323 / 072 337 5984



Tropical Pesticides and Research Institute

Nairobi Rd, Ngaramtoni Area, Tanzania

Tel: +255 272970467

Email: dg@tpri.go.tz

Contact person:

Dr. Benignus Ngowi

Email: benastras_x@yahoo.com

Tel: +255 754 399 000



Kingfisher Farm, Moi South lake Road, Naivasha, Kenya
Email: info@dudutech.com
Tel: +254 704 491120



Sany Godowns, Kasarani Mwiki Rd, New Njiru Town
Email: info@farmtrack.co.ke
Tel: +254 71 149 5522



Nyeri Road, Kambiti, A2, Thika
Tel: 071 308 8557 / +254 713 088 557



Apex Business Park, Unit 6, Mombasa Road, Nairobi
Email: info@koppert.co.ke
Tel: +254 731 202191



Thika-Gatura Road, Thika
Email: sales@realipm.com
Tel: +254 725 806086

icipe – Working in Africa for Africa...

International Centre of Insect Physiology and Ecology (*icipe*) – was established in 1970 in direct response to the need for alternative and environmentally-friendly pest and vector management strategies. Headquartered in Nairobi, Kenya, *icipe* is mandated to conduct research and develop methods that are effective, selective, non-polluting, non-resistance inducing, and which are affordable to resource-limited rural and urban communities. *icipe*'s mandate further extends to the conservation and utilisation of the rich insect biodiversity found in Africa.

icipe contributes to sustainable food security in Africa through the development of integrated pest management systems for major agricultural and horticultural crops. Such strategies include biological control and use of behaviour-modifying and arthropod-active botanicals. *icipe* puts emphasis on control approaches that have no detrimental impact on the environment. These options are always designed to fit the needs of the farmers and are developed on-farm and with farmers' participation. In addition to fruit flies, other key areas of *icipe*'s research include pests of tomato, brassicas, beans, and staple food crops such as maize and sorghum.

For more information on this topic, please contact *icipe*, IPPM project:

Dr. Saliou Niassy (sniassy@icipe.org) | Dr. Thomas Dubois (tdubois@icipe.org) | Dr. Samira Mohamed (sfaris@icipe.org) | Dr. Michael Lattorff (mlattorff@icipe.org)

Contributors: Dr. Saliou Niassy, Beritah Mutune, Isaac Mbeche, Vicky Koech and Mkiga Abdullah Mohamed

Photo credits: Nadia K. Toukem and Joseph Ambaja

Acknowledgement: We gratefully acknowledge the financial and technical support of our core donors: Swiss Agency for Development and Cooperation (SDC), Switzerland; Swedish International Development Cooperation Agency (Sida), Sweden; UK Aid, Government of the United Kingdom; Ministry of Higher Education, Science and Technology, Kenya; and Government of the Federal Democratic Republic of Ethiopia.



International Centre of Insect Physiology and Ecology (*icipe*)

PO Box 30772-00100 Nairobi, Kenya
Email: icipe@icipe.org | Website: www.icipe.org
Technology Transfer Unit:
ttucrow@icipe.org | <https://technologytransfer.icipe.org>
Support *icipe*: www.icipe.org/support-icipe