



Banana weevil

Cosmopolites sordidus



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Damage caused by banana weevil.



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Adult banana weevil.

SUMMARY: The banana weevil is a serious pest to bananas worldwide. A combination of clean planting material, destruction of crop residues and neem can be used to reduce weevil populations; however, movement of banana weevils from neighbouring farms can reduce the efficacy of any management options.

KEY SIGNS

The banana weevil is a major pest that attacks all varieties of bananas and plantains (*Musa* spp.) as well as ensete (*Ensete* spp.).

Adult weevils are about 10-16 mm long and are black or dark brown in colour. Adult weevils are commonly found in the soil around the base of the plant, between leaf sheaths and under plant debris and mats. Adults have a long life (about two years) and can survive for long periods of time without food. The adults are most active at night and have the ability to fly, although they rarely do.

The larvae (or grubs) are creamy-white with a reddish-brown head, legless and about 12 mm long. The grubs cause the most damage to the plant by boring into the base of the pseudostem, rhizome (or corm), suckers and roots. Tunnelling into the corm causes the most severe damage including fungal infection and reduced nutrient uptake, stem growth and stability.

Symptoms include tunnels, weak or dying suckers, yellow floppy leaves and smaller bunches. Plants that are heavily infested will show extensive damage to the pseudostem and a severe infestation can cause plants to fall over. Infested corms will be full of tunnels up to 1.5 cm in diameter. To identify the pest, cut open the corms with tunnels to see if larvae are present. Stunted plants and plants displaying early withering of leaves should also be inspected for larvae and adult weevils. Cut them with a knife at or just above ground level and search for larvae or larval tunnels.

Adults are attracted to freshly cut corms and pseudostems which can be used as traps for monitoring. To make a pseudostem trap, cut small pieces of pseudostem in half lengthwise (about 25 cm long) and place the cut pieces on the ground near the base of the plant, with the cut surface facing down. After 5 days, check the traps and count the weevils on each trap (and kill the weevils). If more than 2-5 weevils per trap are found, control is necessary. These traps are best used when the weather is warm and wet. About 50 traps/hectare are needed to provide good coverage, and the traps should be set once per month.

MANAGEMENT

Prevention – what to do before signs are seen

Cultural approaches: Strict regional quarantine measures to ensure the availability and use of clean planting material are important to protect new plantings and prevent the spread of the insect.

It is extremely important that farmers use clean planting material. Farmers should inspect the corms and suckers for damage and discard any that are infested. Take one or two slices from the planting material and look for tunnels, larvae or pupae. If infested, destroy the planting material.

If clean planting material is not available, then trimming the material to remove the parts infested with eggs and larvae, and using a hot water treatment are the next best options. Remove the outer leaf sheath of suckers to get rid of weevil eggs. Submerge the clean trimmed suckers in a hot water bath (52 to 55°C) for 15 to 27 minutes before planting. Neem is also effective for cleaning infected planting material. Dip suckers in a 20% neem seed solution just before planting.

Entomopathogenic fungi, such as *Beauveria bassiana* and *Metarhizium anisopliae*, and other biological control agents (e.g. arthropods such as ants) are being tested and developed and may provide more options in the future.

Control – what to do after signs are seen

Cultural approaches: Destroy all infected materials and crop residues after harvest to reduce populations.

Do not replant previously infested areas while old corms remain in the ground. Remove all the corms after the final harvest, cut them into 4-8 pieces and allow them to dry to prevent larval development in harvested plants. Allow three months for the weevil population to die out, before replanting a field.

Chemical approaches: Neem powder can be used to control banana weevils. Apply 60-100 grams/mat of neem seed powder or neem cake around the base of the plant. Apply at planting and again every four months.

Chemical control is often used in large plantations, but is often beyond the means of small-scale farmers. The banana weevil is reported to have developed or shown signs of resistance to several pesticides, including cyclodienes (BHC, dieldrin), organophosphates (chlorpyrifos, ethoprophos, pirimiphos-ethyl and prothiophos) and carbamates (carbofuran). Treatments used to control nematodes often control weevils too. Active ingredients that are effective against banana weevils include fosthiazate, azadirachtin, fipronil and imidacloprid. If the bananas are for export, any chemicals used must abide by the rules and regulations in the importing country.

CAUSE

The banana weevil (*Cosmopolites sordidus*) is also known as the banana borer or banana root borer. The insect is spread between plantations, districts and countries by the transport of infested parts of banana plants, especially the corms. Adults can easily move from one banana plant to the next.

IMPACT

The banana weevils can decrease root growth, reducing nutrient uptake and plant vigour, leading to small fruit bunches and yields, and weakening the overall stability of the plant. Infestations in newly planted fields can lead to crop failure. Highland bananas and plantains are more susceptible than dessert or brewing varieties.

DISTRIBUTION

The banana weevil originated in Malaysia and Indonesia, and is currently found in all major banana producing regions of the world. It can be found throughout East and West Africa including Burkina Faso, Ghana, Mali, Nigeria, Tanzania, Uganda and Kenya.

FURTHER READING

Plantwise Knowledge Bank www.plantwise.org/knowledgebank

Gold, C., Pena, J., and E. Karamura. Biology and integrated pest management for the banana weevil *Cosmopolites sordidus* (Germar) (Coleoptera: Curculionidae). *Integrated Pest Management Reviews*, 2001, volume 6, issue 2, pp. 79-155.

PIP Guide to Good Crop Protection Practices for production of Bananas. 2011. www.coleacp.org/pip

Bioversity International <http://www.bioversityinternational.org/>

ProMusa www.promusa.org