

Ambrosia beetles: *Xylosandrus crassiusculus*

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Background

Xylosandrus crassiusculus is an ambrosia beetle native to Asia that has a symbiotic relationship with the fungus, *Ambrosiella roeperi* [1]. This invasive pest has spread to other parts of the world such as Africa, the Americas, Europe and Oceania [2].

Symptoms

A host's visible response varies among species. On avocado, sugary exudate (sugar volcano) and frass pinpoint the single beetle entry/exit hole (Fig. A). The hole can be dry or surrounded by wet discoloration of the outer bark. Toothpick-like strands of boring dust may also be protruding from the beetle holes [3]. Examination of the cortex and wood underneath the hole reveals brown discoloration caused by the ambrosia fungus (Fig. B). Other symptoms include wilting, branch dieback and reduced tree growth [4].

Biology

Adult beetles are rusty brown (Fig. C). Female beetles are approximately 2-3 mm long and males are about 1.5-1.6 mm long [3-5]. The entry and exit holes, which are about 1 mm in diameter, can be located on the branches and trunk of infested trees (Fig D) [6]. Beetles colonize living and dead wood [1-2]. The beetle carries spores within a mandibular mycangium (specialized mouthparts). The adult females burrow into trees to establish brood galleries while depositing the ambrosia fungus which colonize the gallery walls to provide a food source for the developing larvae and adult beetles (Fig E) [4].

Known Hosts

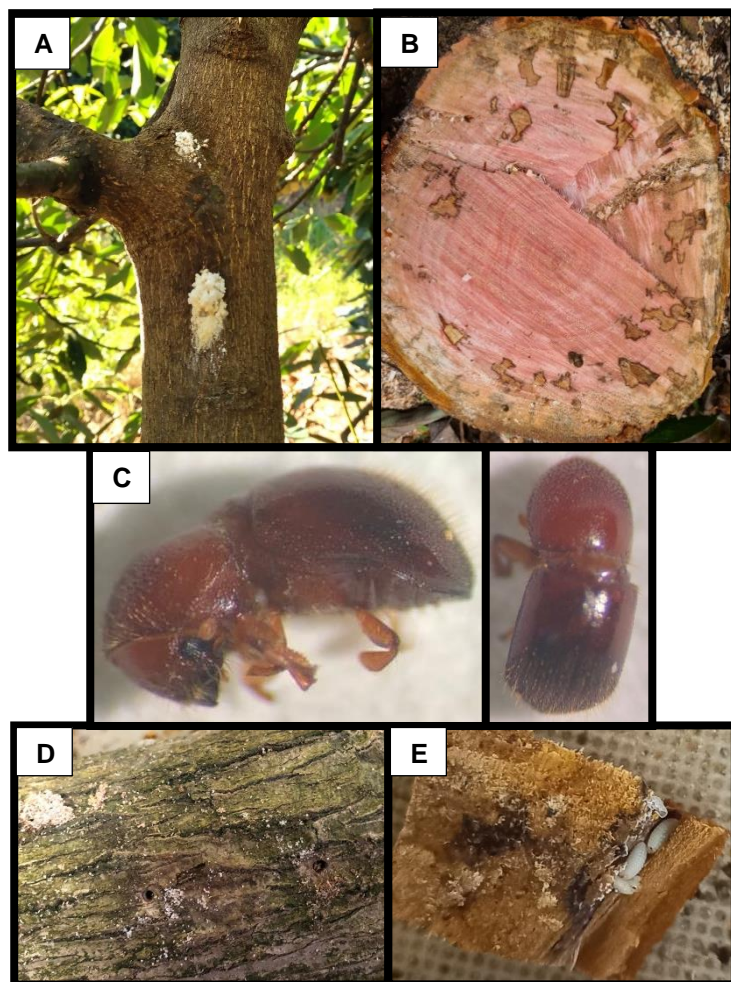
The host range for the beetle-fungus complex includes avocado, peach, plum, oak, cacao, coffee, mahogany, mango, papaya, rubber, and tea [1-6].

Control

Young trees often die from infestation but established trees can sometimes survive when treated. Management options are limited. These beetles attack healthy trees as well as stressed and damaged trees, but evidently stressed trees are preferred. Thus reducing stress in trees is critical. The main approach for reducing damage is monitoring for the presence of the beetle (visual inspection and trapping) and sanitation. Traps with ethanol lures can be deployed. Removal of branches, chipping and solarization/burning of the infested material in the orchard for at least 1 week is advisable. Avoid moving infested material between orchards and sterilize tools with household bleach. There are no chemicals that are effective in controlling these beetles. However, insecticide sprays timed with the appearance of beetles in traps may aid in preventing infestations [2-6].

References

- Harrington *et al.* 2014. *Mycologia*, 133-354.
- Tuffen. 2015. Rapid Pest Risk Analysis (PRA) for *Xylosandrus crassiusculus*. Defra. <https://planthealthportal.defra.gov.uk/pests-and-diseases/uk-plant-health-risk-register/downloadExternalPra.cfm?id=3939>.
- Ellis and Horton. 2008. University of Georgia, Department of Entomology. https://wiki.bugwood.org/Xylosandrus_crassiusculus.
- Cote, 2005. Indiana DNR, Division of Entomology and Plant Pathology, Updated 2008. <https://www.in.gov/dnr/entomology/files/ep-GranulateAmbrosiaBeetleFactsheet.pdf>
- Gallego *et al.* 2017. *Zootaxa*, 4273(3): 431-434.
- Atkinson *et al.* 2000. Entomology and Nematology Department, UF/IFAS Extension. Reviewed May 2020. <http://entnemdept.ifas.ufl.edu/creatures/>.



Photos by Casey Gill and South African avocado growers.

What to do?

- Look for the entry/exit hole surrounded by white exudate.
- Scrape off the bark to see the canker.
- Follow the gallery to look for the beetle (not always present).
- Look for alternative host plants in the area.
- Fill out a FABI diagnostic clinic form, available at app.informationhub.io/form/cl3cy217x00674ts66dcfz1nl or send an email to diagnostic.clinic@fabi.up.ac.za.
- Chop the infested branch off, place in a plastic cooler box, seal properly and send to the ARP Diagnostic Clinic.

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