

ENTOMOLOGY SECTION RESEARCH DIVISION

Research work.

- a) Biological control
- b) Bioassay diamondback moth
- c) Invasive weeds (NENS)

ASIAN CITRUS PYSLID (*Diaphorina citri*)

Present here in Tonga

- Worldwide. On members of the citrus family, especially grapefruit, kumquat, lemons, limes, mandarin, orange, pomelo and tangelo, and the ornamentals, mock orange, and the curry tree. An important pest.
- The psyllid: (i) sucks sap damaging shoot tips; (ii) spreads huanglongbing (greening) bacteria; (iii) produces honeydew, which covers leaves and is turned black by sooty moulds.
- Eggs are laid in shoot tips; nymphs produce thread-like long wax. Adults feed at 40 degrees to surface.
- Our team continues collecting specimens and sending them to the University of Queensland for molecular identification



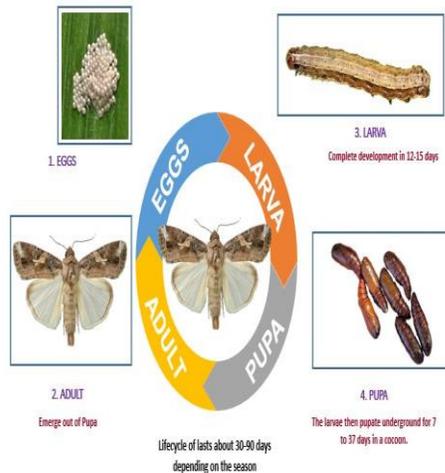
v



FALL ARMY WORM (Spodopdera frugiperda)

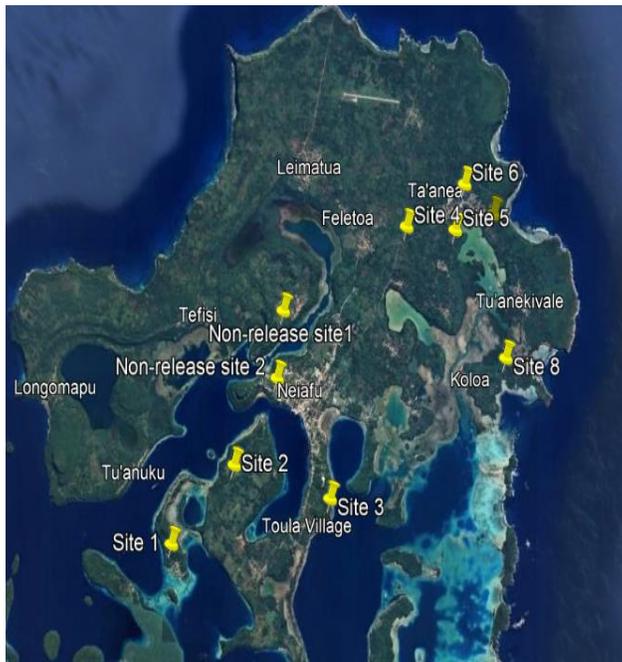
Present here in Tonga

- Widespread, and spreading. Present in Asia, but not Indonesia, the Philippines, Oceania. Hosts: maize, millets, rice, sorghum, sugarcane, and many others of economic importance. Damage: larvae eat leaves and bore into fruits, e.g., maize cobs.
- Eggs masses (up to 200) on the underside of leaves. Young larvae green, feed together, later brown with three whitish lines along back, dark spots with spines, and upside-down Y on head. Larger larvae cannibalistic and nocturnal. Adults, brown forewings and white hindwings, up to 40 mm wingspan. Spread is rapid on the wing, and on air currents.



INVASIVE WEEDS (NATURAL ENEMIES NATURAL SOLUTIONS)

AFRICAN TULIP(*Spathodea campanulata*)
Plant mites (Colopmerus spathodeae)



African tulip tree (*Spathodea campanulata*) is native to west Africa and has been present in the Pacific region since the 1930s, where it has developed into a serious weed problem, invading agricultural and forest areas (Labrada and Medina, 2009). A gall-forming mite (*Colopmerus spathodeae*) was released at eight sites in Vava'u, Tonga in December 2023 (Fig. 1, Table 1.) as a natural enemy for African tulip tree.

Flea Beetle (*Paradipolia coerulea*)

AFRICAN TULIP(*Spathodea campanulata*)





Flea beetle is still rear at Vaini Research Station.

Bioassay

Diamond back moth(*Plutella xylostella*)

Serial dilution rates.



Different insecticides tested and still continue with new insecticides.