Bug of the week

The silverleaf whitefly (*Bemisia tabaci*) is a widely distributed pest species around the world. It is actually a species grouping made up of at least 40 cryptic biotypes (strains) that are hard to distinguish. Whiteflies are not flies at all, but are true bugs that suck sap from plants and are problematic pests in tropical, subtropical, and less so in temperate climates. Adult whiteflies are about 1mm long, have two pairs of white wings and a yellow body. Females can lay 50 to 400 eggs on the underside of leaves. The eggs are 0.2 x 0.1mm and are initially white but change to brown as egg hatch approaches, which is approximately 5-7 days. The small nymphs that hatch are green and flattened, and known as crawlers. This is the only mobile nymph stage where they disperse to seek out a suitable leaf to feed. The crawlers then moult into an immobile phase for 40-50 days while sucking sap from their chosen location. During this period the nymphs are opaquely white and will moult three more times as they outgrow their skins, discarding them on leaves. The nymphs then turn into their pupal stage, where the body structure thickens and turns yellow, and the eyes turn a deep red colour before adults eventually emerge.

The silverleaf whitefly (*Bemisia tabaci*) adults (left) and nymphs including small mobile crawlers (right) (Photos: Mike Bowie)

They can form large populations under leaves of host plants and this causes wilting, leaf discolouration and leaf drop. This species of whitefly is known to feed on over 500 plant species which include tomatoes, capsicum, sweet potatoes, pumpkin, cabbage, squash, cucumber, eggplant, beetroot, taro, okra, beans, lettuce, cassava, poinsettia (Tiare *ʻĀpa-mataʻ*iti) and cotton. Whitefly also produce honeydew that make the leaf sticky, attracting ants, but uneaten honeydew can also be attacked by sooty mould, turning leaves black. In many countries the silverleaf whitefly is a vector for several viral diseases including lettuce infectious yellow virus, tomato yellow leaf curl virus, African cassava mosaic virus and cassava brown streak virus disease.

There are a few other whitefly species in the Cook Islands, but the most distinctive species is the spiraling whitefly (*Aleurodicus dispersus*), which gets its name from the white waxy spiral patterns left on the underside of leaves or fruits when females lay eggs. Another species known in the Cook Islands is the croton or citrus whitefly (*Orchamoplatus mammaeferu*s).

We recommend using oils such as neem and/or D-C-Tron for whitefly control but it is necessary to make several applications at intervals 5-7 days apart for good control of immatures. These horticultural oils can be purchased at the Ministry of Agriculture. It is best to spray oils late in day (between 4 and 6pm) to minimize the chance of leaves becoming sunburnt. Biological control species here include ladybirds, lacewings, hoverflies and thrips.