

Incidence and diversity of *Wolbachia* infection in fruit flies (Diptera: Tephritidae)

The microbial communities with which animals interact affect their growth, reproduction and survival. This also applies to many insect species, where infection with some bacteria can negatively affect their fitness. The true fruit fly family, Tephritidae, contains some of the most destructive global pest species of fruit and vegetable production. Infection with strains of the bacterial endosymbiont, *Wolbachia*, has been detected in several tephritid fruit fly species, and has been linked with mating incompatibility between females and males of the same species, as well as premature adult mortality. For this reason, *Wolbachia* is recognised as a potentially valuable means for biological control. However, despite the obvious role of *Wolbachia* in shaping the fitness of adult tephritid fruit flies and their implications for effective pest management, no data are currently available on their diversity and association with adult tephritids in South Africa. Consequently, we aim to characterise the diversity of *Wolbachia* in a complex of indigenous and alien invasive tephritid fruit flies that are serious pests of horticultural production. To do so we will develop a multiplex PCR that will simultaneously allow for *Wolbachia* detection and host species identification. This will require that we first map the complete mitochondrial genome of fruit flies to identify gene regions that can differentiate cryptic species that are problematic to differentiate based on the COI gene barcoding region alone. Once established this method will ensure improved identification of tephritid fruit flies, and characterisation of bacterial candidates for the biological control of these pests.