2009/087 Successful control of insect vectors of citrus huanglongbing in the islands of Reunion, Mauritius and Guadeloupe

In the 1970s, Reunion Island faced severe outbreaks of citrus huanglongbing (EPPO A1 List), a disease which is transmitted by insect vectors, *Trioza erytreae* and *Diaphorina citri* (both EPPO A1 List). On Reunion Island, both '*Candidatus* Liberibacter africanus' and '*Candidatus* Liberibacter asiaticus' were detected, sometimes in mixed infections. The main reasons for these severe outbreaks were the following:
- presence of *Trioza erytreae* (EPPO A1 List) in the absence of any of its natural parasitoids, and of *Diaphorina citri* (EPPO A1 List) which was poorly controlled by a single species of parasitic wasp (*Diaphorencyrtus aligarhensis*);
- great diversity of climates and topographies offering multiple favourable sites for the vector populations to build up and for the disease to develop;
- many ornamental and wild rutaceous host plants harbouring the two vector species;
- plantation of commercial citrus orchards in the vicinity of many small citrus plantings and backyard trees;
- lack of diagnostic tools and limited research capacities.

Eradication of citrus huanglongbing was not considered feasible at that time and an integrated control strategy was implemented, in which training of extension consultants and farmers played an important role. In this programme, commercial growers were strongly encouraged to replant affected orchards with disease-free material and a biological control programme was launched in 1974. Parasitic wasps, *Tamarixia dryi* and *Tamarixia radiata* (Hymenoptera: Chalcidoidea) originating from Africa and Asia respectively, were reared and released across the island. *Tamarixia dryi* successfully controlled populations of *Trioza erytreae* which were mainly present in the cool and wet areas of higher altitudes. The control was so successful that *T. erytreae* is no longer observed in Reunion. Similarly, *Tamarixia radiata* provided effective control of *D. citri* which was mainly occurring in the dry and hot coastal areas. However, *D. citri* survived on pruned hedges of *Murraya exotica* but is now rarely seen on citrus, even on neglected trees. Today in Reunion Island, huanglongbing is no longer causing economic problems in citrus orchards, nevertheless it is suggested that it would be advisable to search for the last remaining foci in order to eradicate the disease completely. It is noted that similar results were obtained in the neighbouring Island of Mauritius, where the same control strategy was applied.

In Guadeloupe, citrus huanglongbing has never been detected but one of its insect vectors, *Diaphorina citri*, was first found in January 1998 on backyard orange trees. In January 1999, the release of *Tamarixia radiata* was decided. The rearing and release of a few hundred wasps did succeed in establishing and subsequently reducing *D. citri* populations in backyard citrus trees, in hedges of *Murraya exotica*, and across the 360 ha of commercial citrus orchards.

Source: Aubert B, Étienne J, Quilici S, Gottwald TR (2008) Citrus huanglongbing experiences of integrated vector management (IVM) in Réunion and Guadeloupe, two ultra-peripheral regions of the European Union. *International Conference on Huanglongbing (Orlando, Florida, US, 2008-12-01/05),* 9 pp.

Additional key words: detailed record, biological control **Computer codes:** LIBEAS, GP, MU, RE

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