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Significant improvement of IPM strategies against the sugarcane stem borer, *Chilo sacchariphagus*, through long-term successful storage of *Trichogramma chilonis* (Hymenoptera:Tric)

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The stem borer *Chilo sacchariphagus* is a key pest of sugarcane in Reunion Island and South-East Asia. Since 2002, an IPM strategy associating inundative release of an egg parasitoid, *Trichogramma chilonis*, and conservation of a predatory ant has been proposed. This reduced up to 50% of damage in field experiments in Reunion Island (financial gains from \$800 to \$1800/ha). To develop IPM strategies on a large scale, reducing the global costs is necessary. In this context, cold storage is a key step to the development of the sugarcane borer biocontrol, by improving production and release management. Thanks to a French funding (CASDAR), laboratory tests on cold storage of *T. chilonis* were first conducted, followed by field experiments on the performance of stored parasitoids. Quality control after storage was performed several times (after mass production, before and after transport, after field release) in laboratory at $25 \pm 1^\circ\text{C}$, RH $75 \pm 5\%$ and 16L: 8hD to evaluate emergence rate of stored insects, fecundity during 7 days and survival at 7th day of *T. chilonis* females. For the first time, a long-term cold storage of *T. chilonis* was obtained without loss of physiological performance (good emergence, fecundity, survival during 7 days). Results suggested a quiescence state because no loss was observed due to storage interruption. Moreover, the same field efficacy of cold stored *Trichogramma* compared to non-stored individuals was obtained in Reunion Island. These important results make possible a large-scale application of IPM strategies in sugarcane production.

Keywords: *Chilo sacchariphagus*, *Trichogramma chilonis*, inundative release, cold storage, diapause, quiescence, mass production

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