P.35 - Biological control of sugarcane stem borer: inducing diapause or quiescence in Trichogramma chilonis

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The main pest in sugarcane on Reunion Island is the stem borer, *Chilo sacchariphagus* (Lepidoptera, Crambidae). Larvae bore galleries in the stem and are responsible for important yield losses: up to 30% in the case of heavy infestation. Several indigenous beneficial insects exist against among which *Trichogramma chilonis* is the most common. However this species occurs in the wild at a density too low to control the stem borer. During 2000-2004 we tested inundative releases in cane fields with releases starting early in the plant cycle, when it is most sensitive to borer attacks. First results showed that biological control increases yields by 15 and up to 25%, depending on field sites. This translates into financial gains ranging from 600 to 1400 euros/ha. A new research program is set to address two shortcomings of the technique: the release strategy (period and doses) and the time spent for releases. The effects of storage at low temperature on the physiology of *T. chilonis*, with possible induction of diapause or quiescence, will be studied. The resulting knowledge is expected to greatly improve both mass rearing and releasing labour. *Trichogramma chilonis* is well known and already used for biological control in the southern hemisphere. Until now, however, studies of this species have focused on its parasitic efficiency in the laboratory and in the field. Innovation arises from adapting release techniques of *Trichogramma* in use in Mainland France on corn. Thus we need to adapt the technology to a new plant (sugarcane) and to a new pest (the borer *Chilo sacchariphagus*). This project is original in that a biological control is implemented to suit the fragile ecosystem of the island of Reunion. This action is conducted in order to integrate environmentally sound management and the current growers' practices.