ISSCT Entomology Section Webinar
by
Chair ISSCT Entomology Section
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Mauritius Sugar Cane Industry Research Institute/MCIA

The ISSCT Entomology Section webinar, chaired by Mrs N Behary Paray, Chair of the Entomology Section, was held on 9th July 2026 under the theme *Research advances in the management of sugar cane insect pests*. The webinar brought together 26 participants from 13 countries. Dr Jean Claude Autrey, ISSCT General Secretary, opened the webinar by welcoming the participants and highlighting that webinars have become a regular feature of ISSCT activities since their introduction in 2020.

The webinar focused on two economically important groups of insect pest: sugar cane borers and white grubs. Four presentations were delivered, covering recent research advances and innovative approaches to their sustainable management in different sugar cane growing countries:

- *Current advances in management strategies of Diatraea spp.* - Dr. Carolina Camargo Gil (CENICAÑA, Colombia)

  An overview of research advances in the IPM of *Diatraea* spp., one of the most important insect pest species in Latin America, was presented. Main priorities are the improvement of sampling methods and biological control through close monitoring of the host-parasitoid associations and establishment of green corridors comprising of a diversity of trees to support natural enemies. Conservation and inundative biological control initiatives resulted in more than 50% borer parasitism. As an integral part to the IPM programme, quantifying yield losses across varieties and the need for close monitoring of insecticide applications for localised outbreaks were discussed. To further contribute to sustainable IPM, innovative alternatives using *Bacillus thuringiensis* (Bt) proteins and the development of genetically engineered sugar cane varieties with enhanced resistance to borers are currently being explored. Field application of the entomopathogenic/endophytic fungus, *Beauveria* sp. looks also promising.

- *Recent Progress in the application of the Sterile Insect Technique (SIT) for sugar cane borers*– Mrs. Nalini Behary Paray and Dr. Lawrence Malinga (MSIRI-MCIA, Mauritius/ SASRI, South Africa)

  Recent advances in application of Sterile Insect Technique (SIT) for the management of *E. saccharina* in South Africa and key research findings over 20 years were presented. Current research focuses on developing pheromone traps for monitoring, conducting pilot studies on field releases of sterile moths and optimizing handling/transport of moths. To further improve SIT, a project with IAEA is on-going for identification of molecular markers for sex determination. Discussions also followed on the integration of SIT into an area-wide IPM programme, its potential for commercialization and application to lepidopteran pest management in Africa and elsewhere.

  In Mauritius, views were shared regarding the potential for integrating SIT as a complementary and sustainable tool alongside the well-established biological control programme for the spotted borer, *Chilo sacchariphagus*. Particular attention was given to the challenges and progress in

developing artificial diets for mass production of healthy, fully fit and competitive insects, a major requirement for the successful implementation of SIT.

- *Management of sugar cane white grubs* – Mr. Quentin Macé (TPC Ltd, Tanzania/ CIRAD, France)

  Particular focus was laid on *Cochliotis melolonthoides*, responsible for serious annual losses estimated at USD 3m at the TPC sugar estate in Tanzania. Interactions among white grubs, soil environment and their natural enemies are being explored as highly alkaline and sodic soils were found to be 3 times more infested than neutral soils. Promotion of conservation biological control using scoliid wasps, identification of their preferred foodplants, investigation on the potential of the entomopathogenic fungus, *Metarhizium*, and soil reclamation are some of the coming challenges to manage the pest.

- *Management of sugar cane borers in Louisiana: recent findings* – Dr. Blake Wilson (LSU, USA)

  The history and IPM of two stem borer species, *Diatraea saccharalis* and *Eoreuma loftini* as the most economically damaging insect pests in Louisiana were reported. From 2000 to 2020, data showed a decline in borer populations and insecticide use. This success was mainly attributed to the adoption of resistant/moderately resistant varieties on an extensive area, reliable scouting, use of selective insecticides and conservation biological control. However, various issues associated with insecticide use have recently been observed. These include reduced efficacy, common multiple applications, increased rates, development of insecticide resistance among borer populations, emergence of new pests in other crop systems and increased area under susceptible varieties. This has necessitated a review of the situation with more emphasis on varietal resistance in breeding programme using marker-assisted selection and biological control through entomopathogenic fungi and releases of parasitoids.

Discussions & Conclusions

The discussions highlighted the need for a more integrated and sustainable approach to sugar cane pest management, with greater emphasis on prevention, monitoring, varietal resistance and biological control, and reduced reliance on conventional insecticides. Participants discussed the potential of SIT, as a complementary tool within area-wide IPM programmes, while recognizing the importance of cost-effective mass rearing systems including the development of nutritious artificial diets for optimal insect quality. The importance of strengthening conservation biological control through the management of pest habitats and identification of appropriate foodplants for natural enemies was also reported. Other emerging approaches, including entomopathogens as biological insecticides and endophytes together with genetic engineering of varieties using *Bacillus thuringiensis* (Bt) proteins, were recognized as promising avenues for future research. The discussions further highlighted the importance of adapting pest management strategies to prevailing local conditions, including biotic and abiotic factors (e.g. soil characteristics). For the advancement of research in pest management, the need to strengthen collaboration among researchers at regional and international levels was highlighted. The Mauritian context was cited as several biological control programmes have been implemented successfully for years for major pests through such partnerships. Research collaboration through follow-up discussions may be organized among countries sharing similar pest problems as is the case for *Diatraea* spp. This

leads to suggestions to compile regional data on the pest species and their natural enemy complexes which will facilitate and identify scope for research collaboration.

Overall, the webinar underscored the importance of adopting eco green and more sustainable pest control strategies within an IPM framework across countries and regions. Chemical control, if necessary, should be applied judiciously, targeting localized outbreaks through selective insecticides and appropriate application methods that minimize impact on beneficial and non-target organisms.

The ISSCT webinar provided a valuable platform for interaction, knowledge exchange and sharing of professional experiences among sugar cane entomologists from different countries, highlighting the considerable research efforts and innovative approaches being adopted to address insect pest challenges. The importance of strengthening collaboration and knowledge-sharing among countries and institutions facing similar or closely related pest species was emphasized, as this could help accelerate the development and adoption of effective, sustainable pest management solutions that will ultimately benefit the sugar industry as a whole.