8th International Symposium on Fruit Flies of Economic Importance (ISFFEI 2010),Valencia, Spain , 26th September - 1st October 2010

Agroecological pest management against cucurbit flies (Diptera : Tephritidae) : A case study on la Réunion with large scale farming

Douraguia, Elisabeth*1; Rousse, Pascal2 ; Atiama, Toulassi1 & Deguine, Jean-Philippe1

1 Centre de Coopération Internationale de Recherche en Agronomique pour le Développement (CIRAD), Département des Systèmes Biologiques, Saint-Pierre (La Réunion), France
2 Chambre d'Agriculture, Saint-Pierre (La Réunion), France
*Postal address: 7 chemin de l'Irat, 97410 Saint-Pierre. E-mail: elisabeth.douraguia@cirad.fr

Background. Tephritid flies are major economic pests for crop production worldwide. On La Réunion, three species (Bactrocera cucurbitae, Dacus ciliatus and D. demmerezi) cause high yield losses for cucurbits growers. Up to now, control exclusively relied on agrochemistry. Since 2009, CIRAD initiated a three years cooperative program of agro-ecological management of vegetables flies (GAMOUR). This areawide research and extension program gathers twelve local or national organisms specialised in agricultural support. It aims to bring a sustainable methodology to suppress pest populations. i.e. to develop and implement technical innovations that are both economically viable and environmentally friendly.

Methods. We designed a technical package based on the existing foreign experiences, and particularly the experience of researchers in Hawaii, with monitoring, sanitation, bait sprays on border crops, male annihilation by mass trapping, conservative biocontrol and agroecological engineering. In pilot areas, vegetables growers were then requested to conduct an initial survey of agricultural practices. They were afterwards proposed the package in September 2009. Since that, the ecological, social and economical impacts were assessed by a weekly monitoring of flies population and a survey of agricultural practices.

Results. GAMOUR is currently running in three pilot areas on La Réunion (Salazie, Entre-Deux and Petite Ile), with 27 farmers cumulating about 50 ha of vegetable crops (25% of cucurbits). For most of them, the usual method of protection against flies was purely chemical, with a mean of 1 to 3 insecticide cover sprays per week. Moreover, as the technical package is compatible with organic farming as well, four organic farms were included as pilot sites in Bras-Panon, Etang-Salé, Colimaçons, and Boucan-Canot. After one year, in all three pilot areas, curative treatments based on classical pesticides have been almost totally stopped. Meanwhile, the growers declared minimal yield losses, with a maximum of 20-25% of production, which is similar or less than the damage they used to experience during the same season with chemical practices. A detailed economic evaluation is currently in progress to compare the financial outputs of classical and GAMOUR methods, but the growers already declared their satisfaction about the savings in pesticides costs, the decrease of working time and a significant increase in production.

Conclusion. These results demonstrate that an agroecological management approach may be an efficient and sustainable alternative pest control method on La Réunion. One of the main issues of GAMOUR is to support the proper application of the package in pilot areas, in order to stimulate the further extension of the program beyond these areas. Such an approach is part of a global perspective on the evolution of farming practices and a first step to agroecological and sustainable agriculture on La Réunion.

Key words: Fruit flies, Agroecological Crop Protection, Pest Management, La Réunion, Cucurbitaceae