

The 13th IOBC Citrus Meeting- Conference covered multiple needs, including both important presentations and interactions regarding citrus crops pests and diseases, plus social interactions that facilitated bonding of different research groups with maybe different/complementary expertise from different countries.

Our plenary speakers raised important issues and gave us ‘food for thought’. Professor Tjamos summarized current problems and challenges in citrus crop management worldwide. Professor Alberto Urbaneja presented the hot topic of the invasion of *Trioza erytreae* in the Mediterranean basin. Finally, professor Darren Kritikos dealt with climate change, assumptions and uncertainties, along with their anticipated impact on citrus crops.

Indicatively, but not exclusively, important findings and issues were raised in the different sessions:

IPM session pointed out that Mediterranean citrus integrated pest management faces new challenges with the increasingly frequency of invasion and emergence of new pest and diseases that threat production as well as with the increasing society demand for sustainable agriculture production systems. Furthermore, citrus make up complex agroecosystems in which, in order to optimize sustainability through biological pest control processes, it is paramount to understand the multiple relationships between the IPM practices and conservation of natural enemies. We learnt how changes in the agricultural landscapes in which citrus are grown may affect to the incidence of pests already present in the crop. The better understanding of the non-target effects of insecticide applications on the citrus agroecosystem warns us of how ecological infrastructures such as ground covers with flowering plants can offer an unintended route of exposure of systemic insecticides to natural enemies. Alternatives to synthetic pesticide strategies are therefore even more urgent. The use of natural products such as kaolin clays that disrupt regular feeding behaviors of phytophagous were presented as alternative solutions in the control of invasive pests with limited impact in the agroecosystem and low risks to human health and the environment. The need to reconsider our strategies in the control of a recently established insect pest was analyzed. New initiatives with holistic approaches for the development of future citrus integrated pest management strategies, such as those developed through the cropping-beekeeping system of the PLANT-B project, will help citrus industry to overcome the new challenges of the present and future citriculture.

During the “**Biological Control**” season of the IOBC citrus meeting, we had talks that deal with the control of one of the most important pest in the Mediterranean basin, the fruit fly *Ceratitis capitata*, utilizing different approaches including the use of entomopathogenic nematodes. We also had presentations regarding new invasive pests such as *Trioza erytreae* and *Delottococcus aberiae* and talks on the importance and evaluation of the effects of cover crops in the assemblage of natural enemies.

During the **challenges in disease and pest management** session we had interesting talks regarding tristeza virus and its importance for greek citrus, medfly control strategies including the SIT based suppression program for medfly in Valencia and the Cuarentani project in Azores island, plus molecular diagnostics for citrus-infected aphids.

Within the session on **biology of Citrus pests** 5 presentations were presented. Two of them about population dynamics of *Ceratitis capitata* in two locations in Greece, a presentation about the damaging thrip species or citrus in Spain and ways of management, a presentation about the infestation pattern of *Trioza erytreae* on oranges and lemons and one about the parasitism of *Dialeurodes citris* in Algeria. It is clear that med fly populations are high in south and central

Greece and are largely affected by host availability throughout the year. The thrip species *Chaetanaphothrips orchidii* is a very important pest for citrus in Spain and completes at least three generations per year. Encouraging is the finding of the predatory thrip species *Franklinothrips megalops* in citrus orchards that contributes to the biological control of the orchid thrip.

Damage by *Trioza erytrae* was found to be more intense on lemon trees exhibiting different spread behavior and management approaches should reflect these differences.

Finally, even though intense application of chemical insecticides take place in Algeria citrus orchards, parasitism was found to occur but at relatively low levels. Farmers should follow pest management guidelines to facilitate the natural enemies to increase and achieve higher levels of parasitization.

In the **Pest Ecology and Physiology** session it was presented that volatiles and other essential oils can influence medfly's behavior and can be explored for non-destructive of this pest in the fruits. The effects of host fruit and temperature on the overwintering of medfly were also discussed. In respect to recent pest records in Europe, the presence of *Aleurocanthus spiniferus* in Italy and some possible natural enemies was discussed. Finally, the idea of wildflower habitats that enhance pest regulation services was presented.

The **round table** discussion focus on four thematic areas that regard (a) the development and implementation of policy related to response to biological invasions, (b) climate change and bioclimatic modeling, (c) prevention of biological invasions in the citrus producing areas of the West Palearctic region, and following a comprehensive discussion reached the following recommendations

- Develop eradication plans for risk areas and have a ready to implement plan for the high priority pests
- Explore the establishment of preemptive biological control when this is feasible
- Harmonize the biological control practices among the different EU countries
- Establish a system for sharing information within the Citrus research community regarding biological questions
- Perform simulation eradication exercises in each area
- Reconsider eradication as the first option of response and explore additional ones such as containment
- Invest on developing smart systems for detection that can provide reliable and timely information
- Perform elaborated pest risk analysis for target invasive organisms

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