Innovative pilot project for the control of the olive fruit fly

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01. Rationale

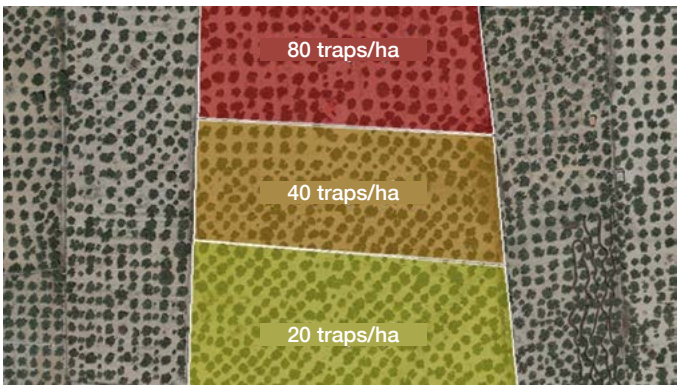
The olive fruit fly, *Bactrocera oleae*, is the most important pest species for this crop in Catalonia. Until the last few years, the most widespread control method was based on chemical aerial treatments with bait, which since 2015 have been used only exceptionally. Therefore, their replacement with other control methods has been evaluated. The mass trapping technique is based on using bait to attract adults, which die when they come into contact with the toxicant in the device used. Its efficacy lies in minimising populations of *B. oleae* (top photo) from the moment the olive is susceptible to be attacked by the fly. When populations are high, this technique needs to be supported by other control methods. This study was carried out on one farm in each of the olive oil PDOs in Catalonia: Terra Alta (Empeltre and Arbequina varieties), Empordà (Argudell var.), Siurana (Arbequina var.), Baix Ebre-Montsià (Morrut and Sevillenca var.) and Les Garrigues (Arbequina var.). Each farm was divided into three plots where three trap densities per unit area were evaluated (middle photo). This density varied between 10 and 80 traps per ha, according to the varietal sensitivity and population abundance of *B. oleae* in each area. When necessary, the mass trapping technique was reinforced with chemical treatments, including the fungus *Beauveria bassiana* and kaolin. The efficacy of the method was assessed by determining the percentage of fruit affected by *B. oleae* and adult populations.

The main objective of the project was to implement control strategies for the olive fruit fly, the main olive tree pest, consisting of a combination of different alternative control methods to aerial treatments, which should make it possible to obtain a high quality olive oil, minimise the environmental impact and increase the competitiveness of the Catalan olive sector.

02. Results and conclusions

The mass trapping technique has been shown to be an alternative to aerial treatments, greatly reducing the adult populations in the field and consequently the damage to the crop. However, during the three years of the project, this technique alone was not sufficiently effective in any of the areas tested, and it was necessary to carry out supporting treatments at certain times which were justified by the monitoring of both adult populations and the percentage of fruit affected. The results obtained during the three consecutive years show a high variability between the variables, year, area and variety.

B. oleae larva inside a fruit.



Plan of plots with different trap densities per ha.

Plot of olive trees in Montsià. Photos: Operational Group.

Of the different alternative products to chemical treatments (*B. bassiana*, diatomaceous earth and kaolin) evaluated in the six field trials conducted, only kaolin was shown to be effective for the control of *B. oleae*.

The commercial characteristics and the physical and chemical and sensory analysis of the oils to assess oil quality within the same area were similar for the different treatments.

The results obtained from the pilot project have helped to define better control strategies to deal with the attacks in accordance with the area, variety and other variables that affect each campaign. Despite the validity of the mass trapping method, there is a clear need to continue working on new R&D&I actions in order to find sustainable control methods that can be combined with mass trapping in order to reduce the incidence of the pest, especially in the most severely affected areas and varieties.

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