Summary risk analysis

The improvement of the environmental quality of the pilot area is one of the indicators of the environmental impact of the project. The scope of the risk analysis performed under this project is to identify, monitor and assess the several risks, related to efficacy, biodiversity, soil quality and environmental pollution related to the added value of the impact of the project's goals. The estimation of the risk identified was monitored in several steps of the project as to take the appropriate measures either for changing the scientific strategy or experimental design.
The infestation rates of citrus in untreated (organic) orchards in Campos area remained above 1% during the project (2015-2019), implying that medfly damage in the study area was high enough for assessing the efficacy of mass trapping with Biodelear. The effectiveness of mass trapping with Biodelear was equal to those of the conventional way of fruit fly control and mass trapping with Biolure. The effect of mass trapping with Biodelaer on the arboreal and ground biodiversity, in terms of arthropod's abundance and diversity, was also investigated. At the end of Pilot Phase (B1), the arboreal arthropod abundance did not differ among Biodelear-treated orchards, Biolure-treated orchards and conventional orchards. Similarly, the risk remained low at the end of project, implying that Biodelear traps are not expected to have a negative impact on arboreal arthropod abundance of the citrus trees. For ground arthropods, the risk of a relative low ground diversity of Carabidae species (based on Species Richness Index) in Biodelear-treated orchards compared to conventional orchards or Biolure-treated orchards was low at the end of the Pilot Phase. On the other hand, the mass trapping with Biodelear results in an increase of 8% in Species Richness (based on Carabidae species), compared to conventional orchards. Regarding environmental pollution, the risk was significant during the cultivation period (July 2015 and January – March 2017) when pesticide residues were identified. However, from the last sampling and after the use of Biodelear in the specific orchards no residues were identified minimizing the risk. In September 2014, during the action A2, there was risk identified due to intensive cultivation practices in the past.
With regards to soil quality, soil analysis during initial action A2 revealed that available Cu, Zn, water soluble Cl, and SO_4 and exchangeable Mg were well above threshold levels and therefore it is was decided to focus on the above soil parameters throughout the whole soil campaign. The majority of the soil samples collected had values above threshold levels in 4 or 5 of these parameters in the upper soil horizon (0-30cm) and therefore the risk was characterized as severe. The negative impacts on soil quality is attributed to nutrient and irrigation management practices in the citrus orchards as well as to past pest control management practices (use of copper-containing fungicidal sprays). On the other hand, the presence of clays and organic matter in the studied soils reduces substantially the environmental risk in deeper soil horizons (>30 cm).

The risk is expected to be minimized in the coming years when considering adoption of a sustainable fertilization and crop protection strategy.