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The role of the connectivity in the implementation of mitigation measures to reduce the impact of pesticides in the environment under Mediterranean conditions

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Regulation 1107/2009 of the European Commission, establishes the procedure and criteria for approval of active substances and authorization of plant protection products in Europe. One of the aspects to be considered is the assessment of the fate and behavior in the environment of pesticides In this assessment a tiered modeling approach is followed according to the models and scenarios developed by the FOrum for the Co-ordination of pesticide fate models and Their USe, (named as FOCUS models/scenarios). They consider different European scenarios to determine the predicted environmental concentration (PEC) in soil, ground water, surface water and sediment at in-field or edge-of-field scales. During the evaluation process, it is frequent to establish different mitigation measures to reduce the impact of pesticides and to ensure an acceptable risk to non-target species. Parallel to this regulatory process, the directive of sustainable use of pesticides (Directive 2009/128/EC) establishes a framework to reduce the impact of use of pesticides where the implementation of mitigation measures to protect aquatic systems and vulnerable areas will play a main role.

Therefore, there is a main need to assess how the risk mitigation measures established at field level under regulation 1107/2009 are acting at landscape/catchment level.

The characteristics of the climate, relief and soils in Mediterranean region provoke that soil erosion by water is common at different scales. In arable lands soil rates due to inter-rill, rill and gully erosion may exceed 10 ton/ha/year. This process may be modified by human actions.

In this scheme, connectivity concept emerges as essential to understand the transfer process of surface water, sediment and micropollutants throughout catchments and the success of the implemented measures for the sustainable management of pesticides at different scales (field, landscape and catchment levels).

In this work a review of published monitoring programs of pesticides (in soil, surface waters and ground waters) in different Mediterranean regions is presented in order to establish the basis to link the connectivity concept with the implementation of risk mitigation programs under these environmental conditions.