



RE CARE MSc / PhD Research Information

Research Title

PESTICIDE DISTRIBUTION IN EUROPEAN SOILS RESULTING FROM DECADES OF APPLICATION AND RELATED RISK FOR THE ENVIRONMENT.

Abstract

Pesticides can be described as products that intended to eradicate pests or diseases and are mainly applied as plant/crop protection products. In order to increase crops yields, and in response to a increasing demand for food, the amount and the variety of pesticides used in agriculture lands increased in the last decades. New formulations and different combination of pesticides have emerged over time to improve the crops productivity. Only one small part of the applied pesticides reaches the target organisms, while the highest amount of pesticides is released to the atmosphere and reach soil and aquatic systems through several transport mechanisms (e.g., volatilization, wind drift, surface runoff, leaching). This is of special concern since some of these products, and/or their transformation products, presents a high persistency in the environment, a tendency for bioaccumulation and a high toxicity to non-target organisms. Furthermore, there are known serious impacts on human health, by occupational or by indirect exposure to pesticides. Therefore, it is crucial to clarify the fate and distribution of long-term applied pesticides as well as identify the off-site impacts of these products. The results should provide valuable information in the definition of more sustainable crops management practices and may contribute to an improvement in pesticides policies.

Objectives of the research

The main research question is which compounds are currently present in the soils resulting from long term of pesticides application and what is the related risk for the environment and human health. Therefore the main objectives of this work include a chemical assessment of the pesticides, and pesticides residues, in European soils and waters, a toxicological assessment of the present mixtures of pesticides with aquatic and terrestrial organisms and the assessment of pesticide bioaccumulation potential by crops.

RE CARE study site

The study areas are located in eastern Spain and NW Portugal. The main threat in Spain is desertification, a strong secondary effect is soil contamination by intensive agriculture practices. The main threat in Portugal is soil erosion, secondary threat is contamination by pesticide use.

Partners in this research

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