



RECARE MSc / PhD Research Information

Research Title

OCCURRENCE OF PESTICIDE RESIDUES IN SOIL AS A RESULT OF LONG-TERM APPLICATION

Abstract

The use of pesticides (in agriculture) have a range of known negative impacts on ecology, water quality and public health. However, there is no comprehensive assessment of the prevalence of pesticide residues in soil. In this study we aim to understand the residence of pesticides in soil. We have conducted a screening of samples in multiples sites in the Netherlands to understand how data on historical application of pesticides matches with what is found in soil today. We took these findings to Spain where we have taken samples from one crop (orange) with two management practices (organic or conventional) in one town with two soil types (river clay and sand). We use GC-MS/MS and LC-MS/MS to analyse 280 compounds in soil. With the data collected we can understand better the fate and distribution of pesticide residues in European agricultural soil.

Objectives of the research

Objective: To assess the occurrence of pesticides in agricultural soil as a result of long-term application in the Netherlands and Spain.

RQ 1: Which groups of pesticides are still present in different types of soil following decades of application?

RQ 2: If you apply pesticide fate models like GeoPEARL to the sites studied, do the outputs correspond to the data collected?

RQ 3: Which management or soil physical factors influence pesticide persistence?

RQ 4: What is the frequency of pesticide residues in sediment found in water bodies connected to agricultural sites?

RQ 5: Which environmental risks are related to the residues actually found in soil? Are they higher than threshold values?

RECARE study site

Carcaixent (Valencia Area, Spain)

Lelystad, Vredepeel and Wageningen (Various Regions, Netherlands).

Partners in this research

Wageningen University (Netherlands) and University of Valencia (Spain).

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