



Pesticide leaching under climate change - A regional perspective

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Climate change scenarios for Scandinavia indicate both increased temperatures and increased winter rainfall. Increased temperature may lead to faster degradation of pesticides and thus reduced leaching, whereas higher and more intense rainfall would likely increase pesticide leaching. The consequences of climate change will however also depend on soil types and changes in land-use patterns. Assessments of pesticide leaching in a climate change perspective therefore need to account for the complex interaction between soil types, compound properties, changes in climate variables, and potential changes in land-use within different regions. Regulatory authorities concerned with risk assessment and management for pesticides have expressed an interest in decision-support tools that can account for potential climate change impacts. We are developing MACRO-SE, a flexible modeling environment for scenario-based parameterisation of the MACRO-model, which enables the user to screen a large range of pedo-climatic conditions present in a given area. A case study was performed for Scania (south Sweden) focusing on winter and spring cereals, two contrasting hypothetical compounds (a weakly and a strongly sorbed, applied in autumn or in spring), and all the major soil types in Scania. Climate driving data were derived from observed climate and from global climate scenarios downscaled to regional level. Our scenario-based analyses also accounted for indirect effects of climate on pesticide use patterns (i.e. autumn vs. spring applications). We report the predicted losses to groundwater and to the drainage systems, and compare the results obtained with the actual and future climates.