

Ardières-Morcille: a research catchment dedicated to the study of the transfer and impact of diffuse agricultural pollution in rivers

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Abstract

The Ardieres catchment, (150 km²), in Beaujolais (France), belongs to the first European catchments where surface water contamination by pesticides has been highlighted in the late 1980s. Research on this site mainly aims at better understanding organic pesticides and trace elements hydrological pathways to watercourses, and at evaluating subsequent contamination and impact on aquatic ecosystems. Landscape as well as instream processes are studied in order to highlight catchment vulnerability to contaminants and possible mitigation actions. A consistent hydrological and chemical monitoring of the Ardieres River and one of its tributaries, the Morcille River, has been taking place since 2002. It was supplemented by biological measurements on aquatic micro-organisms and macroinvertebrates, more particularly after 2005. The results show the importance of long-term study to account for the kinetics of contaminant transfer in hydro-biogeochemical systems. Physico-chemical, ecological and ecotoxicological measurements all showed spatial and temporal variability in water quality and a gradient of impact on community structures and ecological functions as a function of the pressure of human activity. Results allowed to develop indicators of toxic impacts and resilience of communities and provided avenues for action to improve water quality.

Short informative:

This article is a DataNote which describes main results of the research carried out for more than 30 years in the Ardieres-Morcille watershed dedicated to the study of the transfer and impact of diffuse agricultural pollution in rivers.

Running title:

Ardieres-Morcille Catchment DataNote

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