



## **Mitigation of nonpoint source pesticide contamination in a artificial wetland located at the outlet of a vineyard catchment**

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The use of artificial wetlands for mitigating nonpoint source pesticide contamination from surface water runoff of agricultural origin represents an innovative approach, whose potential should be evaluated. The EU LIFE project ArtWET assesses the application of ecological bioengineering methods based on various types of artificial wetlands throughout Europe. In this framework, this study focused on the mitigation of pesticides in a storm basin (320 m<sup>2</sup>; 1500m<sup>3</sup>; planted with *Phragmites australis* Cav.) collecting runoff from a vineyard catchment area (42 ha; Rouffach, Alsace, France) over the cultural period (March to October 2008), and whose the hydraulic design has been modified in order to enhance the mitigation process. Discharge measurements and water samples collections were carried out in parallel at the inflow and the outflow of the basin for 17 runoff events in order to evaluate the load of 17 pesticides. Among the target pesticides, Glyphosate, AMPA, its metabolites, and Diuron predominated and runoff event pesticides loads strongly varied throughout cultural period. The depletion of the Glyphosate and AMPA concentration values recorded over the runoff event between the inflow and outflow of the system exceeded 70 %, and reached 90% when considering the total loads over the runoff event. The high mitigation capacity observed in the storm water wetland was likely due to both degradation and sorption processes. Current efforts focus on characterizing the variability over the cropping season of the wetland system performance in terms of reduction of pesticide loads in relationship with the biogeochemical conditions within the storm basin.