

Diagnosis and mitigation at different scales in France

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The data over the last twenty years show that the level of phosphorus in soil is high, particularly in all the regions where intensive dairy farming exists. Monitoring soils and waters provides a good diagnosis of P pollution of the environment at the national scale. Western part of France is particularly concerned: the P storage and bio-availability in soil is always increasing up to now and induces a high risk of diffuse pollution. Regulations are going to be implemented at the regional scale, for each of French fluvial systems. The example of the Loire-Bretagne basin will be presented. However, the real lack of common usual knowledge about the phosphorus cycle in the environment by the water managers as well the lack of sharing the operational experiences has been considered as a brake for P mitigation. To overlap these difficulties, different initiatives were organized at national scale: two national symposiums have been organized last year and a written documentation will be next available.

The global regulations have to be emphasized by local regulations to better integrate local farming systems and variability of physical conditions. Two examples will be presented, one in French Brittany and another one in Alpen.

In Brittany, a holistic method is available to highlight and document objectively and the functions of the agricultural landscapes components facing to the main issues of the water quality (N, P, pesticide). Territ'eau framework carries out on farmers' fields, semi-natural areas or human infrastructures, which act as sources, sinks or buffers on water quality. This framework allows us to delimit active hydro-biochemical areas, defined by the three following characteristics: i) the dominant hydrological processes and their flow pathways ii) the mobility and persistence of each considered pollutant, and iii) the main elements of the agricultural landscape. These areas are delineated by analysing the flow connectivity from the stream to the croplands, by assessing the buffer functions of semi-natural areas according to their flow pathways. Hence, it allows us to identify functional semi-natural areas in terms of water quality, and assess their limits and functions; it helps in proposing different approaches for changing agricultural landscape, acting on agricultural practices or systems, and/or conserving or re-building semi-natural areas in controversial landscapes.

In Alpen, a non point pollution diagnosis applied at local scale (10 villages) has been elaborated. This diagnosis rests on a simplified description of P transfers. By this way indicators were used to study the links between these processes, the environment and the implemented control techniques. These indicators allow the end users to propose and improve the management system at field and catchment scale.