

Conceptual framework to reduce nutrient losses at catchment scale

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Within COST action 869 "Mitigation Options for Nutrient Reduction in Surface Water and Groundwaters" Working Group 3 has the aim to evaluate the potential effect of mitigation options to reduce nutrient losses to surface water. The emphasis is on Phosphorus (P) and Nitrogen (N). In order to structure the different types of mitigation options it was suggested to set up a conceptual framework for the nutrient losses to surface waters and to show in which way mitigation options influence specific processes or pathways. The first note of this conceptual framework was discussed during the meeting in Waidhofen/Ybbs (Austria, 21 May 2008). Based on the discussion and comments a second draft was written that will be discussed during the meeting in Wageningen (18-19 May, 2009).

In order to identify and recommend mitigation options, it is necessary to have an overview of the implied systems and relations we are looking at in practice: 1) the system which produces nutrients, that is to say the factors controlling the sources, and 2) the impacts which determine the factors to be controlled. Many (production) systems within a catchment / river basin will contribute to the nutrient loads of the ecological system observed (e.g. industry, sewage works/urban, scattered dwellings, direct atmospheric deposition, agriculture, nature). This COST action is focused on agriculture, because many other sources have been reduced over time and agriculture becomes one of the most important sources of nutrient loads over the last years. Furthermore, it is difficult to reduce the diffuse nutrient losses from rural areas and to improve the water quality, because of the complex combinations of different type of available diffuse sources, processes and patterns.

The nutrient losses from agricultural land to surface water depend on the available sources of nutrients and the way these sources can become mobile for transport with the water movement over land and through the soil. Within this presentation a conceptual framework will be presented based on information from and discussion within the small discussion group¹.

¹ *Small discussion group*: Oscar Schoumans, Chantal Gascuel, Jean-Marcel Dorioz, Wim Chardon, Iggy Litaor, Brian Kronvang, Ken Irvine, Phil Haygarth and Bruna Grizzetti