K O L L O Q U I U M

Institut für Hydrologie, Albert-Ludwigs-Universität Freiburg

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Hörsaal Fahnenbergplatz
(Rektoratsgebäude)

Dr. Christian Bockstaller

INRA, UMR Agronomie et Environnement, Université Lorraine – INRA, Colmar, France

Emission of pollutants (NO_3, pesticides) from arable fields into surface- and groundwater: mechanisms, assessment, ways for reduction

For the last 50 year, Intensification of agriculture has led to tremendous increase of production through mechanization, introduction of new varieties, intensification of input use, landscape redesign. Especially nitrogen fertilzers and pesticides play a key role in the crop production but meet more and more concern because of to their environmental impacts. Water pollution by nitrate leaching, and by pesticides vertical transfers and horizontal transfers to water surface and ground water belong to the main issues. This raised a great number of studies among crop scientists and agronomists on the mechanisms of emissions from arable fields, assessment tools (models, indicators) and solution to reduce them. Starting by a comparison of the research domain between agronomists and hydrolgists, hightlighting their complementary we will continue to give an overview of the mechanisms involved in the field emissions of those pollutants. Taking into account these mechanisms, solutions proposed by agronomists to reduce emissions go further than the simple reduction of the amount of inputs (fertilizer, active ingredients). We will also give some insights to the systemic approach and agro-ecological currently developped by agronomists, which allows to conciliate reduction of inputs and maintenance of production level. Finally we will focus on the assessement methods of field emissions in form of models, indicators, based on our own experience for more than 15 years of reseach on environmental indicators.