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Pollution Swapping in Agricultural Systems

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Abstract

Pollution swapping occurs when a mitigation option or best management practice (BMP) is introduced to reduce loss of one pollutant but in doing so inadvertently leads to an increase in another pollutant; one pollutant is 'swapped' for another. Although the concept of pollution swapping is widely understood it has received little research attention and little attention in policy design, as a result of incentive schemes or legislations farmers are either encouraged or required to adopt BMPs to reduce losses of one or more pollutants however, this can impact on losses of other pollutants. The mitigation options investigated in this study are applied in combinable crop systems. They are: cover crops, residue management, no-tillage, riparian buffer zones, contour grass strips and constructed wetlands. A wide range of water and atmospheric pollutants were considered including nitrogen, phosphorus, carbon and sulphur. The pollutants considered have a wide range of environmental, economic and health effects with impacts at different spatial and temporal scales. It is clear from this investigation that there is no single mitigation option that will reduce all pollutants, it is however possible to make some recommendations regarding the use of mitigation options.