Environmental impact assessment of energy crops cultivation and use

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Energy crops, as bioenergy carriers, offer ecological advantages over fossil fuels by contributing to reduction of greenhouse gases and acidifying emissions. However, there could be ecological shortcomings related to the intensity of agricultural production (risk of polluting water and air, losing soil quality, enhancing erosion and reducing biodiversity).

The study of the expected environmental consequences from the cultivation and use of a set of energy crops suggest that they do not inflict higher impact to the environment comparing to the traditional potato and wheat farming. Results indicate that annual cropping systems have a more negative impact on the environment than perennial lignocellulosic and woody species, especially regarding erodibility and biodiversity. Annual systems and woody crops are also more damaging to soil quality than herbaceous perennials. However, differences among crop types are not as evident with other indicators. Impact reduction strategies are limited to crop management options, but, site specific factors should be accurately assessed to evaluate the adequacy between crop and location. Therefore, decision makers and stakeholders should assess site-specific factors (e.g. on-field emission fluxes, quality assessment of soil and groundwater, effect on local biodiversity and landscape).