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Implementation of soft hydraulic conservation measures: are we done with soil erosion?

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Numerous studies worldwide have reported a dramatic increase in soil erosion rates following the development of agriculture. In Western Europe, food security issues led to an intensification of agricultural practices after World War II. A profound modification of the landscapes was operated that translated into an increase in hydrosedimentary connectivity and a decrease in soil cover in winter. Related on-site soil degradation and off site societal and environmental detrimental effects rapidly started to call for the implementation of conservation measures. Since 2000, the French water agencies, through the European water framework directives, started to fund the implementation of soft hydraulic conservation measures, such as vegetated filter strips or linear vegetation barriers. These measures have the advantage to be easily implemented and to be visible in the landscape without compromising the intensive agriculture production system. After twenty years of funding of soft hydraulic conservation measures, soil erosion is still an issue. Are these solutions just a plaster on a wooden leg or are they really effective? Recent efforts consisting in catchment scale monitoring programs and modelling exercise tend to show that soft hydraulic conservation measures may be usefull for local mitigation actions but may have a limited impact in terms of floods and muddy floods. On the basis of simulation exercises in contrasting environments we will discuss the advantages and limitations of such measures.