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## Modelling the effect of agricultural policy scenarios on soil ecosystem services at the continental level

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The study presents a geographically explicit model that uses multiple layers of environmental and social information to assess the environmental footprint of soil management practices at a 10 x 10 km resolution at the continental scale. Changes in soil environmental footprint are quantified in terms of the effect of management practices on soil productivity, nutrients and biodiversity. Changes in soil environmental footprint are quantified in terms of their effects on soil organic carbon, productivity and biodiversity. The central actor in the analytical process is the farmer, who is managing a plot of land where a certain crop is grown under a typical farming system. This plot of land is subject to policy scenarios, determined by the combination of agro-environmental determinants at the regional level, defined within the targets of the Common Agricultural Policy, environmental policy, market conditions and socio-economic development. Functional relations to define the effect of agricultural management practices on ecosystem services are formulated in qualitative terms. Results of different soil quality indicators are then combined to produce descriptions of improvement of soil environmental footprint. Soil Environmental footprint scenarios are then analysed in terms of improvements with respect to the current situation. Our results show that the Expected scenario is not enough to make significant contributions towards improving the soil environmental footprint and the Towards 2050 scenario delivers important benefits. The Regional Targets scenario delivers important benefits in key challenging areas, where the effects improve greatly the soil environmental footprint. The content of the study is based on the results of the iSQAPER (<http://www.isqaper-project.eu/>) H2020 project.