



Research School for Operations  
Management and Logistics

**The Economic Value of Soil Quality: Optimizing the land use and soil quality in Dutch arable and dairy farming**

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High land prices force farmers to intensive land use which endangers the level and the risk of the economic value of soil quality (EVsq, expressed as the accumulated discounted gross margins). A certain degree of extensive land use should be restricted to meet minimum requirements for soil quality, to ensure the highest returns and hence EVsq. Since little insight in EVsq exists, development of a new concept and reconsideration of crop management, as well as a new estimation methodology for EVsq is required. This research will develop the new concept for EVsq. Subsequently, a modelling set-up will be developed, aimed at estimation and analysis of EVsq; this set-up comprises simulation of soil quality indicators, simulation of feasible crop rotations and technical and economic optimization of crop management plans. In the third and last stage, the set-up will be applied to three specific real-life cases: arable farming, feed production and the interaction between both farm types. The research will result in a soil-quality based optimization of farm planning as well as an economic basis for decisions in which the price of land is important (e.g. collateral and land use policy).