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## The integrated COMET-WQ tool for crop field water quality assessment

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**Abstract:** A new development of the COMET-Farm platform (originally designed for farm and ranch carbon and greenhouse gas accounting) now includes the APEX (Agricultural Policy / Environmental eXtender) simulation model for water quality assessment at farm/small watershed scale. This web-based tool uses a geospatial graphical user interface (GUI) to help agricultural producers, land managers and other users identify their fields/area of interest and compare the impacts of different management scenarios on nitrogen and phosphorus losses, sediment losses, and crop yields in addition to the carbon and greenhouse gas accounting in the original COMET-Farm decision support tool. The platform provides a number of spatial databases, including for soil, hydrologic, weather, and baseline management conditions, which together with user inputs, are used to build the APEX model inputs and run the model 'on-the-fly'. The tool simulates the implementation of USDA-NRCS recommended conservation practices (e.g. buffer strips, conservation tillage, improved crop rotations) to estimate environmental benefits and ecosystem services. A case study in the US Corn Belt is used to demonstrate the application of this tool.

**Keywords:** COMET; APEX; web-tool; conservation practices