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Pollutants dynamics in a rice field and an upland field during storm events

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We investigated the dynamics of pollutants such as total nitrogen (TN), total phosphorous (TP), biochemical oxygen demand (BOD), chemical oxygen demand (COD), and suspended sediment (SS) in runoff from a rice field and an upland field near the upper stream of the Han river in South Korea for multiple storm events. The upland field was cropped with red pepper, sweet potato, beans, and sesame. Runoff from the rice field started later than that from the upland field due to the water storage function of rice field. Unlike the upland field, runoff from the rice field was greatly affected by farmers' water management practices. Overall, event mean concentrations (EMCs) of pollutants in runoff water from the upland field were higher than those from the rice field. Especially, EMCs of TP and SS in runoff water from the upland field were one order of magnitude higher than those from the rice field. This may be because ponding condition and flat geographical features of the rice field greatly reduces the transport of particulate phosphorous associated with soil erosion. The results suggest that the rice field contributes to control particulate pollutants into adjacent water bodies.