

Estimation of material flux from an abandoned agricultural watershed in coastal area of Seto Inland Sea, western Japan

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The objective of this study is to evaluate the impact of abandoned rice paddy on water and sediment yields in Tanijiri River catchment using SWAT model. The target catchment (2.6km²) is located on a hilly and mountainous area near central Fukuyama City, Hiroshima Prefecture Japan. The rice paddy were distributed along bottom of valleys and uplands were distributed on hills although those has already abandoned according to land use map established on 2006. Calibration and validation processes were conducted using the observed data which were measured since 2007 because the data is limited only recent years except meteorological data. Then the impact was evaluated comparison of different land use map that are before and after abandonment of rice paddy. Changing hydrological processes due to abandonment was also validated using published papers and the observed data of field experiment that were conducted lysimeters that are filled with several rice paddy soils. As the result, the water and sediment yields were changed depends on elapsed years after abandonment. Especially, it is suggested that categories of former rice paddy; wet or dried rice paddy. Changing physical properties of the soils and intrusion of woody plants are suggested as sensitive factors as well.

Keywords: Material transport, Abandoned agricultural-forestry, Soil and Water Assessment Tool