SEDIMEN SUPENSI DAN SEDIMEN DASAR PADA LAHAN AGROFORESTRI DI DAERAH TANGKAPAN AIR TAMANSARI, DESA LEKSANA, KARANGKOBAR, BANJARNEGARA

Abstrak

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Daerah Tangkapan Air (DTA) Tamansari merupakan bagian hulu DAS Merawu. Penggunaan lahan DTA Tamansari berupa agroforestri dengan tanaman pertanian yang diolah secara terus – menerus yang dipadukan dengan tanaman kehutanan. Tanaman kehutanan sebagai penutup tajuk di DTA Tamansari tergolong jarang. Apabila tidak memiliki tajuk, maka energi kinetik butir hujan langsung jatuh ke tanah. Akibatnya kapasitas infiltrasi cepat mencapai maksimal dan terjadi aliran permukaan serta erosi. Erosi dapat memengaruhi besarnya sedimen yang terangkut oleh aliran permukaan menjadi semakin meningkat. Selain itu, masyarakat tetap mengolah lahan pertanian secara terus – menerus pada DTA Tamansari yang memiliki kelerengan curam. Akibatnya tanah menjadi gembur dan rentan terhadap longsor dan erosi. Oleh sebab itu perlu dilakukan penelitian dengan tujuan yaitu memprediksi muatan sedimen suspensi, memprediksi muatan sedimen dasar, dan menganalisis pola sedimen suspensi pada saat aliran naik dan aliran turun di DTA Tamansari. Penelitian ini dilakukan pada bulan Januari sampai dengan April 2019. Data yang diambil yaitu karakteristik hujan, tinggi muka air, debit aliran, debit suspensi, sedimen dasar, vegetasi, dan kelerengan. Data hidrograf suspensi diperoleh melalui analisis debit suspensi dengan alat current meter, suspended sampler, botol mineral 600 ml, kertas saring, oven, dan AWLR. Data sedimen dasar diperoleh melalui alat bak penampung, pita meter. Data sedimen suspensi dan sedimen dasar akan dihubungkan dengan karakteristik hujan yang diperoleh melalui ARR. Sehingga, diperoleh respon analisis sedimen dengan karakteristik hujan melalui Software SigmaPlot dengan regresi linier berganda. Hasil penelitian menunjukkan besar muatan sedimen suspensi yaitu 0,25 ton/ha dan besar volume sedimen dasar yaitu 0,16 m^3/ha. Pola sedimen suspensi pada saat aliran air naik dan aliran turun memiliki pola Qs aliran naik > Qs aliran turun. Pola ini berarti pada saat aliran naik ternyata menghasilkan nilai Qs yang lebih tinggi daripada saat aliran turun.

Kata kunci: DTA Tamansari, Karakteristik Hujan, Sedimen, Agroforestri

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SUSPENSION SEDIMENT AND BASE SEDIMENT ON AGROFORESTRY LAND IN TAMANSARI CATCHMENT AREA, LEKSANA VILLAGE, KARANGKOBAR, BANJARNEGARA

Abstract

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Tamansari Catchment Area is part of upper Merawu Watershed. Inside Tamansari Catchment Area, people do their agriculture work with agroforestry system which is processed continuously. Canopy cover plants in Tamansari Catchmen Areais quite low. It then cause soil unprotected, for there is no forest canopy, which can protect the soil from rain kinetic force. The direct contact between rain and soil then increase the infiltration capacity and eventually trigger the domino process of runoff and erosion. Erosion itself can affect the number of sediment, which is brought by the runoff. The high intensity agriculture activity in Tamansari catchment area, as well as the high slope of the area, then contribute to the fragility of the soil. It then can cause a bigger erosion or landslide. Therefore, this research was conducted to determines: prediction number of suspension sediment load, prediction number of base sediment load, and suspension sediment pattern in high and low flow in Tamansari Catchment Area. Data were taken from January to April 2019. The intended data are: rain characteristic, high water level, water discharge, suspension discharge, base sediment, vegetation, and slope. Suspension hydrograph data was obtained through suspension discharge analysis with current meter equipment, suspended sampler, 600 ml mineral bottle, filter paper, oven, and AWLR. Sediment data is obtained through means of collecting tanks, tape meters. Suspension and basic sediment sediment data will be linked to the characteristics of rain obtained through ARR. Thus, a sediment analysis response with rain characteristics was obtained through SigmaPlot Software with multiple linear regression. This research shows that the amount of sediment suspension is 0.25 ton/ha, whereas the number of base sediment is 0.16 m^3/ha. In terms of sediment suspension pattern when the water flow rise and dive, it has the pattern of Qs upstream > Qs downstream. This pattern means that when the stream is rising then Qs number is higher then when the stream is declining.

Keywords: Tamansari Catchment Area, Rain characteristics, Sediments, Agroforestry

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