Up Flow and down Flow Debit Suspension analysis on Balun water catchment area, Sub watershed Merawu, Banjarnegara Regency

by:

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Abstract

Balun Catchment Area, in Wanayasa District of Banjarnegara Regency is a mountainous area. Its average altitude is 1.199 metre above sea level with a total area of 1633.366 hectares. The area has various types of ground cover which are forests, thickets, fields, settlements, and rice fields. There is virgin forest with the type of constituent Pinus plants in the upstream of this area. On the other side, in the downstream area the case occured differently that There is agricultural land with treatment activities such as soil tilling, fertilizing, weeding, and crops harvesting. Consequently, the intensive process of agricultural land activities in this site make erosion potentiality greater. Therefore, this research aim to determine the measurement of erosion which occured in the research location.

The research situated in the Observation Station Watershed in Balun Village , District Wanayasa, Banjarnegara Regency. The taking of suspension loads were performed by using an Raising Stage attached to the wall of SPAS (Observation Station Watershed). For the flow debit measurement were performed by using the Current Meter equipment , the water level measurement by using AWRL (Automatic Water Level Recorder) and for the rain gauge by using ARR (Automatic Rainfall Recorder). The supporting data were used such as the appearance of ground cover and the land treatment. The total erosion determination using microsoft excel application and sigmaplot for he help.

The result of the research obtained the total erosion of the balun Catchment Area during the research period is equal to 0,629 tonnes / ha. For equation of the upflow is obtained equation Y = 0.5091 (Q) 1.7674 with a coefficient of determination (R2) = 0.7549, for down flow equation Y = 0.3112 (Q) 1.6714 with koefisin determination (R2) = 0.8993, and the average equation Y = 0.4082 (Q) 1.7357 with a coefficient of determination (R2) = 0.7026.

Keyword : land treatment, ground cover, debit suspension and erosion

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ANALISIS DEBIT SUSPENSI PADA ALIRAN NAIK DAN TURUN PADA DAERAH TANGKAPAN AIR BALUN, SUB DAS MERAWU, KABUPATEN BANJARNEGARA

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INTISARI

Catchment Area Balun, Kecamatan Wanayasa, Kabupaten Banjarnegara merupakan daerah pegunungan yang memiliki ketinggian tempat rata-rata 1.199 m dpl. dengan luas area 1.633,366 Ha. Daerah tersebut memiliki berbagai jenis tutupan lahan, yaitu hutan, semak belukar, tegalan, pemukiman, dan persawahan. Bagian hulu kawasan terdapat hutan yang masih alami dengan jenis penyusun tanaman *Pinus merkusii*. Akan tetapi, di bagian hilir kawasan terdapat lahan pertanian dengan aktivitas pengelolaan lahan yaitu pendangiran tanah, pemupukan, pembersihan rumput, dan pemanenan tanaman. Kegiatan pengolahan lahan secara intensif di lahan pertanian, bisa berpotensi menyebabkan erosi yang semakin besar. Oleh karena itu, penelitian ini perlu dilakukan untuk mengetahui besarnya erosi yang terjadi di lokasi penelitian.

Penelitian ini dilakukan di Stasiun Pengamatan Aliran Sungai (SPAS) yang berada di Desa Balun, Kecamatan Wanayasa, Kabupaten Banjarnegara. Pengambilan muatan suspensi dilakukan dengan menggunakan alat *Suspended Sampler* yang menempel pada dinding SPAS. Selain itu dilakukan pengukuran debit aliran dengan menggunakan alat *Current Meter*, Ketinggian muka air dengan AWRL (*Automatic Water Level Recorder*) dan tebal hujan dengan ARR (*Automatic Rainfall Recorder*). Adapun data pendukung lainnya yaitu kenampakan tutupan lahan dan pengolahan lahan. Perhitungan total erosi dilakukan dengan bantuan aplikasi *microsoft excel* dan *sigmaplot*.

Hasil penelitian diperoleh total erosi pada *Catchment Area* Balun selama waktu penelitian sebesar 0,629 ton/ha. Untuk persamaan Qs aliran naik didapatkan persamaan $Y=0{,}5091(Q)^{1{,}7674}$ dengan koefisien determinasi (R^2)=0,7549, persamaan Qs aliran turun $Y=0{,}3112(Q)^{1{,}6714}$ dengan koefisin determinasi (R^2)=0,8993, dan persamaan Qs rata-rata $Y=0{,}4082(Q)^{1{,}7357}$ dengan koefisien determinasi (R^2)=0,7026.

Kata kunci : pengolahan lahan, tutupan lahan, debit suspensi dan erosi

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