

Pengendalian Laju Erosi dan Sedimentasi Menggunakan Metode Petak Kecil pada Area Revegetasi di Blok 9 PT Bharinto Ekatama, Desa Besik, Kecamatan Muara Damai, Kabupaten Kutai Barat, Provinsi Kalimantan Timur

Oleh:
Umi Afiva
114190110

INTISARI

Pemadatan pada tanah lempung untuk menjamin stabilitas lereng membuat permukaan tanah sulit menyerap air hujan dan menimbulkan aliran permukaan dalam jumlah besar. Aliran permukaan terkonsentrasi dan mengalir pada tempat-tempat tertentu di permukaan tanah hingga terbentuk alur-alur, dan menjadi semakin dalam hingga membentuk saluran-saluran parit. Tujuan penelitian yakni mengetahui laju erosi dan sedimentasi yang dihasilkan oleh erosi alur dan erosi parit, mengidentifikasi hubungan keterkaitan antara intensitas hujan dengan laju erosi dan sedimentasi, serta memberikan rekomendasi teknik pengendalian yang sesuai dengan kondisi lahan reklamasi. Penelitian dilaksanakan pada area revegetasi Blok 9 PT Bharinto Ekatama, Desa Besik, Muara Damai, Kutai Barat, Kalimantan Timur.

Pengamatan menggunakan metode petak kecil dengan ukuran 20 m x 4 m. Percobaan dilakukan selama 1 bulan, mulai dari 18 Desember 2022 – 17 Januari 2023. Uji laboratorium dilakukan untuk mengetahui konsentrasi sedimen dan perhitungan nilai laju erosi dan sedimentasi. Survei dan pemetaan juga dilakukan untuk mengetahui dimensi dan persebaran tiap-tiap erosi alur dan erosi parit menggunakan panduan Stocking dan Murnaghan (2000).

Hasil pengukuran laju erosi parit selama 1 bulan pengamatan mencapai 267,51 ton/Ha, sedangkan pada erosi alur mencapai 15,18 ton/ha. Total sedimentasi yang dihasilkan oleh erosi parit mencapai 96,21 gram/L dan erosi alur 9,75 gram/L. Berdasarkan panduan Stocking dan Murnaghan (2000), nilai erosi tertinggi untuk erosi parit dan alur yakni 65,22 ton/ha di LP 6 dan 1,53 ton/ha di LP 5. Sedangkan hasil pengukuran terendah yakni 0,5 ton/ha di LP 19 dan 0,04 ton/ha di LP 1. Peningkatan intensitas hujan tidak memberikan pengaruh yang berarti terhadap volume aliran permukaan yang dihasilkan oleh masing-masing erosi parit dan alur. Teknik pengendalian erosi dan sedimentasi melalui pendekatan metode mekanik dan vegetatif. Rekomendasi arahan pengelolaan untuk mengendalikan laju erosi parit dan alur yakni pembuatan Lubang Resapan Biopori (LRB) dan *Gully Plug*, mengembangkan *Desmodium spp.* sebagai *cover crop*, penerapan mulsa vertikal, teras gulud, serta pengaturan sistem Saluran Pembuangan Air (SPA).

Kata kunci: Erosi, Petak Kecil, Hujan, Kepadatan Tanah, Aliran Permukaan

***Erosion Rate and Sedimentation Control Using the Small Plot Method in the
Revegetation Area of Block 9 PT Bharinto Ekatama, Besik Village, Muara Damai
District, West Kutai Regency, East Kalimantan***

By:
Umi Afiva
114190110

ABSTRACT

Compaction of clay soil to ensure slope stability results in a low soil surface ability to absorb rainwater and leads to large amounts of runoff. In some areas on the ground surface, surface flow concentrates and flows until it forms rills and becomes deeper until it forms gullies. The objectives of the study was to determine the erosion and sedimentation rates produced by rill erosion and gully erosion, investigate the relationship between rain intensity and erosion and sedimentation rates, and provide recommendations for control techniques that are appropriate to the conditions of reclamation land. The research was conducted in Block 9 of PT Bharinto Ekatama, Besik Village, Muara Damai, West Kutai, East Kalimantan.

Observations used the small plot method with a size of 20 x 4 meters. The experiment was carried out for 1 month, from 18 December 2022 to 17 January 2023. Laboratory tests were conducted to determine the sediment concentration and calculate the erosion rate value. Surveys and maps were also conducted to determine the dimensions and distribution of each rill erosion and gully erosion based on Stocking and Murnaghan (2000) Guidelines.

*Based on observations made during 1 month, the gully erosion rate reaches 267,51 tons/ha, while the rill erosion rate reached 15,18 tons/ha. Sedimentation from gully erosion reached 96,21 grams/L and rill erosion 9,75 grams/L. Based on Stocking and Murnaghan guidelines, the highest for gully and rill is 65,22 tons/ha at LP 6 and 1,53 tons/ha at LP 5. Meanwhile the lowest results were 0,5 tons/ha at LP 19 and 0,04 tons/ha at LP 1. The volume of surface runoff produced by each gully and rill is not clearly affected by an increase in rainfall intensity. Erosion and sedimentation control techniques through mechanical and vegetative approaches. Management recommendations to control gully and rill erosion are Biopore Absorption Holes (LRB), Gully Plugs, developing *Desmodium spp.* as a cover crop, applying vertical mulch, contour terrace, and setting up a Water Drainage System (SPA).*

Keywords: Erosion, Small Plot, Rain, Soil Compaction, Run Off