

Erosi tanah diakui sebagai salah satu masalah lingkungan paling serius di dunia yang mempengaruhi lahan curam di daerah tropis karena secara signifikan mengurangi area lahan pertanian tersedia untuk produksi tanaman. Mayoritas penelitian erosi hanya mempertimbangkan faktor erosivitas, erodibilitas, kemiringan dan panjang lereng, vegetasi, dan pengelolaan lahan. Posisi tubuh tanah pada suatu lereng cenderung terabaikan. Kajian posisi lereng sebagai pengontrol erosi dan karakteristik tanah dilakukan pada toposekuen perwakilan di zona transisi gunungapi Tersier Menoreh dan Kwartir Sumbing yang ditentukan melalui interpretasi foto udara dan *groundcheck*. Toposekuen perwakilan dibagi menjadi 3 posisi lereng, yaitu: atas, tengah, dan bawah yang secara proses geomorfologis merupakan zona erosi dan zona deposisi. Pengukuran erosi dilakukan dengan menggunakan metode volumetrik berbasis bentuk hasil proses erosi kecuali erosi percik diukur dengan menggunakan metode *splash cup* modifikasi. Pengukuran karakteristik tanah di laboratorium yang mencakup tekstur, stabilitas agregat, permeabilitas, berat volume, berat jenis, porositas, dan bahan organik dilakukan pada contoh tanah dari 18 titik. Pengukuran curah hujan dilakukan dengan menggunakan Automatic Weather Station (AWS). Data struktur tanah, mineralogi dan Kapasitas Pertukaran Kation didapatkan dari penelitian sebelumnya. Hasil penelitian menunjukkan bahwa posisi lereng menentukan erosi dan karakteristik tanah. Posisi lereng secara langsung mempengaruhi arah dan akumulasi aliran permukaan yang berdampak pada terbentuknya erosi alur dan parit. Kehilangan tanah dari satu kawasan tangkapan hujan oleh proses erosi secara nyata berasal dari erosi alur dan parit, sehingga usaha pengendalian laju erosi semestinya terkonsentrasi pada alur dan parit.

Kata kunci : erosi alur, erosi parit, posisi lereng, aliran permukaan, konservasi

ABSTRACT

Soil erosion is recognized as one of the most serious environmental problems in the world affecting steep lands in the tropics as it significantly reduces the area of agricultural land available for crop production. Most of erosion studies only consider erosivity, erodibility, slope gradient and slope length, vegetation, and land management factors. The position of the soil body on a slope tends to be neglected. The study of slope position as erosion control and soil characteristics was carried out on representative toposequence in the transition zone of the Tertiary Menoreh and Sumbing Quaternary Volcanoes determined through the interpretation of aerial photo and groundcheck. The representative toposequence was divided into 3 slope positions, i.e. upper, middle, and lower which were geomorphologically an erosion zone and a deposition zone. Erosion measurements were carried out using the volumetric method based on the type of the erosion process except for splash erosion measured using the modified splash cup method. Measurements of soil characteristics in the laboratory including soil texture, aggregate stability, permeability, bulk density, particle density, porosity, and organic matter were carried out on soil samples from 18 points. Rainfall measurements were carried out using the Automatic Weather Station (AWS). Data on soil structure, mineralogy and Cation Exchange Capacity were obtained from previous studies. The results showed that the position of the slope determined the soil erosion. The slope position directly affected the direction and accumulation of runoff which resulted in the formation of rill and gully erosion. Soil loss by the erosion process actually came from the rill and gully erosion. Controlling the rate of erosion should be concentrated on rill and gully.

Keywords : Rill erosion, gully erosion, slope position, runoff, conservation