

Plantation Land along Secang Watershed is Vulnerable to Landslides


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YOGYAKARTA - Approximately 87.28% of the lands in Secang Watershed, Kokap sub-district of Kulon Progo regency, Yogyakarta, which have been used as mixed plantations and moors, are vulnerable to erosion. Moreover, the potential for surface runoff, surface flow and erosion along the river basin is very high. It was conveyed by Lecturer of Faculty of Geography, Suprpto Dibyosaputro, in his doctoral exam at the Faculty, Saturday (25/2).

Secang watershed is located in Kokap Sub-district, Kulonprogo Regency, Yogyakarta. With an area of 2092.05 ha, this area consists of two villages, Hargotirto in the north and Hargowilis village in the south and southeast of Secang watershed. Land use in Secang watershed comprised of 36.31 ha of forest, 1,643 ha mixed farm, 182 ha moor, 15.64 ha of scrubland, 23.13 ha grassland, 57.25 ha settlement and 134.46 ha reservoirs. "Mixed plantation is the widest area, reaching 78.55% and 8.73% of dry land," he said.

Secang watershed declivity is dominated by inclined to very steep slopes, which reach to 97.99 per cent while the remaining 2.14% is in sloping area. "The declivity becomes one of the factors triggering erosion that causes the landslide," he said.

In his dissertation research that emphasizes the spatial distribution pattern of erosion process, it is known that surface runoff and sheet erosion in Secang watershed are not started from the top of the hills despite the rain starts from the peak area. Meanwhile, the rain water that falls to the ground is accommodated in small basin on the surface, partly into the ground, causing soil to be moist and wet, and even saturated. Furthermore, after the soil saturated, water can no longer absorb rain water, then there is excess of water in the soil. "Rain water fills the small notches in the surface soil and excess of water will accumulate on the soil surface forming a thin layer of water on the slope field as surface runoff," he said.



He further added a thin layer of water gradually becomes thicker and eventually flows laterally in the ground as surface runoff. In certain condition the increasing thickness of surface runoff and runoff velocity have a force that is able to remove and transport soil particles and there occurs a process of surface erosion called sheet erosion.

From this research result, he concluded that surface runoff is influenced by factors of soil moisture, slope, soil texture, tree's height, organic matter content, soil permeability and rainfall intensity. Meanwhile, sheet erosion occurs due to soil moisture and rainfall intensity. "Therefore, the most controlling factor of soil runoff and beginning of sheet erosion is soil moisture in reddish-brown latosol soil," he said.

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