

Influence of surface flow on nitrogen discharge processes from a forested watershed

Tatsuro Kugo^{1*}, Ken'ichi Osaka¹, II, Yumi¹, Osamu Nagafuchi¹, Kei Nishida², Takashi Nakamura²

¹Graduate School of Environmental Science, the University of Shiga Prefecture, ²ICRE University of Yamanashi

It was generally thought that surface flow did not occur in forested watershed because of large infiltration capacity of forest soil. However, in recent years, some studies showed that surface flow was generated in plantations of v. The purpose of this study is to clarify the mechanisms of surface flow and its influence on nitrogen discharge from plantation of Japanese cypress.

We collected rainfall, throughfall, surface flow, soilwater (10cm, 30cm), groundwater, springwater and streamwater in a forested watershed planted with Japanese cypress in Shiga prefecture in biweekly. Four plots on the lower slope and two plots on the upper slope were selected to collect the samples. Samples were analyzed for total nitrogen, dissolved nitrogen, nitrate, ammonium, nitrite, and oxygen isotope of nitrate. Isotope analysis was conducted at ICRE in University of Yamanashi.

The amount of collected sample of surface flow was the largest in the samples and its suggested occurrence of surface flow, however, the amount of samples collected on a unit area by surface flow was extremely small compared to soilwater and throughfall. Therefore, influence of surface flow on nitrogen discharge was small in this watershed while dissolved nitrogen concentrations in surface flow were the highest in the samples.

This study was partly supported by a grant from Water Resources Environment Technology Center.

Keywords: forested watershed, surface flow, nitrogen discharge processes