Monitoring illegal cultivation extension in Rawa Danau Nature Reserve, Banten Indonesia

Arief Darmawan[*], Lilik Budi Prasetyo[2], and Satoshi TSUYUKI[1]

[1]Graduate School of Agricultural and Life Sciences, The University of Tokyo,
1-1-1 Yayoi, Bunkyo-ku, Tokyo 113-8657, Japan
[2]Bogor Agricultural University, Bogor, P.O. Box 16002, Indonesia
*Corresponding author (e-mail: arief@fr.a.u-tokyo.ac.jp)

Abstract

Rawa Danau Nature Reserve has been identified as an important natural site because it represents the last of fresh water and peat swamp forest ecosystems remains in Java Island. For years, the natural ecosystems in this unique area have been significantly affected by illegal cultivation extension that threatens the sustainability of the ecosystems. The aims of this paper are to identify land cover change dynamics between 1994 and 2000, focusing on the extent of illegal cultivation in the reserve area, and to investigate the driving forces from socioeconomic perspectives. GIS and remote sensing applications using multi temporal analysis including NDVI and post classification methods were able to identify land cover changes and to map the extent of illegal cultivation within the area. We use 1997 image as a key point to compare land cover changes and illegal cultivation before economic crisis and those after economic crisis. Correlation analysis was conducted on several socioeconomic factors, which were assumed to be the major factors in the extension of illegal cultivation. It was found that such illegal practices occurred mainly because of economic problems such as low income along with low-level education that leaves people only a few options of occupation besides farming, weak law enforcement, and the increase of the population. These accumulating problems forced people to cultivate illegally in the reserve area.

Keywords: GIS, remote sensing, land cover change, illegal cultivation, socioeconomic perspective

Curriculum Vitae

Arief Darmawan is a master student at Graduate School of Agriculture and Life Sciences, Dept. of Global Agricultural Sciences, Lab. of Global Forest Environmental Science, the University of Tokyo. He received his Bachelor of Forestry in Bogor University of Agriculture (IPB) in 2002. He was a GIS and remote sensing officer at WWF Indonesia Kayan Mentarang National Park Project in 2003. Using remote sensing and GIS for analyzing forest structure and natural resources is his interest. Estimating terrestrial carbon sequestration in aboveground Teak (*Tectona grandis*) forest biomass from remotely sensed data in Indonesia is currently his main research.