

Cost and carbon dioxide (CO₂) analysis of thinning operation with the construction of forest operation roads taken into account
-A case study on the Nihon University Forest in Hokkaido-

Takuyuki YOSHIOKA, Katsuaki SUGIURA, and Koki INOUE
(College of Bioresource Sciences, Nihon University, JAPAN)

The amount of carbon dioxide (CO₂) sequestration per unit area is expected to increase when thinning a dense plantation forest, while CO₂ will be emitted in thinning operation due to the construction of a forest-road network and the use of forestry machines. In this study, as a case study on the Nihon University Forest in Hokkaido, cost and CO₂ emission of forest operation road construction and thinning operation were analyzed, and the effectiveness of forest operation roads on subsequent thinning was discussed. From a long-term management point of view, it has been shown that the investment on forest operation roads and large efficient forestry machines, *i.e.*, constructing a durable, 3.6-m-wide road with approximately 200 m/ha of road density and introducing a harvester-forwarder system, be of beneficial,.

Keywords: Cost and carbon dioxide (CO₂) analysis, Forest operation road, Hokkaido, Thinning operation, University forest