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著者	TADA C., OOISHI R., HAYASHI S., KUNII D., SEIWA K., NAKAI Y.
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Chemical and microbial characteristics of forest soil by the difference of forest management

**C. TADA¹, R. OOISHI¹, S. HAYASHI², D. KUNII¹, K. SEIWA¹
and Y. NAKAI¹**

¹Graduate school of Agricultural Science, Tohoku University

²National Institute for Environmental Study

Artificial forest in Japan occupied more than quarter of the country, where cedar and cypress were planted. After 1955, importation of cheap woods from abroad to Japan increased, and depopulation of mountain village continues, there were many abandoned artificial forests. Then, surface soil runoff, windfall tree and pest arise became problems.

To decrease global warming, utilization of forest is important. Forest management is changing for making biodiversity and healthy forest. However, effects on chemical and microbial characteristics of forest soil by the change of forest management need to be fully elucidated.

In this study, chemical and microbial characteristics of forest soil by the difference of forest management were investigated. Quality of water extracted from different management soils was compared by ICP analysis. Concentrations of potassium, iron and manganese in water from 67% thinning forest soil were higher than that from no thinning forest soil. By analyzing with electrochemical analysis, cyclic voltammetry, reduction wave peak in extracted water from 67% thinning forest soil were clearer than that in water from no thinning forest soil. The peak potentials of the reduction wave between water from 67% thinning forest soil and from no thinning soil were different. These results suggested that characteristics of organic complex were different between 67% thinning forest soil and no thinning forest soil. Analysis of bacterial community in soil using PCR-DGGE, the community of 67% forest soil and that of no thinning forest soil were almost same.