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Effect of nitrogen fixation activity on green needle decomposition of Japanese cedar

Keizo Hirai[1*], Takashi Yamanaka[1], Kenji Ono[2], Tomonori Kaneko[3]

[1]Foresry and Forest Products research Institute, [2]Tohoku Reserach Center, Foresry and Forest Products research Institute, [3]Institute of Forestry, Akita Prefecture Agriculture, Forestry and Fisheries Research Center

Decomposition of green needles in Japanese cedar was investigated. Experimental sites were established at Shirosato, Ibaraki and Odate, Akita. The former site is no snow and the later site is much snow in winter. Litter bag experiment was conducted using green needles of Japanese cedar, and set on the ground surface and in the air.

A decomposition rate was not differing among treatments in first year but higher in the ground installed than those of air. A decomposition rate in Katsura was higher than in Odate. It was reflected difference of mean annual temperature among sites. Decomposition was proceeding even in during winter at Odate, but not at Katusra. It was considered that decomposition was progressed by water condition and physical destruction in the snowpack. A nitrogen fixation activity in remained needles was appeared three months after installation and was maximum at 6-10 month after. These values among sites were not differing. A nitrogen contents in remained needles was increased following installing time, was higher in the ground installed samples than those of air, but no relationship was observed with nitrogen fixing activity. Nitrogen content was constant in each treatment at sampling time. It was considered that increments of nitrogen contents between initial and air installed needles were derived from nitrogen fixing from air, and increments between air and ground installed needles were derives immobilization of soil microbes.

Keywords: Immobilization, litter, snow, thinning