

Geographic variation of Japanese cedar (*Cryptomeria japonica*) may have a different effect on soil ecosystem

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Soil organisms can be affected by differences in aboveground vegetation, often driven by the chemical quality of the soil and litter. *C. japonica* is the most popular plantation tree species in Japan, and plantations of *C. japonica* account for 12% of the total land area in Japan. *C. japonica* has many geographic variations such as Yakusugi and Yoshinosugi, and has been planted at each provinces. Our previous studies showed plantation of *C. japonica* affect community structure of soil invertebrate by altering calcium availability in soil. However, we have not estimated whether the effects of plantation on soil organisms vary depend on the geographic variation. In Wakayama Experimental Forest, Hokkaido University, there are common gardens that planted various provenances of *C. japonica*. We investigated the soil solution and leaf litter chemistry, root exudation rates of organic acids and soil invertebrate community, and we compared between plots that planted a different provenances of *C. japonica* (Yakusugi, Yanasesugi, Yoshinosugi and Itoshirosugi). Our results showed the diversity of soil invertebrate and concentrations of essential nutrients (calcium and phosphorus) in soil and litter significantly higher at the plot where native provenance, Yoshinosugi, was planted. Furthermore, root exudation rates of organic acids were also significantly higher at the plot where Yoshinosugi was planted. Supply of the organic acids from root systems of tree can alter dynamics of soil nutrients. Therefore, variation of rhizosphere environment might create differences in soil nutrients availability and soil invertebrate community.

Keywords: Soil invertebrate, Calcium availability