

AHW023-10

会場:102

時間:5月25日 11:30-11:45

## Soil organic carbon redistribution in Japanese cypress (Hinoki) using radionuclides Soil organic carbon redistribution in Japanese cypress (Hinoki) using radionuclides

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The forest cover of Japan (68%) is ranked among the highest of all nations, and its plantations, among the largest, are composed mainly of conifers (41%) dominated by hinoki and sugi tree species located in steep mountainous area. Given the huge carbon stores in this considerable land cover and the significance of the forest soil as a path in global carbon networks, understanding soil organic carbon (SOC) flux in forested areas is essential. We evaluated the potential of  $\{^{210}\text{Pb}_{ex}\}$  and  $\{^{137}\text{Cs}\}$  to assess SOC and soil erosion in hillslope forested area. Consequently, findings demonstrated a strong correlation between SOC and both radionuclides. But  $\{^{210}\text{Pb}_{ex}\}$  showed a superior relation due to its chemical advantage to the cation exchanging site of the soil fabric. Using DM model, net soil and SOC loss of  $0.7 \pm 0.8$  (SOC loss:  $0.13 \pm 0.16$ ) and  $1 \pm 0.4$  (SOC loss:  $0.2 \pm 0.08$ )  $\text{t ha}^{-1}\text{y}^{-1}$  have been estimated based on  $\{^{137}\text{Cs}\}$  and  $\{^{210}\text{Pb}_{ex}\}$ , respectively. In conclusion, due to strong relationship with SOC, natural and continuous fallout nature and the presence of considerable concentration in the litter,  $\{^{210}\text{Pb}_{ex}\}$  could be an alternative independent tracer to study SOC redistribution rate in forested hillslope starting from the very beginning of litter fall than  $\{^{137}\text{Cs}\}$ . This study contributes to efforts in developing a model to quantify water induced soil and SOC redistribution using  $\{^{210}\text{Pb}_{ex}\}$  in forested area as a part of endeavor to credit and mitigate carbon-induced climate tribulations.

キーワード: Soil, SOC, radionuclide, redistribution,  $\{^{137}\text{Cs}\}$ ,  $\{^{210}\text{Pb}_{ex}\}$

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