

Seasonal pattern of nitrogen uptake by *Sasa* dwarf bamboo in a cool-temperate forest in northern Hokkaido

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Nitrogen (N) is an essential element, so uptake of inorganic N by plants would influence N dynamics in forest ecosystems. Generally the amount of N that circulates within the ecosystem is considered to be far larger than that leached out from the ecosystem. In addition, nitrate concentration in stream water has been reported to be high in winter season than in growing season owing to low N uptake by plants in winter, however no study quantified the N uptake. Especially we focused on understory *Sasa* bamboo, which is the typical understory vegetation in northern Hokkaido and being thought to be important in biogeochemical processes. *Sasa* is an evergreen perennial plant, which has green leaves during winter under snowpack, hence it may be different in activity such as uptake compared with deciduous species. In this study, we spread ¹⁵N tracer four times a year and measured the uptake by collecting *Sasa* in order to determine the pattern of N uptake by *Sasa*.

We conducted our study in a cool-temperate forest in Teshio Experimental Forest of Hokkaido University in northern Hokkaido. *Sasa* (*Sasa senanensis*) covered the forest floor entirely. We conducted the survey four times in a year (November 2011, January, May, and July 2012) and set four treatment; ¹⁴NH₄, ¹⁵NH₄, ¹⁴NO₃, ¹⁵NO₃. In each date and treatment, we established the 1-m*1m plot. In total 16 plots was established. Soil surrounding each plot was trenched to 30 cm depth and plate was installed to cut off the connection of rhizomes and roots with outside plot. NH₄Cl and NaNO₃ were used in NH₄ and NO₃ plots, respectively. We established five quadrates of 20*20cm in each plot and 128ml of 1mM NH₄Cl and NaNO₃ were evenly spread using syringe within the quadrates. In NH₄ plots, 8mg of nitrapirin was contained in the solution to block nitrification. Surface 10 cm of soil was collected using auger one day and one month after the treatment and collected *Sasa* roots by washing with water. ¹⁵N content in dried and milled samples was measured, compared according to the season. We discuss the seasonal pattern of N uptake by *Sasa*.

Keywords: ¹⁵N tracer, nitrate, ammonium, root, *Sasa senanensis*