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Responses of *Persicaria thumbergii* planted on Wet Soil to Nitrogen Addition

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Response of *Persicaria thumbergii* to nitrogen additions, and its applicability for nutrient removal were investigated. The plants with soils were sampled from Kyung-An stream and grown in pots for 4 months. Soil without vegetation was also included to figure out effects of the plants. Four levels (0 N kg/m^2/wk, 0.39 N kg/m^2/wk, 0.78 N kg/m^2/wk, 1.57 N kg/m^2/wk) of nitrogen with 1:1 ratio of nitrate and ammonium were added, and ammonium and nitrate of leachate and plant biomass were determined every week. In all treatments, the removal of ammonium was 5-10 times higher than that of nitrate. The additions of 0.39 N kg/m^2/wk and 0.78 N kg/m^2/wk induced significant increase of the plant biomass. The standing crop was positively correlated to the retention of nitrogen ([N input - N output] /N input), indicating that *Persicaria thumbergii* plays an important role in removing nitrogen added. When nitrogen was added to the pots in the rate of 1.57 N kg/m^2/wk, the plant went senescent after 2 months. There might be toxic effects of large amount of nitrogen added. In summary, *Persicaria thumbergii* was effective in the removal of nitrogen, especially ammonium, and its removal rate was the highest at the 0.39 N kg/m^2/wk addition.

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Effects of Increased CO_2 on the Mineralization of Organic C, N, and P in a Loamy Sand Soil Taken from Mt. Jumbong

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Natural soils are exposed to various levels of CO_2 in current situations. In addition, the concentration of carbon dioxide in the atmosphere has been increasing due to intensive use of fossil fuels and deforestation. For a better understanding of effects of higher levels of CO_2 on soil biogeochemistry, soils were taken from A horizons of the south- and north-facing slopes at a local area of Mt. Jumbong. Sets of soil incubation were manipulated to be exposed to 5 comparable trajectories of CO_2 evolution. While the soils were incubated with 60% water holding capacity for 6 weeks at 20°C, CO_2 evolution in the one experimental set was automatically monitored using a soil respirometer. The final CO_2 concetrations were estimated to range from 0 to 1.61% v/v. Total organic carbon, NH_4^+-N, NO_3^--N, available P, and microbial C, N, and P of the incubated soils were determined. Overall, the content of NH_4^+-N was significantly decreased, while that of NO_3-N was significantly increased as the soils had been situated under higher levels of CO_2. It is suggested that increased CO_2 stimulates nitrification in the soils. and mincralization of nitrogen per microbial biomass may be related to microbial C/N ratio: the bigger the ratio is, the smaller the amount of N mineralization per unit microbial C. There was no statistically significant difference in phosphorus availability under the vaired trajectories of CO_2 concentratons.