

Accumulation of N-NH₄ and N-NO₃ in Pine under Conditions of Nitrogen Stress – Apolonia Ostrowska,
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Summary

This paper discusses the results of a study on the impact of nitrogen stress on the accumulation of various n forms in young pines and in needles of mature pine trees. With the increase in n content in the growth environment (fertilization), a several fold increase in total n in plants was found while N-NH₄ increased tens of times as compared to the treatment without fertilization. At a decreased biomass yield by ca. 50% the proportion of N-NH₄ in the total n pool fluctuated from 10 to 15%, or even more. The share of N-NO₃ in the total n amount was several fold lower than that of N-NH₄. In needles of trees growing under the impact of n deposition, the observed share of N-NH₄ in the total n pool was at a level of ca. 3%, but the total amount of soluble non-protein n compounds constituted ca. 26%. In needles of trees under low n deposition only trace amounts of mineral n were detected. Thus it can be suggested that the ratio of total n to soluble non-protein n compounds as well as the total n to mineral n ratio may be used as indices of n stress for pine.