

**PHYSIOLOGICAL PERFORMANCE OF *CLADONIA PORTENTOSA* AFTER 11 YEARS OF WET AMMONIUM AND NITRATE DEPOSITION AND ROLE OF POTASSIUM AND PHOSPHORUS EXTERNAL SUPPLY**

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Lichens are among the most sensitive organisms to nitrogen (N) pollution at the ecosystem level. Several papers have considered N tolerance in lichens, however many questions on the topic are still unsolved. Moreover, reactive N effects have been shown to increase over time, confirming that long-term experiments are needed to better characterize these responses in different ecosystems.

The Whim Bog manipulation experiment has been providing wet and dry deposition to ombrotrophic bog vegetation containing the matt forming lichen *Cladonia portentosa* (Dufour) Coem. since 2002, offering the potential to study such interactions in a controlled environment.

Samples of *C. portentosa* growing in the bog were collected and physiological parameters (pH, gas exchange, photosynthetic parameters, vitality index) and ultrastructural characteristics were analyzed in case of wet deposition. The role of potassium (K) and phosphorous (P) in alleviating N toxicity symptoms was considered.

Algal cell ultrastructure showed to be affected by different treatments. Samples receiving P and K showed an increased activity of the algal partner. Thallus pH showed to be influenced by different forms and concentrations of N. These results contribute to link physiological and morphological effects to the ecological consequences of N excess, providing a more integrated approach to managing N in the environment and offering important clues for future researches.