

Uptake of organic nitrogen in Dutch heathland ecosystems

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During the last decades species replacement has taken place in many heathlands and nutrient-poor grasslands. The increased atmospheric nitrogen deposition may have decreased the degree of mycorrhizal infection in ericoid plants reducing the competitive ability of these species. Ericoid mycorrhiza have a major role in the uptake of organic nitrogen and the production of polyphenolic compounds in the leaves and roots. Negative effects of plant litter with high concentrations of phenolics on the ratio between the release of inorganic and organic nitrogen may favour species that are able to absorb organic nitrogen (e.g. ericoid plants with ericoid mycorrhizal fungi) relative to species that are not (e.g. grasses with arbuscular mycorrhizal fungi). Field observations showed that in Dutch heathland ecosystems plant species showed great differences in their ability to produce polyphenolic compounds which is related to organic nitrogen uptake. In *Vaccinium myrtillus*, *V. vitis-idaea* and *Deschampsia flexuosa* growing under reduced light conditions levels of total polyphenolics and condensed tannins were lower compared to plants without shaded conditions. In young plants of *Calluna vulgaris* on recent sod cutted soil total polyphenolics contents were higher compared to plants on sites from an older succession stage. Fungal isolates from *Ericaceae* roots showed great variety of dark, slow growing fungi. Mycorrhizal infection still has to be analysed.