Master thesis (Mémoire de fin d'études)

Cemagref de Grenoble, Unité Ecosystèmes montagnards

Resilience of mountain pastures to soil amendments

Introduction

The continuous man-made addition of nitrogen (N), phosphorus (P), potassium (K), and calcium (Ca) has caused dramatic shifts in ecosystem states. Fertilisation generally leads to higher biomass yields, but such an increase in productivity is often accompanied by a decrease in biodiversity. Liming increases the soil pH, changes soil structure and induces replacement of rare plants species adapted to acid soils by ubiquitous plant species, which are more competitive under less acid conditions. However, little is known about whether ecosystems are resilient in the long-term against short-term perturbations.

The proposed thesis continues an experiment in an acid mountain grasslands started in 1990 with the initial aim to improve the pasture quality through fertilisation (P/K) and liming (Ca and Thomas slag). Today, the main question behind the experiment is expanded: in addition to improving the fodder quality, it is the long-term effect of soil amendments on the conservation value and effects on biodiversity of mountain grasslands which are addressed.

Content of the proposed Master thesis

Within the context of an ongoing research project, in which the dynamics of the herbaceous mountain grassland vegetation with regard to land use and climatic changes are investigated, the proposed study focus on one site at 1600 m asl next to Les Saisies (74). It investigates on the long-term effects of different liming treatments on the pastoral value and on the floristic composition. This includes the analysis of existing plant data sets (1990 to 1997) using uni- and multivariate statistics which will be completed by new vegetation relevés (May/June 2007). Further topics may include laboratory work (assessment of plant C/N ratios and nutrient status) and greenhouse experiments (productivity under controlled conditions).

Time period and work place

The optimal working period would from March to August 2007 (to be discussed). The workplace will be Grenoble with field work next to Les Saisies (74).

Contact and further information

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